

Appendix I. Aquatic Toxicity Testing Lab Results



Toxicity Report for Ventura County Watershed Protection District

NPDES Stormwater Wet Season (Contract AE20-007)

PROJECT: 2022/23-1 (Wet) P6010561

CONTRACT: AE20-007

CLIENT: Ms. Kelly Hahs
VCWPD
800 South Victoria Avenue, L#1670
Ventura, CA 93003-1670

SAMPLE I.D.: MO-VEN, MO-OXN, MO-SPA, MO-FIL, MO-OJA, MO-MEI, MO-HUE,
RW-LC1, ME-CC, ME-VR2, MO-CAM, MO-THO, MO-SIM, MO-MPK

DATE RECEIVED: 8/8/2022 and 8/10/2022

DATE REPORTED: Preliminary Results 1/10/2023, Final Report 1/19/2023

ABC LAB NO.: VCF1122.260, .253, .254, .255, .257, .258, .259, .267, .268, .269, .263,
.264, .265, .266

29 North Olive Street Ventura, California 93001 (805) 643-5621

INTRODUCTION

Toxicity tests using fathead (*P. promelas*), Ceriodaphnia (*C. dubia*), green algae (*S. capricornutum*), Topsmelt (*A. affinis*), midge (*C. dilutus*), and Hyalella (*H. azteca*) were performed to evaluate the quality of stormwater samples for Ventura County Watershed Protection District. The samples were collected on November 8th, 2022 and delivered the same day. Testing was conducted at Aquatic Bioassay and Consulting Labs, Inc. in Ventura California from November 8th, through November 15th, 2022.

MATERIALS AND METHODS

Test Material

Test material consisted of 14 grab samples collected by Ventura County Watershed Protection District (VCWPD) outfall sites. Sample collection was performed by VCWPD personnel under the direction of Ms. Kelly Hahs. The samples were collected in 5-gallon low-density polyethylene buckets and were delivered to Aquatic Bioassay immediately after sampling. Sample temperature was recorded upon acceptance at Aquatic Bioassay Laboratories and is included in the report for each station.

Samples were stored at 4°C. Upon arrival at Aquatic Bioassay, an aliquot of each sample was drawn and water quality parameters of pH, dissolved oxygen (DO), conductivity, temperature, salinity, alkalinity, and hardness were measured and recorded.

Bioassay Testing

The study was performed in accordance with the United States Environmental Protection Agency (USEPA) protocols:

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002, US EPA-821-R-02-013.

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition, October 2002, US EPA-821-R-02-014.

Summary of results for 100% sample concentration:

Sample ID	Test	Endpoint	Control	100% Sample	Statistically Different From Control	TST Result	*Percent Effect
MO-OXN	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3463	0.3492	No	Pass	-0.82
MO-MEI	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3442	0.3383	No	Pass	1.69
MO-SPA	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3463	0.3435	No	Pass	0.82
MO-CAM	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3442	0.3472	No	Pass	-0.87
MO-OJA	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3463	0.3443	No	Pass	0.58
MO-VEN	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction #-Neonates	25.0	27.2	No	Pass	-8.80
MO-FIL	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction #-Neonates	27.33	26.9	No	Pass	1.59
MO-HUE	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction #-Neonates	25.0	26.0	No	Pass	-4.00
MO-THO	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction #-Neonates	25.3	28.1	No	Pass	-11.07

*Percent Effect at IWC = (Mean Control Response – Mean IWC Response) * 100 / Mean Control Response.

Summary of results for 100% sample concentration: (Cont.)

Sample ID	Test	Endpoint	Control	100% Sample	Statistically Different From Control	TST Result	*Percent Effect
MO-SIM	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction #-Neonates	25.3	27.0	No	Pass	-6.72
MO-MPK	Selenastrum	Cell Density	1.490E6	1.964E6	No	Pass	-31.87
ME-CC	Chronic Topsmelt	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	1.442	1.461	No	Pass	-1.30
ME-VR2	Chronic Topsmelt	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	1.442	1.441	No	Pass	0.08

*Percent Effect at IWC = (Mean Control Response – Mean IWC Response) * 100 / Mean Control Response.

Summary results of species sensitivity screen 100% concentration.

Sample ID	Test	Endpoint	Control	100% Sample	Statistically Different From Control	TST Result	*Percent Effect
RW-LC1	Chronic Fathead	Survival (%)	100	100	No	Pass	0.00
		Biomass (mg)	0.3395	0.3407	No	Pass	-0.34
RW-LC1	Chronic Ceriodaphnia	Survival (%)	100	100	No	Pass	0.00
		Reproduction (#)	26.0	30.8	No	Pass	-18.46
RW-LC1	Acute Hyalella	Survival (%)	100	100	No	Pass	0.00
RW-LC1	Acute Chironomus	Survival (%)	100	90.0	No	Pass	10.00

*Percent Effect at IWC = (Mean Control Response – Mean IWC Response) * 100 / Mean Control Response.

Quality Assurance

All samples were received in good condition at the appropriate temperatures, and all tests were initiated within 72 hours of sample collection. The natural negative controls met the minimum test acceptability criterion of 80 percent mean survival. Variability among replicates was minimal, and the ability to detect a statistical difference was deemed appropriate.

Survival counts were recorded daily to ensure tests were progressing as expected. Counts were conducted daily on the control replicates. The temperatures in samples were within the recommended range for the entire test duration.

Reference Toxicant Test

A concurrent reference toxicant test using copper chloride was conducted to assess the health of the test organisms. Mean control survival met the test acceptability criterion. The median lethal concentration (LC50) calculated for this test was within two standard deviations of the internal control chart mean, indicating test organism sensitivity was typical. Reference toxicant test results are summarized in the report.

Results and Discussion

Mean survival and statistical differences from control for the tests, error bars, results summaries including individual replicate data, statistical summaries, and raw datasheets are located in in the appendix. Appropriate chain-of-custody (COC) procedures were followed during all phases of this study, and copies of the COC forms are provided in the appendix.

Most Sensitive Species Screen

Results of the species sensitivity screen are as follows: RW-LC1 exhibited 10.00 percent effect in the acute *Chironomus* test deeming it the most sensitive species. All other tests for RW-LC1 yield a result of zero or negative percent effect.

Data Analysis and Reporting

The response observed in this test includes survival of the test organism. Two statistical methods were employed to determine whether there was an effect between the control and test sample: 1) A standard t-test approach following the statistical analysis decision tree in EPA 2002; and 2) A more recent EPA-recommended Test of Significant Toxicity (TST) approach (EPA 2010).

References:

United States Environmental Protection Agency, 1995. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.

United States Environmental Protection Agency, 2002. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/821/R-02-014.

United States Environmental Protection Agency, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA/821/R-02/012.

United States Environmental Protection Agency, 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document. Office of Wastewater Management. EPA 833-R-10-003.



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11-8-2022

Project Number: 2022/23-1 (Wet)

Sampling Team: JM & JK

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
MO-OXN	11-8-22/11:50					X			2	Note 1, Note 2, Note 3
MO-SPA	11-8-22/12:00					X			2	Note 1, Note 2, Note 3
260 MO-VEN	11-8-22/13:50						X		2	Note 1, Note 2, Note 3
MO-FIL	11-8-22/14:00						X		2	Note 1, Note 2, Note 3
MO-CAM						X			2	Note 1, Note 2, Note 3
MO-THO							X		2	Note 1, Note 2, Note 3
MO-SIM							X		2	Note 1, Note 2, Note 3
MO-MPK								X	2	Note 1, Note 2, Note 3

Relinquished

Printed Name JM McCarty

Signature [Signature]

Affiliation Contractor

Date/Time 11-8-2022 13:50/12:45

Received

Printed Name [Signature]

VM2:45

Signature [Signature]

Affiliation ABC

Date/Time 11-8-2022

Other Notes:

Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%

Note 3: Notify District within 24 hours if significant toxicity is observed.

Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyalella*



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. Results were as follows:


CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	MO-VEN
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.260

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

REPRODUCTION	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 12:35 (p 1 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-4069-8411	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:15	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO
		Age: <24
Sample ID: 18-7287-8917	Code: VCF1122.260cer	Project: P6010561
Sample Date: 08 Nov-22 13:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:45	CAS (PC):	Station: MO-VEN
Sample Age: 100m (9.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
19-4857-3151	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
05-3239-9506	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	14.3%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
17-5386-6708	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
10-2419-1892	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
17-5386-6708	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
19-4857-3151	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
05-3239-9506	Reproduction	Control Resp	25	15	<<	Yes	Passes Criteria
10-2419-1892	Reproduction	Control Resp	25	15	<<	Yes	Passes Criteria
05-3239-9506	Reproduction	PMSD	0.1435	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	25	22.37	27.63	21	33	1.164	3.682	14.73%	0.00%
6.25		10	24.4	22.78	26.02	20	28	0.718	2.271	9.31%	2.40%
12.5		10	26.4	24.21	28.59	21	33	0.9684	3.062	11.60%	-5.60%
25		10	24.9	21.59	28.21	18	32	1.464	4.63	18.59%	0.40%
50		10	25.8	23	28.6	21	32	1.236	3.91	15.16%	-3.20%
100		10	27.2	25.07	29.33	21	31	0.9404	2.974	10.93%	-8.80%

Handwritten signature and "PASS" stamp

CETIS Summary Report

Report Date: 16 Dec-22 12:35 (p 2 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: 4AC717EFCABBE956D232546098242235

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	28	23	24	22	25	28	33	22	21
6.25		28	25	20	26	25	25	24	26	23	22
12.5		21	27	24	26	28	27	27	25	26	33
25		27	25	24	19	18	32	29	28	27	20
50		23	24	23	21	30	23	27	24	31	32
100		25	28	21	25	26	29	29	28	30	31

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 16 Dec-22 12:34 (p 1 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 05-3239-9506	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:33	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 12:29	MD5 Hash: 4AC717EFCABBE956D232546098242235	Editor ID: 008-463-000-3
Batch ID: 14-4069-8411	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:15	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 18-7287-8917	Code: VCF1122.260cer	Project: P6010561
Sample Date: 08 Nov-22 13:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:45	CAS (PC):	Station: MO-VEN
Sample Age: 100m (9.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.587	14.35%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	0.3829	2.289	3.587	CDF	0.6959	Non-Significant Effect
		12.5	18	-0.8935	2.289	3.587	CDF	0.9787	Non-Significant Effect
		25	18	0.06382	2.289	3.587	CDF	0.8137	Non-Significant Effect
		50	18	-0.5106	2.289	3.587	CDF	0.9423	Non-Significant Effect
		100	18	-1.404	2.289	3.587	CDF	0.9956	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	25	15	<<	Yes	Passes Criteria
PMSD	0.1435	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	55.2833	11.0567	5	0.9007	0.4875	Non-Significant Effect
Error	662.9	12.2759	54			
Total	718.183		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.079	15.09	0.4063	Equal Variances
	Levene Equality of Variance Test	1.58	3.377	0.1813	Equal Variances
	Mod Levene Equality of Variance Test	0.9643	3.377	0.4479	Equal Variances
Distribution	Anderson-Darling A2 Test	0.1919	3.878	0.9480	Normal Distribution
	D'Agostino Kurtosis Test	0.09063	2.576	0.9278	Normal Distribution
	D'Agostino Skewness Test	0.6699	2.576	0.5030	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.4569	9.21	0.7958	Normal Distribution
	Kolmogorov-Smirnov D Test	0.05568	0.1331	0.9885	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9885	0.9459	0.8441	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	25	22.37	27.63	24	21	33	1.164	14.73%	0.00%
6.25		10	24.4	22.78	26.02	25	20	28	0.718	9.31%	2.40%
12.5		10	26.4	24.21	28.59	26.6	21	33	0.9684	11.60%	-5.60%
25		10	24.9	21.59	28.21	26.33	18	32	1.464	18.59%	0.40%
50		10	25.8	23	28.6	24	21	32	1.236	15.16%	-3.20%
100		10	27.2	25.07	29.33	28	21	31	0.9404	10.93%	-8.80%

Ceriodaphnia 7-d Survival and Reproduction Test

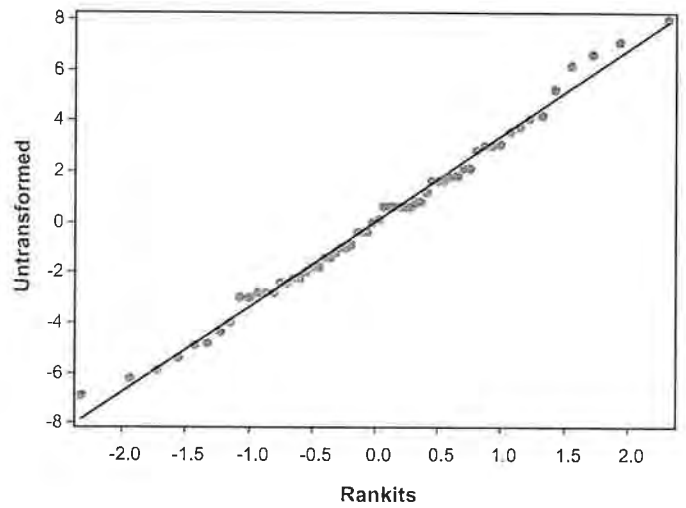
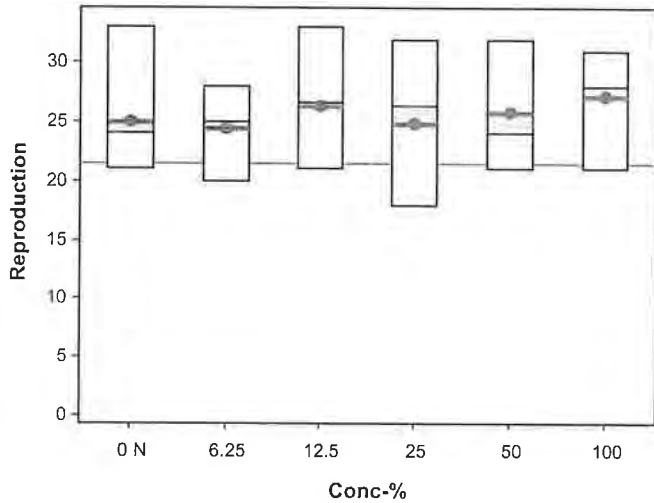
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 05-3239-9506 Endpoint: Reproduction CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:33 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 12:29 MD5 Hash: 4AC717EFCABBE956D232546098242235 Editor ID: 008-463-000-3

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	28	23	24	22	25	28	33	22	21
6.25		28	25	20	26	25	25	24	26	23	22
12.5		21	27	24	26	28	27	27	25	26	33
25		27	25	24	19	18	32	29	28	27	20
50		23	24	23	21	30	23	27	24	31	32
100		25	28	21	25	26	29	29	28	30	31

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:34 (p 1 of 4)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	17-5386-6708	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3		
Analyzed:	16 Dec-22 12:33	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1		
Edit Date:	16 Dec-22 12:29	MD5 Hash:	521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID:	008-463-000-3		
Batch ID:	14-4069-8411	Test Type:	Reproduction-Survival (7d)	Analyst:			
Start Date:	08 Nov-22 15:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 14:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	18-7287-8917	Code:	VCF1122.260cer	Project:	P6010561		
Sample Date:	08 Nov-22 13:50	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	08 Nov-22 14:45	CAS (PC):		Station:	MO-VEN		
Sample Age:	100m (9.5 °C)	Client:	Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

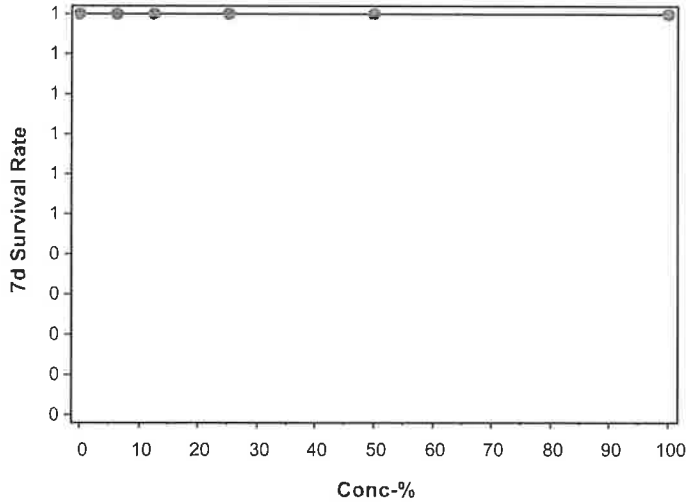
7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-5386-6708 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:33 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 12:29 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF Editor ID: 008-463-000-3

Graphics



Attachment A Appendix I *P*

CETIS Analytical Report

Report Date: 16 Dec-22 12:34 (p 3 of 4)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-2419-1892	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:33	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 12:29	MD5 Hash: 4AC717EFCABBE956D232546098242235	Editor ID: 008-463-000-3
Batch ID: 14-4069-8411	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:15	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 18-7287-8917	Code: VCF1122.260cer	Project: P6010561
Sample Date: 08 Nov-22 13:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:45	CAS (PC):	Station: MO-VEN
Sample Age: 100m (9.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	230267	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	25	15	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	25	24	21	33	14.73%	0.00%	25.62	0.00%
6.25		10	24.4	25	20	28	9.31%	2.40%	25.62	0.00%
12.5		10	26.4	26.6	21	33	11.60%	-5.60%	25.62	0.00%
25		10	24.9	26.33	18	32	18.59%	0.40%	25.62	0.00%
50		10	25.8	24	21	32	15.16%	-3.20%	25.62	0.00%
100		10	27.2	28	21	31	10.93%	-8.80%	25.62	0.00%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	28	23	24	22	25	28	33	22	21
6.25		28	25	20	26	25	25	24	26	23	22
12.5		21	27	24	26	28	27	27	25	26	33
25		27	25	24	19	18	32	29	28	27	20
50		23	24	23	21	30	23	27	24	31	32
100		25	28	21	25	26	29	29	28	30	31

CETIS Analytical Report

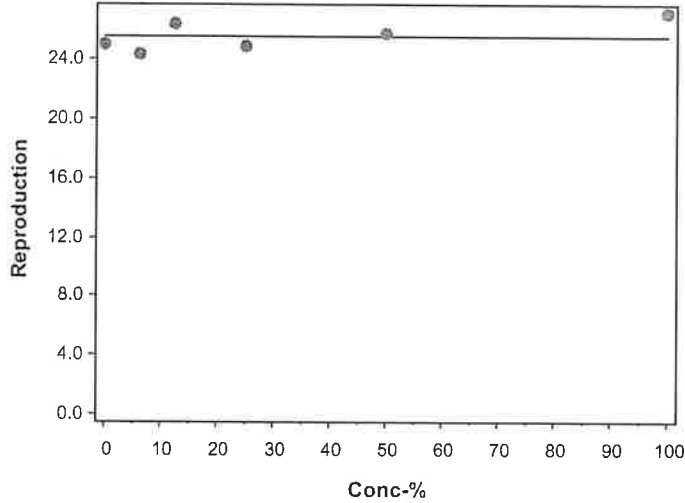
Report Date: 16 Dec-22 12:34 (p 4 of 4)
Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-2419-1892	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:33	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 12:29	MD5 Hash: 4AC717EFCABBE956D232546098242235	Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:35 (p 1 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-4857-3151	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:33	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 16 Dec-22 12:29	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3
Batch ID: 14-4069-8411	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:15	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 18-7287-8917	Code: VCF1122.260cer	Project: P6010561
Sample Date: 08 Nov-22 13:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:45	CAS (PC):	Station: MO-VEN
Sample Age: 100m (9.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 16 Dec-22 12:35 (p 2 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

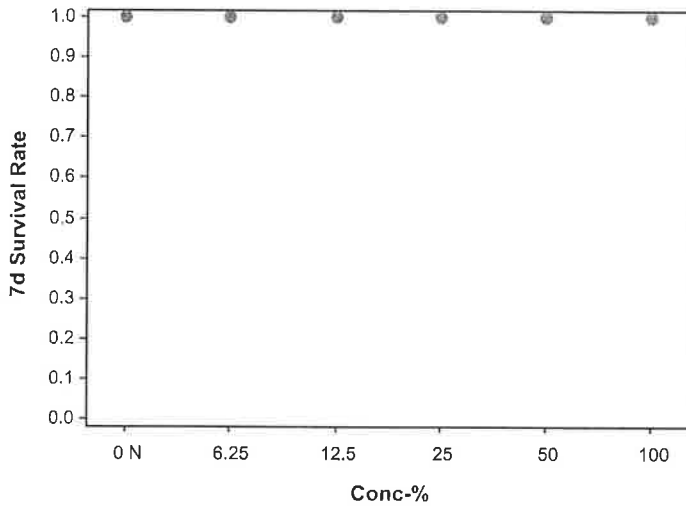
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-4857-3151 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:33 Analysis: STP 2xK Contingency Tables Status Level: 1
 Edit Date: 16 Dec-22 12:29 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF Editor ID: 008-463-000-3

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 12:35 (p 1 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-4069-8411	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:15	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 18-7287-8917	Code: VCF1122.260cer	Project: P6010561
Sample Date: 08 Nov-22 13:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:45	CAS (PC):	Station: MO-VEN
Sample Age: 100m (9.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	32	32	32	32	32	0	0	0.00%	0
Overall		16	46	38.3	53.7	32	60	3.615	14.46	31.43%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.2	363.1	369.4	362	370	0.4665	3.732	1.02%	0
6.25		8	342.4	340.4	344.4	340	346	0.2983	2.387	0.70%	0
12.5		8	379.4	375.8	382.9	372	387	0.5301	4.241	1.12%	0
25		8	395.1	392.3	398	390	399	0.4249	3.399	0.86%	0
50		8	353.5	350.9	356.1	349	357	0.3953	3.162	0.89%	0
100		8	261.8	259.9	263.6	260	267	0.2815	2.252	0.86%	0
Overall		48	349.7	337.1	362.3	260	399	6.268	43.42	12.42%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.6	7.368	7.832	7	8	0.03472	0.2777	3.65%	0
12.5		8	7.587	7.353	7.822	7	8	0.035	0.28	3.69%	0
25		8	7.525	7.254	7.796	6.9	8.1	0.0405	0.324	4.31%	0
50		8	7.512	7.283	7.742	7	8	0.03435	0.2748	3.66%	0
100		8	7.5	7.247	7.753	7	8.1	0.0378	0.3024	4.03%	0
Overall		48	7.554	7.472	7.636	6.9	8.1	0.0406	0.2813	3.72%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	50	50	50	50	50	0	0	0.00%	0
Overall		16	72	59.79	84.21	50	98	5.727	22.91	31.82%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
6.25		8	7.963	7.919	8.006	7.9	8	0.006468	0.05175	0.65%	0
12.5		8	7.95	7.887	8.013	7.8	8	0.009449	0.07559	0.95%	0
25		8	7.925	7.851	7.999	7.8	8	0.01108	0.08864	1.12%	0
50		8	7.887	7.783	7.992	7.7	8	0.01558	0.1246	1.58%	0
100		8	7.875	7.751	7.999	7.6	8	0.0186	0.1488	1.89%	0
Overall		48	7.919	7.887	7.95	7.6	8	0.01566	0.1085	1.37%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 12:35 (p 2 of 2)
 Test Code/ID: VCF1122.260cer / 12-2397-6861

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.08	23.99	24.16	24	24.2	0.01293	0.1035	0.43%	0
12.5		8	24.08	23.99	24.16	24	24.2	0.01293	0.1035	0.43%	0
25		8	24.08	23.99	24.16	24	24.2	0.01293	0.1035	0.43%	0
50		8	24.06	23.99	24.14	24	24.2	0.01145	0.09156	0.38%	0
100		8	24.06	23.99	24.14	24	24.2	0.01145	0.09156	0.38%	0
Overall		48	24.06	24.03	24.08	24	24.2	0.01292	0.08952	0.37%	0 (0%)



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11-8-2022 Project Number: 2022/23-1 (Wet)
 Sampling Team: JM & JK

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
.253 MO-OXN	11-8-22/11:00					X			2	Note 1, Note 2, Note 3 <i>Temp = 16.0°C LOI = 0.0</i>
.254 MO-SPA	11-8-22/8:25					X			2	Note 1, Note 2, Note 3 <i>Temp = 10.0°C LOI = 0.0</i>
.255 MO-VEN							X		2	Note 1, Note 2, Note 3 <i>Temp = 12.5°C LOI = 0.0</i>
.255 MO-FIL	11-8-22/9:50						X		2	Note 1, Note 2, Note 3
MO-CAM						X			2	Note 1, Note 2, Note 3
MO-THO							X		2	Note 1, Note 2, Note 3
MO-SIM							X		2	Note 1, Note 2, Note 3
MO-MPK								X	2	Note 1, Note 2, Note 3

Relinquished Printed Name LIM MCCRODY
 Signature [Signature]
 Affiliation CONTRACTOR Date/Time 11-8-2022 / 12:37

Received Printed Name Victor Marquez
 Signature [Signature]
 Affiliation ABC LABS Date/Time 11-8-22 1237

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%
 Note 3: Notify District within 24 hours if significant toxicity is observed.
 Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyalella*



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

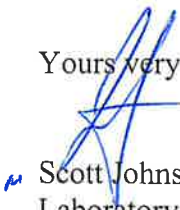
We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT: Ventura County Flood Control
SAMPLE I.D.: ME-OXN
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.253

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
BIOMASS	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:37 (p 1 of 2)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon					
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable					
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561					
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN					
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary									
Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	PMSD	TU	S
03-5103-6803	7d Survival Rate	Steel Many-One Rank Sum Test		100	>100	---	---	1	1
19-6328-6529	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test		100	>100	---	3.27%	1	1

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
01-0611-0560	7d Survival Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	
14-4719-6344	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)		IC15	>100	---	---	<1	1
				IC20	>100	---	---	<1	
				IC25	>100	---	---	<1	
				IC40	>100	---	---	<1	
				IC50	>100	---	---	<1	

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-0611-0560	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
03-5103-6803	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
14-4719-6344	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
19-6328-6529	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
19-6328-6529	Mean Dry Biomass-mg	PMSD	0.03268	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.3387	0.3627	0.005501	0.011	3.18%	0.00%
6.25		4	0.3433	0.339	0.3477	0.3393	0.3453	0.001361	0.002722	0.79%	0.87%
12.5		4	0.3478	0.3444	0.3512	0.3447	0.3493	0.001067	0.002134	0.61%	-0.43%
25		4	0.3408	0.338	0.3436	0.3393	0.3433	0.000877	0.001753	0.51%	1.59%
50		4	0.3447	0.3393	0.3501	0.3413	0.3493	0.0017	0.003399	0.99%	0.48%
100		4	0.3492	0.3319	0.3664	0.338	0.3627	0.005425	0.01085	3.11%	-0.82%

CETIS Summary Report

Report Date: 16 Dec-22 11:37 (p 2 of 2)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

7d Survival Rate Detail MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail MD5: 3779E4011A03FF4ABBB91439D7F6AE47

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3447	0.3393	0.3453	0.344
12.5		0.3447	0.3493	0.3487	0.3487
25		0.3393	0.34	0.3407	0.3433
50		0.3413	0.3433	0.3493	0.3447
100		0.3433	0.3627	0.3527	0.338

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 10:42 (p 1 of 4)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 03-5103-6803	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:55	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 12:49	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4			
Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable			
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:			
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561			
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN			
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	--	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%

CETIS Analytical Report

Report Date: 16 Dec-22 10:42 (p 2 of 4)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-5103-6803 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:55 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:49 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

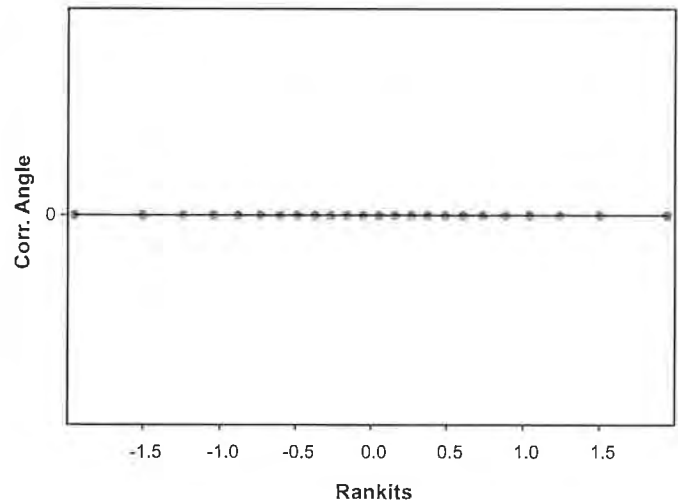
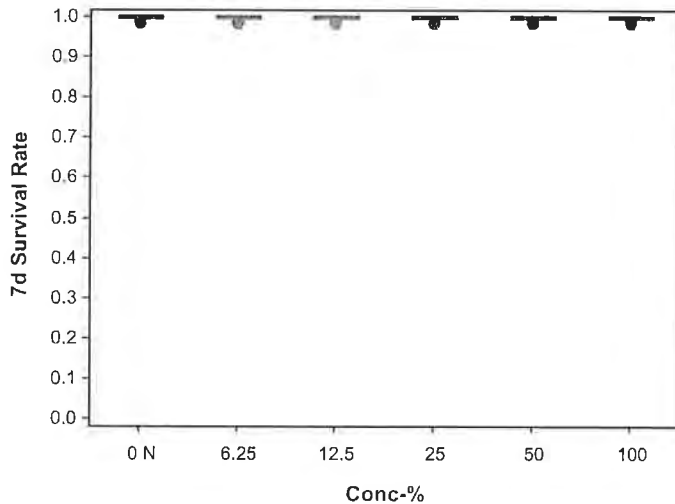
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 10:42 (p 3 of 4)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 19-6328-6529	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:55	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:49	MD5 Hash: 3779E4011A03FF4ABBB91439D7F6AE47	Editor ID: 001-068-318-4
Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.01132	3.27%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	20	10	0	CDF	0.9516	Non-Significant Effect
		12.5	6	22	10	0	CDF	0.9908	Non-Significant Effect
		25	6	16	10	0	CDF	0.6105	Non-Significant Effect
		50	6	20	10	0	CDF	0.9516	Non-Significant Effect
		100	6	19.5	10	1	CDF	0.9315	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
PMSD	0.03268	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0001865	3.731E-05	5	0.8435	0.5365	Non-Significant Effect
Error	0.0007961	4.423E-05	18			
Total	0.0009826		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	16.15	15.09	0.0064	Unequal Variances
	Levene Equality of Variance Test	4.467	4.248	0.0080	Unequal Variances
	Mod Levene Equality of Variance Test	1.648	4.248	0.1983	Equal Variances
Distribution	Anderson-Darling A2 Test	0.9597	3.878	0.0155	Normal Distribution
	D'Agostino Kurtosis Test	2.066	2.576	0.0388	Normal Distribution
	D'Agostino Skewness Test	2.214	2.576	0.0268	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	9.171	9.21	0.0102	Normal Distribution
	Kolmogorov-Smirnov D Test	0.1688	0.2056	0.0753	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9039	0.884	0.0260	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.342	0.3387	0.3627	0.005501	3.18%	0.00%
6.25		4	0.3433	0.339	0.3477	0.3443	0.3393	0.3453	0.001361	0.79%	0.87%
12.5		4	0.3478	0.3444	0.3512	0.3487	0.3447	0.3493	0.001067	0.61%	-0.43%
25		4	0.3408	0.338	0.3436	0.3403	0.3393	0.3433	0.000877	0.51%	1.59%
50		4	0.3447	0.3393	0.3501	0.344	0.3413	0.3493	0.0017	0.99%	0.48%
100		4	0.3492	0.3319	0.3664	0.348	0.338	0.3627	0.005425	3.11%	-0.82%

CETIS Analytical Report

Report Date: 16 Dec-22 10:42 (p 1 of 4)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-0611-0560	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:55	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:49	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

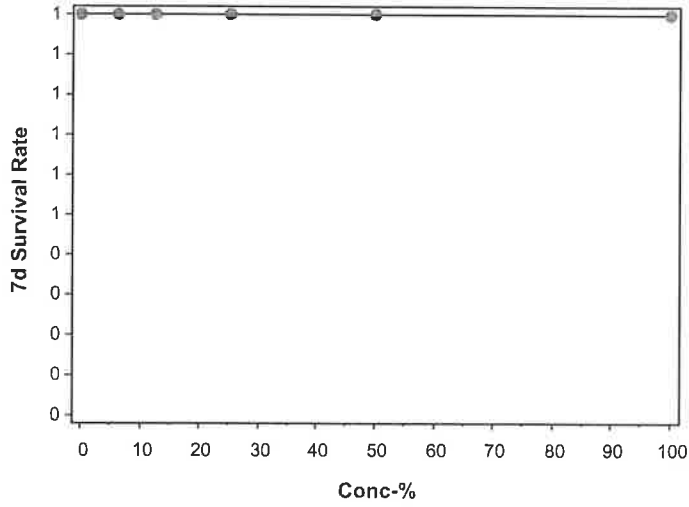
Attachment A Appendix I
 Analyst: 

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-0611-0560 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:55 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 12:49 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

Graphics



Attachment A Appendix I 

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 14-4719-6344	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:55	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 12:49	MD5 Hash: 3779E4011A03FF4ABBB91439D7F6AE47	Editor ID: 001-068-318-4			
Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable			
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:			
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561			
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN			
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	62187	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3463	0.342	0.3387	0.3627	3.18%	0.00%	0.3463	0.00%
6.25		4	0.3433	0.3443	0.3393	0.3453	0.79%	0.87%	0.3456	0.20%
12.5		4	0.3478	0.3487	0.3447	0.3493	0.61%	-0.43%	0.3456	0.20%
25		4	0.3408	0.3403	0.3393	0.3433	0.51%	1.59%	0.3449	0.40%
50		4	0.3447	0.344	0.3413	0.3493	0.99%	0.48%	0.3449	0.40%
100		4	0.3492	0.348	0.338	0.3627	3.11%	-0.82%	0.3449	0.40%

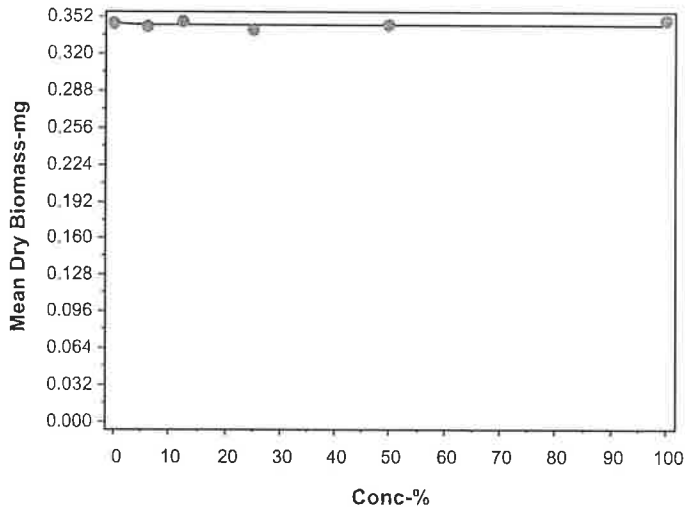
Mean Dry Biomass-mg Detail					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3447	0.3393	0.3453	0.344
12.5		0.3447	0.3493	0.3487	0.3487
25		0.3393	0.34	0.3407	0.3433
50		0.3413	0.3433	0.3493	0.3447
100		0.3433	0.3627	0.3527	0.338

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-4719-6344	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:55	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:49	MD5 Hash: 3779E4011A03FF4ABBB91439D7F6AE47	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 10:42 (p 1 of 2)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-0866-1781	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:12	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 03-1803-5843	Code: VCF1122.253fml	Project: P6010561
Sample Date: 08 Nov-22 11:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 07 Nov-22 12:37	CAS (PC):	Station: MO-OXN
Sample Age: 120m (16 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	66	66	66	66	66	0	0	0.00%	0
Overall		16	63	61.35	64.65	60	66	0.7746	3.098	4.92%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	366.8	362.3	371.2	360	372	0.664	5.312	1.45%	0
12.5		8	378.4	369.2	387.6	359	389	1.374	10.99	2.91%	0
25		8	387.1	372.9	401.3	358	399	2.121	16.97	4.38%	0
50		8	408	400.2	415.8	400	429	1.169	9.35	2.29%	0
100		8	486.9	482.2	491.6	480	496	0.7022	5.617	1.15%	0
Overall		48	398.9	386.4	411.5	358	496	6.235	43.2	10.83%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.587	7.329	7.846	7	8.1	0.03864	0.3091	4.07%	0
12.5		8	7.55	7.318	7.782	7	8	0.03472	0.2777	3.68%	0
25		8	7.575	7.308	7.842	7	8.1	0.03995	0.3196	4.22%	0
50		8	7.55	7.26	7.84	6.9	8.1	0.0433	0.3464	4.59%	0
100		8	7.525	7.229	7.821	6.8	8	0.04419	0.3536	4.70%	0
Overall		48	7.565	7.477	7.653	6.8	8.1	0.04371	0.3028	4.00%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	144	144	144	144	144	0	0	0.00%	0
Overall		16	119	105.2	132.8	90	144	6.496	25.98	21.84%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
12.5		8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
25		8	7.888	7.766	8.009	7.6	8	0.01822	0.1458	1.85%	0
50		8	7.863	7.722	8.003	7.5	8	0.02106	0.1685	2.14%	0
100		8	7.863	7.722	8.003	7.5	8	0.02106	0.1685	2.14%	0
Overall		48	7.89	7.848	7.931	7.5	8	0.02046	0.1418	1.80%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 10:42 (p 2 of 2)
 Test Code/ID: VCF1122.253fml / 09-8333-6774

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
12.5		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
50		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
100		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
Overall		48	24.02	24	24.04	24	24.2	0.008912	0.06174	0.26%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT: Ventura County Flood Control
SAMPLE I.D.: MO-SPA
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.254

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

BIOMASS	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:38 (p 1 of 2)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
06-3724-6239	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
07-8312-1437	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	4.79%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
19-0096-8630	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
10-9453-6285	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
06-3724-6239	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
19-0096-8630	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
07-8312-1437	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
10-9453-6285	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
07-8312-1437	Mean Dry Biomass-mg	PMSD	0.04787	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.3387	0.3627	0.005501	0.011	3.18%	0.00%
6.25		4	0.3435	0.3287	0.3583	0.3373	0.3573	0.004662	0.009323	2.71%	0.82%
12.5		4	0.3508	0.3289	0.3728	0.3387	0.3707	0.006898	0.0138	3.93%	-1.30%
25		4	0.3445	0.3292	0.3598	0.3353	0.358	0.004795	0.00959	2.78%	0.53%
50		4	0.3405	0.3361	0.3449	0.3373	0.344	0.001371	0.002742	0.81%	1.68%
100		4	0.3435	0.33	0.357	0.336	0.3547	0.004228	0.008457	2.46%	0.82%

CETIS Summary Report

Report Date: 16 Dec-22 11:38 (p 2 of 2)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: B30BEB74910051906FF3D655EA5B8DE7

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3407	0.3387	0.3373	0.3573
12.5		0.3707	0.3467	0.3473	0.3387
25		0.358	0.3353	0.342	0.3427
50		0.34	0.3373	0.344	0.3407
100		0.3453	0.338	0.336	0.3547

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 1 of 4)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-3724-6239	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:57	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 2 of 4)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 06-3724-6239 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 10:46 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:57 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 3 of 4)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-8312-1437	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:57	MD5 Hash: C1E47393BFC04714BB43AECAC190A61B	Editor ID: 001-068-318-4
Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.01658	4.79%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	14.5	10	1	CDF	0.4092	Non-Significant Effect
		12.5	6	20.5	10	1	CDF	0.9667	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	15	10	0	CDF	0.4761	Non-Significant Effect
		100	6	16	10	0	CDF	0.6105	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
PMSD	0.04787	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0002428	4.855E-05	5	0.5117	0.7639	Non-Significant Effect
Error	0.0017079	9.488E-05	18			
Total	0.0019507		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.304	15.09	0.3799	Equal Variances
	Levene Equality of Variance Test	1.062	4.248	0.4132	Equal Variances
	Mod Levene Equality of Variance Test	0.29	4.248	0.9123	Equal Variances
Distribution	Anderson-Darling A2 Test	1.585	3.878	2.6E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	0.4189	2.576	0.6753	Normal Distribution
	D'Agostino Skewness Test	2.187	2.576	0.0288	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	4.958	9.21	0.0838	Normal Distribution
	Kolmogorov-Smirnov D Test	0.2092	0.2056	0.0080	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.8683	0.884	0.0049	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.342	0.3387	0.3627	0.005501	3.18%	0.00%
6.25		4	0.3435	0.3287	0.3583	0.3397	0.3373	0.3573	0.004662	2.71%	0.82%
12.5		4	0.3508	0.3289	0.3728	0.347	0.3387	0.3707	0.006898	3.93%	-1.30%
25		4	0.3445	0.3292	0.3598	0.3423	0.3353	0.358	0.004795	2.78%	0.53%
50		4	0.3405	0.3361	0.3449	0.3403	0.3373	0.344	0.001371	0.81%	1.68%
100		4	0.3435	0.33	0.357	0.3417	0.336	0.3547	0.004228	2.46%	0.82%

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 4 of 4)
Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-8312-1437 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46 Analysis: Nonparametric-Control vs Treatments Status Level: 1
Edit Date: 05 Dec-22 12:57 MD5 Hash: C1E47393BFC04714BB43AECAC190A61B Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3407	0.3387	0.3373	0.3573
12.5		0.3707	0.3467	0.3473	0.3387
25		0.358	0.3353	0.342	0.3427
50		0.34	0.3373	0.344	0.3407
100		0.3453	0.338	0.336	0.3547

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 1 of 4)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-0096-8630	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:57	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 10:47 (p 3 of 4)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-9453-6285	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:57	MD5 Hash: C1E47393BFC04714BB43AECAC190A61B	Editor ID: 001-068-318-4
Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1746368	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3463	0.342	0.3387	0.3627	3.18%	0.00%	0.3469	0.00%
6.25		4	0.3435	0.3397	0.3373	0.3573	2.71%	0.82%	0.3469	0.00%
12.5		4	0.3508	0.347	0.3387	0.3707	3.93%	-1.30%	0.3469	0.00%
25		4	0.3445	0.3423	0.3353	0.358	2.78%	0.53%	0.3445	0.69%
50		4	0.3405	0.3403	0.3373	0.344	0.81%	1.68%	0.342	1.41%
100		4	0.3435	0.3417	0.336	0.3547	2.46%	0.82%	0.342	1.41%

Mean Dry Biomass-mg Detail

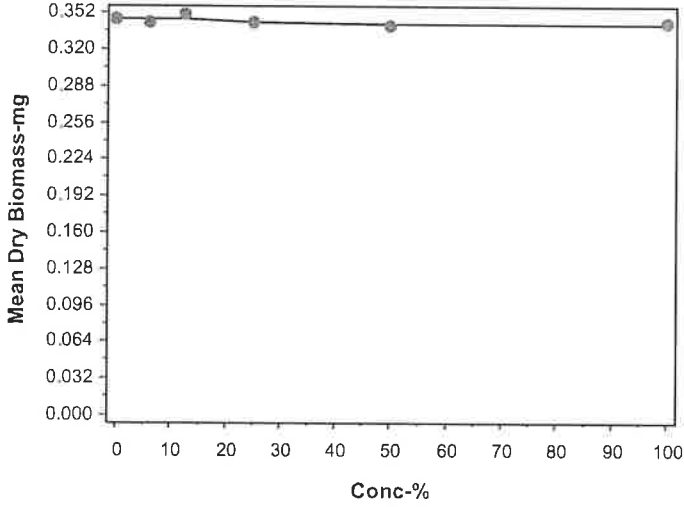
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3407	0.3387	0.3373	0.3573
12.5		0.3707	0.3467	0.3473	0.3387
25		0.358	0.3353	0.342	0.3427
50		0.34	0.3373	0.344	0.3407
100		0.3453	0.338	0.336	0.3547

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-9453-6285 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:46 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 12:57 MD5 Hash: C1E47393BFC04714BB43AECAC190A61B Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 10:47 (p 1 of 2)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-2918-9494	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:05	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:16	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 16-8901-6525	Code: VCF1122.254fml	Project: P6010561
Sample Date: 08 Nov-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-SPA
Sample Age: 5h (10 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	44	44	44	44	44	0	0	0.00%	0
Overall		16	52	47.6	56.4	44	60	2.066	8.262	15.89%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	362.9	360.7	365	360	367	0.3235	2.588	0.71%	0
12.5		8	354.8	351	358.5	349	360	0.566	4.528	1.28%	0
25		8	335.8	333.1	338.4	332	339	0.3995	3.196	0.95%	0
50		8	306.4	303.2	309.5	302	310	0.4674	3.739	1.22%	0
100		8	253.6	251.2	256	250	258	0.3594	2.875	1.13%	0
Overall		48	330	318.3	341.7	250	370	5.808	40.24	12.19%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.335	7.815	7	8	0.03583	0.2866	3.78%	0
12.5		8	7.575	7.335	7.815	7	8	0.03583	0.2866	3.78%	0
25		8	7.562	7.31	7.815	7	8.1	0.03776	0.3021	3.99%	0
50		8	7.525	7.298	7.752	7	8	0.03391	0.2712	3.60%	0
100		8	7.525	7.298	7.752	7	8	0.03391	0.2712	3.60%	0
Overall		48	7.56	7.481	7.64	7	8.1	0.03936	0.2727	3.61%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	77	77	77	77	77	0	0	0.00%	0
Overall		16	85.5	80.57	90.43	77	98	2.313	9.252	10.82%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
12.5		8	7.875	7.743	8.007	7.5	8	0.01976	0.1581	2.01%	0
25		8	7.9	7.759	8.041	7.5	8	0.02113	0.169	2.14%	0
50		8	7.875	7.735	8.015	7.5	8	0.02086	0.1669	2.12%	0
100		8	7.875	7.735	8.015	7.5	8	0.02086	0.1669	2.12%	0
Overall		48	7.89	7.847	7.932	7.5	8	0.02131	0.1477	1.87%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 10:47 (p 2 of 2)
 Test Code/ID: VCF1122.254fml / 04-4436-5854

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
12.5		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
50		8	24.01	23.98	24.04	24	24.1	0.004414	0.03531	0.15%	0
100		8	24.01	23.98	24.04	24	24.1	0.004414	0.03531	0.15%	0
Overall		48	24.02	24	24.03	24	24.2	0.007493	0.05191	0.22%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. Results were as follows:


CLIENT: Ventura County Flood Control
SAMPLE I.D.: MO-FIL
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.255

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

REPRODUCTION	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:39 (p 1 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 00-4186-1880	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon					
Start Date: 08 Nov-22 13:26	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 15 Nov-22 13:47	Species: Ceriodaphnia dubia	Brine: Not Applicable					
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 00-8658-9101	Code: VCF1122.255cer	Project: P6010506					
Sample Date: 08 Nov-22 13:26	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-FIL					
Sample Age: --- (12.5 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary									
Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	PMSD	TU	S
06-6392-6840	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test		100	>100	---	---	1	1
06-9848-5723	Reproduction	Bonferroni Adj t Test		100	>100	---	13.1%	1	1

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
13-3555-1169	7d Survival Rate	Linear Interpolation (ICPIN)		EC15	>100	---	---	<1	1
				EC20	>100	---	---	<1	
				EC25	>100	---	---	<1	
				EC40	>100	---	---	<1	
				EC50	>100	---	---	<1	
16-4120-0928	Reproduction	Linear Interpolation (ICPIN)		IC15	>100	---	---	<1	1
				IC20	>100	---	---	<1	
				IC25	>100	---	---	<1	
				IC40	>100	---	---	<1	
				IC50	>100	---	---	<1	

Test Acceptability								TAC Limits	
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision		
06-6392-6840	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria		
13-3555-1169	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria		
06-9848-5723	Reproduction	Control Resp	27.33	15	<<	Yes	Passes Criteria		
16-4120-0928	Reproduction	Control Resp	27.33	15	<<	Yes	Passes Criteria		
06-9848-5723	Reproduction	PMSD	0.1307	0.13	0.47	Yes	Passes Criteria		

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	9	27.33	25.57	29.09	25	31	0.7638	2.291	8.38%	0.00%
6.25		10	24.8	22.96	26.64	21	29	0.8138	2.573	10.38%	9.27%
12.5		10	25.6	22.84	28.36	19	32	1.222	3.864	15.10%	6.34%
25		10	26.3	23.38	29.22	20	33	1.291	4.084	15.53%	3.78%
50		10	28	25.37	30.63	23	33	1.164	3.682	13.15%	-2.44%
100		10	26.9	25.23	28.57	23	31	0.7371	2.331	8.67%	1.59%

CETIS Summary Report

Report Date: 16 Dec-22 11:39 (p 2 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: 62161287BA5453C7E63C33F5B6EFE3D5

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	---	31	26	25	25	30	28	25	29	27
6.25		25	26	24	21	21	29	27	24	24	27
12.5		27	28	32	29	25	19	25	27	21	23
25		24	22	20	25	25	29	33	25	31	29
50		23	24	26	28	32	29	25	33	33	27
100		28	31	27	27	24	23	28	28	25	28

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 16 Dec-22 10:56 (p 1 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-9848-5723	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:55	Analysis: Parametric-Multiple Comparison	Status Level: 1
Edit Date: 05 Dec-22 16:34	MD5 Hash: 62161287BA5453C7E63C33F5B6EFE3D5	Editor ID: 001-068-318-4
Batch ID: 00-4186-1880	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:26	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:47	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-8658-9101	Code: VCF1122.255cer	Project: P6010506
Sample Date: 08 Nov-22 13:26	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-FIL
Sample Age: --- (12.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.573	13.07%

Bonferroni Adj t Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	17	1.701	2.399	3.573	CDF	0.2371	Non-Significant Effect
		12.5	17	1.164	2.399	3.573	CDF	0.6244	Non-Significant Effect
		25	17	0.6937	2.399	3.573	CDF	1.0000	Non-Significant Effect
		50	17	-0.4476	2.399	3.573	CDF	1.0000	Non-Significant Effect
		100	17	0.2909	2.399	3.573	CDF	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	27.33	15	<<	Yes	Passes Criteria
PMSD	0.1307	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	67.7119	13.5424	5	1.289	0.2827	Non-Significant Effect
Error	557	10.5094	53			
Total	624.712		58			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.783	15.09	0.3280	Equal Variances
	Levene Equality of Variance Test	1.561	3.384	0.1872	Equal Variances
	Mod Levene Equality of Variance Test	0.9571	3.392	0.4526	Equal Variances
Distribution	Anderson-Darling A2 Test	0.1626	3.878	0.9935	Normal Distribution
	D'Agostino Kurtosis Test	0.7742	2.576	0.4388	Normal Distribution
	D'Agostino Skewness Test	0.2131	2.576	0.8312	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.6448	9.21	0.7244	Normal Distribution
	Kolmogorov-Smirnov D Test	0.05134	0.1342	1.0000	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9899	0.9451	0.9070	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	9	27.33	25.57	29.09	27	25	31	0.7638	8.38%	0.00%
6.25		10	24.8	22.96	26.64	24.25	21	29	0.8138	10.38%	9.27%
12.5		10	25.6	22.84	28.36	26	19	32	1.222	15.10%	6.34%
25		10	26.3	23.38	29.22	25	20	33	1.291	15.53%	3.78%
50		10	28	25.37	30.63	27.5	23	33	1.164	13.15%	-2.44%
100		10	26.9	25.23	28.57	27.67	23	31	0.7371	8.67%	1.59%

Ceriodaphnia 7-d Survival and Reproduction Test

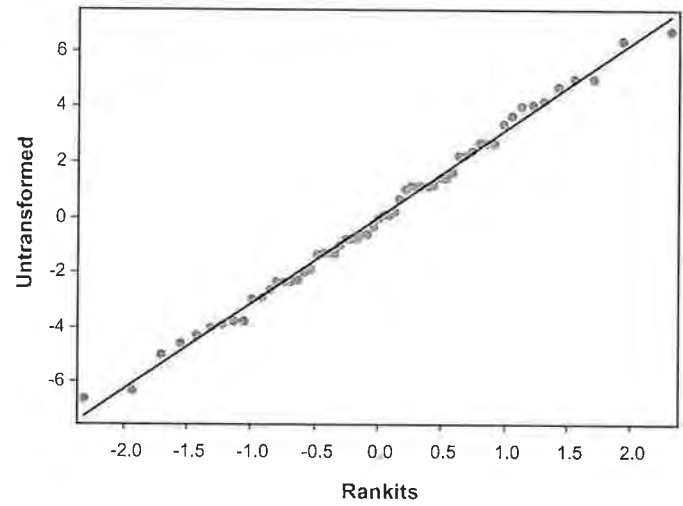
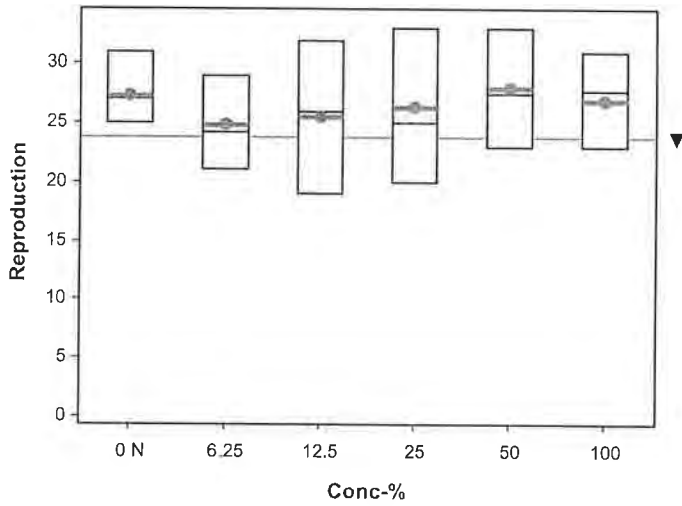
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-9848-5723	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:55	Analysis: Parametric-Multiple Comparison	Status Level: 1
Edit Date: 05 Dec-22 16:34	MD5 Hash: 62161287BA5453C7E63C33F5B6EFE3D5	Editor ID: 001-068-318-4

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	31	26	25	25	30	28	25	29	27	
6.25		25	26	24	21	21	29	27	24	24	27
12.5		27	28	32	29	25	19	25	27	21	23
25		24	22	20	25	25	29	33	25	31	29
50		23	24	26	28	32	29	25	33	33	27
100		28	31	27	27	24	23	28	28	25	28

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 10:56 (p 1 of 4)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	13-3555-1169	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3		
Analyzed:	16 Dec-22 10:55	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1		
Edit Date:	05 Dec-22 16:34	MD5 Hash:	521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID:	001-068-318-4		
Batch ID:	00-4186-1880	Test Type:	Reproduction-Survival (7d)	Analyst:	Tina DeLeon		
Start Date:	08 Nov-22 13:26	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 13:47	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	7d 0h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	00-8658-9101	Code:	VCF1122.255cer	Project:	P6010506		
Sample Date:	08 Nov-22 13:26	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	08 Nov-22 12:37	CAS (PC):		Station:	MO-FIL		
Sample Age:	--- (12.5 °C)	Client:	Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

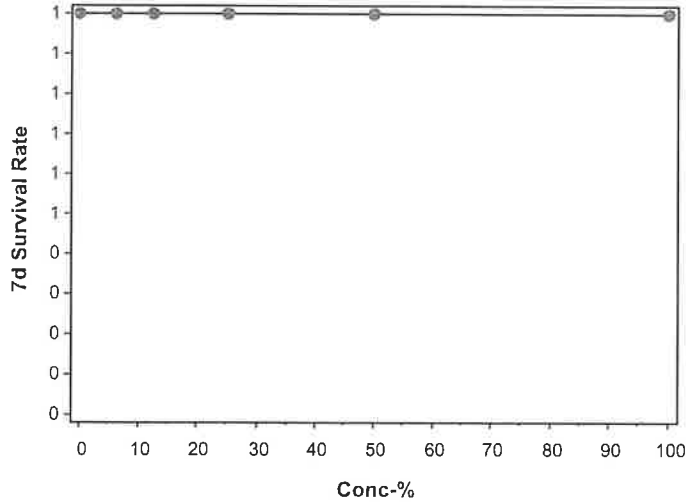
Report Date: 16 Dec-22 10:56 (p 2 of 4)
Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-3555-1169	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:55	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 16:34	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 10:56 (p 3 of 4)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-4120-0928	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:55	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 16:34	MD5 Hash: 62161287BA5453C7E63C33F5B6EFE3D5	Editor ID: 001-068-318-4
Batch ID: 00-4186-1880	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:26	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:47	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-8658-9101	Code: VCF1122.255cer	Project: P6010506
Sample Date: 08 Nov-22 13:26	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-FIL
Sample Age: --- (12.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2071964	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	27.33	15	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	9	27.33	27	25	31	8.38%	0.00%	27.33	0.00%
6.25		10	24.8	24.25	21	29	10.38%	9.27%	26.32	3.70%
12.5		10	25.6	26	19	32	15.10%	6.34%	26.32	3.70%
25		10	26.3	25	20	33	15.53%	3.78%	26.32	3.70%
50		10	28	27.5	23	33	13.15%	-2.44%	26.32	3.70%
100		10	26.9	27.67	23	31	8.67%	1.59%	26.32	3.70%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	31	26	25	25	30	28	25	29	27	
6.25		25	26	24	21	21	29	27	24	24	27
12.5		27	28	32	29	25	19	25	27	21	23
25		24	22	20	25	25	29	33	25	31	29
50		23	24	26	28	32	29	25	33	33	27
100		28	31	27	27	24	23	28	28	25	28

CETIS Analytical Report

Report Date: 16 Dec-22 10:56 (p 1 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-6392-6840	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 10:55	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 05 Dec-22 16:34	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 001-068-318-4
Batch ID: 00-4186-1880	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:26	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:47	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-8658-9101	Code: VCF1122.255cer	Project: P6010506
Sample Date: 08 Nov-22 13:26	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-FIL
Sample Age: --- (12.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Measurement Report

Report Date: 16 Dec-22 10:56 (p 1 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 00-4186-1880	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 13:26	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:47	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-8658-9101	Code: VCF1122.255cer	Project: P6010506
Sample Date: 08 Nov-22 13:26	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 12:37	CAS (PC):	Station: MO-FIL
Sample Age: --- (12.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
50		1	70	---	---	70	70	---	---	---	0
100		8	70	70	70	70	70	0	0	0.00%	0
Overall		17	65.29	62.65	67.94	60	70	1.248	5.145	7.88%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	362.4	360.8	363.9	360	365	0.2309	1.847	0.51%	0
12.5		8	379	375.5	382.5	372	385	0.5175	4.14	1.09%	0
25		8	397.2	395.5	399	394	399	0.2566	2.053	0.52%	0
50		8	447.6	443.3	451.9	442	455	0.6441	5.153	1.15%	0
100		8	531.6	523	540.2	522	552	1.285	10.28	1.93%	0
Overall		48	414.1	396.5	431.6	360	552	8.74	60.55	14.62%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.625	7.358	7.892	7.1	8.1	0.03995	0.3196	4.19%	0
12.5		8	7.613	7.362	7.863	7.1	8	0.03746	0.2997	3.94%	0
25		8	7.55	7.305	7.795	7.1	8	0.0366	0.2928	3.88%	0
50		8	7.525	7.265	7.785	7	8	0.03882	0.3105	4.13%	0
100		8	7.512	7.254	7.771	7	8	0.03864	0.3091	4.11%	0
Overall		48	7.571	7.486	7.656	7	8.1	0.04221	0.2924	3.86%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	162	162	162	162	162	0	0	0.00%	0
Overall		16	128	109.2	146.8	90	162	8.809	35.24	27.53%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.825	7.648	8.002	7.4	8	0.02652	0.2121	2.71%	0
12.5		8	7.825	7.648	8.002	7.4	8	0.02652	0.2121	2.71%	0
25		8	7.812	7.626	7.999	7.4	8	0.0279	0.2232	2.86%	0
50		8	7.788	7.571	8.004	7.3	8	0.03235	0.2588	3.32%	0
100		8	7.738	7.543	7.932	7.3	8	0.02908	0.2326	3.01%	0
Overall		48	7.815	7.754	7.875	7.3	8	0.03022	0.2093	2.68%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 10:56 (p 2 of 2)
 Test Code/ID: VCF1122.255cer / 05-4424-0912

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.06	23.99	24.14	24	24.2	0.01145	0.09156	0.38%	0
12.5		8	24.06	23.99	24.14	24	24.2	0.01145	0.09156	0.38%	0
25		8	24.05	23.96	24.14	24	24.3	0.01336	0.1069	0.44%	0
50		8	24.05	23.96	24.14	24	24.3	0.01336	0.1069	0.44%	0
100		8	24.05	23.93	24.17	24	24.4	0.01768	0.1414	0.59%	0
Overall		48	24.05	24.02	24.07	24	24.4	0.01395	0.09666	0.40%	0 (0%)



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11/8/2022 Project Number: 2022/23-1 (Wet)
 Sampling Team: Samuel Colman, Dean Wilkerson

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
ME-CC		X							2	Note 1, Note 2, Note 3
ME-SCR					X				1	Note 1, Note 2, Note 3
ME-VR2		X							2	Note 1, Note 2, Note 3
.257 MO-OJA	11/8/22 · 1325					X			2	Note 1, Note 2, Note 3
.258 MO-MEI	11/8/22 · 1115					X			2	Note 1, Note 2, Note 3
.259 MO-HUE	11/8/22 · 935						X		3	Note 1, Note 2, Note 3, Note 4

Temp. deg. = 11.5 = 10.3
 Chlorine (mg/L) = 0.0 = 1.0
 pH (mg/L) = 5.5 = 10.0

Relinquished Printed Name Samuel Colman
 Signature [Signature]
 Affiliation Rivian Date/Time 11/8/22 · 1440

Received Printed Name Victor Marquez
 Signature [Signature]
 Affiliation ABC LABS Date/Time 11/8/22 1440

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%
Note 3: Notify District within 24 hours if significant toxicity is observed.
Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyaella*



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

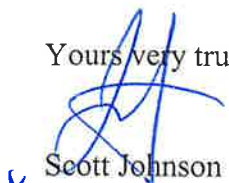
CLIENT: Ventura County Flood Control
SAMPLE I.D.: MO-OJA
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.257

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL NOEC = 100.00 %
TUc = 1.00
EC25 = >100.00 %
EC50 = >100.00 %

BIOMASS NOEC = 100.00 %
TUc = 1.00
IC25 = >100.00 %
IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:41 (p 1 of 2)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 03-7307-2462	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon					
Start Date: 08 Nov-22 14:52	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 15 Nov-22 13:30	Species: Pimephales promelas	Brine: Not Applicable					
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 11-2061-0062	Code: VCF1122.257fml	Project: P6010561					
Sample Date: 08 Nov-22 13:25	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-OJA					
Sample Age: 87m (11.5 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
09-1076-4679	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
10-9441-8328	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	6.96%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
16-7395-4951	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
17-0850-5711	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
09-1076-4679	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
16-7395-4951	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
10-9441-8328	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
17-0850-5711	Mean Dry Biomass-mg	Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
10-9441-8328	Mean Dry Biomass-mg	PMSD	0.06963	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.3387	0.3627	0.005501	0.011	3.18%	0.00%
6.25		4	0.345	0.337	0.353	0.3407	0.35	0.002517	0.005033	1.46%	0.38%
12.5		4	0.363	0.3151	0.4109	0.3447	0.408	0.01506	0.03012	8.30%	-4.81%
25		4	0.3458	0.3328	0.3589	0.34	0.358	0.004104	0.008208	2.37%	0.14%
50		4	0.339	0.3357	0.3423	0.3367	0.3413	0.001036	0.002073	0.61%	2.12%
100		4	0.3443	0.3302	0.3585	0.338	0.3573	0.004443	0.008886	2.58%	0.58%

CETIS Analytical Report

Report Date: 16 Dec-22 11:04 (p 1 of 4)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 09-1076-4679	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:19	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:11	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 03-7307-2462	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 14:52	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:30	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 11-2061-0062	Code: VCF1122.257fml	Project: P6010561
Sample Date: 08 Nov-22 13:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-OJA
Sample Age: 87m (11.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-1076-4679 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:19 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:11 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

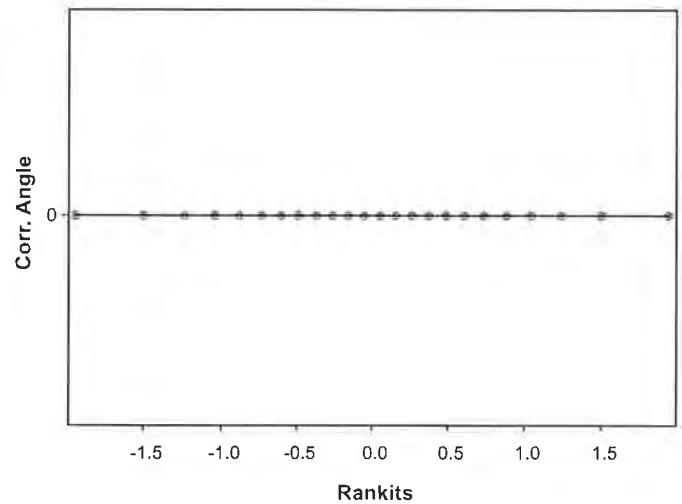
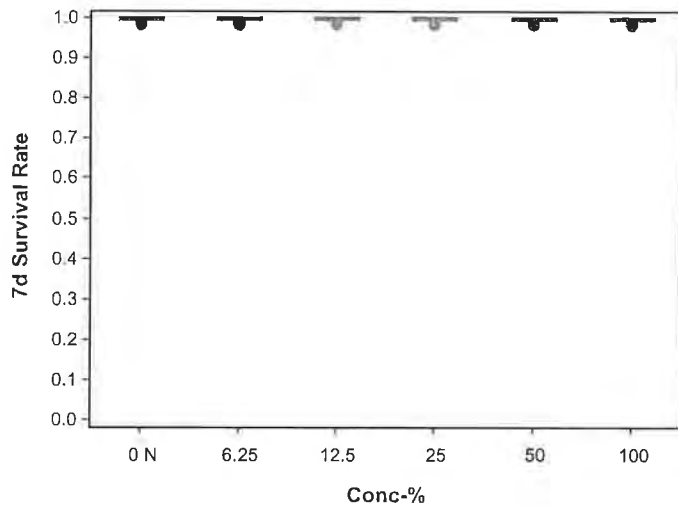
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:04 (p 3 of 4)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-9441-8328	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:19	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:11	MD5 Hash: 215A04764C2DC26A4799ED8481D45152	Editor ID: 001-068-318-4
Batch ID: 03-7307-2462	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 14:52	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:30	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 11-2061-0062	Code: VCF1122.257fml	Project: P6010561
Sample Date: 08 Nov-22 13:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-OJA
Sample Age: 87m (11.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.02412	6.96%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	0	CDF	0.8333	Non-Significant Effect
		12.5	6	23	10	0	CDF	0.9966	Non-Significant Effect
		25	6	20	10	0	CDF	0.9516	Non-Significant Effect
		50	6	12	10	0	CDF	0.1424	Non-Significant Effect
		100	6	17	10	0	CDF	0.7334	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria
PMSD	0.06963	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0013302	0.0002660	5	1.325	0.2979	Non-Significant Effect
Error	0.0036132	0.0002007	18			
Total	0.0049434		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	18.42	15.09	0.0025	Unequal Variances
	Levene Equality of Variance Test	4.227	4.248	0.0102	Equal Variances
	Mod Levene Equality of Variance Test	0.6693	4.248	0.6517	Equal Variances
Distribution	Anderson-Darling A2 Test	1.629	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	3.323	2.576	0.0009	Non-Normal Distribution
	D'Agostino Skewness Test	3.66	2.576	0.0003	Non-Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	24.44	9.21	<1.0E-05	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.1985	0.2056	0.0154	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8095	0.884	0.0004	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3463	0.3288	0.3638	0.342	0.3387	0.3627	0.005501	3.18%	0.00%
6.25		4	0.345	0.337	0.353	0.3433	0.3407	0.35	0.002517	1.46%	0.38%
12.5		4	0.363	0.3151	0.4109	0.3497	0.3447	0.408	0.01506	8.30%	-4.81%
25		4	0.3458	0.3328	0.3589	0.3427	0.34	0.358	0.004104	2.37%	0.14%
50		4	0.339	0.3357	0.3423	0.339	0.3367	0.3413	0.001036	0.61%	2.12%
100		4	0.3443	0.3302	0.3585	0.341	0.338	0.3573	0.004443	2.58%	0.58%

Fathead Minnow 7-d Larval Survival and Growth Test

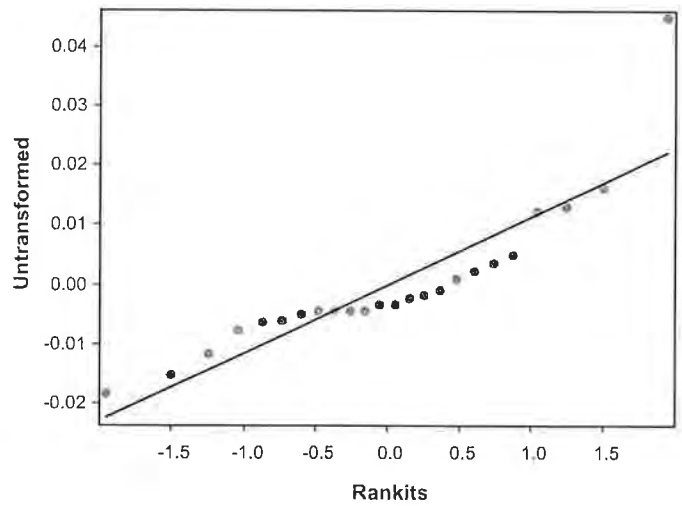
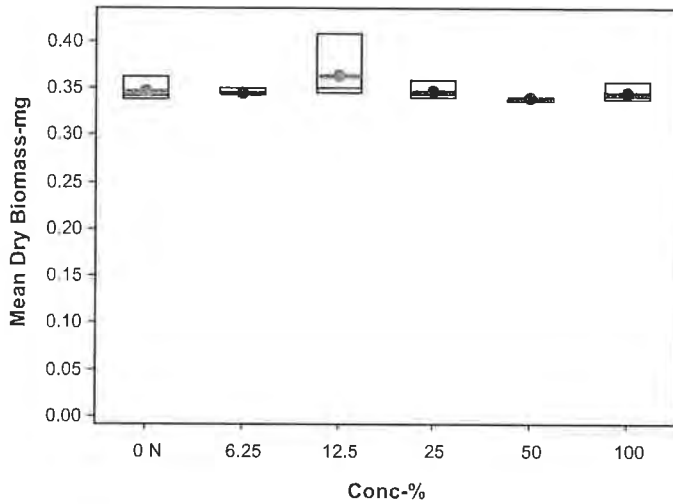
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-9441-8328 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:19 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:11 MD5 Hash: 215A04764C2DC26A4799ED8481D45152 Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3407	0.3407	0.3487	0.35
12.5		0.408	0.3513	0.3447	0.348
25		0.34	0.358	0.3427	0.3427
50		0.3367	0.3413	0.34	0.338
100		0.338	0.3573	0.3427	0.3393

Graphics

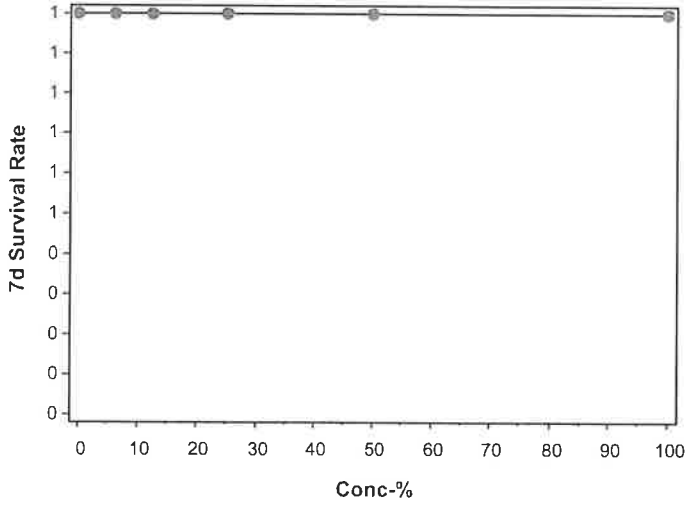


Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7395-4951 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:19 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 15:11 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:04 (p 3 of 4)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-0850-5711	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:19	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:11	MD5 Hash: 215A04764C2DC26A4799ED8481D45152	Editor ID: 001-068-318-4
Batch ID: 03-7307-2462	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 14:52	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:30	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 11-2061-0062	Code: VCF1122.257fml	Project: P6010561
Sample Date: 08 Nov-22 13:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-OJA
Sample Age: 87m (11.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	901294	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3463	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3463	0.342	0.3387	0.3627	3.18%	0.00%	0.3514	0.00%
6.25		4	0.345	0.3433	0.3407	0.35	1.46%	0.38%	0.3514	0.00%
12.5		4	0.363	0.3497	0.3447	0.408	8.30%	-4.81%	0.3514	0.00%
25		4	0.3458	0.3427	0.34	0.358	2.37%	0.14%	0.3458	1.59%
50		4	0.339	0.339	0.3367	0.3413	0.61%	2.12%	0.3417	2.76%
100		4	0.3443	0.341	0.338	0.3573	2.58%	0.58%	0.3417	2.76%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3627	0.3387	0.342	0.342
6.25		0.3407	0.3407	0.3487	0.35
12.5		0.408	0.3513	0.3447	0.348
25		0.34	0.358	0.3427	0.3427
50		0.3367	0.3413	0.34	0.338
100		0.338	0.3573	0.3427	0.3393

CETIS Measurement Report

Report Date: 16 Dec-22 11:04 (p 1 of 2)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-7307-2462	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 14:52	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:30	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 11-2061-0062	Code: VCF1122.257fml	Project: P6010561
Sample Date: 08 Nov-22 13:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-OJA
Sample Age: 87m (11.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	30	30	30	30	30	0	0	0.00%	0
Overall		16	45	36.74	53.26	30	60	3.873	15.49	34.43%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	342.6	340.3	344.9	340	348	0.3468	2.774	0.81%	0
12.5		8	334.5	331.2	337.8	330	339	0.4864	3.891	1.16%	0
25		8	296.1	292.7	299.6	289	299	0.5194	4.155	1.40%	0
50		8	230.5	225.7	235.3	220	240	0.7196	5.757	2.50%	0
100		8	82	78.48	85.52	75	88	0.5261	4.209	5.13%	0
Overall		48	275.4	247	303.8	75	370	14.12	97.85	35.53%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.304	7.846	6.9	8.1	0.0405	0.324	4.28%	0
12.5		8	7.537	7.259	7.816	6.8	8	0.04169	0.3335	4.43%	0
25		8	7.475	7.176	7.774	6.7	8	0.0447	0.3576	4.78%	0
50		8	7.462	7.163	7.762	6.7	8	0.04479	0.3583	4.80%	0
100		8	7.475	7.157	7.793	6.7	8.1	0.0476	0.3808	5.09%	0
Overall		48	7.521	7.425	7.616	6.7	8.1	0.04754	0.3294	4.38%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	31	31	31	31	31	0	0	0.00%	0
Overall		16	62.5	45.09	79.91	31	98	8.166	32.66	52.26%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.875	7.735	8.015	7.5	8	0.02086	0.1669	2.12%	0
12.5		8	7.863	7.696	8.029	7.4	8	0.02494	0.1996	2.54%	0
25		8	7.85	7.702	7.998	7.5	8	0.02216	0.1773	2.26%	0
50		8	7.838	7.697	7.978	7.5	8	0.02106	0.1685	2.15%	0
100		8	7.863	7.763	7.962	7.7	8	0.01485	0.1188	1.51%	0
Overall		48	7.865	7.82	7.91	7.4	8	0.02238	0.155	1.97%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 11:04 (p 2 of 2)
 Test Code/ID: VCF1122.257fml / 00-6616-5798

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
12.5		8	24.06	23.99	24.14	24	24.2	0.01145	0.09156	0.38%	0
25		8	24.12	24.01	24.24	24	24.3	0.01736	0.1389	0.58%	0
50		8	24.09	23.98	24.19	24	24.3	0.01558	0.1246	0.52%	0
100		8	24.09	23.98	24.19	24	24.3	0.01558	0.1246	0.52%	0
Overall		48	24.07	24.04	24.1	24	24.3	0.01552	0.1075	0.45%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

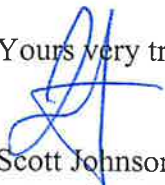
CLIENT: Ventura County Flood Control
SAMPLE I.D.: MO-MEI
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.258

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL NOEC = 100.00 %
TUc = 1.00
EC25 = >100.00 %
EC50 = >100.00 %

BIOMASS NOEC = 100.00 %
TUc = 1.00
IC25 = >100.00 %
IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:41 (p 1 of 2)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 06-4694-5299	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:39	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-9619-5461	Code: VCF1122.258fml	Project: P6010561
Sample Date: 08 Nov-22 11:15	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-MEI
Sample Age: 4h (6 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
10-2366-5212	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
02-7290-6503	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	8.89%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
07-0906-8732	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
01-9491-7586	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-0906-8732	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
10-2366-5212	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
01-9491-7586	Mean Dry Biomass-mg	Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
02-7290-6503	Mean Dry Biomass-mg	Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
02-7290-6503	Mean Dry Biomass-mg	PMSD	0.08891	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3442	0.33	0.3584	0.3387	0.3573	0.004459	0.008917	2.59%	0.00%
6.25		4	0.3458	0.3314	0.3603	0.3347	0.356	0.004533	0.009066	2.62%	-0.48%
12.5		4	0.3405	0.3367	0.3443	0.3373	0.3427	0.001198	0.002396	0.70%	1.07%
25		4	0.3757	0.3112	0.4401	0.3393	0.4133	0.02024	0.04049	10.78%	-9.15%
50		4	0.3693	0.3511	0.3876	0.3533	0.378	0.005741	0.01148	3.11%	-7.31%
100		4	0.3383	0.337	0.3397	0.3373	0.3393	0.000430	0.000861	0.25%	1.69%

PAS

CETIS Summary Report

Report Date: 16 Dec-22 11:41 (p 2 of 2)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: B555B3B925E7E01F0F80B45CC61351F7

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3493	0.356	0.3433	0.3347
12.5		0.342	0.3427	0.34	0.3373
25		0.3393	0.4133	0.408	0.342
50		0.3773	0.378	0.3533	0.3687
100		0.338	0.3393	0.3387	0.3373

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 11:15 (p 1 of 4)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-2366-5212	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:29	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:22	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 06-4694-5299	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:39	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-9619-5461	Code: VCF1122.258fml	Project: P6010561
Sample Date: 08 Nov-22 11:15	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-MEI
Sample Age: 4h (6 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 10-2366-5212 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:29 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:22 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

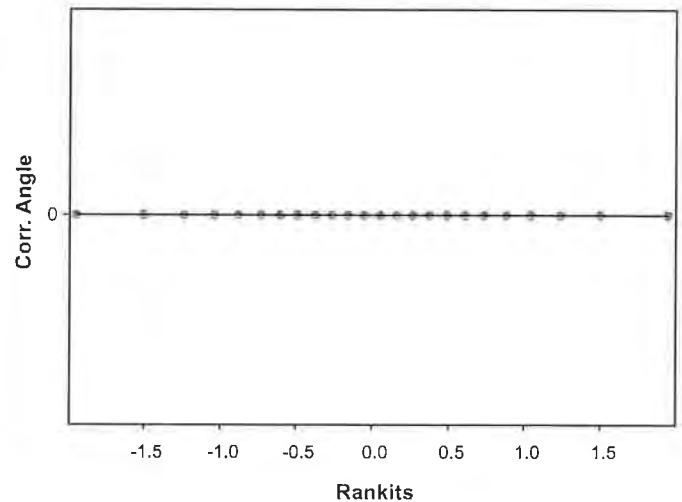
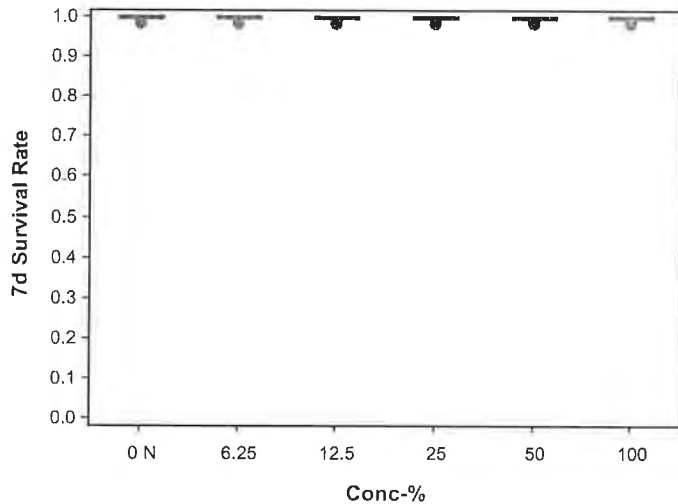
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:15 (p 3 of 4)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-7290-6503	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:29	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:22	MD5 Hash: 4B88FB637C5AFB4AB3110A175DEE1B0E	Editor ID: 001-068-318-4
Batch ID: 06-4694-5299	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:39	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-9619-5461	Code: VCF1122.258fml	Project: P6010561
Sample Date: 08 Nov-22 11:15	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-MEI
Sample Age: 4h (6 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.0306	8.89%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	19	10	0	CDF	0.9055	Non-Significant Effect
		12.5	6	17.5	10	1	CDF	0.7867	Non-Significant Effect
		25	6	22.5	10	1	CDF	0.9944	Non-Significant Effect
		50	6	25	10	0	CDF	0.9997	Non-Significant Effect
		100	6	13	10	1	CDF	0.2311	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
PMSD	0.08891	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0051137	0.0010227	5	3.164	0.0319	Significant Effect
Error	0.0058179	0.0003232	18			
Total	0.0109315		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	32.28	15.09	<1.0E-05	Unequal Variances
	Levene Equality of Variance Test	43.69	4.248	<1.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	26.95	4.248	<1.0E-05	Unequal Variances
Distribution	Anderson-Darling A2 Test	1.371	3.878	0.0009	Non-Normal Distribution
	D'Agostino Kurtosis Test	1.857	2.576	0.0634	Normal Distribution
	D'Agostino Skewness Test	0.005476	2.576	0.9956	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	3.447	9.21	0.1784	Normal Distribution
	Kolmogorov-Smirnov D Test	0.1981	0.2056	0.0158	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8936	0.884	0.0158	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3442	0.33	0.3584	0.3398	0.3387	0.3573	0.004459	2.59%	0.00%
6.25		4	0.3458	0.3314	0.3603	0.3463	0.3347	0.356	0.004533	2.62%	-0.48%
12.5		4	0.3405	0.3367	0.3443	0.341	0.3373	0.3427	0.001198	0.70%	1.07%
25		4	0.3757	0.3112	0.4401	0.375	0.3393	0.4133	0.02024	10.78%	-9.15%
50		4	0.3693	0.3511	0.3876	0.373	0.3533	0.378	0.005741	3.11%	-7.31%
100		4	0.3383	0.337	0.3397	0.3383	0.3373	0.3393	0.00043	0.25%	1.69%

Fathead Minnow 7-d Larval Survival and Growth Test

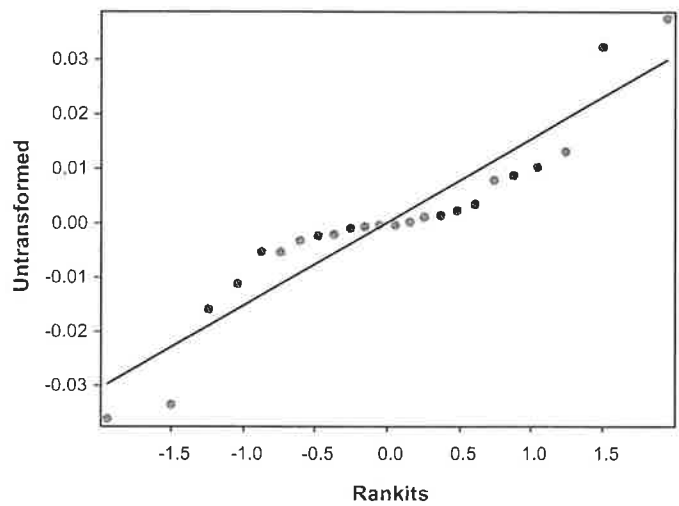
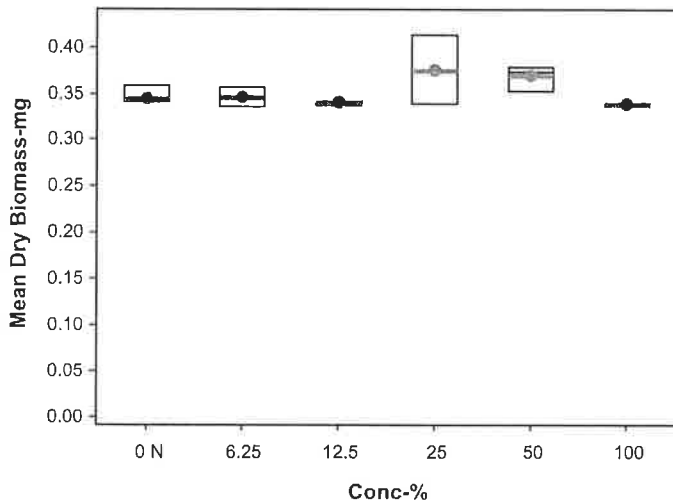
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-7290-6503 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:29 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:22 MD5 Hash: 4B88FB637C5AFB4AB3110A175DEE1B0E Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3493	0.356	0.3433	0.3347
12.5		0.342	0.3427	0.34	0.3373
25		0.3393	0.4133	0.408	0.342
50		0.3773	0.378	0.3533	0.3687
100		0.338	0.3393	0.3387	0.3373

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:15 (p 1 of 4)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	07-0906-8732	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3
Analyzed:	05 Dec-22 15:29	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	05 Dec-22 15:22	MD5 Hash:	68E117461239090AA7E1427F0F536296	Editor ID:	001-068-318-4
Batch ID:	06-4694-5299	Test Type:	Growth-Survival (7d)	Analyst:	Tina DeLeon
Start Date:	08 Nov-22 15:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	15 Nov-22 13:39	Species:	Pimephales promelas	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Actinopterygii	Source:	Aquatic Biosystems, CO Age:
Sample ID:	00-9619-5461	Code:	VCF1122.258fml	Project:	P6010561
Sample Date:	08 Nov-22 11:15	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 14:40	CAS (PC):		Station:	MO-MEI
Sample Age:	4h (6 °C)	Client:	Ventura County Watershed Protection Distri		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

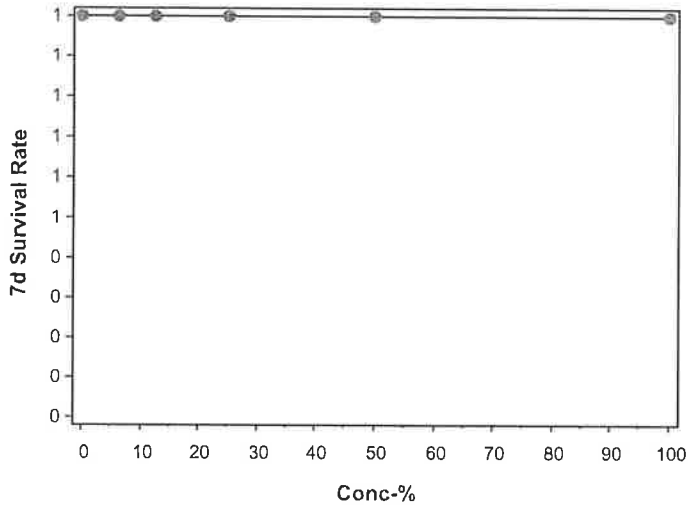
Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-0906-8732 Endpoint: 7d Survival Rate
Analyzed: 05 Dec-22 15:29 Analysis: Linear Interpolation (ICPIN)
Edit Date: 05 Dec-22 15:22 MD5 Hash: 68E117461239090AA7E1427F0F536296

CETIS Version: CETISv2.1.3
Status Level: 1
Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:15 (p 3 of 4)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-9491-7586	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:29	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:22	MD5 Hash: 4B88FB637C5AFB4AB3110A175DEE1B0E	Editor ID: 001-068-318-4
Batch ID: 06-4694-5299	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:39	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-9619-5461	Code: VCF1122.258fml	Project: P6010561
Sample Date: 08 Nov-22 11:15	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-MEI
Sample Age: 4h (6 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	563973	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3442	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3442	0.3398	0.3387	0.3573	2.59%	0.00%	0.3551	0.00%
6.25		4	0.3458	0.3463	0.3347	0.356	2.62%	-0.48%	0.3551	0.00%
12.5		4	0.3405	0.341	0.3373	0.3427	0.70%	1.07%	0.3551	0.00%
25		4	0.3757	0.375	0.3393	0.4133	10.78%	-9.15%	0.3551	0.00%
50		4	0.3693	0.373	0.3533	0.378	3.11%	-7.31%	0.3551	0.00%
100		4	0.3383	0.3383	0.3373	0.3393	0.25%	1.69%	0.3383	4.73%

Mean Dry Biomass-mg Detail

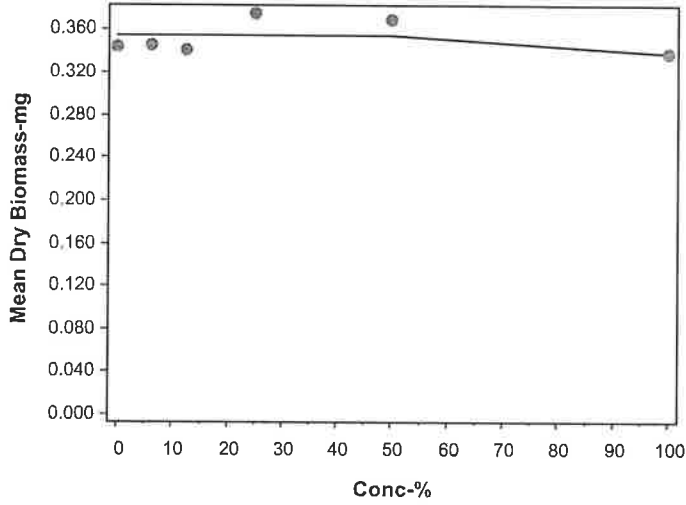
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3493	0.356	0.3433	0.3347
12.5		0.342	0.3427	0.34	0.3373
25		0.3393	0.4133	0.408	0.342
50		0.3773	0.378	0.3533	0.3687
100		0.338	0.3393	0.3387	0.3373

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-9491-7586 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:29 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 15:22 MD5 Hash: 4B88FB637C5AFB4AB3110A175DEE1B0E Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 11:15 (p 1 of 2)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 06-4694-5299	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 13:39	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age:
Sample ID: 00-9619-5461	Code: VCF1122.258fml	Project: P6010561
Sample Date: 08 Nov-22 11:15	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-MEI
Sample Age: 4h (6 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	37	37	37	37	37	0	0	0.00%	0
Overall		16	48.5	42.17	54.83	37	60	2.969	11.88	24.49%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	339.4	329.3	349.5	316	350	1.512	12.09	3.56%	0
12.5		8	334.2	331.7	336.8	330	338	0.3824	3.059	0.92%	0
25		8	312	310.1	313.9	310	316	0.2912	2.33	0.75%	0
50		8	254.9	252.2	257.6	250	259	0.4033	3.227	1.27%	0
100		8	143	140.1	145.9	140	149	0.4278	3.423	2.39%	0
Overall		48	291.7	269.7	313.7	140	370	10.94	75.77	25.98%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.55	7.289	7.811	7	8.1	0.03896	0.3117	4.13%	0
12.5		8	7.538	7.281	7.794	7	8.1	0.03835	0.3068	4.07%	0
25		8	7.5	7.272	7.728	7.1	8	0.03407	0.2726	3.63%	0
50		8	7.488	7.262	7.713	7.1	8	0.0337	0.2696	3.60%	0
100		8	7.5	7.251	7.749	7.1	8.1	0.0372	0.2976	3.97%	0
Overall		48	7.529	7.448	7.611	7	8.1	0.04049	0.2805	3.73%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	44	44	44	44	44	0	0	0.00%	0
Overall		16	69	55.15	82.85	44	98	6.496	25.98	37.66%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.875	7.676	8.074	7.3	8	0.02969	0.2375	3.02%	0
12.5		8	7.875	7.676	8.074	7.3	8	0.02969	0.2375	3.02%	0
25		8	7.863	7.696	8.029	7.4	8	0.02494	0.1996	2.54%	0
50		8	7.875	7.703	8.047	7.4	8	0.02566	0.2053	2.61%	0
100		8	7.875	7.735	8.015	7.5	8	0.02086	0.1669	2.12%	0
Overall		48	7.877	7.822	7.932	7.3	8	0.02733	0.1893	2.40%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 11:15 (p 2 of 2)
 Test Code/ID: VCF1122.258fml / 04-1693-5981

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.04	23.98	24.1	24	24.2	0.009295	0.07436	0.31%	0
12.5		8	24.04	23.98	24.1	24	24.2	0.009295	0.07436	0.31%	0
25		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
50		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
100		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
Overall		48	24.04	24.02	24.06	24	24.2	0.01099	0.07614	0.32%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. Results were as follows:


CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	MO-HUE
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.259

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

REPRODUCTION	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:25 (p 1 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
04-3954-4890	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
20-5174-2195	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	15.1%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
13-6754-6797	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
20-8317-9177	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
04-3954-4890	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
13-6754-6797	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
20-5174-2195	Reproduction	Control Resp	25	15	<<	Yes	Passes Criteria
20-8317-9177	Reproduction	Control Resp	25	15	<<	Yes	Passes Criteria
20-5174-2195	Reproduction	PMSD	0.1512	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	25	22.37	27.63	21	33	1.164	3.682	14.73%	0.00%
6.25		10	25	22.18	27.82	18	33	1.247	3.944	15.78%	0.00%
12.5		10	26.1	23.5	28.7	21	31	1.149	3.635	13.93%	-4.40%
25		10	24.9	22.19	27.61	17	30	1.197	3.784	15.20%	0.40%
50		10	25.6	22.82	28.38	20	33	1.231	3.893	15.21%	-2.40%
100		10	26	23.74	28.26	22	32	1	3.162	12.16%	-4.00%

PASS

CETIS Summary Report

Report Date: 16 Dec-22 11:25 (p 2 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test **Aquatic Bioassay & Consulting Labs, Inc.**

7d Survival Rate Detail MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail MD5: 7ACDB48E5BBA49E3D407EF05D89D8A59

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	28	23	24	22	25	28	33	22	21
6.25		22	22	24	26	26	26	27	26	18	33
12.5		31	27	30	22	27	21	21	29	27	26
25		24	30	22	28	27	27	25	27	22	17
50		22	33	20	21	25	26	26	29	27	27
100		22	27	29	26	28	26	24	24	22	32

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1



CETIS Analytical Report

Report Date: 16 Dec-22 11:25 (p 1 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-5174-2195	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:23	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 7ACDB48E5BBA49E3D407EF05D89D8A5	Editor ID: 008-463-000-3
Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.78	15.12%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	0	2.289	3.78	CDF	0.8333	Non-Significant Effect
		12.5	18	-0.6662	2.289	3.78	CDF	0.9607	Non-Significant Effect
		25	18	0.06056	2.289	3.78	CDF	0.8147	Non-Significant Effect
		50	18	-0.3634	2.289	3.78	CDF	0.9192	Non-Significant Effect
		100	18	-0.6056	2.289	3.78	CDF	0.9542	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	25	15	<<	Yes	Passes Criteria
PMSD	0.1512	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	14.5333	2.90667	5	0.2132	0.9555	Non-Significant Effect
Error	736.2	13.6333	54			
Total	750.733		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	0.5182	15.09	0.9914	Equal Variances
	Levene Equality of Variance Test	0.07374	3.377	0.9959	Equal Variances
	Mod Levene Equality of Variance Test	0.04734	3.377	0.9986	Equal Variances
Distribution	Anderson-Darling A2 Test	0.3596	3.878	0.4538	Normal Distribution
	D'Agostino Kurtosis Test	0.04016	2.576	0.9680	Normal Distribution
	D'Agostino Skewness Test	0.4292	2.576	0.6677	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.1859	9.21	0.9113	Normal Distribution
	Kolmogorov-Smirnov D Test	0.0775	0.1331	0.4617	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9838	0.9459	0.6101	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	25	22.37	27.63	24	21	33	1.164	14.73%	0.00%
6.25		10	25	22.18	27.82	26	18	33	1.247	15.78%	0.00%
12.5		10	26.1	23.5	28.7	27	21	31	1.149	13.93%	-4.40%
25		10	24.9	22.19	27.61	26.5	17	30	1.197	15.20%	0.40%
50		10	25.6	22.82	28.38	26	20	33	1.231	15.21%	-2.40%
100		10	26	23.74	28.26	26	22	32	1	12.16%	-4.00%

CETIS Analytical Report

Report Date: 16 Dec-22 11:25 (p 1 of 4)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-6754-6797	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:24	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3
Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

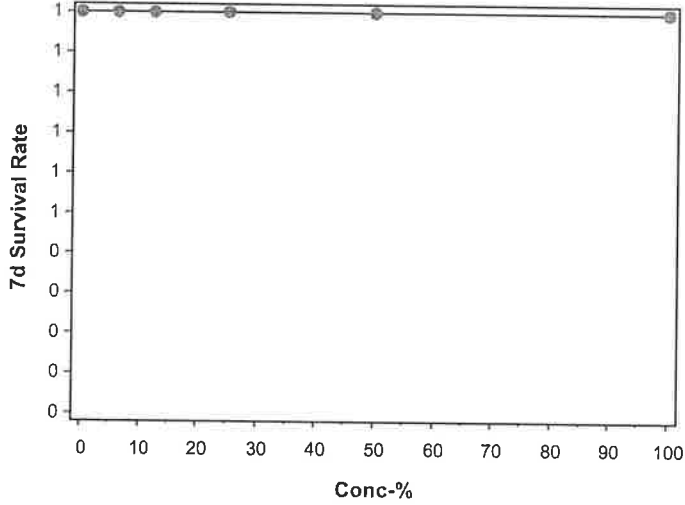
Report Date: 16 Dec-22 11:25 (p 2 of 4)
Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-6754-6797	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:24	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:25 (p 3 of 4)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-8317-9177	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:24	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 7ACDB48E5BBA49E3D407EF05D89D8A5	Editor ID: 008-463-000-3
Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1844503	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	25	15	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	25	24	21	33	14.73%	0.00%	25.43	0.00%
6.25		10	25	26	18	33	15.78%	0.00%	25.43	0.00%
12.5		10	26.1	27	21	31	13.93%	-4.40%	25.43	0.00%
25		10	24.9	26.5	17	30	15.20%	0.40%	25.43	0.00%
50		10	25.6	26	20	33	15.21%	-2.40%	25.43	0.00%
100		10	26	26	22	32	12.16%	-4.00%	25.43	0.00%

Reproduction Detail

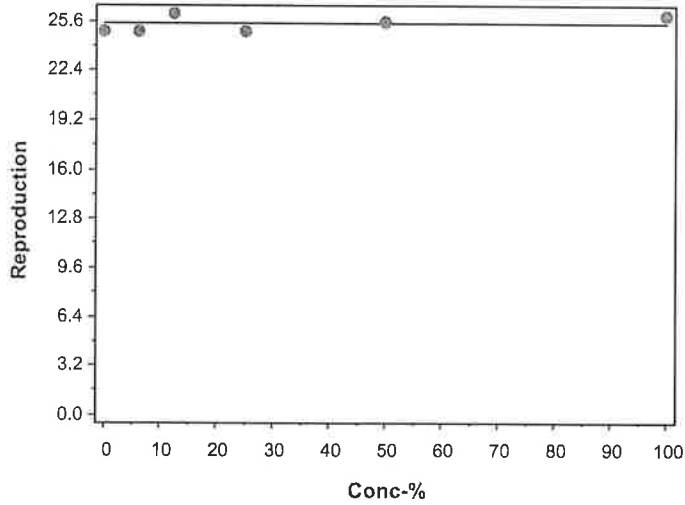
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	24	28	23	24	22	25	28	33	22	21
6.25		22	22	24	26	26	26	27	26	18	33
12.5		31	27	30	22	27	21	21	29	27	26
25		24	30	22	28	27	27	25	27	22	17
50		22	33	20	21	25	26	26	29	27	27
100		22	27	29	26	28	26	24	24	22	32

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-8317-9177 Endpoint: Reproduction CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:24 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 11:16 MD5 Hash: 7ACDB48E5BBA49E3D407EF05D89D8A5 Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:25 (p 1 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-3954-4890	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:23	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3
Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	--	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

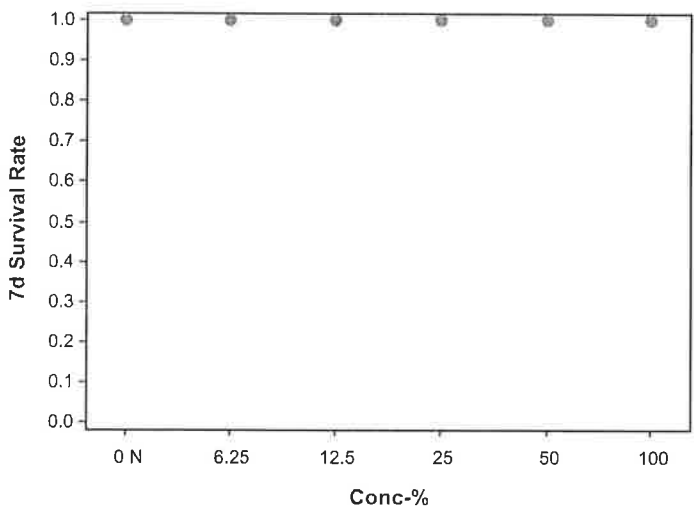
Ceriodaphnia 7-d Survival and Reproduction Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 04-3954-4890	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:23	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 16 Dec-22 11:16	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 11:25 (p 1 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-6707-9413	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 15:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 14:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-0287-6824	Code: VCF1122.259cer	Project: P6010561
Sample Date: 08 Nov-22 09:35	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 14:40	CAS (PC):	Station: MO-HUE
Sample Age: 6h (5.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	145	145	145	145	145	0	0	0.00%	0
Overall		16	102.5	79.11	125.9	60	145	10.97	43.89	42.82%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	365.6	362.6	368.7	362	370	0.4529	3.623	0.99%	0
6.25		8	711.2	709.2	713.3	707	715	0.3116	2.493	0.35%	0
12.5		8	1182	1175	1189	1172	1196	1.069	8.552	0.72%	0
25		8	2063	2057	2070	2052	2077	0.9852	7.882	0.38%	0
50		8	3453	3446	3460	3442	3468	1.052	8.418	0.24%	0
100		8	6494	6487	6501	6483	6509	1.051	8.408	0.13%	0
Overall		48	2378	1762	2994	362	6509	306.3	2122	89.23%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.55	7.293	7.807	7	8.1	0.03838	0.3071	4.07%	0
12.5		8	7.525	7.247	7.803	6.9	8.1	0.04159	0.3327	4.42%	0
25		8	7.525	7.265	7.785	7	8.1	0.03882	0.3105	4.13%	0
50		8	7.475	7.173	7.777	6.8	8.1	0.04519	0.3615	4.84%	0
100		8	7.488	7.207	7.768	6.9	8.1	0.04196	0.3357	4.48%	0
Overall		48	7.527	7.437	7.617	6.8	8.1	0.04483	0.3106	4.13%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	90	90	90	90	90	0	0	0.00%	0
Overall		16	92	90.09	93.91	90	98	0.8944	3.578	3.89%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
6.25		8	7.838	7.61	8.065	7.2	8	0.03403	0.2722	3.47%	0
12.5		8	7.825	7.569	8.081	7.1	8	0.03824	0.3059	3.91%	0
25		8	7.813	7.532	8.093	7	8	0.04196	0.3357	4.30%	0
50		8	7.788	7.514	8.061	7	8	0.04088	0.3271	4.20%	0
100		8	7.788	7.48	8.095	6.9	8	0.04602	0.3682	4.73%	0
Overall		48	7.827	7.744	7.91	6.9	8	0.04144	0.2871	3.67%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 11:25 (p 2 of 2)
 Test Code/ID: VCF1122.259cer / 03-7026-4970

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
12.5		8	24.09	24	24.17	24	24.2	0.01238	0.09904	0.41%	0
25		8	24.08	24	24.15	24	24.2	0.01107	0.08857	0.37%	0
50		8	24.08	24	24.15	24	24.2	0.01107	0.08857	0.37%	0
100		8	24.08	24	24.15	24	24.2	0.01107	0.08857	0.37%	0
Overall		48	24.06	24.04	24.08	24	24.2	0.01218	0.0844	0.35%	0 (0%)



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Most Sensitive Species Testing - Toxicity - ABC Laboratories
Project P6010506

Side 1 of 1

Sampling Date: 11/8/2022 Project Number: 2022/23-1 (Wet)
 Sampling Team: Dave Laak & Lars Zwaanenburg

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - <i>Pimephales promelas</i> (fathead minnow)	Chronic toxicity - <i>Ceriodaphnia dubia</i> (daphnid)	Chronic toxicity - <i>Hyaella azteca</i> (Amphipod)	Chronic toxicity - <i>Chironomus dilutus</i> (midge)	Chronic toxicity - <i>Atherinops affinis</i> (topsmelt)	Chronic toxicity - <i>Macrocystis pyrifera</i> (giant kelp)	Chronic toxicity - <i>Strongylocentrotus purpuratus</i> (purple sea urchin)	Number of 5-Gallon Buckets	NOTES
MO-HUE						X	X	X	3	Note 1, Note 2, Note 3, Note 4
269 RW-LC1	11/8/22 15:00	X	X	X	X				3	Note 1, Note 2, Note 3, Note 4
ME-CC		X		X					3	Note 1, Note 2, Note 3, Note 4
ME-VR2		X	X	X	X				3	Note 1, Note 2, Note 3, Note 4

Temp. Deg. C = 8.5°C
 Chlorine (mg/L) = 2.01
 pH = 7.5

Relinquished Printed Name David Laak
 Signature [Signature]
 Affiliation VCWPD Date/Time 11/8/22 17:50

Received Printed Name Victor Marquez
 Signature [Signature]
 Affiliation ABC LABS Date/Time 11/8/22 17:50

Other Notes:
Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100%.
Note 2: Please contact Kelly Hahs 805-658-4375 if lethal or sublethal effect > 50%. TIE may be needed.
Note 3: Notify District within 24 hours if significant toxicity is observed.
Note 4: Please run salt controls for any sites with salinities at/above species tolerances.



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT: Ventura County Watershed Protection District
SAMPLE I.D.: RW-LC1
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.269

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL NOEC = 100.00 %
 TU_c = 1.00
 EC25 = >100.00 %
 EC50 = >100.00 %

BIOMASS NOEC = 100.00 %
 TU_c = 1.00
 IC25 = >100.00 %
 IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:01 (p 1 of 2)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
04-2787-1448	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
19-0136-4015	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	>100	---	2.88%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
18-4251-2853	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
13-9031-9592	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
04-2787-1448	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
18-4251-2853	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
13-9031-9592	Mean Dry Biomass-mg	Control Resp	0.3395	0.25	<<	Yes	Passes Criteria
19-0136-4015	Mean Dry Biomass-mg	Control Resp	0.3395	0.25	<<	Yes	Passes Criteria
19-0136-4015	Mean Dry Biomass-mg	PMSD	0.02881	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3395	0.3367	0.3423	0.338	0.3413	0.000877	0.001753	0.52%	0.00%
6.25		4	0.342	0.3385	0.3455	0.3393	0.3447	0.001089	0.002177	0.64%	-0.74%
12.5		4	0.3405	0.3369	0.3441	0.3373	0.3427	0.001134	0.002269	0.67%	-0.29%
25		4	0.3465	0.3287	0.3643	0.338	0.3627	0.005607	0.01121	3.24%	-2.06%
50		4	0.3423	0.3316	0.3531	0.334	0.35	0.003372	0.006744	1.97%	-0.83%
100		4	0.3407	0.3347	0.3466	0.3353	0.344	0.001866	0.003732	1.10%	-0.34%

CETIS Summary Report

Report Date: 16 Dec-22 13:01 (p 2 of 2)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: E0B77FF76F044C02253F622AA21A3A25

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3407	0.3413	0.338	0.338
6.25		0.3447	0.342	0.3393	0.342
12.5		0.3427	0.3413	0.3407	0.3373
25		0.3627	0.34	0.338	0.3453
50		0.35	0.3407	0.3447	0.334
100		0.342	0.3413	0.344	0.3353

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 1 of 4)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-2787-1448	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:51	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	--	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%

CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 2 of 4)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-2787-1448 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:51 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:45 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
6.25					
12.5					
25					
50					
100					

Attachment A Appendix I
 Analyst: 

CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 3 of 4)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-0136-4015	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:51	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 0CC3C95B7EEF80CF723D3DA97FAB2D9	Editor ID: 001-068-318-4
Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.00978	2.88%

Dunnett Multiple Comparison Test

Control	vs	Conc.-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	-0.6153	2.407	0.00978	CDF	0.9539	Non-Significant Effect
		12.5	6	-0.2461	2.407	0.00978	CDF	0.8956	Non-Significant Effect
		25	6	-1.723	2.407	0.00978	CDF	0.9979	Non-Significant Effect
		50	6	-0.6973	2.407	0.00978	CDF	0.9622	Non-Significant Effect
		100	6	-0.2871	2.407	0.00978	CDF	0.9040	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	0.3395	0.25	<<	Yes	Passes Criteria
PMSD	0.02881	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0001224	2.448E-05	5	0.7413	0.6025	Non-Significant Effect
Error	0.0005943	3.302E-05	18			
Total	0.0007167		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	14.29	15.09	0.0139	Equal Variances
	Levene Equality of Variance Test	2.922	4.248	0.0420	Equal Variances
	Mod Levene Equality of Variance Test	1.594	4.248	0.2122	Equal Variances
Distribution	Anderson-Darling A2 Test	0.9167	3.878	0.0197	Normal Distribution
	D'Agostino Kurtosis Test	2.549	2.576	0.0108	Normal Distribution
	D'Agostino Skewness Test	2.266	2.576	0.0235	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	11.63	9.21	0.0030	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.1749	0.2056	0.0557	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8936	0.884	0.0158	Normal Distribution

Mean Dry Biomass-mg Summary

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3395	0.3367	0.3423		0.338	0.3413	0.000877	0.52%	0.00%
6.25		4	0.342	0.3385	0.3455		0.3393	0.3447	0.001089	0.64%	-0.74%
12.5		4	0.3405	0.3369	0.3441		0.3373	0.3427	0.001134	0.67%	-0.29%
25		4	0.3465	0.3287	0.3643		0.338	0.3627	0.005607	3.24%	-2.06%
50		4	0.3423	0.3316	0.3531		0.334	0.35	0.003372	1.97%	-0.83%
100		4	0.3407	0.3347	0.3466		0.3353	0.344	0.001866	1.10%	-0.34%

CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 4 of 4)
Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-0136-4015 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:51 Analysis: Parametric-Control vs Treatments Status Level: 1
Edit Date: 05 Dec-22 15:45 MD5 Hash: 0CC3C95B7EEF80CF723D3DA97FAB2D9 Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3407	0.3413	0.338	0.338
6.25		0.3447	0.342	0.3393	0.342
12.5		0.3427	0.3413	0.3407	0.3373
25		0.3627	0.34	0.338	0.3453
50		0.35	0.3407	0.3447	0.334
100		0.342	0.3413	0.344	0.3353



CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 1 of 4)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 18-4251-2853	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:52	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

Attachment A Appendix I
 Analyst: 

CETIS Analytical Report

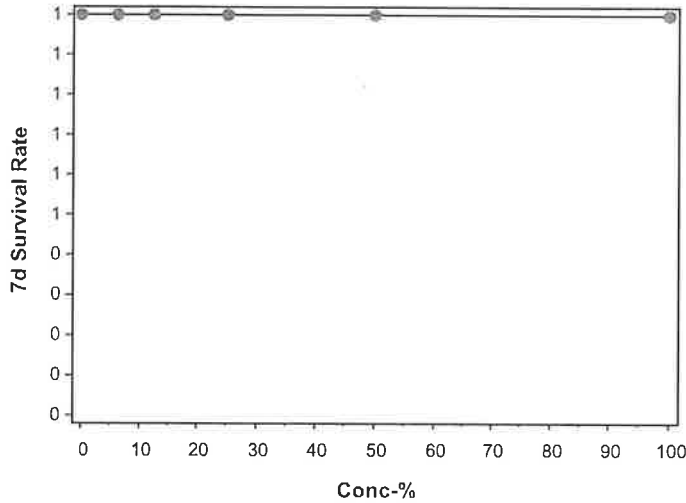
Report Date: 16 Dec-22 13:00 (p 2 of 4)
Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-4251-2853	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:52	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4

Graphics



Attachment A Appendix I
Analyst:  CA

CETIS Analytical Report

Report Date: 16 Dec-22 13:00 (p 3 of 4)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-9031-9592	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:52	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 0CC3C95B7EEF80CF723D3DA97FAB2D9	Editor ID: 001-068-318-4
Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	961059	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3395	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3395	0.3389	0.338	0.3413	0.52%	0.00%	0.3422	0.00%
6.25		4	0.342	0.342	0.3393	0.3447	0.64%	-0.74%	0.3422	0.00%
12.5		4	0.3405	0.341	0.3373	0.3427	0.67%	-0.29%	0.3422	0.00%
25		4	0.3465	0.3427	0.338	0.3627	3.24%	-2.06%	0.3422	0.00%
50		4	0.3423	0.3427	0.334	0.35	1.97%	-0.83%	0.3422	0.00%
100		4	0.3407	0.3417	0.3353	0.344	1.10%	-0.34%	0.3407	0.44%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3407	0.3413	0.338	0.338
6.25		0.3447	0.342	0.3393	0.342
12.5		0.3427	0.3413	0.3407	0.3373
25		0.3627	0.34	0.338	0.3453
50		0.35	0.3407	0.3447	0.334
100		0.342	0.3413	0.344	0.3353

CETIS Analytical Report

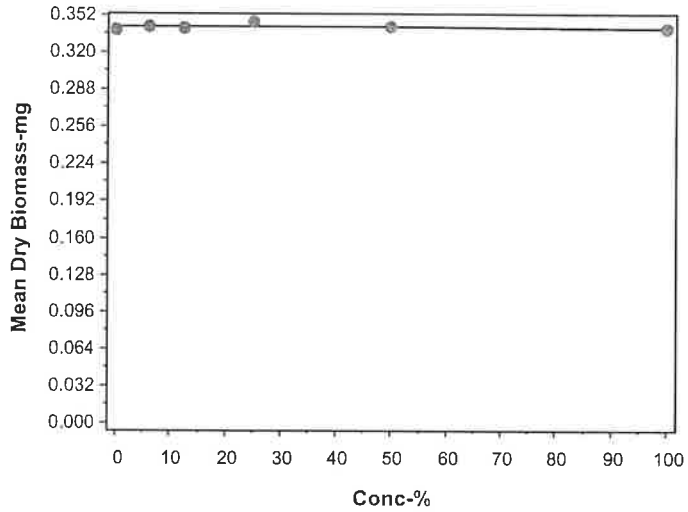
Report Date: 16 Dec-22 13:00 (p 4 of 4)
Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-9031-9592	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:52	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:45	MD5 Hash: 0CC3C95B7EEF80CF723D3DA97FAB2D9	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:01 (p 1 of 2)
 Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-0087-5261	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 15-4461-9907	Code: VCF1122.269fml	Project: P6010561
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	31	31	31	31	31	0	0	0.00%	0
Overall		16	45.5	37.52	53.48	31	60	3.744	14.98	32.91%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	354.5	352.1	356.9	350	358	0.3536	2.828	0.80%	0
12.5		8	357.5	355.3	359.7	352	360	0.3341	2.673	0.75%	0
25		8	352	350.3	353.7	350	355	0.2588	2.07	0.59%	0
50		8	349.4	347.7	351	348	354	0.2494	1.996	0.57%	0
100		8	335.9	333.5	338.2	332	339	0.35	2.8	0.83%	0
Overall		48	352.6	349.8	355.4	332	370	1.395	9.668	2.74%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.348	7.802	7.1	8.1	0.03391	0.2712	3.58%	0
12.5		8	7.575	7.392	7.758	7.2	8	0.02735	0.2188	2.89%	0
25		8	7.625	7.412	7.838	7.2	8.1	0.03187	0.255	3.34%	0
50		8	7.625	7.412	7.838	7.2	8.1	0.03187	0.255	3.34%	0
100		8	7.6	7.386	7.814	7.1	8	0.03204	0.2563	3.37%	0
Overall		48	7.6	7.528	7.672	7	8.1	0.03573	0.2475	3.26%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	87	87	87	87	87	0	0	0.00%	0
Overall		16	90.5	88.02	92.98	87	98	1.162	4.648	5.14%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.788	7.549	8.026	7.3	8	0.03563	0.285	3.66%	0
12.5		8	7.8	7.577	8.023	7.3	8	0.03341	0.2673	3.43%	0
25		8	7.788	7.601	7.974	7.4	8	0.0279	0.2232	2.87%	0
50		8	7.763	7.584	7.941	7.4	8	0.02667	0.2134	2.75%	0
100		8	7.763	7.584	7.941	7.4	8	0.02667	0.2134	2.75%	0
Overall		48	7.8	7.736	7.864	7.3	8	0.03179	0.2203	2.82%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:01 (p 2 of 2)
Test Code/ID: VCF1122.269fml / 07-6657-4039

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24	24	24	24	24	0	0	0.00%	0
12.5		8	24	24	24	24	24	0	0	0.00%	0
25		8	24	24	24	24	24	0	0	0.00%	0
50		8	24	24	24	24	24	0	0	0.00%	0
100		8	24	24	24	24	24	0	0	0.00%	0
Overall		48	24	24	24	24	24	0	0	0.00%	0 (0%)





December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:


CLIENT: Ventura County Watershed Protection District
SAMPLE I.D.: RW-LC1
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.269

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL NOEC = 100.00 %
TU_c = 1.00
EC25 = >100.00 %
EC50 = >100.00 %

REPRODUCTION NOEC = 100.00 %
TU_c = 1.00
IC25 = >100.00 %
IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:08 (p 1 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	04-6206-9686	Test Type:	Reproduction-Survival (7d)	Analyst:	Tina DeLeon		
Start Date:	08 Nov-22 18:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 16:42	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	17-3670-5855	Code:	VCF1122.269cer	Project:	P6010506		
Sample Date:	08 Nov-22 15:00	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	RW-LC1		
Sample Age:	3h (8.5 °C)	Client:	Ventura County Watershed Protection Distri				

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
06-6964-7812	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
07-5983-6851	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	13.6%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
18-5659-8275	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
02-9185-0484	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Decision
				Lower	Upper	Overlap	
06-6964-7812	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
18-5659-8275	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
02-9185-0484	Reproduction	Control Resp	26	15	<<	Yes	Passes Criteria
07-5983-6851	Reproduction	Control Resp	26	15	<<	Yes	Passes Criteria
07-5983-6851	Reproduction	PMSD	0.1359	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	26	23.69	28.31	21	31	1.022	3.232	12.43%	0.00%
6.25		10	29.9	27.55	32.25	23	34	1.038	3.281	10.97%	-15.00%
12.5		10	28.8	26.49	31.11	26	37	1.02	3.225	11.20%	-10.77%
25		10	29.7	27.79	31.61	26	34	0.8439	2.669	8.99%	-14.23%
50		10	30.1	28.21	31.99	25	34	0.836	2.644	8.78%	-15.77%
100		10	30.8	27.17	34.43	23	36	1.604	5.073	16.47%	-18.46%

CETIS Summary Report

Report Date: 16 Dec-22 13:08 (p 2 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: E5A63892977163FF11FABB4EE844033A

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	31	27	22	29	25	21	28	26	28	23
6.25		23	28	29	34	27	32	32	33	30	31
12.5		28	27	28	28	31	29	28	26	26	37
25		34	31	27	26	27	32	29	28	31	32
50		34	30	25	33	32	30	28	30	31	28
100		35	33	27	24	29	23	29	36	36	36

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 1 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 07-5983-6851	Endpoint: Reproduction	CETIS Version: CETISv2.1.3			
Analyzed: 16 Dec-22 13:03	Analysis: Parametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 16:25	MD5 Hash: E5A63892977163FF11FABB4EE844033A	Editor ID: 001-068-318-4			
Batch ID: 04-6206-9686	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:42	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 17-3670-5855	Code: VCF1122.269cer	Project: P6010506			
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1			
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.533	13.59%

Dunnnett Multiple Comparison Test

Control	vs	Conc.-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	-2.527	2.289	3.533	CDF	0.9999	Non-Significant Effect
		12.5	18	-1.814	2.289	3.533	CDF	0.9990	Non-Significant Effect
		25	18	-2.397	2.289	3.533	CDF	0.9999	Non-Significant Effect
		50	18	-2.657	2.289	3.533	CDF	1.0000	Non-Significant Effect
		100	18	-3.11	2.289	3.533	CDF	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	26	15	<<	Yes	Passes Criteria
PMSD	0.1359	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	145.083	29.0167	5	2.436	0.0461	Significant Effect
Error	643.1	11.9093	54			
Total	788.183		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.558	15.09	0.3516	Equal Variances
	Levene Equality of Variance Test	2.362	3.377	0.0520	Equal Variances
	Mod Levene Equality of Variance Test	2.277	3.377	0.0596	Equal Variances
Distribution	Anderson-Darling A2 Test	0.2409	3.878	0.8011	Normal Distribution
	D'Agostino Kurtosis Test	0.06277	2.576	0.9499	Normal Distribution
	D'Agostino Skewness Test	0.2895	2.576	0.7722	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.08774	9.21	0.9571	Normal Distribution
	Kolmogorov-Smirnov D Test	0.06752	0.1331	0.6889	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9893	0.9459	0.8770	Normal Distribution

Reproduction Summary

Conc.-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	26	23.69	28.31	26.5	21	31	1.022	12.43%	0.00%
6.25		10	29.9	27.55	32.25	30.5	23	34	1.038	10.97%	-15.00%
12.5		10	28.8	26.49	31.11	28	26	37	1.02	11.20%	-10.77%
25		10	29.7	27.79	31.61	30.33	26	34	0.8439	8.99%	-14.23%
50		10	30.1	28.21	31.99	30	25	34	0.836	8.78%	-15.77%
100		10	30.8	27.17	34.43	30.33	23	36	1.604	16.47%	-18.46%

CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 2 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

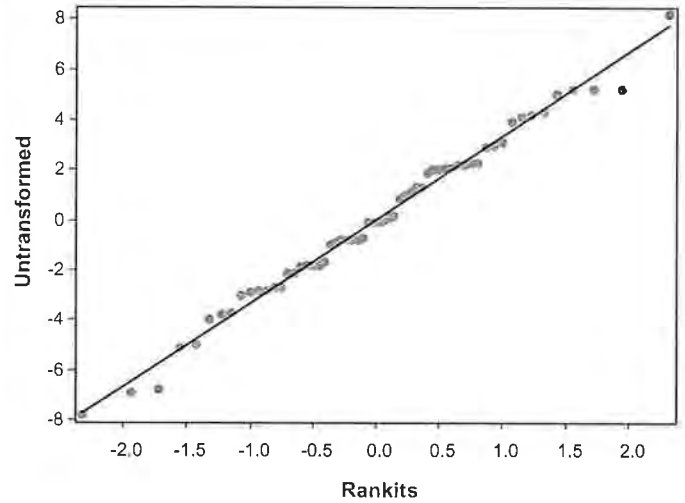
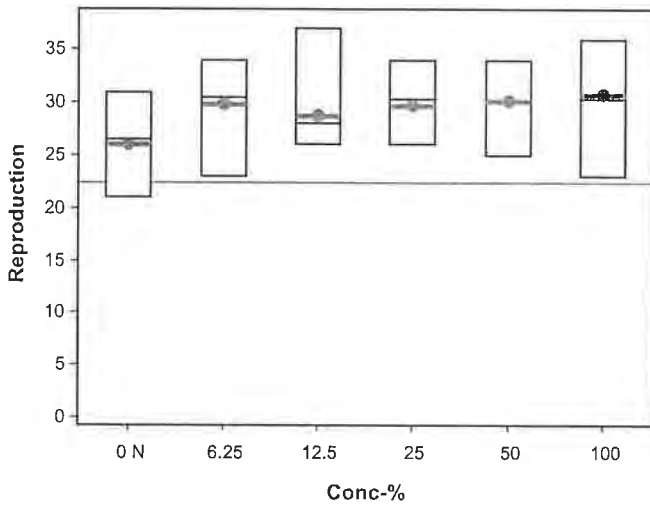
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-5983-6851 Endpoint: Reproduction CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 13:03 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 16:25 MD5 Hash: E5A63892977163FF11FABB4EE844033A Editor ID: 001-068-318-4

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	31	27	22	29	25	21	28	26	28	23
6.25		23	28	29	34	27	32	32	33	30	31
12.5		28	27	28	28	31	29	28	26	26	37
25		34	31	27	26	27	32	29	28	31	32
50		34	30	25	33	32	30	28	30	31	28
100		35	33	27	24	29	23	29	36	36	36

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 1 of 4)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	18-5659-8275	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3		
Analyzed:	16 Dec-22 13:03	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1		
Edit Date:	05 Dec-22 16:25	MD5 Hash:	521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID:	001-068-318-4		
Batch ID:	04-6206-9686	Test Type:	Reproduction-Survival (7d)	Analyst:	Tina DeLeon		
Start Date:	08 Nov-22 18:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 16:42	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	17-3670-5855	Code:	VCF1122.269cer	Project:	P6010506		
Sample Date:	08 Nov-22 15:00	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	RW-LC1		
Sample Age:	3h (8.5 °C)	Client:	Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

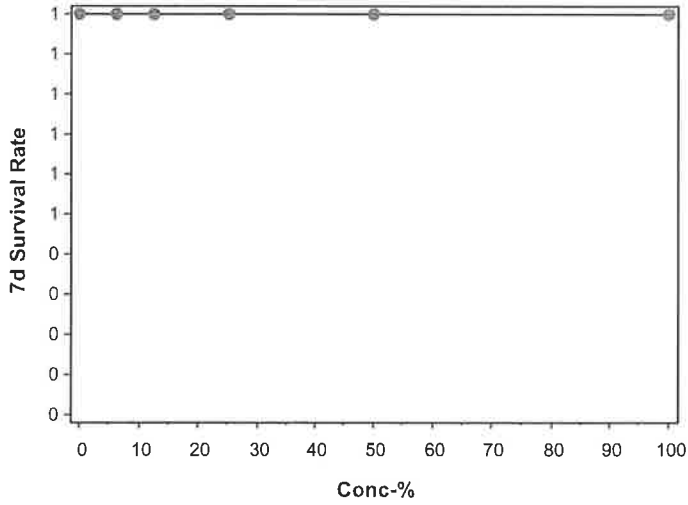
7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-5659-8275	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 13:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 16:25	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 3 of 4)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 02-9185-0484	Endpoint: Reproduction	CETIS Version: CETISv2.1.3			
Analyzed: 16 Dec-22 13:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 16:25	MD5 Hash: E5A63892977163FF11FABB4EE844033A	Editor ID: 001-068-318-4			
Batch ID: 04-6206-9686	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:42	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 17-3670-5855	Code: VCF1122.269cer	Project: P6010506			
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1			
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2098323	280	Yes	Two-Point Interpolation

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	26	15	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	26	26.5	21	31	12.43%	0.00%	29.22	0.00%
6.25		10	29.9	30.5	23	34	10.97%	-15.00%	29.22	0.00%
12.5		10	28.8	28	26	37	11.20%	-10.77%	29.22	0.00%
25		10	29.7	30.33	26	34	8.99%	-14.23%	29.22	0.00%
50		10	30.1	30	25	34	8.78%	-15.77%	29.22	0.00%
100		10	30.8	30.33	23	36	16.47%	-18.46%	29.22	0.00%

Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	31	27	22	29	25	21	28	26	28	23
6.25		23	28	29	34	27	32	32	33	30	31
12.5		28	27	28	28	31	29	28	26	26	37
25		34	31	27	26	27	32	29	28	31	32
50		34	30	25	33	32	30	28	30	31	28
100		35	33	27	24	29	23	29	36	36	36

CETIS Analytical Report

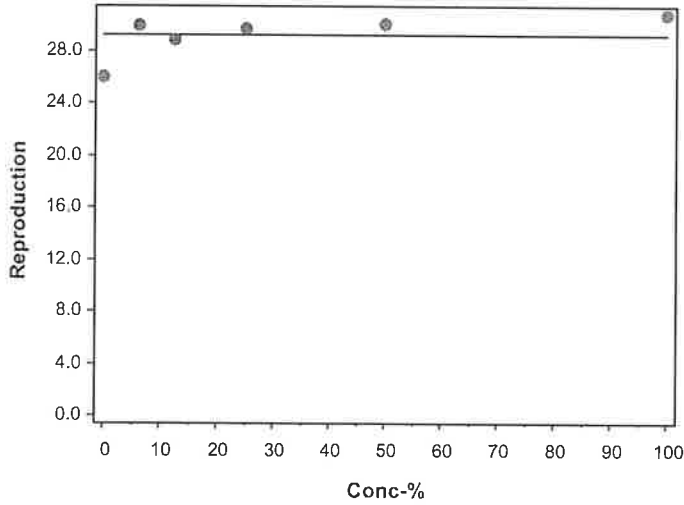
Report Date: 16 Dec-22 13:08 (p 4 of 4)
Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-9185-0484	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 13:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 16:25	MD5 Hash: E5A63892977163FF11FABB4EE844033A	Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 1 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-6964-7812	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 13:03	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 05 Dec-22 16:25	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 001-068-318-4
Batch ID: 04-6206-9686	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 17-3670-5855	Code: VCF1122.269cer	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 16 Dec-22 13:08 (p 2 of 2)
 Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

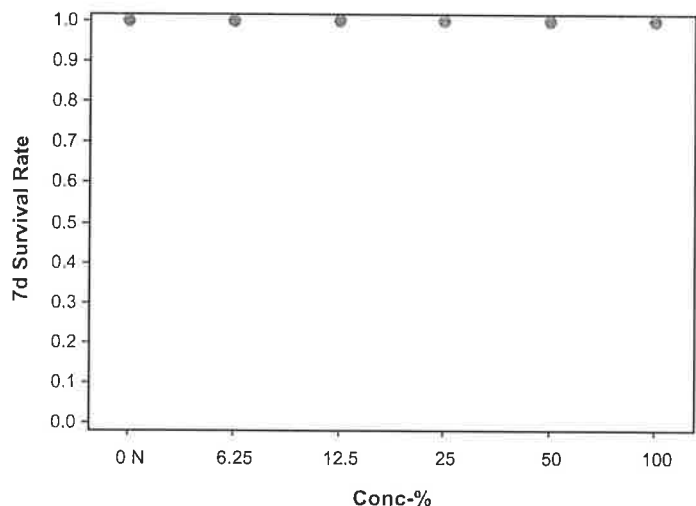
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-6964-7812 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 13:03 Analysis: STP 2xK Contingency Tables Status Level: 1
 Edit Date: 05 Dec-22 16:25 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF Editor ID: 001-068-318-4

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

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CETIS Measurement Report

Report Date: 16 Dec-22 13:08 (p 1 of 2)

Test Code/ID: VCF1122.269cer / 09-9457-8859

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 04-6206-9686	Test Type: Reproduction-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 18:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:42	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 17-3670-5855	Code: VCF1122.269cer	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	31	31	31	31	31	0	0	0.00%	0
Overall		16	45.5	37.52	53.48	31	60	3.744	14.98	32.91%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	354.5	352.1	356.9	350	358	0.3536	2.828	0.80%	0
12.5		8	357.5	355.3	359.7	352	360	0.3341	2.673	0.75%	0
25		8	352	350.3	353.7	350	355	0.2588	2.07	0.59%	0
50		8	349.4	347.7	351	348	354	0.2494	1.996	0.57%	0
100		8	335.9	333.5	338.2	332	339	0.35	2.8	0.83%	0
Overall		48	352.6	349.8	355.4	332	370	1.395	9.668	2.74%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.348	7.802	7.1	8.1	0.03391	0.2712	3.58%	0
12.5		8	7.575	7.392	7.758	7.2	8	0.02735	0.2188	2.89%	0
25		8	7.625	7.412	7.838	7.2	8.1	0.03187	0.255	3.34%	0
50		8	7.763	7.584	7.941	7.4	8	0.02667	0.2134	2.75%	0
100		8	7.763	7.584	7.941	7.4	8	0.02667	0.2134	2.75%	0
Overall		48	7.65	7.578	7.722	7	8.1	0.03585	0.2484	3.25%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	87	87	87	87	87	0	0	0.00%	0
Overall		16	90.5	88.02	92.98	87	98	1.162	4.648	5.14%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.788	7.549	8.026	7.3	8	0.03563	0.285	3.66%	0
12.5		8	7.8	7.577	8.023	7.3	8	0.03341	0.2673	3.43%	0
25		8	7.788	7.601	7.974	7.4	8	0.0279	0.2232	2.87%	0
50		8	7.763	7.584	7.941	7.4	8	0.02667	0.2134	2.75%	0
100		8	7.738	7.577	7.898	7.4	7.9	0.02403	0.1923	2.48%	0
Overall		48	7.796	7.732	7.859	7.3	8	0.0315	0.2183	2.80%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Ventura County Watershed Protection District
SAMPLE I.D.:	RW-LC1
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.269

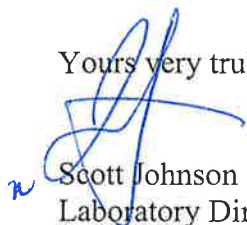
ACUTE 96 HOURS HYALELLA AZTECA SURVIVAL BIOASSAY

% Survival = 100 % Survival in 100% Sample

*TU_a = 0.00

* TU(a) Is calculated by: $\log (\% \text{ Mortality})/1.7$

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:13 (p 1 of 1)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 15-1045-2027	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 15:57	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-9687-5925	Code: VCF1122.269ahya	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
07-1230-0959	96h Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
09-5527-1216	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	>100	---	---	<1	1
			EC20	>100	---	---	<1	
			EC25	>100	---	---	<1	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

96h Survival Rate Detail

MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5

CETIS Analytical Report

Report Date: 16 Dec-22 13:13 (p 1 of 2)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 07-1230-0959	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:16	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 12:14	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4			
Batch ID: 15-1045-2027	Test Type: Survival (96h)	Analyst: Arnel Ramos			
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 12 Nov-22 15:57	Species: Hyalella azteca	Brine: Not Applicable			
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:			
Sample ID: 02-9687-5925	Code: VCF1122.269ahya	Project: P6010506			
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1			
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test									
Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variance	Bartlett Equality of Variance Test				Indeterminate	
Distribution	Shapiro-Wilk W Normality Test				Indeterminate	

96h Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
6.25		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
12.5		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
25		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
50		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
100		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%

CETIS Analytical Report

Report Date: 16 Dec-22 13:13 (p 2 of 2)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-1230-0959 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:16 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:14 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.3450
12.5		1.3450	1.3450	1.3450	1.3450
25		1.3450	1.3450	1.3450	1.3450
50		1.3450	1.3450	1.3450	1.3450
100		1.3450	1.3450	1.3450	1.3450

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
6.25					
12.5					
25					
50					
100					

CETIS Analytical Report

Report Date: 16 Dec-22 13:13 (p 1 of 2)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-5527-1216	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:22	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:14	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 15-1045-2027	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 15:57	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-9687-5925	Code: VCF1122.269ahya	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

96h Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5

CETIS Analytical Report

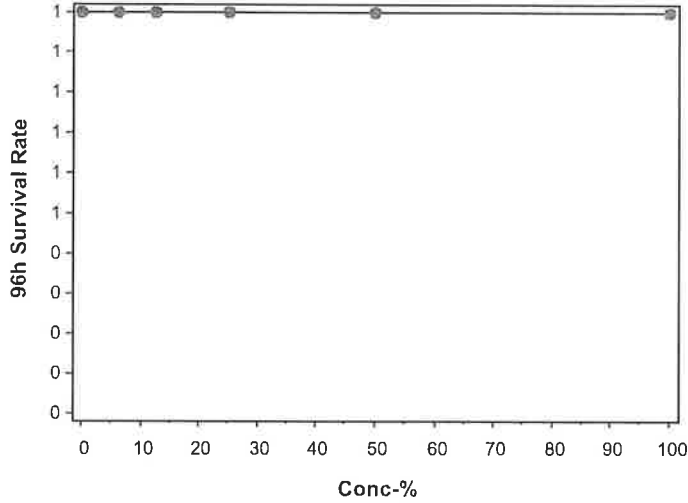
Report Date: 16 Dec-22 13:13 (p 2 of 2)
Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-5527-1216	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:22	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:14	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:13 (p 1 of 2)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 15-1045-2027	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 15:57	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-9687-5925	Code: VCF1122.269ahya	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	60	60	60	60	60	0	0	0.00%	0
100		3	31	31	31	31	31	0	0	0.00%	0
Overall		6	45.5	28.83	62.17	31	60	6.485	15.88	34.91%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	369.7	354.7	384.6	364	376	2.009	6.028	1.63%	0
6.25		3	357	352.7	361.3	355	358	0.5774	1.732	0.49%	0
12.5		3	357.3	355.9	358.8	357	358	0.1925	0.5774	0.16%	0
25		3	356.3	353.5	359.2	355	357	0.3849	1.155	0.32%	0
50		3	350.3	344.1	356.6	348	353	0.8389	2.517	0.72%	0
100		3	337	330.4	343.6	334	339	0.8819	2.646	0.79%	0
Overall		18	354.6	349.5	359.8	334	376	2.44	10.35	2.92%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
6.25		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
12.5		3	8	8	8	8	8	0	0	0.00%	0
25		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
50		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
100		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8.022	8.001	8.043	8	8.1	0.01008	0.04278	0.53%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	98	98	98	98	98	0	0	0.00%	0
100		3	87	87	87	87	87	0	0	0.00%	0
Overall		6	92.5	86.18	98.82	87	98	2.46	6.025	6.51%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	7.599	7.601	7.6	7.6	0	0	0.00%	0
6.25		3	7.467	7.087	7.846	7.3	7.6	0.05092	0.1527	2.05%	0
12.5		3	7.533	7.39	7.677	7.5	7.6	0.01924	0.05773	0.77%	0
25		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
50		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
100		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
Overall		18	7.5	7.458	7.542	7.3	7.6	0.0198	0.08402	1.12%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:13 (p 2 of 2)
 Test Code/ID: VCF1122.269ahya / 07-7112-1093

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22	22	22	22	22	0	0	0.00%	0
6.25		3	22	22	22	22	22	0	0	0.00%	0
12.5		3	22	22	22	22	22	0	0	0.00%	0
25		3	22	22	22	22	22	0	0	0.00%	0
50		3	22	22	22	22	22	0	0	0.00%	0
100		3	22	22	22	22	22	0	0	0.00%	0
Overall		18	22	22	22	22	22	0	0	0.00%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Ventura County Watershed Protection District
SAMPLE I.D.:	RW-LC1
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.269

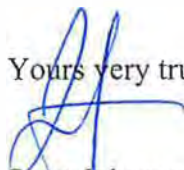
ACUTE 96 HOURS CHIRONOMUS SURVIVAL BIOASSAY

% Survival = 90.00 % Survival in 100% Sample

*TUa = 0.59

* TU(a) Is calculated by: $\log (\% \text{ Mortality})/1.7$

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:15 (p 1 of 1)
 Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-0763-9934	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 16:52	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 95h	Taxon: Insecta	Source: Aquatic Biosystems, CO
		Age:
Sample ID: 10-0987-4312	Code: VCF1122.269achi	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
20-1677-0319	96h Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	11.9%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
15-3584-3200	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	>100	---	---	<1	1
			EC20	>100	---	---	<1	
			EC25	>100	---	---	<1	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
100		4	0.9000	0.7163	1.0840	0.8000	1.0000	0.0577	0.1155	12.83%	10.00%

96h Survival Rate Detail

MD5: D14C3A14D4D5504E9484396E374EDBAC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	0.8000	1.0000
100		0.8000	0.8000	1.0000	1.0000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
50		5/5	5/5	4/5	5/5
100		4/5	4/5	5/5	5/5

Handwritten signature and initials: [Signature] PAS

CETIS Analytical Report

Report Date: 16 Dec-22 13:14 (p 1 of 3)
 Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	20-1677-0319	Endpoint:	96h Survival Rate	CETIS Version:	CETISv2.1.3
Analyzed:	05 Dec-22 12:26	Analysis:	Nonparametric-Control vs Treatments	Status Level:	1
Edit Date:	05 Dec-22 12:25	MD5 Hash:	D14C3A14D4D5504E9484396E374EDBAC	Editor ID:	001-068-318-4
Batch ID:	20-0763-9934	Test Type:	Survival (96h)	Analyst:	Arnel Ramos
Start Date:	08 Nov-22 17:55	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Laboratory Water
Ending Date:	12 Nov-22 16:52	Species:	Chironomus dilutus	Brine:	Not Applicable
Test Length:	95h	Taxon:	Insecta	Source:	Aquatic Biosystems, CO
Sample ID:	10-0987-4312	Code:	VCF1122.269achi	Project:	P6010506
Sample Date:	08 Nov-22 15:00	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	RW-LC1
Sample Age:	3h (8.5 °C)	Client:	Ventura County Watershed Protection Distri		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.1188	11.88%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	16	10	1	CDF	0.6105	Non-Significant Effect
		100	6	14	10	1	CDF	0.3451	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0496194	0.0099239	5	1.8	0.1637	Non-Significant Effect
Error	0.0992388	0.0055133	18			
Total	0.148858		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	20.2	4.248	<1.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	4.2	4.248	0.0105	Equal Variances
Distribution	Anderson-Darling A2 Test	3.246	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	1.912	2.576	0.0559	Normal Distribution
	D'Agostino Skewness Test	1.791	2.576	0.0733	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	6.862	9.21	0.0323	Normal Distribution
	Kolmogorov-Smirnov D Test	0.375	0.2056	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.7721	0.884	0.0001	Non-Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
50		4	0.9500	0.7909	1.0000		0.8000	1.0000	0.0500	10.53%	5.00%
100		4	0.9000	0.7163	1.0000		0.8000	1.0000	0.0577	12.83%	10.00%

CETIS Analytical Report

Report Date: 16 Dec-22 13:14 (p 2 of 3)
 Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-1677-0319 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:26 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:25 MD5 Hash: D14C3A14D4D5504E9484396E374EDBAC Editor ID: 001-068-318-4

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
6.25		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
12.5		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
25		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
50		4	1.2860	1.0960	1.4750		1.1070	1.3450	0.0595	9.26%	4.43%
100		4	1.2260	1.0070	1.4450		1.1070	1.3450	0.0687	11.21%	8.85%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	0.8000	1.0000
100		0.8000	0.8000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.3450
12.5		1.3450	1.3450	1.3450	1.3450
25		1.3450	1.3450	1.3450	1.3450
50		1.3450	1.3450	1.1070	1.3450
100		1.1070	1.1070	1.3450	1.3450

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
6.25					
12.5					
25					
50					
100					

CETIS Analytical Report

Report Date: 16 Dec-22 13:14 (p 3 of 3)
Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-1677-0319	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:26	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:25	MD5 Hash: D14C3A14D4D5504E9484396E374EDBAC	Editor ID: 001-068-318-4



CETIS Analytical Report

Report Date: 16 Dec-22 13:14 (p 1 of 2)
 Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 15-3584-3200	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:26	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 12:25	MD5 Hash: D14C3A14D4D5504E9484396E374EDBAC	Editor ID: 001-068-318-4			
Batch ID: 20-0763-9934	Test Type: Survival (96h)	Analyst: Arnel Ramos			
Start Date: 08 Nov-22 17:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 12 Nov-22 16:52	Species: Chironomus dilutus	Brine: Not Applicable			
Test Length: 95h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:			
Sample ID: 10-0987-4312	Code: VCF1122.269achi	Project: P6010506			
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1			
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

96h Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
50		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9500	5.00%
100		4	0.9000	0.9000	0.8000	1.0000	12.83%	10.00%	18/20	0.9000	10.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	0.8000	1.0000
100		0.8000	0.8000	1.0000	1.0000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5
50		5/5	5/5	4/5	5/5
100		4/5	4/5	5/5	5/5

CETIS Analytical Report

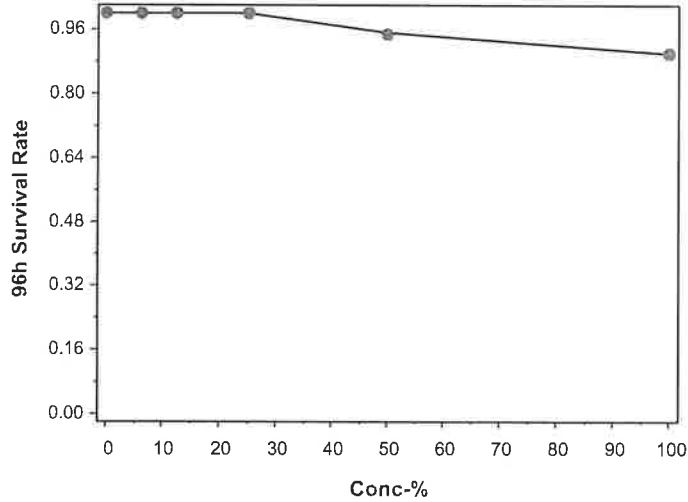
Report Date: 16 Dec-22 13:14 (p 2 of 2)
Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-3584-3200	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:26	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:25	MD5 Hash: D14C3A14D4D5504E9484396E374EDBAC	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:15 (p 1 of 2)

Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-0763-9934	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:55	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 16:52	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 95h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:

Sample ID: 10-0987-4312	Code: VCF1122.269achi	Project: P6010506
Sample Date: 08 Nov-22 15:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: RW-LC1
Sample Age: 3h (8.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	60	60	60	60	60	0	0	0.00%	0
100		3	31	31	31	31	31	0	0	0.00%	0
Overall		6	45.5	28.83	62.17	31	60	6.485	15.88	34.91%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	369.7	354.7	384.6	364	376	2.009	6.028	1.63%	0
6.25		3	357	352.7	361.3	355	358	0.5774	1.732	0.49%	0
12.5		3	357.3	355.9	358.8	357	358	0.1925	0.5774	0.16%	0
25		3	356.3	353.5	359.2	355	357	0.3849	1.155	0.32%	0
50		3	350.3	344.1	356.6	348	353	0.8389	2.517	0.72%	0
100		3	337	330.4	343.6	334	339	0.8819	2.646	0.79%	0
Overall		18	354.6	349.5	359.8	334	376	2.44	10.35	2.92%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
6.25		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
12.5		3	8	8	8	8	8	0	0	0.00%	0
25		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
50		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
100		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8.022	8.001	8.043	8	8.1	0.01008	0.04278	0.53%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	98	98	98	98	98	0	0	0.00%	0
100		3	87	87	87	87	87	0	0	0.00%	0
Overall		6	92.5	86.18	98.82	87	98	2.46	6.025	6.51%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	7.599	7.601	7.6	7.6	0	0	0.00%	0
6.25		3	7.467	7.087	7.846	7.3	7.6	0.05092	0.1527	2.05%	0
12.5		3	7.533	7.39	7.677	7.5	7.6	0.01924	0.05773	0.77%	0
25		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
50		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
100		3	7.467	7.323	7.61	7.4	7.5	0.01925	0.05774	0.77%	0
Overall		18	7.5	7.458	7.542	7.3	7.6	0.0198	0.08402	1.12%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:15 (p 2 of 2)
Test Code/ID: VCF1122.269achi / 09-0221-1721

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22	22	22	22	22	0	0	0.00%	0
6.25		3	22	22	22	22	22	0	0	0.00%	0
12.5		3	22	22	22	22	22	0	0	0.00%	0
25		3	22	22	22	22	22	0	0	0.00%	0
50		3	22	22	22	22	22	0	0	0.00%	0
100		3	22	22	22	22	22	0	0	0.00%	0
Overall		18	22	22	22	22	22	0	0	0.00%	0 (0%)





CHRONIC FATHEAD MINNOW SURVIVAL AND GROWTH BIOASSAY

DATE: 8 November 2022

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 19.00 ug/l

EC25 = 27.64 ug/l

EC50 = 36.27 ug/l

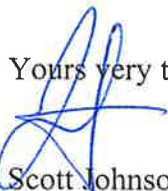
ENDPOINT: GROWTH

NOEC = 19.00 ug/l

IC25 = 26.27 ug/l

IC50 = 33.72 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:30 (p 1 of 2)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
18-2405-5054	7d Survival Rate	Steel Many-One Rank Sum Test	✓ 19	38	26.87	4.12%	1
16-7758-9576	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	✓ 19	38	26.87	5.47%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
16-4815-2011	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	24.18	23.49	25.33	1
			EC20	25.91	24.99	27.43	
			EC25	27.64	26.48	29.54	
			EC40	32.82	30.98	35.87	
			EC50	36.27	33.97	41.5	
11-3405-5843	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	23.28	21.6	23.92	1
			✓ IC20	24.77	23.09	25.52	
			✓ IC25	26.27	24.72	27.13	
			✓ IC40	30.74	29.05	31.96	
			✓ IC50	33.72	31.82	35.2	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
16-4815-2011	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
18-2405-5054	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
11-3405-5843	Mean Dry Biomass-mg	Control Resp	0.3457	0.25	<<	Yes	Passes Criteria	
16-7758-9576	Mean Dry Biomass-mg	Control Resp	0.3457	0.25	<<	Yes	Passes Criteria	
16-7758-9576	Mean Dry Biomass-mg	PMSD	0.05466	0.12	0.3	Yes	Below Criteria	

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
19		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
38		4	0.4500	0.3484	0.5516	0.4000	0.5333	0.0319	0.0638	14.18%	55.00%
75		4	0.1167	0.0636	0.1697	0.0667	0.1333	0.0167	0.0333	28.57%	88.33%
150		4	0.0167	-0.0364	0.0697	0.0000	0.0667	0.0167	0.0333	200.00%	98.33%

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3457	0.3231	0.3683	0.3353	0.3667	0.0071	0.0142	4.11%	0.00%
10		4	0.3442	0.34	0.3484	0.342	0.3473	0.001316	0.002632	0.76%	0.43%
19		4	0.3435	0.3317	0.3553	0.338	0.354	0.003696	0.007391	2.15%	0.63%
38		4	0.1232	0.09297	0.1534	0.096	0.14	0.009488	0.01898	15.41%	64.37%
75		4	0.02167	0.01311	0.03022	0.016	0.028	0.002687	0.005375	24.81%	93.73%
150		4	0.004667	-0.01018	0.01952	0	0.01867	0.004667	0.009333	200.00%	98.65%

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CETIS Summary Report

Report Date: 16 Dec-22 13:30 (p 2 of 2)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 6F824543FFC9E3CCCD55D086F569C4E4

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
19		1.0000	1.0000	1.0000	1.0000
38		0.5333	0.4000	0.4000	0.4667
75		0.1333	0.1333	0.1333	0.0667
150		0.0000	0.0667	0.0000	0.0000

Mean Dry Biomass-mg Detail

MD5: 06D5552004113D38FD5A7C023A29809F

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.34	0.3667	0.3407	0.3353
10		0.3453	0.342	0.342	0.3473
19		0.338	0.3387	0.354	0.3433
38		0.1267	0.096	0.13	0.14
75		0.028	0.024	0.01867	0.016
150		0	0.01867	0	0

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	15/15	15/15
38		8/15	6/15	6/15	7/15
75		2/15	2/15	2/15	1/15
150		0/15	1/15	0/15	0/15

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-2405-5054	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:35	MD5 Hash: 6F824543FFC9E3CCCD55D086F569C4E4	Editor ID: 001-068-318-4
Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	19	38	26.87	---	0.0412	4.12%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		10	6	18	10	1	CDF	0.8333	Non-Significant Effect
		19	6	18	10	1	CDF	0.8333	Non-Significant Effect
		38*	6	10	10	0	CDF	0.0417	Significant Effect
		75*	6	10	10	0	CDF	0.0417	Significant Effect
		150*	6	10	10	0	CDF	0.0417	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.01233	1.40247	5	723.7	<1.0E-05	Significant Effect
Error	0.0348847	0.0019380	18			
Total	7.04722		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	6.229	4.248	0.0016	Unequal Variances
	Mod Levene Equality of Variance Test	1.304	4.248	0.3060	Equal Variances
Distribution	Anderson-Darling A2 Test	1.609	3.878	1.1E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	1.699	2.576	0.0893	Normal Distribution
	D'Agostino Skewness Test	1.156	2.576	0.2476	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	4.224	9.21	0.1210	Normal Distribution
	Kolmogorov-Smirnov D Test	0.25	0.2056	0.0004	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.8844	0.884	0.0102	Normal Distribution

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
19		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
38		4	0.4500	0.3484	0.5516		0.4000	0.5333	0.0319	14.18%	55.00%
75		4	0.1167	0.0636	0.1697		0.0667	0.1333	0.0167	28.57%	88.33%
150		4	0.0167	0.0000	0.0697		0.0000	0.0667	0.0167	200.00%	98.33%

CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 2 of 5)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-2405-5054 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:41 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:35 MD5 Hash: 6F824543FFC9E3CCCD55D086F569C4E4 Editor ID: 001-068-318-4

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
10		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
19		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
38		4	0.7351	0.6329	0.8372		0.6847	0.8188	0.0321	8.73%	49.00%
75		4	0.3456	0.2560	0.4352		0.2612	0.3738	0.0282	16.29%	76.02%
150		4	0.1624	0.0576	0.2672		0.1295	0.2612	0.0329	40.55%	88.73%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
19		1.0000	1.0000	1.0000	1.0000
38		0.5333	0.4000	0.4000	0.4667
75		0.1333	0.1333	0.1333	0.0667
150		0.0000	0.0667	0.0000	0.0000

Angular (Corrected) Transformed Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
10		1.4410	1.4410	1.4410	1.4410
19		1.4410	1.4410	1.4410	1.4410
38		0.8188	0.6847	0.6847	0.7520
75		0.3738	0.3738	0.3738	0.2612
150		0.1295	0.2612	0.1295	0.1295

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
10					
19					
38					
75					
150					

CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 3 of 5)
Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-2405-5054	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:35	MD5 Hash: 6F824543FFC9E3CCCD55D086F569C4E4	Editor ID: 001-068-318-4

Attachment A Appendix I
Analyst:  CA

CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 4 of 5)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7758-9576	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:35	MD5 Hash: 06D5552004113D38FD5A7C023A29809F	Editor ID: 001-068-318-4
Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	19	38	26.87	---	0.01889	5.47%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		10	6	0.1911	2.407	0.01889	CDF	0.7709	Non-Significant Effect
		19	6	0.276	2.407	0.01889	CDF	0.7395	Non-Significant Effect
		38*	6	28.35	2.407	0.01889	CDF	2.7E-05	Significant Effect
		75*	6	41.28	2.407	0.01889	CDF	2.7E-05	Significant Effect
		150*	6	43.44	2.407	0.01889	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	0.3457	0.25	<<	Yes	Passes Criteria
PMSD	0.05466	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.553629	0.110726	5	898.6	<1.0E-05	Significant Effect
Error	0.0022179	0.0001232	18			
Total	0.555847		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	10.42	15.09	0.0641	Equal Variances
	Levene Equality of Variance Test	2.007	4.248	0.1264	Equal Variances
	Mod Levene Equality of Variance Test	0.5764	4.248	0.7174	Equal Variances
Distribution	Anderson-Darling A2 Test	0.8863	3.878	0.0234	Normal Distribution
	D'Agostino Kurtosis Test	1.794	2.576	0.0728	Normal Distribution
	D'Agostino Skewness Test	0.4135	2.576	0.6793	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	3.389	9.21	0.1837	Normal Distribution
	Kolmogorov-Smirnov D Test	0.1986	0.2056	0.0153	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9227	0.884	0.0671	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3457	0.3231	0.3683		0.3353	0.3667	0.0071	4.11%	0.00%
10		4	0.3442	0.34	0.3484		0.342	0.3473	0.001316	0.76%	0.43%
19		4	0.3435	0.3317	0.3553		0.338	0.354	0.003696	2.15%	0.63%
38		4	0.1232	0.09297	0.1534		0.096	0.14	0.009488	15.41%	64.37%
75		4	0.02167	0.01311	0.03022		0.016	0.028	0.002687	24.81%	93.73%
150		4	0.004667	-0.01018	0.01952		0	0.01867	0.004667	200.00%	98.65%

CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 5 of 5)
Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7758-9576 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41 Analysis: Parametric-Control vs Treatments Status Level: 1
Edit Date: 05 Dec-22 12:35 MD5 Hash: 06D5552004113D38FD5A7C023A29809F Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.34	0.3667	0.3407	0.3353
10		0.3453	0.342	0.342	0.3473
19		0.338	0.3387	0.354	0.3433
38		0.1267	0.096	0.13	0.14
75		0.028	0.024	0.01867	0.016
150		0	0.01867	0	0

CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 1 of 4)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-4815-2011	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:35	MD5 Hash: 6F824543FFC9E3CCCD55D086F569C4E4	Editor ID: 001-068-318-4
Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	24.18	23.49	25.33
EC20	25.91	24.99	27.43
EC25	27.64	26.48	29.54
EC40	32.82	30.98	35.87
EC50	36.27	33.97	41.5

7d Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
19		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
38		4	0.4500	0.4222	0.4000	0.5333	14.18%	55.00%	27/60	0.4500	55.00%
75		4	0.1167	0.1333	0.0667	0.1333	28.57%	88.33%	7/60	0.1167	88.33%
150		4	0.0167	0.0000	0.0000	0.0667	200.00%	98.33%	1/60	0.0167	98.33%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
19		1.0000	1.0000	1.0000	1.0000
38		0.5333	0.4000	0.4000	0.4667
75		0.1333	0.1333	0.1333	0.0667
150		0.0000	0.0667	0.0000	0.0000

7d Survival Rate Binomials

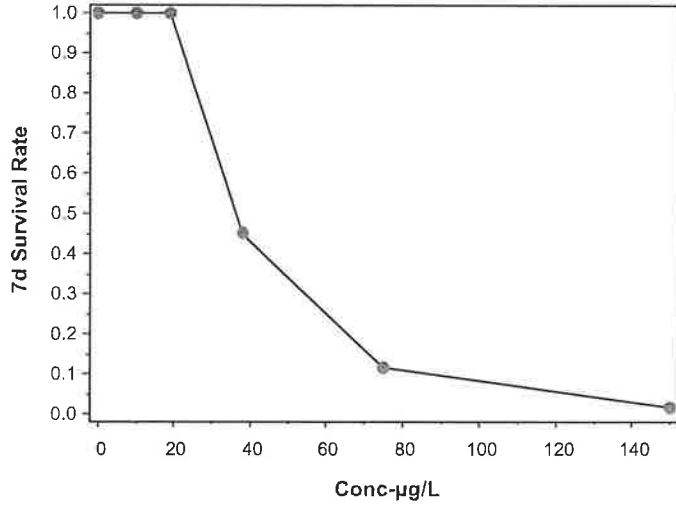
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	15/15	15/15
38		8/15	6/15	6/15	7/15
75		2/15	2/15	2/15	1/15
150		0/15	1/15	0/15	0/15

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-4815-2011 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 12:35 MD5 Hash: 6F824543FFC9E3CCCD55D086F569C4E4 Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 13:30 (p 3 of 4)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3405-5843	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:35	MD5 Hash: 06D5552004113D38FD5A7C023A29809F	Editor ID: 001-068-318-4
Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1113296	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3457	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC15	23.28	21.6	23.92
IC20	24.77	23.09	25.52
IC25	26.27	24.72	27.13
IC40	30.74	29.05	31.96
IC50	33.72	31.82	35.2

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3457	0.3403	0.3353	0.3667	4.11%	0.00%	0.3457	0.00%
10		4	0.3442	0.3431	0.342	0.3473	0.76%	0.43%	0.3442	0.43%
19		4	0.3435	0.341	0.338	0.354	2.15%	0.63%	0.3435	0.64%
38		4	0.1232	0.1283	0.096	0.14	15.41%	64.37%	0.1232	64.36%
75		4	0.02167	0.02133	0.016	0.028	24.81%	93.73%	0.02167	93.73%
150		4	0.004667	0	0	0.01867	200.00%	98.65%	0.004667	98.65%

Mean Dry Biomass-mg Detail

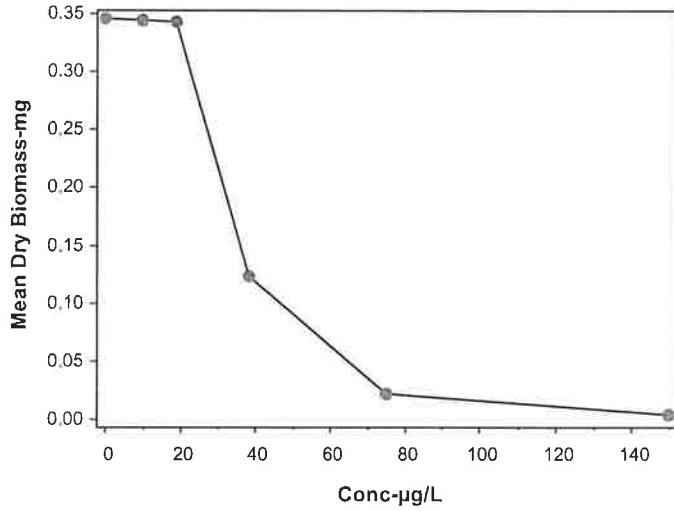
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.34	0.3667	0.3407	0.3353
10		0.3453	0.342	0.342	0.3473
19		0.338	0.3387	0.354	0.3433
38		0.1267	0.096	0.13	0.14
75		0.028	0.024	0.01867	0.016
150		0	0.01867	0	0

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3405-5843 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:41 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 12:35 MD5 Hash: 06D5552004113D38FD5A7C023A29809F Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:30 (p 1 of 2)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-3731-0222	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 00-8758-8024	Code: FML110822	Project: REF TOX
Sample Date: 08 Nov-22 16:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:35	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
150		8	62	62	62	62	62	0	0	0.00%	0
Overall		16	61	60.45	61.55	60	62	0.2582	1.033	1.69%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
10		8	373.5	362.2	384.8	360	396	1.696	13.56	3.63%	0
19		8	324.1	227	421.2	37	372	14.52	116.1	35.83%	0
38		8	363.5	359.3	367.7	357	370	0.6303	5.043	1.39%	0
75		8	362	358	366	356	369	0.605	4.84	1.34%	0
150		8	360.8	356.4	365.1	354	368	0.6572	5.258	1.46%	0
Overall		48	358.4	344.4	372.3	37	396	6.932	48.03	13.40%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
10		8	7.6	7.332	7.868	7	8.1	0.04009	0.3207	4.22%	0
19		8	7.613	7.346	7.879	7	8.1	0.03977	0.3182	4.18%	0
38		8	7.565	7.279	7.851	6.9	8.1	0.04269	0.3416	4.51%	0
75		8	7.55	7.289	7.811	7	8.1	0.03896	0.3117	4.13%	0
150		8	7.512	7.246	7.779	6.9	8	0.03977	0.3182	4.24%	0
Overall		48	7.573	7.485	7.661	6.9	8.1	0.04382	0.3036	4.01%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
150		8	100	100	100	100	100	0	0	0.00%	0
Overall		16	97	94.73	99.27	90	100	1.065	4.258	4.39%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
10		8	7.938	7.849	8.026	7.7	8	0.01326	0.1061	1.34%	0
19		8	7.938	7.849	8.026	7.7	8	0.01326	0.1061	1.34%	0
38		8	7.9	7.811	7.989	7.7	8	0.01336	0.1069	1.35%	0
75		8	7.863	7.754	7.971	7.6	8	0.01628	0.1302	1.66%	0
150		8	7.863	7.754	7.971	7.6	8	0.01628	0.1302	1.66%	0
Overall		48	7.9	7.866	7.934	7.6	8	0.01684	0.1167	1.48%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:30 (p 2 of 2)
 Test Code/ID: FML110822 / 15-6970-3086

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
10		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
19		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
38		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
75		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
150		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
Overall		48	24.02	24	24.04	24	24.2	0.008912	0.06174	0.26%	0 (0%)



ACUTE 96 HOUR HYALELLA AZTECA SURVIVAL BIOASSAY

DATE: 11/8/2022

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 120.00 $\mu\text{g/L}$

EC25 = 114.30 $\mu\text{g/L}$

EC50 = 127.50 $\mu\text{g/L}$

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:24 (p 1 of 1)
 Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 07-0155-3765	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 15:51	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-9193-9616	Code: HYA110822ahya	Project: REF TOX
Sample Date: 08 Nov-22 17:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:19	CAS (PC):	Station: REF TOX
Sample Age: 30m	Client: ABC Labs	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
11-3436-4819	96h Survival Rate	Steel Many-One Rank Sum Test	120	140	129.6	22.9%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
16-9587-3277	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	108.6	102.9	126.9	1
			EC20	111.4	103.8	128.1	
			EC25	114.3	104.8	129.2	
			EC40	122.5	107.8	134.5	
			EC50	127.5	110.2	138.4	

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
120		4	0.6500	0.1726	1.1270	0.4000	1.0000	0.1500	0.3000	46.15%	35.00%
140		4	0.2500	-0.0547	0.5547	0.0000	0.4000	0.0957	0.1915	76.59%	75.00%

96h Survival Rate Detail

MD5: ACAEE52AF12161BFB13059690CC3D791

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000
120		1.0000	0.8000	0.4000	0.4000
140		0.4000	0.2000	0.0000	0.4000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5
120		5/5	4/5	2/5	2/5
140		2/5	1/5	0/5	2/5

CETIS Analytical Report

Report Date: 16 Dec-22 13:24 (p 1 of 3)
Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 11-3436-4819	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:22	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 12:20	MD5 Hash: ACAEE52AF12161BFB13059690CC3D791	Editor ID: 001-068-318-4			
Batch ID: 07-0155-3765	Test Type: Survival (96h)	Analyst: Arnel Ramos			
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 12 Nov-22 15:51	Species: Hyalella azteca	Brine: Not Applicable			
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:			
Sample ID: 06-9193-9616	Code: HYA110822ahya	Project: REF TOX			
Sample Date: 08 Nov-22 17:00	Material: Copper chloride	Source: Reference Toxicant			
Receipt Date: 05 Dec-22 12:19	CAS (PC):	Station: REF TOX			
Sample Age: 30m	Client: ABC Labs				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	120	140	129.6	---	0.2292	22.92%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		40	6	18	10	1	CDF	0.8333	Non-Significant Effect
		80	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect
		120	6	12	10	1	CDF	0.1424	Non-Significant Effect
		140*	6	10	10	0	CDF	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.37463	0.474927	5	18.36	<1.0E-05	Significant Effect
Error	0.465621	0.0258678	18			
Total	2.84025		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	17.74	4.248	<1.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	11.82	4.248	3.6E-05	Unequal Variances
Distribution	Anderson-Darling A2 Test	3.351	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	2.053	2.576	0.0401	Normal Distribution
	D'Agostino Skewness Test	0.3168	2.576	0.7514	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	4.313	9.21	0.1157	Normal Distribution
	Kolmogorov-Smirnov D Test	0.3333	0.2056	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.7672	0.884	9.0E-05	Non-Normal Distribution

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
120		4	0.6500	0.1726	1.0000		0.4000	1.0000	0.1500	46.15%	35.00%
140		4	0.2500	0.0000	0.5547		0.0000	0.4000	0.0957	76.59%	75.00%

CETIS Analytical Report

Report Date: 16 Dec-22 13:24 (p 2 of 3)
 Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3436-4819 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:22 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:20 MD5 Hash: ACAEE52AF12161BFB13059690CC3D791 Editor ID: 001-068-318-4

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
40		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
80		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
100		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
120		4	0.9555	0.4345	1.4760		0.6847	1.3450	0.1637	34.27%	28.98%
140		4	0.5146	0.1660	0.8633		0.2255	0.6847	0.1096	42.58%	61.74%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000
120		1.0000	0.8000	0.4000	0.4000
140		0.4000	0.2000	0.0000	0.4000

Angular (Corrected) Transformed Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
40		1.3450	1.3450	1.3450	1.3450
80		1.3450	1.3450	1.3450	1.3450
100		1.3450	1.3450	1.3450	1.3450
120		1.3450	1.1070	0.6847	0.6847
140		0.6847	0.4636	0.2255	0.6847

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
40					
80					
100					
120					
140					

CETIS Analytical Report

Report Date: 16 Dec-22 13:24 (p 3 of 3)
Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3436-4819	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:22	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 12:20	MD5 Hash: ACAEE52AF12161BFB13059690CC3D791	Editor ID: 001-068-318-4

CETIS Analytical Report

Report Date: 16 Dec-22 13:24 (p 1 of 2)
 Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 16-9587-3277	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:22	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 12:20	MD5 Hash: ACAEE52AF12161BFB13059690CC3D791	Editor ID: 001-068-318-4			
Batch ID: 07-0155-3765	Test Type: Survival (96h)	Analyst: Arnel Ramos			
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 12 Nov-22 15:51	Species: Hyalella azteca	Brine: Not Applicable			
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:			
Sample ID: 06-9193-9616	Code: HYA110822ahya	Project: REF TOX			
Sample Date: 08 Nov-22 17:00	Material: Copper chloride	Source: Reference Toxicant			
Receipt Date: 05 Dec-22 12:19	CAS (PC):	Station: REF TOX			
Sample Age: 30m	Client: ABC Labs				

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	108.6	102.9	126.9
EC20	111.4	103.8	128.1
EC25	114.3	104.8	129.2
EC40	122.5	107.8	134.5
EC50	127.5	110.2	138.4

96h Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
120		4	0.6500	0.5333	0.4000	1.0000	46.15%	35.00%	13/20	0.6500	35.00%
140		4	0.2500	0.3333	0.0000	0.4000	76.59%	75.00%	5/20	0.2500	75.00%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000
120		1.0000	0.8000	0.4000	0.4000
140		0.4000	0.2000	0.0000	0.4000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5
120		5/5	4/5	2/5	2/5
140		2/5	1/5	0/5	2/5

CETIS Analytical Report

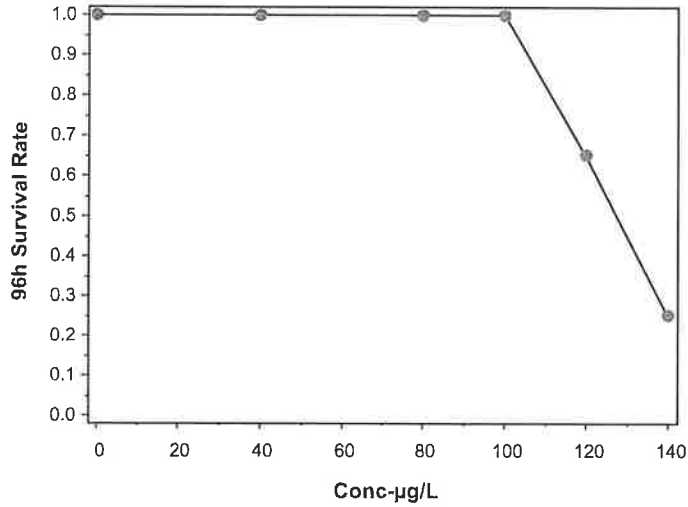
Report Date: 16 Dec-22 13:24 (p 2 of 2)
Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-9587-3277	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:22	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:20	MD5 Hash: ACAEE52AF12161BFB13059690CC3D791	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:24 (p 1 of 2)
 Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 07-0155-3765	Test Type: Survival (96h)	Analyst: Arnel Ramos
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 15:51	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 94h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-9193-9616	Code: HYA110822ahya	Project: REF TOX
Sample Date: 08 Nov-22 17:00	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:19	CAS (PC):	Station: REF TOX
Sample Age: 30m	Client: ABC Labs	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	60	60	60	60	60	0	0	0.00%	0
140		3	60	60	60	60	60	0	0	0.00%	0
Overall		6	60	60	60	60	60	0	0	0.00%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	367.7	359.7	375.7	364	370	1.072	3.215	0.87%	0
40		3	378.7	371.1	386.3	376	382	1.018	3.055	0.81%	0
80		3	378.7	371.1	386.3	376	382	1.018	3.055	0.81%	0
100		3	376.3	368.3	384.3	374	380	1.072	3.215	0.85%	0
120		3	375	364.2	385.8	372	380	1.453	4.359	1.16%	0
140		3	376.7	368.7	384.7	373	379	1.072	3.215	0.85%	0
Overall		18	375.5	373.1	377.9	364	382	1.127	4.78	1.27%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
40		3	8.067	7.923	8.21	8	8.1	0.01925	0.05775	0.72%	0
80		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
100		3	8	8	8	8	8	0	0	0.00%	0
120		3	8	8	8	8	8	0	0	0.00%	0
140		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8.022	8.001	8.043	8	8.1	0.01008	0.04278	0.53%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	98	98	98	98	98	0	0	0.00%	0
140		3	99	99	99	99	99	0	0	0.00%	0
Overall		6	98.5	97.93	99.07	98	99	0.2236	0.5477	0.56%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	7.599	7.601	7.6	7.6	0	0	0.00%	0
40		3	7.667	7.523	7.81	7.6	7.7	0.01924	0.05773	0.75%	0
80		3	7.667	7.523	7.81	7.6	7.7	0.01924	0.05773	0.75%	0
100		3	7.7	7.699	7.701	7.7	7.7	0	0	0.00%	0
120		3	7.733	7.59	7.877	7.7	7.8	0.01925	0.05774	0.75%	0
140		3	7.733	7.59	7.877	7.7	7.8	0.01925	0.05774	0.75%	0
Overall		18	7.683	7.653	7.714	7.6	7.8	0.01457	0.06183	0.80%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:24 (p 2 of 2)
Test Code/ID: HYA110822ahya / 03-9368-1006

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22	22	22	22	22	0	0	0.00%	0
40		3	22	22	22	22	22	0	0	0.00%	0
80		3	22	22	22	22	22	0	0	0.00%	0
100		3	22	22	22	22	22	0	0	0.00%	0
120		3	22	22	22	22	22	0	0	0.00%	0
140		3	22	22	22	22	22	0	0	0.00%	0
Overall		18	22	22	22	22	22	0	0	0.00%	0 (0%)





ACUTE 96 HOUR CHIRONOMUS DILUTUS SURVIVAL BIOASSAY

DATE: 11/8/2022

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 100.00 $\mu\text{g/L}$

EC25 = 120.00 $\mu\text{g/L}$

EC50 = 126.70 $\mu\text{g/L}$

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 13:27 (p 1 of 1)
 Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	10-3668-6231	Test Type:	Survival (96h)	Analyst:			
Start Date:	08 Nov-22 17:40	Protocol:	EPA/821/R-02-012 (2002)	Diluent:	Laboratory Water		
Ending Date:	12 Nov-22 16:50	Species:	Chironomus dilutus	Brine:	Not Applicable		
Test Length:	95h	Taxon:	Insecta	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	17-6594-9952	Code:	CHI110822act	Project:	REF TOX		
Sample Date:	08 Nov-22 17:40	Material:	Copper chloride	Source:	Reference Toxicant		
Receipt Date:	05 Dec-22 12:28	CAS (PC):		Station:	REF TOX		
Sample Age:	---	Client:	ABC Labs				

Multiple Comparison Summary							
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
00-4187-2398	96h Survival Rate	Steel Many-One Rank Sum Test	100	120	109.5	9.18%	1

Point Estimate Summary							
Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
14-9998-1383	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	112	106.5	116.8	1
			EC20	116	108.7	122.4	
			EC25	120	110.9	122	
			EC40	124	120.1	125.6	
			EC50	126.7	123.4	128	

96h Survival Rate Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
120		4	0.7500	0.5909	0.9091	0.6000	0.8000	0.0500	0.1000	13.33%	25.00%
140		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

96h Survival Rate Detail						MD5: 57809C12134B2B6ADEBC679B74E8D87C					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	N	1.0000	1.0000	1.0000	1.0000						
40		1.0000	1.0000	1.0000	1.0000						
80		1.0000	1.0000	1.0000	1.0000						
100		1.0000	1.0000	1.0000	1.0000						
120		0.8000	0.8000	0.8000	0.6000						
140		0.0000	0.0000	0.0000	0.0000						

96h Survival Rate Binomials					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5
120		4/5	4/5	4/5	3/5
140		0/5	0/5	0/5	0/5

Attachment A Appendix I

CETIS Analytical Report

Report Date: 16 Dec-22 13:27 (p 1 of 2)
 Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 00-4187-2398	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:30	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 12:29	MD5 Hash: 57809C12134B2B6ADEBC679B74E8D87C	Editor ID: 001-068-318-4			
Batch ID: 10-3668-6231	Test Type: Survival (96h)	Analyst:			
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 12 Nov-22 16:50	Species: Chironomus dilutus	Brine: Not Applicable			
Test Length: 95h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:			
Sample ID: 17-6594-9952	Code: CHI110822act	Project: REF TOX			
Sample Date: 08 Nov-22 17:40	Material: Copper chloride	Source: Reference Toxicant			
Receipt Date: 05 Dec-22 12:28	CAS (PC):	Station: REF TOX			
Sample Age: ---	Client: ABC Labs				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	120	109.5	---	0.09183	9.18%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		40	6	18	10	1	CDF	0.8000	Non-Significant Effect
		80	6	18	10	1	CDF	0.8000	Non-Significant Effect
		100	6	18	10	1	CDF	0.8000	Non-Significant Effect
		120*	6	10	10	0	CDF	0.0350	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.275471	0.0688678	4	28.18	<1.0E-05	Significant Effect
Error	0.0366545	0.0024436	15			
Total	0.312126		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	9	4.893	0.0006	Unequal Variances
	Mod Levene Equality of Variance Test	1	4.893	0.4380	Equal Variances
Distribution	Anderson-Darling A2 Test	4.869	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	3.989	2.576	6.6E-05	Non-Normal Distribution
	D'Agostino Skewness Test	4.183	2.576	2.9E-05	Non-Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	33.4	9.21	<1.0E-05	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.45	0.2235	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.5088	0.866	<1.0E-05	Non-Normal Distribution

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
120		4	0.7500	0.5909	0.9091		0.6000	0.8000	0.0500	13.33%	25.00%
140		4	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	---	100.00%

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
40		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
80		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
100		4	1.3450	1.3450	1.3460		1.3450	1.3450	0.0000	0.00%	0.00%
120		4	1.0520	0.8760	1.2280		0.8861	1.1070	0.0553	10.51%	21.81%
140		4	0.2255	0.2255	0.2256		0.2255	0.2255	0.0000	0.00%	83.24%

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-4187-2398 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:30 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 12:29 MD5 Hash: 57809C12134B2B6ADEBC679B74E8D87C Editor ID: 001-068-318-4

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000
120		0.8000	0.8000	0.8000	0.6000
140		0.0000	0.0000	0.0000	0.0000

Angular (Corrected) Transformed Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
40		1.3450	1.3450	1.3450	1.3450
80		1.3450	1.3450	1.3450	1.3450
100		1.3450	1.3450	1.3450	1.3450
120		1.1070	1.1070	1.1070	0.8861
140		0.2255	0.2255	0.2255	0.2255

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
40					
80					
100					
120					
140					

CETIS Analytical Report

Report Date: 16 Dec-22 13:27 (p 1 of 2)
 Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-9998-1383 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 12:30 Analysis: Linear Interpolation (ICPIN) Status Level: 1
 Edit Date: 05 Dec-22 12:29 MD5 Hash: 57809C12134B2B6ADEBC679B74E8D87C Editor ID: 001-068-318-4

Batch ID: 10-3668-6231 Test Type: Survival (96h) Analyst:
 Start Date: 08 Nov-22 17:40 Protocol: EPA/821/R-02-012 (2002) Diluent: Laboratory Water
 Ending Date: 12 Nov-22 16:50 Species: Chironomus dilutus Brine: Not Applicable
 Test Length: 95h Taxon: Insecta Source: Aquatic Biosystems, CO Age:

Sample ID: 17-6594-9952 Code: CHI110822act Project: REF TOX
 Sample Date: 08 Nov-22 17:40 Material: Copper chloride Source: Reference Toxicant
 Receipt Date: 05 Dec-22 12:28 CAS (PC): Station: REF TOX
 Sample Age: --- Client: ABC Labs

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	112	106.5	116.8
EC20	116	108.7	122.4
EC25	120	110.9	122
EC40	124	120.1	125.6
EC50	126.7	123.4	128

96h Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
120		4	0.7500	0.8000	0.6000	0.8000	13.33%	25.00%	15/20	0.7500	25.00%
140		4	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/20	0.0000	100.00%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000
120		0.8000	0.8000	0.8000	0.6000
140		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5
120		4/5	4/5	4/5	3/5
140		0/5	0/5	0/5	0/5

Attachment A Appendix I 

CETIS Analytical Report

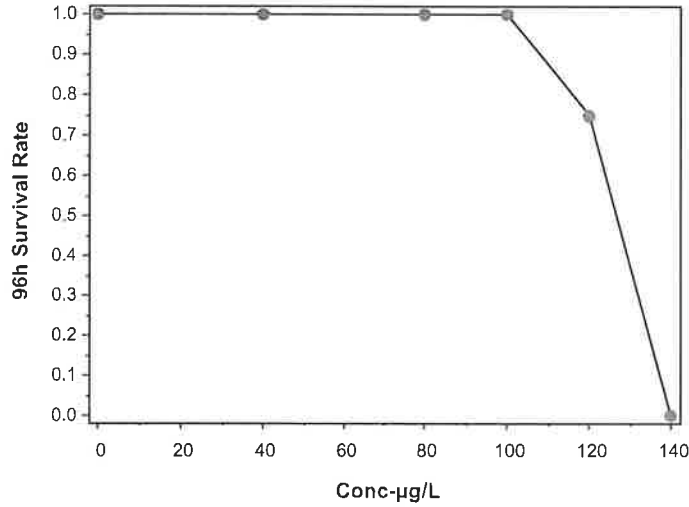
Report Date: 16 Dec-22 13:27 (p 2 of 2)
Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-9998-1383	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:30	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 12:29	MD5 Hash: 57809C12134B2B6ADEBC679B74E8D87C	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 13:27 (p 1 of 2)
 Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-3668-6231	Test Type: Survival (96h)	Analyst:
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 12 Nov-22 16:50	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 95h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:
Sample ID: 17-6594-9952	Code: CHI110822act	Project: REF TOX
Sample Date: 08 Nov-22 17:40	Material: Copper chloride	Source: Reference Toxicant
Receipt Date: 05 Dec-22 12:28	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	60	60	60	60	60	0	0	0.00%	0
140		2	60	60	60	60	60	0	0	0.00%	0
Overall		5	60	60	60	60	60	0	0	0.00%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	367.7	359.7	375.7	364	370	1.072	3.215	0.87%	0
40		3	378.7	371.1	386.3	376	382	1.018	3.055	0.81%	0
80		3	378.7	371.1	386.3	376	382	1.018	3.055	0.81%	0
100		3	376.3	368.3	384.3	374	380	1.072	3.215	0.85%	0
120		3	375	364.2	385.8	372	380	1.453	4.359	1.16%	0
140		3	376.7	368.7	384.7	373	379	1.072	3.215	0.85%	0
Overall		18	375.5	373.1	377.9	364	382	1.127	4.78	1.27%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
40		3	8.067	7.923	8.21	8	8.1	0.01925	0.05775	0.72%	0
80		3	8.033	7.89	8.177	8	8.1	0.01925	0.05774	0.72%	0
100		3	8	8	8	8	8	0	0	0.00%	0
120		3	8	8	8	8	8	0	0	0.00%	0
140		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8.022	8.001	8.043	8	8.1	0.01008	0.04278	0.53%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	98	98	98	98	98	0	0	0.00%	0
140		2	100	100	100	100	100	0	0	0.00%	0
Overall		5	98.8	97.44	100.2	98	100	0.4899	1.095	1.11%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	7.599	7.601	7.6	7.6	0	0	0.00%	0
40		3	7.667	7.523	7.81	7.6	7.7	0.01924	0.05773	0.75%	0
80		3	7.667	7.523	7.81	7.6	7.7	0.01924	0.05773	0.75%	0
100		3	7.7	7.699	7.701	7.7	7.7	0	0	0.00%	0
120		3	7.733	7.59	7.877	7.7	7.8	0.01925	0.05774	0.75%	0
140		3	7.733	7.59	7.877	7.7	7.8	0.01925	0.05774	0.75%	0
Overall		18	7.683	7.653	7.714	7.6	7.8	0.01457	0.06183	0.80%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 13:27 (p 2 of 2)
Test Code/ID: CHI110822act / 10-7888-7123

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22	22	22	22	22	0	0	0.00%	0
40		3	22	22	22	22	22	0	0	0.00%	0
80		3	22	22	22	22	22	0	0	0.00%	0
100		3	22	22	22	22	22	0	0	0.00%	0
120		3	22	22	22	22	22	0	0	0.00%	0
140		3	22	22	22	22	22	0	0	0.00%	0
Overall		18	22	22	22	22	22	0	0	0.00%	0 (0%)





Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11/8/22

Project Number: 2022/23-1 (Wet)

Sampling Team: David Laak & Lars Zwaanenburg

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
ME-CC	11/8/22 16:10	X							2	Note 1, Note 2, Note 3
ME-SCR					X				1	Note 1, Note 2, Note 3
ME-VR2		X							2	Note 1, Note 2, Note 3
MO-OJA					X				2	Note 1, Note 2, Note 3
MO-MEI					X				2	Note 1, Note 2, Note 3
MO-HUE							X		3	Note 1, Note 2, Note 3, Note 4

Temp 13.0°C
 CHLOROPHYLL = 20.1
 salinity = 20.1

Relinquished Printed Name David Laak
 Signature [Signature]
 Affiliation VCWPP Date/Time 11/8/22 17:50

Received Printed Name Victor Marquez
 Signature [Signature]
 Affiliation ABC LABS Date/Time 11/8/22 1750

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%
Note 3: Notify District within 24 hours if significant toxicity is observed.
Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyaella*



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Estuarine Organisms, EPA/821/R-02-014*. Results were as follows:


CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	ME-CC
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.268

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

Survival	NOEC =	100.00
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

Biomass	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 12:56 (p 1 of 2)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	16-3675-0279	Test Type:	Growth-Survival (7d)	Analyst:			
Start Date:	08 Nov-22 18:22	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater		
Ending Date:	15 Nov-22 16:53	Species:	Atherinops affinis	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Actinopterygii	Source:	Aquatic Biosystems, CO	Age:	9d
Sample ID:	20-0293-9675	Code:	VCF1122.268tops	Project:	P6010561		
Sample Date:	08 Nov-22 16:10	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	ME-CC		
Sample Age:	2h (10 °C)	Client:	Ventura County Watershed Protection Distri				

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
11-3791-3455	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
16-9361-4165	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	3260.0%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
12-1668-6915	7d Survival Rate	Linear Interpolation (ICPIN)	EC15	>100	---	---	<1	1
			EC20	>100	---	---	<1	
			EC25	>100	---	---	<1	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	
15-2233-1220	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	29.14	28.85	---	3.4	1
			✓ IC20	30.52	30.13	---	3.3	
			✓ IC25	31.9	31.41	---	3.1	
			✓ IC40	36.04	35.26	---	2.8	
			✓ IC50	38.8	37.82	---	2.6	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
11-3791-3455	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
12-1668-6915	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
15-2233-1220	Mean Dry Biomass-mg	Control Resp	1.442	0.85	<<	Yes	Passes Criteria
16-9361-4165	Mean Dry Biomass-mg	Control Resp	1.442	0.85	<<	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.442	1.405	1.479	1.404	1.48	0.01332	0.02978	2.06%	0.00%
6.25		5	1.464	1.421	1.507	1.412	1.504	0.0155	0.03467	2.37%	-1.50%
12.5		5	1.428	1.407	1.448	1.41	1.452	0.007467	0.0167	1.17%	1.03%
25		5	57.82	-38.06	153.7	1.412	143.6	34.53	77.22	133.55%	-3908.57
50		5	1.457	1.411	1.503	1.42	1.504	0.01649	0.03687	2.53%	-1.03%
100		5	1.461	1.423	1.499	1.424	1.504	0.01379	0.03084	2.11%	-1.30%

CETIS Summary Report

Report Date: 16 Dec-22 12:56 (p 2 of 2)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 0DC5ABA07818A6ABCDE75EC39DEAA80

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: A2FDC7C0BDD3B79F8AA13655DEFA82E5

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.504	1.482	1.452	1.47	1.412
12.5		1.452	1.414	1.43	1.41	1.432
25		1.43	143.6	1.456	141.2	1.412
50		1.504	1.488	1.43	1.444	1.42
100		1.46	1.442	1.424	1.504	1.476

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

CETIS Analytical Report

Report Date: 16 Dec-22 12:56 (p 1 of 4)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3791-3455	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:54	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 12:50	MD5 Hash: 0DC5ABA07818A6ABCDE75EC39DEAA80	Editor ID: 008-463-000-3
Batch ID: 16-3675-0279	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:22	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:53	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 20-0293-9675	Code: VCF1122.268tops	Project: P6010561
Sample Date: 08 Nov-22 16:10	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: ME-CC
Sample Age: 2h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		12.5	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		25	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		50	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		100	8	27.5	16	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	24			
Total	0		29			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
6.25		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
12.5		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
25		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
50		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
100		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%

CETIS Analytical Report

Report Date: 16 Dec-22 12:56 (p 2 of 4)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-3791-3455 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:54 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 12:50 MD5 Hash: 0DC5ABA07818A6ABCDE75EC39DEAA80 Editor ID: 008-463-000-3

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

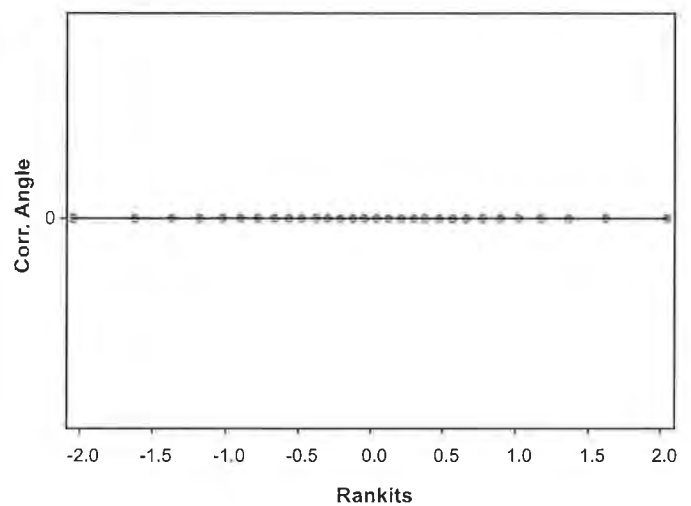
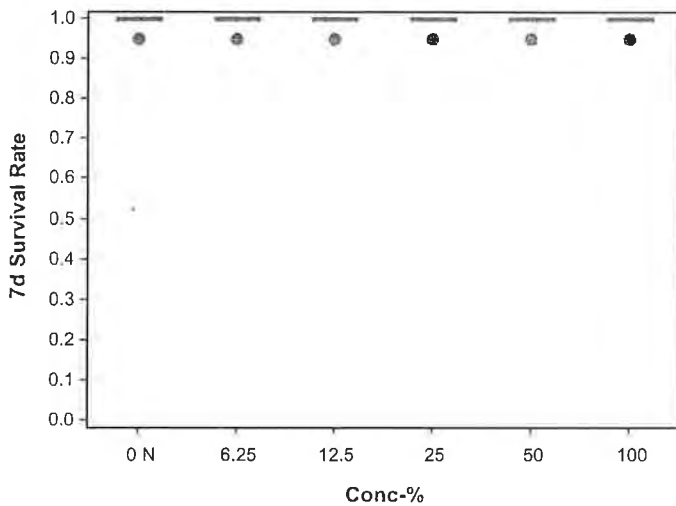
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.3450	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.3450	1.3450
12.5		1.3450	1.3450	1.3450	1.3450	1.3450
25		1.3450	1.3450	1.3450	1.3450	1.3450
50		1.3450	1.3450	1.3450	1.3450	1.3450
100		1.3450	1.3450	1.3450	1.3450	1.3450

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:56 (p 3 of 4)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-9361-4165	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:54	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 12:50	MD5 Hash: A2FDC7C0BDD3B79F8AA13655DEFA82E	Editor ID: 008-463-000-3
Batch ID: 16-3675-0279	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:22	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:53	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 20-0293-9675	Code: VCF1122.268tops	Project: P6010561
Sample Date: 08 Nov-22 16:10	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: ME-CC
Sample Age: 2h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	47.09	3264.43%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	8	33	16	0	CDF	0.9907	Non-Significant Effect
		12.5	8	24	16	0	CDF	0.5394	Non-Significant Effect
		25	8	31	16	0	CDF	0.9676	Non-Significant Effect
		50	8	31	16	0	CDF	0.9676	Non-Significant Effect
		100	8	31	16	0	CDF	0.9676	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1.442	0.85	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	13239.5	2647.9	5	2.665	0.0472	Significant Effect
Error	23849	993.71	24			
Total	37088.5		29			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	248.7	15.09	<1.0E-05	Unequal Variances
	Levene Equality of Variance Test	95.65	3.895	<1.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	3	4.248	0.0384	Equal Variances
Distribution	Anderson-Darling A2 Test	7.461	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	3.069	2.576	0.0021	Non-Normal Distribution
	D'Agostino Skewness Test	2.358	2.576	0.0184	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	14.98	9.21	0.0006	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.4327	0.1853	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.5587	0.9031	<1.0E-05	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.442	1.405	1.479	1.44	1.404	1.48	0.01332	2.06%	0.00%
6.25		5	1.464	1.421	1.507	1.47	1.412	1.504	0.0155	2.37%	-1.50%
12.5		5	1.428	1.407	1.448	1.43	1.41	1.452	0.007468	1.17%	1.03%
25		5	57.82	-38.06	153.7	1.456	1.412	143.6	34.53	133.55%	-3908.57%
50		5	1.457	1.411	1.503	1.444	1.42	1.504	0.01649	2.53%	-1.03%
100		5	1.461	1.423	1.499	1.46	1.424	1.504	0.01379	2.11%	-1.30%

Pacific Topsmelt 7-d Survival and Growth Test

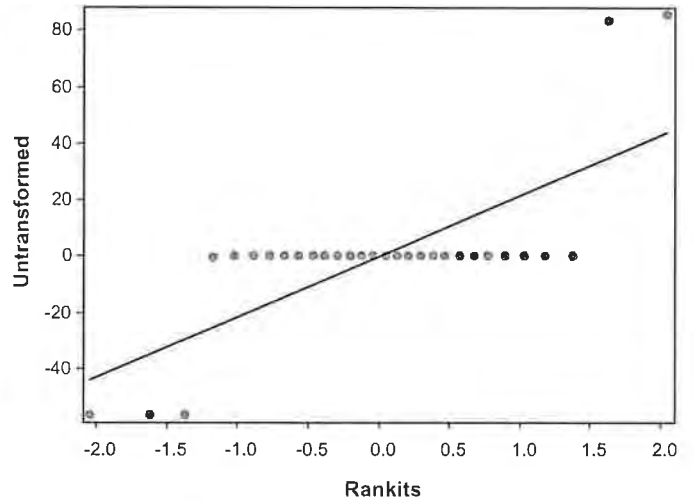
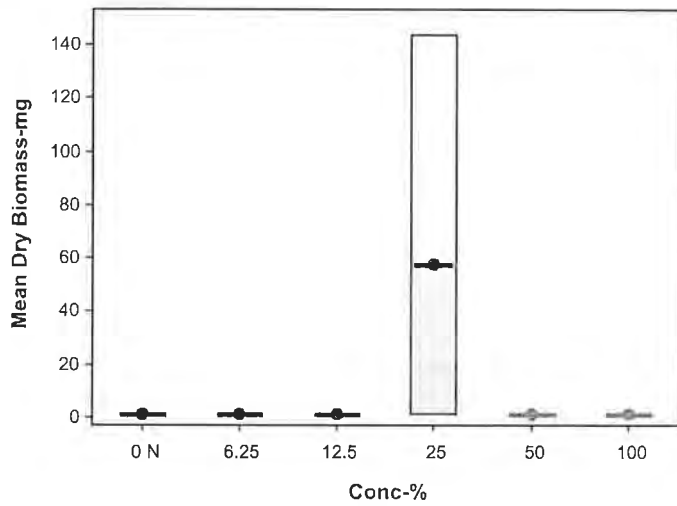
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-9361-4165 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:54 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 12:50 MD5 Hash: A2FDC7C0BDD3B79F8AA13655DEFA82E Editor ID: 008-463-000-3

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.504	1.482	1.452	1.47	1.412
12.5		1.452	1.414	1.43	1.41	1.432
25		1.43	143.6	1.456	141.2	1.412
50		1.504	1.488	1.43	1.444	1.42
100		1.46	1.442	1.424	1.504	1.476

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:56 (p 1 of 4)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	12-1668-6915	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3
Analyzed:	16 Dec-22 12:54	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	16 Dec-22 12:50	MD5 Hash:	ODC5ABA07818A6ABCDE75EC39DEAA80	Editor ID:	008-463-000-3
Batch ID:	16-3675-0279	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Nov-22 18:22	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	15 Nov-22 16:53	Species:	Atherinops affinis	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Actinopterygii	Source:	Aquatic Biosystems, CO Age: 9d
Sample ID:	20-0293-9675	Code:	VCF1122.268tops	Project:	P6010561
Sample Date:	08 Nov-22 16:10	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	ME-CC
Sample Age:	2h (10 °C)	Client:	Ventura County Watershed Protection Distri		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation


Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
50		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
100		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%

7d Survival Rate Detail						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

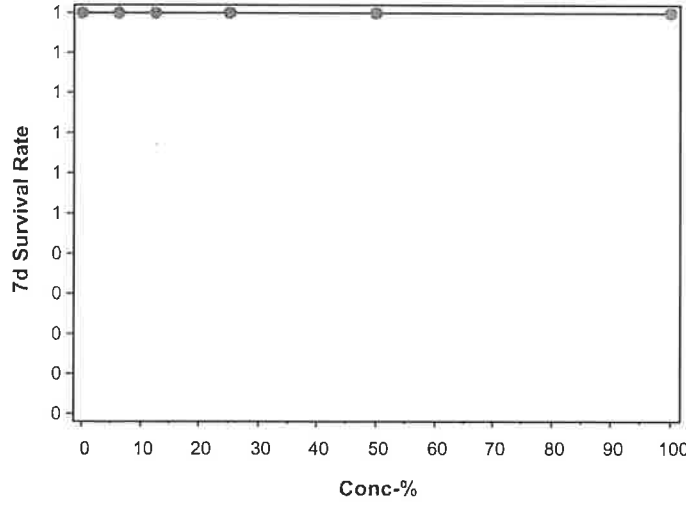
Attachment A Appendix I
 Analyst: 

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-1668-6915 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:54 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 12:50 MD5 Hash: 0DC5ABA07818A6ABCDE75EC39DEAA80 Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:56 (p 3 of 4)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	15-2233-1220	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv2.1.3
Analyzed:	16 Dec-22 12:54	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	16 Dec-22 12:50	MD5 Hash:	A2FDC7C0BDD3B79F8AA13655DEFA82E	Editor ID:	008-463-000-3
Batch ID:	16-3675-0279	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Nov-22 18:22	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	15 Nov-22 16:53	Species:	Atherinops affinis	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Actinopterygii	Source:	Aquatic Biosystems, CO Age: 9d
Sample ID:	20-0293-9675	Code:	VCF1122.268tops	Project:	P6010561
Sample Date:	08 Nov-22 16:10	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:50	CAS (PC):		Station:	ME-CC
Sample Age:	2h (10 °C)	Client:	Ventura County Watershed Protection Distri		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	175741	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1.442	0.85	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	29.14	28.85	---	3.4	---	3.5
IC20	30.52	30.13	---	3.3	---	3.3
IC25	31.9	31.41	---	3.1	---	3.2
IC40	36.04	35.26	---	2.8	---	2.8
IC50	38.8	37.82	---	2.6	---	2.6

Mean Dry Biomass-mg Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	5	1.442	1.44	1.404	1.48	2.06%	0.00%	15.54	0.00%
6.25		5	1.464	1.47	1.412	1.504	2.37%	-1.50%	15.54	0.00%
12.5		5	1.428	1.43	1.41	1.452	1.17%	1.03%	15.54	0.00%
25		5	57.82	1.456	1.412	143.6	133.55%	-3908.57%	15.54	0.00%
50		5	1.457	1.444	1.42	1.504	2.53%	-1.03%	1.459	90.61%
100		5	1.461	1.46	1.424	1.504	2.11%	-1.30%	1.459	90.61%

Mean Dry Biomass-mg Detail						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.504	1.482	1.452	1.47	1.412
12.5		1.452	1.414	1.43	1.41	1.432
25		1.43	143.6	1.456	141.2	1.412
50		1.504	1.488	1.43	1.444	1.42
100		1.46	1.442	1.424	1.504	1.476

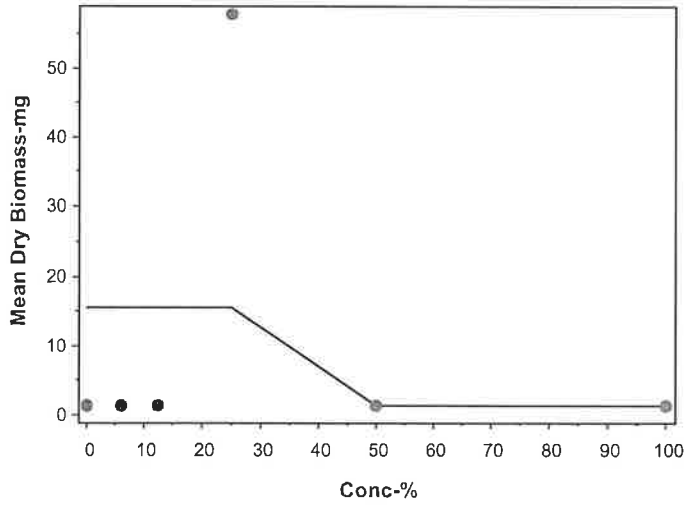
Attachment A Appendix I

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-2233-1220 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:54 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 12:50 MD5 Hash: A2FDC7C0BDD3B79F8AA13655DEFA82E Editor ID: 008-463-000-3

Graphics



Attachment A Appendix I
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CETIS Measurement Report

Report Date: 16 Dec-22 12:56 (p 1 of 1)
 Test Code/ID: VCF1122.268tops / 19-4016-1404

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 16-3675-0279	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:22	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:53	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 20-0293-9675	Code: VCF1122.268tops	Project: P6010561
Sample Date: 08 Nov-22 16:10	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:50	CAS (PC):	Station: ME-CC
Sample Age: 2h (10 °C)	Client: Ventura County Watershed Protection Distri	

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.237	7.161	7.314	7.1	7.4	0.01145	0.09161	1.27%	0
6.25		8	7.25	7.173	7.327	7.1	7.4	0.01157	0.09258	1.28%	0
12.5		8	7.25	7.173	7.327	7.1	7.4	0.01157	0.09258	1.28%	0
25		8	7.225	7.138	7.312	7.1	7.4	0.01294	0.1035	1.43%	0
50		8	7.2	7.039	7.361	7	7.6	0.02409	0.1927	2.68%	0
100		8	7.187	7.03	7.345	7	7.6	0.02356	0.1885	2.62%	0
Overall		48	7.225	7.187	7.263	7	7.6	0.01871	0.1296	1.79%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.625	7.566	7.684	7.5	7.7	0.008839	0.07071	0.93%	0
6.25		8	7.6	7.555	7.645	7.5	7.7	0.006681	0.05345	0.70%	0
12.5		8	7.587	7.558	7.617	7.5	7.6	0.004419	0.03535	0.47%	0
25		8	7.6	7.6	7.6	7.6	7.6	0	0	0.00%	0
50		8	7.587	7.534	7.641	7.5	7.7	0.008011	0.06409	0.84%	0
100		8	7.562	7.519	7.606	7.5	7.6	0.006469	0.05175	0.68%	0
Overall		48	7.594	7.579	7.609	7.5	7.7	0.007536	0.05221	0.69%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	34	34	34	34	34	0	0	0.00%	0
6.25		8	34	34	34	34	34	0	0	0.00%	0
12.5		8	34	34	34	34	34	0	0	0.00%	0
25		8	34	34	34	34	34	0	0	0.00%	0
50		8	34	34	34	34	34	0	0	0.00%	0
100		8	34	34	34	34	34	0	0	0.00%	0
Overall		48	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.00%	0
6.25		8	21	21	21	21	21	0	0	0.00%	0
12.5		8	21	21	21	21	21	0	0	0.00%	0
25		8	21	21	21	21	21	0	0	0.00%	0
50		8	21	21	21	21	21	0	0	0.00%	0
100		8	21	21	21	21	21	0	0	0.00%	0
Overall		48	21	21	21	21	21	0	0	0.00%	0 (0%)



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11/8/2022

Project Number: 2022/23-1 (Wet)

Sampling Team: Sample Colman, Dean Wilkinson

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
ME-CC		X							2	Note 1, Note 2, Note 3
ME-SCR					X				1	Note 1, Note 2, Note 3
ME-VR2	11/8/22-1650	X							2	Note 1, Note 2, Note 3
MO-OJA	11/8/22-1325					X			2	Note 1, Note 2, Note 3
MO-MEI	11/8/22-1115					X			2	Note 1, Note 2, Note 3
MO-HUE	11/8/22-935						X		3	Note 1, Note 2, Note 3, Note 4

Temp. deg. C = 12.0°C
 Chlorine (mg/L) = LOI
 Nitrate (mg/L) = LOI

Separate delivery 267

Relinquished

Printed Name Sample Colman

Signature [Signature]

Affiliation Rincon

Date/Time 11/8/22 - 1440

Received

Printed Name Victor Marquez

Signature [Signature]

Affiliation ABC Labs

Date/Time 11/8/22 1440

Other Notes:

Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%

Note 3: Notify District within 24 hours if significant toxicity is observed.

Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyalella*

Relinquished

Name: Sample Colman Sign: [Signature]

Affiliation: Rincon

Date/Time: 11/8/22 1725

Received

Name: Victor Marquez Sign: [Signature]

Affiliation: ABC Labs

Date/Time: 11/8/22 1725



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:


We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Estuarine Organisms, EPA/821/R-02-014*. Results were as follows:

CLIENT: Ventura County Flood Control
SAMPLE I.D.: ME-VR2
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.267

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

Survival	NOEC =	100.00
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
Biomass	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


w Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 12:48 (p 1 of 2)
 Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-6877-2316	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:10	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:50	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 04-4096-0370	Code: VCF1122.267tops	Project: P6010561
Sample Date: 08 Nov-22 16:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:25	CAS (PC):	Station: ME-VR2
Sample Age: 80m (12 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
19-8372-7720	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	8.2%	1	1
19-3515-4544	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	7.41%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
12-9435-1838	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
00-7800-2277	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Decision
				Lower	Upper	Overlap	
12-9435-1838	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
19-8372-7720	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
00-7800-2277	Mean Dry Biomass-mg	Control Resp	1.442	0.85	<<	Yes	Passes Criteria
19-3515-4544	Mean Dry Biomass-mg	Control Resp	1.442	0.85	<<	Yes	Passes Criteria
19-8372-7720	7d Survival Rate	PMSD	0.08202	<<	0.25	No	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		5	0.9600	0.8489	1.0710	0.8000	1.0000	0.0400	0.0894	9.32%	4.00%
100		5	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.442	1.405	1.479	1.404	1.48	0.01332	0.02978	2.06%	0.00%
6.25		5	1.458	1.428	1.487	1.426	1.49	0.01074	0.02402	1.65%	-1.05%
12.5		5	1.423	1.415	1.431	1.414	1.43	0.0028	0.006261	0.44%	1.33%
25		5	1.497	1.356	1.639	1.43	1.7	0.05091	0.1138	7.60%	-3.80%
50		5	1.55	1.396	1.704	1.434	1.722	0.0555	0.1241	8.00%	-7.49%
100		5	1.441	1.406	1.477	1.398	1.47	0.01285	0.02873	1.99%	0.08%

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CETIS Summary Report

Report Date: 16 Dec-22 12:48 (p 2 of 2)
Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 6C715BC374DBFBAF8B3000A16B508B98

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		0.8000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: 07F91C36F719ED77C97BCB0ACC6A75AA

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.454	1.47	1.49	1.448	1.426
12.5		1.43	1.422	1.428	1.414	1.422
25		1.456	1.454	1.7	1.446	1.43
50		1.632	1.434	1.446	1.722	1.518
100		1.432	1.398	1.464	1.442	1.47

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		4/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

CETIS Analytical Report

Report Date: 16 Dec-22 12:47 (p 1 of 3)

Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-8372-7720	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:41	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 12:38	MD5 Hash: 6C715BC374DBFBAF8B3000A16B508B98	Editor ID: 008-463-000-3
Batch ID: 20-6877-2316	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:10	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:50	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 04-4096-0370	Code: VCF1122.267tops	Project: P6010561
Sample Date: 08 Nov-22 16:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:25	CAS (PC):	Station: ME-VR2
Sample Age: 80m (12 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.08202	8.20%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		12.5	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		25	8	27.5	16	1	CDF	0.8333	Non-Significant Effect
		50	8	25	16	1	CDF	0.6353	Non-Significant Effect
		100	8	27.5	16	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria
PMSD	0.08202	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0094513	0.0018903	5	1	0.4389	Non-Significant Effect
Error	0.0453663	0.0018903	24			
Total	0.0548176		29			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	7.111	3.895	0.0003	Unequal Variances
	Mod Levene Equality of Variance Test	1	4.248	0.4457	Equal Variances
Distribution	Anderson-Darling A2 Test	7.95	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	4.912	2.576	<1.0E-05	Non-Normal Distribution
	D'Agostino Skewness Test	5.58	2.576	<1.0E-05	Non-Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	55.27	9.21	<1.0E-05	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.4667	0.1853	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.4063	0.9031	<1.0E-05	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		5	0.9600	0.8489	1.0000	1.0000	0.8000	1.0000	0.0400	9.32%	4.00%
100		5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-8372-7720 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:41 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 12:38 MD5 Hash: 6C715BC374DBFBAF8B3000A16B508B98 Editor ID: 008-463-000-3

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
6.25		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
12.5		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
25		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
50		5	1.2980	1.1650	1.4300	1.3450	1.1070	1.3450	0.0476	8.21%	3.54%
100		5	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		0.8000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

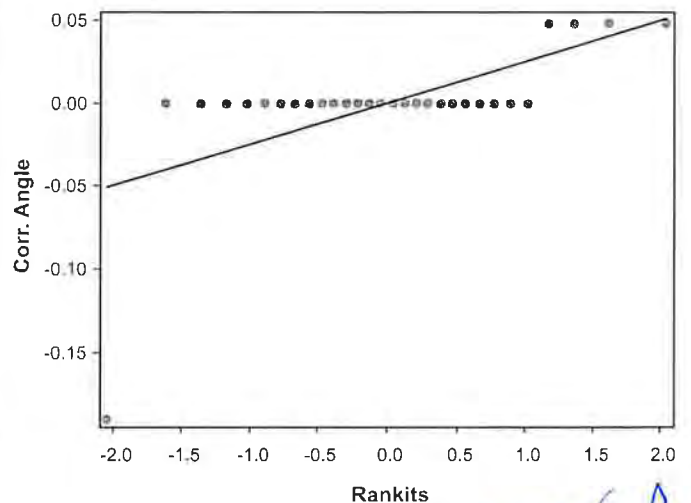
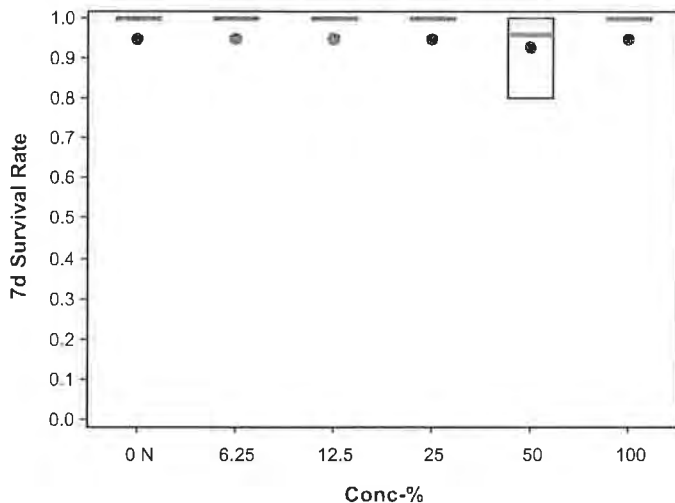
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.3450	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.3450	1.3450
12.5		1.3450	1.3450	1.3450	1.3450	1.3450
25		1.3450	1.3450	1.3450	1.3450	1.3450
50		1.1070	1.3450	1.3450	1.3450	1.3450
100		1.3450	1.3450	1.3450	1.3450	1.3450

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		4/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:47 (p 3 of 3)
 Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	19-3515-4544	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv2.1.3
Analyzed:	16 Dec-22 12:41	Analysis:	Nonparametric-Control vs Treatments	Status Level:	1
Edit Date:	16 Dec-22 12:38	MD5 Hash:	07F91C36F719ED77C97BCB0ACC6A75A	Editor ID:	008-463-000-3
Batch ID:	20-6877-2316	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Nov-22 18:10	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	15 Nov-22 16:50	Species:	Atherinops affinis	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Actinopterygii	Source:	Aquatic Biosystems, CO
				Age:	9d
Sample ID:	04-4096-0370	Code:	VCF1122.267tops	Project:	P6010561
Sample Date:	08 Nov-22 16:50	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:25	CAS (PC):		Station:	ME-VR2
Sample Age:	80m (12 °C)	Client:	Ventura County Watershed Protection Distri		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.1068	7.41%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	8	31.5	16	1	CDF	0.9757	Non-Significant Effect
		12.5	8	22	16	0	CDF	0.3476	Non-Significant Effect
		25	8	31	16	0	CDF	0.9676	Non-Significant Effect
		50	8	35	16	0	CDF	0.9979	Non-Significant Effect
		100	8	28	16	0	CDF	0.8627	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1.442	0.85	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0556426	0.0111285	5	2.176	0.0906	Non-Significant Effect
Error	0.122744	0.0051143	24			
Total	0.178387		29			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	31.34	15.09	<1.0E-05	Unequal Variances
	Levene Equality of Variance Test	5.865	3.895	0.0011	Unequal Variances
	Mod Levene Equality of Variance Test	2.35	4.248	0.0828	Equal Variances
Distribution	Anderson-Darling A2 Test	1.581	3.878	2.9E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	2.649	2.576	0.0081	Non-Normal Distribution
	D'Agostino Skewness Test	2.98	2.576	0.0029	Non-Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	15.9	9.21	0.0004	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.1817	0.1853	0.0128	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8623	0.9031	0.0011	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.442	1.405	1.479	1.44	1.404	1.48	0.01332	2.06%	0.00%
6.25		5	1.458	1.428	1.487	1.454	1.426	1.49	0.01074	1.65%	-1.05%
12.5		5	1.423	1.415	1.431	1.422	1.414	1.43	0.002801	0.44%	1.33%
25		5	1.497	1.356	1.639	1.454	1.43	1.7	0.05091	7.60%	-3.80%
50		5	1.55	1.396	1.704	1.518	1.434	1.722	0.0555	8.00%	-7.49%
100		5	1.441	1.406	1.477	1.442	1.398	1.47	0.01285	1.99%	0.08%

Pacific Topsmelt 7-d Survival and Growth Test

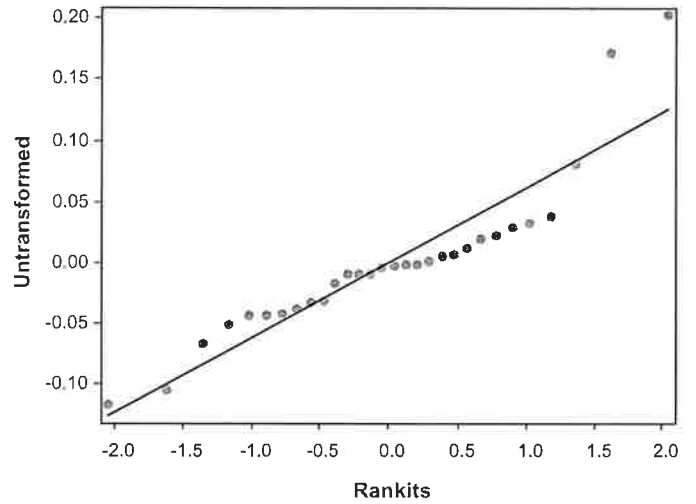
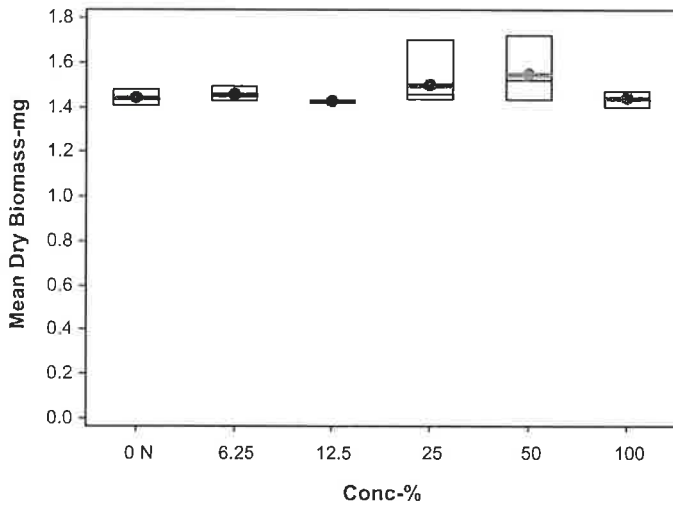
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-3515-4544 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:41 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 12:38 MD5 Hash: 07F91C36F719ED77C97BCB0ACC6A75A Editor ID: 008-463-000-3

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.454	1.47	1.49	1.448	1.426
12.5		1.43	1.422	1.428	1.414	1.422
25		1.456	1.454	1.7	1.446	1.43
50		1.632	1.434	1.446	1.722	1.518
100		1.432	1.398	1.464	1.442	1.47

Graphics



Attachment A Appendix I

CETIS Analytical Report

Report Date: 16 Dec-22 12:47 (p 1 of 4)
 Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-9435-1838	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:41	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 12:38	MD5 Hash: 6C715BC374DBFBAF8B3000A16B508B98	Editor ID: 008-463-000-3
Batch ID: 20-6877-2316	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:10	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:50	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 04-4096-0370	Code: VCF1122.267tops	Project: P6010561
Sample Date: 08 Nov-22 16:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:25	CAS (PC):	Station: ME-VR2
Sample Age: 80m (12 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
6.25		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
12.5		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
25		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	1.0000	0.00%
50		5	0.9600	1.0000	0.8000	1.0000	9.32%	4.00%	24/25	0.9800	2.00%
100		5	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	25/25	0.9800	2.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000
50		0.8000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		5/5	5/5	5/5	5/5	5/5
25		5/5	5/5	5/5	5/5	5/5
50		4/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

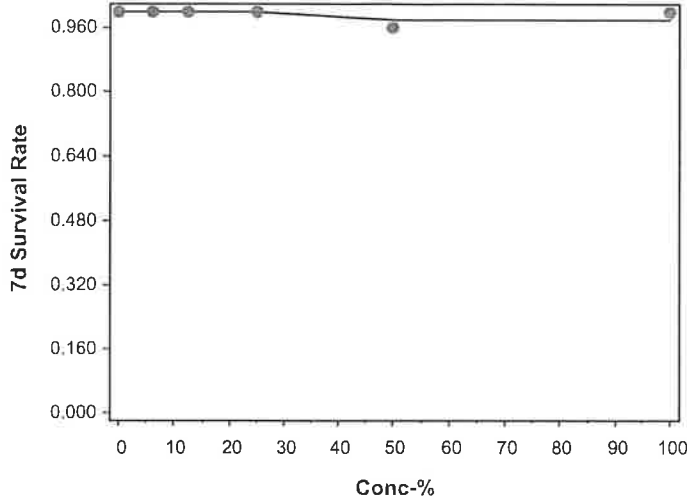
Attachment A Appendix I

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-9435-1838 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:41 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 12:38 MD5 Hash: 6C715BC374DBFBAF8B3000A16B508B98 Editor ID: 008-463-000-3

Graphics



Attachment A Appendix I 

CETIS Analytical Report

Report Date: 16 Dec-22 12:47 (p 3 of 4)
 Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-7800-2277	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:41	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 12:38	MD5 Hash: 07F91C36F719ED77C97BCB0ACC6A75A	Editor ID: 008-463-000-3
Batch ID: 20-6877-2316	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:10	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:50	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 04-4096-0370	Code: VCF1122.267tops	Project: P6010561
Sample Date: 08 Nov-22 16:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:25	CAS (PC):	Station: ME-VR2
Sample Age: 80m (12 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	528720	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1.442	0.85	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	5	1.442	1.44	1.404	1.48	2.06%	0.00%	1.474	0.00%
6.25		5	1.458	1.454	1.426	1.49	1.65%	-1.05%	1.474	0.00%
12.5		5	1.423	1.422	1.414	1.43	0.44%	1.33%	1.474	0.00%
25		5	1.497	1.454	1.43	1.7	7.60%	-3.80%	1.474	0.00%
50		5	1.55	1.518	1.434	1.722	8.00%	-7.49%	1.474	0.00%
100		5	1.441	1.442	1.398	1.47	1.99%	0.08%	1.441	2.24%

Mean Dry Biomass-mg Detail

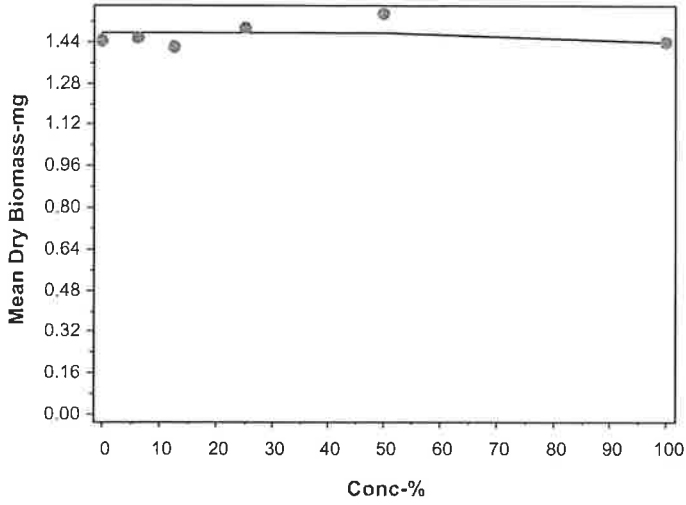
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	N	1.426	1.48	1.462	1.404	1.44
6.25		1.454	1.47	1.49	1.448	1.426
12.5		1.43	1.422	1.428	1.414	1.422
25		1.456	1.454	1.7	1.446	1.43
50		1.632	1.434	1.446	1.722	1.518
100		1.432	1.398	1.464	1.442	1.47

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-7800-2277 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:41 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 12:38 MD5 Hash: 07F91C36F719ED77C97BCB0ACC6A75A Editor ID: 008-463-000-3

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 12:48 (p 1 of 1)

Test Code/ID: VCF1122.267tops / 19-9475-2844

Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-6877-2316	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 08 Nov-22 18:10	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 15 Nov-22 16:50	Species: Atherinops affinis	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 9d
Sample ID: 04-4096-0370	Code: VCF1122.267tops	Project: P6010561
Sample Date: 08 Nov-22 16:50	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:25	CAS (PC):	Station: ME-VR2
Sample Age: 80m (12 °C)	Client: Ventura County Watershed Protection Distri	

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.237	7.161	7.314	7.1	7.4	0.01145	0.09161	1.27%	0
6.25		8	7.225	7.166	7.284	7.1	7.3	0.008838	0.0707	0.98%	0
12.5		8	7.225	7.166	7.284	7.1	7.3	0.008838	0.0707	0.98%	0
25		8	7.237	7.161	7.314	7.1	7.4	0.01145	0.09161	1.27%	0
50		8	7.212	7.13	7.295	7.1	7.4	0.01239	0.0991	1.37%	0
100		8	7.2	7.1	7.3	7	7.4	0.01494	0.1195	1.66%	0
Overall		48	7.223	7.197	7.248	7	7.4	0.01272	0.0881	1.22%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.625	7.566	7.684	7.5	7.7	0.008839	0.07071	0.93%	0
6.25		8	7.575	7.501	7.649	7.4	7.7	0.01108	0.08864	1.17%	0
12.5		8	7.575	7.536	7.614	7.5	7.6	0.005786	0.04629	0.61%	0
25		8	7.562	7.519	7.606	7.5	7.6	0.006469	0.05175	0.68%	0
50		8	7.55	7.505	7.595	7.5	7.6	0.006681	0.05345	0.71%	0
100		8	7.55	7.505	7.595	7.5	7.6	0.006681	0.05345	0.71%	0
Overall		48	7.573	7.554	7.592	7.4	7.7	0.009292	0.06438	0.85%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	34	34	34	34	34	0	0	0.00%	0
6.25		8	34	34	34	34	34	0	0	0.00%	0
12.5		8	34	34	34	34	34	0	0	0.00%	0
25		8	34	34	34	34	34	0	0	0.00%	0
50		8	34	34	34	34	34	0	0	0.00%	0
100		8	34	34	34	34	34	0	0	0.00%	0
Overall		48	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	21	21	21	21	21	0	0	0.00%	0
6.25		8	21	21	21	21	21	0	0	0.00%	0
12.5		8	21	21	21	21	21	0	0	0.00%	0
25		8	21	21	21	21	21	0	0	0.00%	0
50		8	21	21	21	21	21	0	0	0.00%	0
100		8	21	21	21	21	21	0	0	0.00%	0
Overall		48	21	21	21	21	21	0	0	0.00%	0 (0%)



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 11/08/22 Project Number: 2022/23-1 (Wet)

Sampling Team: Emily McCord + Marissa Deltoyos CAM = THO - SIM = MPK

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
MO-OXN						X			2	Note 1, Note 2, Note 3
MO-SPA						X			2	Note 1, Note 2, Note 3
MO-VEN							X		2	Note 1, Note 2, Note 3
MO-FIL							X		2	Note 1, Note 2, Note 3
269 MO-CAM	11/08/22 1095					X			2	Note 1, Note 2, Note 3
264 MO-THO	11/08/22 1200						X		2	Note 1, Note 2, Note 3
268 MO-SIM	11/08/22 1320						X		2	Note 1, Note 2, Note 3
266 MO-MPK	11/08/22 1420							X	2	Note 1, Note 2, Note 3

10.0 = 10.0 = 10.0 = 8.0
LOI = LOI = LOI = LOI
LOI = LOI = LOI = LOI

Relinquished Printed Name Marissa Deltoyos

Signature [Signature]

Affiliation Rincon Consultants Date/Time 11/08/22 1700

Received Printed Name Victor Marquez

Signature [Signature]

Affiliation ABC LABS Date/Time 11/08/22 1700

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%

Note 3: Notify District within 24 hours if significant toxicity is observed.

Note 4: If salinity >2 ppt then also run topsmelt for comparison. If topsmelt unavailable, use *Hyalella*



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	MO-CAM
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.263

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

BIOMASS	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:36 (p 1 of 2)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
12-0723-9305	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	---	1	1
19-7850-8282	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	100	>100	---	9.34%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
03-3620-4232	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
04-4750-6643	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
03-3620-4232	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
12-0723-9305	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
04-4750-6643	Mean Dry Biomass-mg	Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
19-7850-8282	Mean Dry Biomass-mg	Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
19-7850-8282	Mean Dry Biomass-mg	PMSD	0.09342	0.12	0.3	Yes	Below Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3442	0.33	0.3584	0.3387	0.3573	0.004459	0.008917	2.59%	0.00%
6.25		4	0.3443	0.3345	0.3542	0.338	0.3527	0.003097	0.006194	1.80%	-0.05%
12.5		4	0.3328	0.2965	0.3692	0.2987	0.3467	0.01143	0.02286	6.87%	3.29%
25		4	0.3572	0.3066	0.4077	0.338	0.4047	0.01588	0.03176	8.89%	-3.78%
50		4	0.3608	0.3284	0.3932	0.346	0.3907	0.01018	0.02037	5.65%	-4.84%
100		4	0.3472	0.3332	0.3612	0.34	0.36	0.0044	0.0088	2.53%	-0.87%

Handwritten signature and initials: PAB5

CETIS Summary Report

Report Date: 16 Dec-22 11:36 (p 2 of 2)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 68E117461239090AA7E1427F0F536296

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mean Dry Biomass-mg Detail

MD5: 91B061582222C9D553987D054996EC29

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3447	0.342	0.3527	0.338
12.5		0.342	0.2987	0.344	0.3467
25		0.4047	0.3427	0.3433	0.338
50		0.35	0.346	0.3907	0.3567
100		0.344	0.36	0.3447	0.34

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

Report Date: 16 Dec-22 11:34 (p 1 of 4)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-0723-9305	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 15:40	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 15:32	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4			
Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561			
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM			
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Angular (Corrected)	C > T	100	>100	---	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	18	10	1	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5			Indeterminate
Error	0	0	18			
Total	0		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
Distribution	Shapiro-Wilk W Normality Test				Indeterminate

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%

Attachment A Appendix I


CETIS Analytical Report

Report Date: 16 Dec-22 11:34 (p 2 of 4)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-0723-9305 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 05 Dec-22 15:40 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 05 Dec-22 15:32 MD5 Hash: 68E117461239090AA7E1427F0F536296 Editor ID: 001-068-318-4

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.4410	1.4410	1.4410	1.4410

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N				
6.25					
12.5					
25					
50					
100					

CETIS Analytical Report

Report Date: 16 Dec-22 11:35 (p 3 of 4)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 19-7850-8282	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:40	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 05 Dec-22 15:32	MD5 Hash: A6B021C6F99620CB11F36533C1FC4AEC	Editor ID: 001-068-318-4
Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.03215	9.34%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	-0.01248	2.407	0.03215	CDF	0.8370	Non-Significant Effect
		12.5	6	0.8484	2.407	0.03215	CDF	0.4901	Non-Significant Effect
		25	6	-0.9732	2.407	0.03215	CDF	0.9814	Non-Significant Effect
		50	6	-1.248	2.407	0.03215	CDF	0.9913	Non-Significant Effect
		100	6	-0.2246	2.407	0.03215	CDF	0.8909	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3442	0.25	<<	Yes	Passes Criteria
PMSD	0.09342	0.12	0.3	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0020288	0.0004058	5	1.137	0.3769	Non-Significant Effect
Error	0.0064235	0.0003569	18			
Total	0.0084523		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	9.795	15.09	0.0812	Equal Variances
	Levene Equality of Variance Test	2.474	4.248	0.0713	Equal Variances
	Mod Levene Equality of Variance Test	0.372	4.248	0.8612	Equal Variances
Distribution	Anderson-Darling A2 Test	0.7243	3.878	0.0587	Normal Distribution
	D'Agostino Kurtosis Test	1.861	2.576	0.0627	Normal Distribution
	D'Agostino Skewness Test	1.826	2.576	0.0678	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	6.798	9.21	0.0334	Normal Distribution
	Kolmogorov-Smirnov D Test	0.1766	0.2056	0.0512	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9339	0.884	0.1193	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3442	0.33	0.3584		0.3387	0.3573	0.004459	2.59%	0.00%
6.25		4	0.3443	0.3345	0.3542		0.338	0.3527	0.003097	1.80%	-0.05%
12.5		4	0.3328	0.2965	0.3692		0.2987	0.3467	0.01143	6.87%	3.29%
25		4	0.3572	0.3066	0.4077		0.338	0.4047	0.01588	8.89%	-3.78%
50		4	0.3608	0.3284	0.3932		0.346	0.3907	0.01018	5.65%	-4.84%
100		4	0.3472	0.3332	0.3612		0.34	0.36	0.0044	2.53%	-0.87%

CETIS Analytical Report

Report Date: 16 Dec-22 11:35 (p 4 of 4)
Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-7850-8282 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:40 Analysis: Parametric-Control vs Treatments Status Level: 1
Edit Date: 05 Dec-22 15:32 MD5 Hash: A6B021C6F99620CB11F36533C1FC4AEC Editor ID: 001-068-318-4

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3447	0.342	0.3527	0.338
12.5		0.342	0.2987	0.344	0.3467
25		0.4047	0.3427	0.3433	0.338
50		0.35	0.346	0.3907	0.3567
100		0.344	0.36	0.3447	0.34

CETIS Analytical Report

Report Date: 16 Dec-22 11:36 (p 1 of 4)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-3620-4232	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:40	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:32	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4
Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Calculated Variate(A/B)

Isotonic Variate

Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

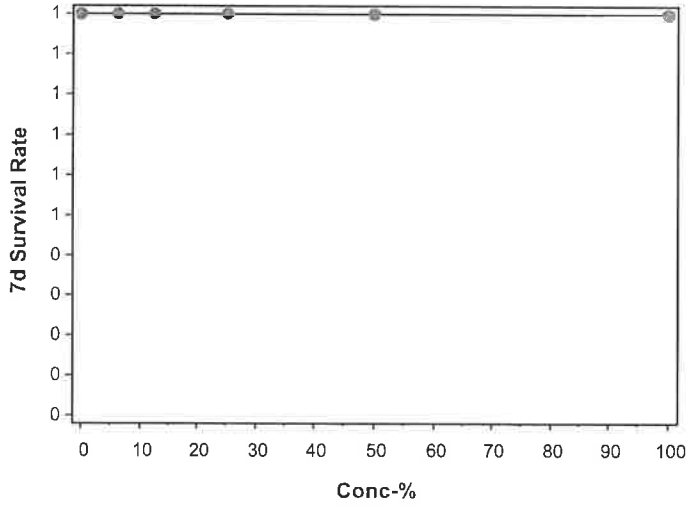
7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		15/15	15/15	15/15	15/15

Fathead Minnow 7-d Larval Survival and Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-3620-4232	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:40	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 15:32	MD5 Hash: 68E117461239090AA7E1427F0F536296	Editor ID: 001-068-318-4

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:36 (p 3 of 4)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 04-4750-6643	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 15:41	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 15:32	MD5 Hash: A6B021C6F99620CB11F36533C1FC4AEC	Editor ID: 001-068-318-4			
Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon			
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561			
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM			
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	129114	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.3442	0.25	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3442	0.3398	0.3387	0.3573	2.59%	0.00%	0.3479	0.00%
6.25		4	0.3443	0.3433	0.338	0.3527	1.80%	-0.05%	0.3479	0.00%
12.5		4	0.3328	0.343	0.2987	0.3467	6.87%	3.29%	0.3479	0.00%
25		4	0.3572	0.343	0.338	0.4047	8.89%	-3.78%	0.3479	0.00%
50		4	0.3608	0.3533	0.346	0.3907	5.65%	-4.84%	0.3479	0.00%
100		4	0.3472	0.3443	0.34	0.36	2.53%	-0.87%	0.3472	0.20%

Mean Dry Biomass-mg Detail					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3387	0.342	0.3387	0.3573
6.25		0.3447	0.342	0.3527	0.338
12.5		0.342	0.2987	0.344	0.3467
25		0.4047	0.3427	0.3433	0.338
50		0.35	0.346	0.3907	0.3567
100		0.344	0.36	0.3447	0.34

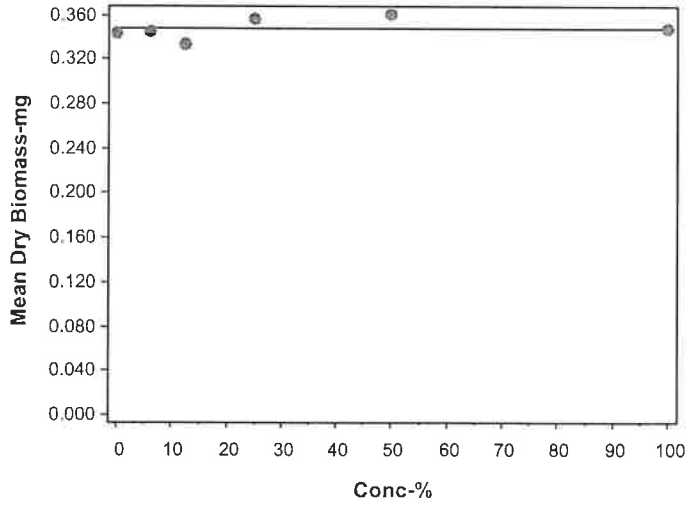
Analyst:  P

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-4750-6643 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 15:41 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 05 Dec-22 15:32 MD5 Hash: A6B021C6F99620CB11F36533C1FC4AEC Editor ID: 001-068-318-4

Graphics



Attachment A Appendix I *[Signature]*

CETIS Measurement Report

Report Date: 16 Dec-22 11:36 (p 1 of 2)
 Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-8082-1636	Test Type: Growth-Survival (7d)	Analyst: Tina DeLeon
Start Date: 08 Nov-22 17:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 11-9283-5375	Code: VCF1122.263fml	Project: P6010561
Sample Date: 08 Nov-22 10:05	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-CAM
Sample Age: 7h (10 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	35	35	35	35	35	0	0	0.00%	0
Overall		16	47.5	40.62	54.38	35	60	3.227	12.91	27.18%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	366.5	363.6	369.4	362	370	0.433	3.464	0.95%	0
6.25		8	351	348.8	353.2	346	355	0.3341	2.673	0.76%	0
12.5		8	344.2	341.3	347.2	340	349	0.4369	3.495	1.02%	0
25		8	326.6	323.7	329.6	322	332	0.4378	3.503	1.07%	0
50		8	283.9	281.3	286.4	280	288	0.3805	3.044	1.07%	0
100		8	198.1	197	199.3	196	199	0.1695	1.356	0.68%	0
Overall		48	311.7	295	328.5	196	370	8.326	57.69	18.51%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.612	7.387	7.838	7.1	8	0.0337	0.2696	3.54%	0
12.5		8	7.625	7.381	7.869	7.1	8.1	0.03644	0.2915	3.82%	0
25		8	7.612	7.396	7.829	7.2	8.1	0.03235	0.2588	3.40%	0
50		8	7.613	7.37	7.855	7.1	8.1	0.03625	0.29	3.81%	0
100		8	7.613	7.37	7.855	7.1	8.1	0.03625	0.29	3.81%	0
Overall		48	7.612	7.534	7.691	7	8.1	0.03878	0.2687	3.53%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	48	48	48	48	48	0	0	0.00%	0
Overall		16	71	58.25	83.75	48	98	5.983	23.93	33.71%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.9	7.791	8.009	7.6	8	0.01637	0.1309	1.66%	0
6.25		8	7.788	7.63	7.945	7.4	8	0.02356	0.1885	2.42%	0
12.5		8	7.75	7.616	7.884	7.4	7.9	0.02004	0.1604	2.07%	0
25		8	7.712	7.591	7.834	7.4	7.9	0.01822	0.1458	1.89%	0
50		8	7.7	7.574	7.826	7.4	7.9	0.0189	0.1512	1.96%	0
100		8	7.712	7.608	7.817	7.5	7.9	0.01558	0.1246	1.62%	0
Overall		48	7.76	7.714	7.807	7.4	8	0.02301	0.1594	2.06%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 11:36 (p 2 of 2)
Test Code/ID: VCF1122.263fml / 10-7427-2235

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
12.5		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
25		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
50		8	24.05	23.99	24.11	24	24.2	0.009442	0.07553	0.31%	0
100		8	24.05	23.99	24.11	24	24.2	0.009442	0.07553	0.31%	0
Overall		48	24.03	24.01	24.05	24	24.2	0.01002	0.06945	0.29%	0 (0%)





December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. Results were as follows:


CLIENT: Ventura County Flood Control
SAMPLE I.D.: MO-THO
DATE RECEIVED: 11/8/2022
ABC LAB. NO.: VCF1122.264

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

REPRODUCTION	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 11:50 (p 1 of 2)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 00-4132-0148	Test Type: Reproduction-Survival (7d)	Analyst:					
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 15 Nov-22 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable					
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 12-3538-7214	Code: VCF1122.264cer	Project: P6010561					
Sample Date: 08 Nov-22 12:00	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-THO					
Sample Age: 6h (10 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary								
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
09-3608-6919	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
19-2283-1737	Reproduction	Dunnnett Multiple Comparison Test	100	>100	---	14.9%	1	1

Point Estimate Summary								
Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
13-7223-8669	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
12-6799-3339	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
09-3608-6919	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
13-7223-8669	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
12-6799-3339	Reproduction	Control Resp	25.3	15	<<	Yes	Passes Criteria
19-2283-1737	Reproduction	Control Resp	25.3	15	<<	Yes	Passes Criteria
19-2283-1737	Reproduction	PMSD	0.149	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	25.3	22.87	27.73	18	29	1.075	3.401	13.44%	0.00%
6.25		10	25.8	23.59	28.01	19	29	0.9752	3.084	11.95%	-1.98%
12.5		10	27	24.2	29.8	20	32	1.238	3.916	14.50%	-6.72%
25		10	25.6	23.19	28.01	19	29	1.067	3.373	13.18%	-1.19%
50		10	26.8	23.79	29.81	19	34	1.332	4.211	15.71%	-5.93%
100		10	28.1	25.25	30.95	21	36	1.26	3.985	14.18%	-11.07%

CETIS Summary Report

Report Date: 16 Dec-22 11:50 (p 2 of 2)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: E39660369559127426248FF7F8EAE326

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		26	24	29	23	27	26	27	29	28	19
12.5		24	20	23	28	31	26	31	32	29	26
25		29	25	24	23	19	28	23	29	27	29
50		28	29	27	25	34	30	23	19	24	29
100		36	29	27	21	30	31	29	27	26	25

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-2283-1737	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:47	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 16 Dec-22 11:43	MD5 Hash: E39660369559127426248FF7F8EAE326	Editor ID: 008-463-000-3
Batch ID: 00-4132-0148	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 12-3538-7214	Code: VCF1122.264cer	Project: P6010561
Sample Date: 08 Nov-22 12:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-THO
Sample Age: 6h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.771	14.90%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	-0.3035	2.289	3.771	CDF	0.9080	Non-Significant Effect
		12.5	18	-1.032	2.289	3.771	CDF	0.9857	Non-Significant Effect
		25	18	-0.1821	2.289	3.771	CDF	0.8818	Non-Significant Effect
		50	18	-0.9106	2.289	3.771	CDF	0.9797	Non-Significant Effect
		100	18	-1.7	2.289	3.771	CDF	0.9984	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	25.3	15	<<	Yes	Passes Criteria
PMSD	0.149	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	56.1333	11.2267	5	0.8275	0.5357	Non-Significant Effect
Error	732.6	13.5667	54			
Total	788.733		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	1.234	15.09	0.9416	Equal Variances
	Levene Equality of Variance Test	0.328	3.377	0.8939	Equal Variances
	Mod Levene Equality of Variance Test	0.3595	3.377	0.8739	Equal Variances
Distribution	Anderson-Darling A2 Test	0.7378	3.878	0.0543	Normal Distribution
	D'Agostino Kurtosis Test	0.1601	2.576	0.8728	Normal Distribution
	D'Agostino Skewness Test	1.328	2.576	0.1840	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	1.79	9.21	0.4085	Normal Distribution
	Kolmogorov-Smirnov D Test	0.0954	0.1331	0.1808	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9654	0.9459	0.0869	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	25.3	22.87	27.73	26	18	29	1.075	13.44%	0.00%
6.25		10	25.8	23.59	28.01	26.5	19	29	0.9752	11.95%	-1.98%
12.5		10	27	24.2	29.8	26.67	20	32	1.238	14.50%	-6.72%
25		10	25.6	23.19	28.01	26	19	29	1.067	13.18%	-1.19%
50		10	26.8	23.79	29.81	27.5	19	34	1.332	15.71%	-5.93%
100		10	28.1	25.25	30.95	28	21	36	1.26	14.18%	-11.07%

CETIS Analytical Report

Report Date: 16 Dec-22 11:49 (p 2 of 2)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test

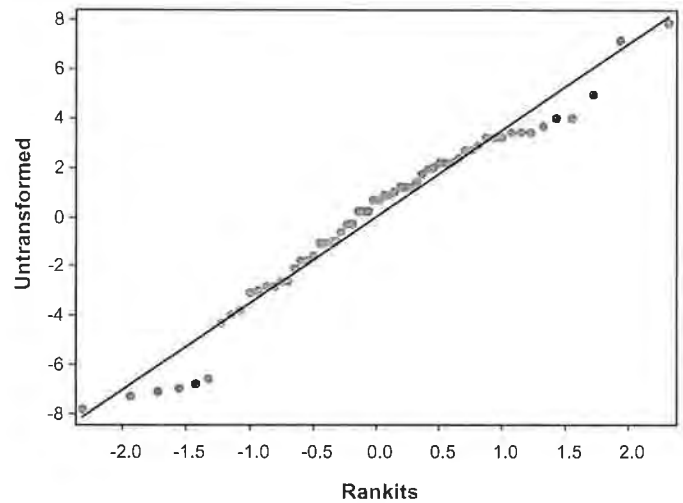
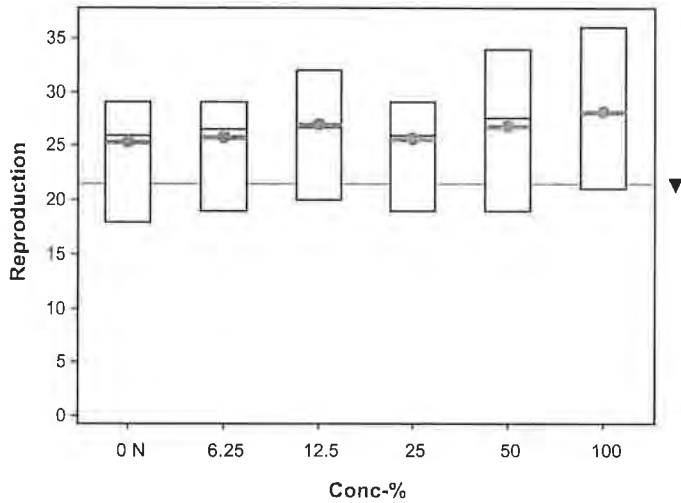
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-2283-1737 Endpoint: Reproduction CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 11:47 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 11:43 MD5 Hash: E39660369559127426248FF7F8EAE326 Editor ID: 008-463-000-3

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		26	24	29	23	27	26	27	29	28	19
12.5		24	20	23	28	31	26	31	32	29	26
25		29	25	24	23	19	28	23	29	27	29
50		28	29	27	25	34	30	23	19	24	29
100		36	29	27	21	30	31	29	27	26	25

Graphics



P

CETIS Analytical Report

Report Date: 16 Dec-22 11:50 (p 1 of 4)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	13-7223-8669	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3
Analyzed:	16 Dec-22 11:47	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	16 Dec-22 11:43	MD5 Hash:	521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID:	008-463-000-3
Batch ID:	00-4132-0148	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	08 Nov-22 17:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	15 Nov-22 16:20	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO
				Age:	<24
Sample ID:	12-3538-7214	Code:	VCF1122.264cer	Project:	P6010561
Sample Date:	08 Nov-22 12:00	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:00	CAS (PC):		Station:	MO-THO
Sample Age:	6h (10 °C)	Client:	Ventura County Watershed Protection Distri		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

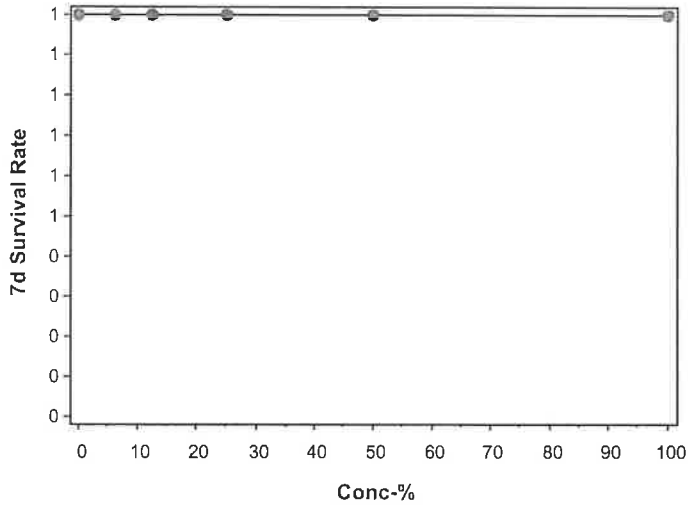
7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 13-7223-8669	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:47	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 11:43	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:50 (p 3 of 4)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	12-6799-3339	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.3
Analyzed:	16 Dec-22 11:47	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Edit Date:	16 Dec-22 11:43	MD5 Hash:	E39660369559127426248FF7F8EAE326	Editor ID:	008-463-000-3
Batch ID:	00-4132-0148	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	08 Nov-22 17:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	15 Nov-22 16:20	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO Age: <24
Sample ID:	12-3538-7214	Code:	VCF1122.264cer	Project:	P6010561
Sample Date:	08 Nov-22 12:00	Material:	Sample Water	Source:	Bioassay Report
Receipt Date:	08 Nov-22 17:00	CAS (PC):		Station:	MO-THO
Sample Age:	6h (10 °C)	Client:	Ventura County Watershed Protection Distri		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1308169	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	25.3	15	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	25.3	26	18	29	13.44%	0.00%	26.43	0.00%
6.25		10	25.8	26.5	19	29	11.95%	-1.98%	26.43	0.00%
12.5		10	27	26.67	20	32	14.50%	-6.72%	26.43	0.00%
25		10	25.6	26	19	29	13.18%	-1.19%	26.43	0.00%
50		10	26.8	27.5	19	34	15.71%	-5.93%	26.43	0.00%
100		10	28.1	28	21	36	14.18%	-11.07%	26.43	0.00%

Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		26	24	29	23	27	26	27	29	28	19
12.5		24	20	23	28	31	26	31	32	29	26
25		29	25	24	23	19	28	23	29	27	29
50		28	29	27	25	34	30	23	19	24	29
100		36	29	27	21	30	31	29	27	26	25

CETIS Analytical Report

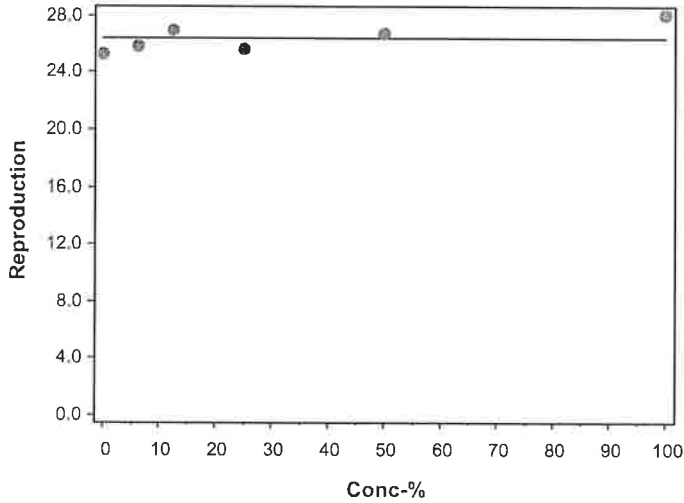
Report Date: 16 Dec-22 11:50 (p 4 of 4)
Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-6799-3339	Endpoint: Reproduction	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 11:47	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 16 Dec-22 11:43	MD5 Hash: E39660369559127426248FF7F8EAE326	Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 11:50 (p 1 of 2)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 09-3608-6919	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3			
Analyzed: 16 Dec-22 11:47	Analysis: STP 2xK Contingency Tables	Status Level: 1			
Edit Date: 16 Dec-22 11:43	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3			
Batch ID: 00-4132-0148	Test Type: Reproduction-Survival (7d)	Analyst:			
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 12-3538-7214	Code: VCF1122.264cer	Project: P6010561			
Sample Date: 08 Nov-22 12:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-THO			
Sample Age: 6h (10 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	---	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria		TAC Limits		Overlap	Decision
Attribute	Test Stat	Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Measurement Report

Report Date: 16 Dec-22 11:50 (p 1 of 2)
 Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 00-4132-0148	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 17:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:20	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 12-3538-7214	Code: VCF1122.264cer	Project: P6010561
Sample Date: 08 Nov-22 12:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-THO
Sample Age: 6h (10 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	83	83	83	83	83	0	0	0.00%	0
Overall		16	71.5	65.17	77.83	60	83	2.969	11.88	16.61%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	365.6	362.6	368.7	362	370	0.4529	3.623	0.99%	0
6.25		8	373.1	370.2	376	369	377	0.4301	3.441	0.92%	0
12.5		8	412.8	411.2	414.3	410	416	0.2386	1.909	0.46%	0
25		8	462.8	460.3	465.2	460	468	0.3705	2.964	0.64%	0
50		8	554	552.3	555.7	552	557	0.2588	2.07	0.37%	0
100		8	761.8	760.4	763.1	760	764	0.1976	1.581	0.21%	0
Overall		48	488.3	447.9	528.7	362	764	20.09	139.2	28.50%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.362	7.788	7.1	8	0.03187	0.255	3.37%	0
12.5		8	7.575	7.344	7.806	7.1	8.1	0.03456	0.2765	3.65%	0
25		8	7.575	7.323	7.827	7	8.1	0.03765	0.3012	3.98%	0
50		8	7.575	7.323	7.827	7	8.1	0.03765	0.3012	3.98%	0
100		8	7.575	7.34	7.81	7.1	8.1	0.0352	0.2816	3.72%	0
Overall		48	7.579	7.5	7.658	7	8.1	0.03916	0.2713	3.58%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	210	210	210	210	210	0	0	0.00%	0
Overall		16	152	120	184	90	210	14.99	59.97	39.46%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
6.25		8	7.888	7.75	8.025	7.5	8	0.02053	0.1642	2.08%	0
12.5		8	7.85	7.689	8.011	7.4	8	0.02409	0.1927	2.46%	0
25		8	7.825	7.665	7.985	7.4	8	0.02386	0.1909	2.44%	0
50		8	7.8	7.652	7.948	7.4	8	0.02216	0.1773	2.27%	0
100		8	7.8	7.652	7.948	7.4	8	0.02216	0.1773	2.27%	0
Overall		48	7.846	7.796	7.895	7.4	8	0.02455	0.1701	2.17%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 11:50 (p 2 of 2)
Test Code/ID: VCF1122.264cer / 21-0992-2678

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.08	23.98	24.17	24	24.3	0.01456	0.1165	0.48%	0
12.5		8	24.09	23.98	24.19	24	24.3	0.01558	0.1246	0.52%	0
25		8	24.1	24	24.2	24	24.3	0.01494	0.1195	0.50%	0
50		8	24.11	23.99	24.23	24	24.4	0.01822	0.1457	0.60%	0
100		8	24.11	23.99	24.23	24	24.4	0.01822	0.1457	0.60%	0
Overall		48	24.08	24.05	24.12	24	24.4	0.01727	0.1197	0.50%	0 (0%)



December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. Results were as follows:


CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	MO-SIM
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.265

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU _c =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

REPRODUCTION	NOEC =	100.00 %
	TU _c =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 12:03 (p 1 of 2)
Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 03-5376-4306	Test Type: Reproduction-Survival (7d)	Analyst:					
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 15 Nov-22 16:35	Species: Ceriodaphnia dubia	Brine: Not Applicable					
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 06-9360-3886	Code: VCF1122.265cer	Project: P6010561					
Sample Date: 08 Nov-22	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 15 Nov-22	CAS (PC):	Station: MO-SIM					
Sample Age: 18h (10 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
09-5282-7082	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
15-2967-8788	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	14.1%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
17-2164-7806	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
16-1741-2854	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
09-5282-7082	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
17-2164-7806	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
15-2967-8788	Reproduction	Control Resp	25.3	15	<<	Yes	Passes Criteria
16-1741-2854	Reproduction	Control Resp	25.3	15	<<	Yes	Passes Criteria
15-2967-8788	Reproduction	PMSD	0.1409	0.13	0.47	Yes	Passes Criteria

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	25.3	22.87	27.73	18	29	1.075	3.401	13.44%	0.00%
6.25		10	27.8	25.11	30.49	24	34	1.191	3.765	13.54%	-9.88%
12.5		10	27	23.87	30.13	20	35	1.382	4.372	16.19%	-6.72%
25		10	28.1	26.15	30.05	24	33	0.8622	2.726	9.70%	-11.07%
50		10	27	24.87	29.13	22	32	0.9428	2.981	11.04%	-6.72%
100		10	27	24.57	29.43	22	33	1.075	3.399	12.59%	-6.72%

CETIS Summary Report

Report Date: 16 Dec-22 12:03 (p 2 of 2)
Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: 5F9CE649295802849DB2DE982A76D433

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		31	29	24	24	34	32	29	24	24	27
12.5		27	35	30	28	23	23	20	29	30	25
25		27	31	30	27	24	27	25	33	28	29
50		26	27	28	23	22	30	28	32	28	26
100		32	28	27	27	25	33	27	24	25	22

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 16 Dec-22 12:03 (p 1 of 2)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	15-2967-8788	Endpoint:	Reproduction	CETIS Version:	CETISv2.1.3		
Analyzed:	16 Dec-22 12:02	Analysis:	Parametric-Control vs Treatments	Status Level:	1		
Edit Date:	16 Dec-22 11:53	MD5 Hash:	5F9CE649295802849DB2DE982A76D433	Editor ID:	008-463-000-3		
Batch ID:	03-5376-4306	Test Type:	Reproduction-Survival (7d)	Analyst:			
Start Date:	08 Nov-22 17:50	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 16:35	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	06-9360-3886	Code:	VCF1122.265cer	Project:	P6010561		
Sample Date:	08 Nov-22	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	15 Nov-22	CAS (PC):		Station:	MO-SIM		
Sample Age:	18h (10 °C)	Client:	Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	3.564	14.09%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	-1.606	2.289	3.564	CDF	0.9978	Non-Significant Effect
		12.5	18	-1.092	2.289	3.564	CDF	0.9881	Non-Significant Effect
		25	18	-1.798	2.289	3.564	CDF	0.9989	Non-Significant Effect
		50	18	-1.092	2.289	3.564	CDF	0.9881	Non-Significant Effect
		100	18	-1.092	2.289	3.564	CDF	0.9881	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	25.3	15	<<	Yes	Passes Criteria
PMSD	0.1409	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	47.3333	9.46667	5	0.7809	0.5678	Non-Significant Effect
Error	654.6	12.1222	54			
Total	701.933		59			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	2.435	15.09	0.7863	Equal Variances
	Levene Equality of Variance Test	0.6934	3.377	0.6307	Equal Variances
	Mod Levene Equality of Variance Test	0.672	3.377	0.6464	Equal Variances
Distribution	Anderson-Darling A2 Test	0.3771	3.878	0.4142	Normal Distribution
	D'Agostino Kurtosis Test	0.3979	2.576	0.6907	Normal Distribution
	D'Agostino Skewness Test	0.05884	2.576	0.9531	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.1618	9.21	0.9223	Normal Distribution
	Kolmogorov-Smirnov D Test	0.0897	0.1331	0.2513	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9855	0.9459	0.6936	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	25.3	22.87	27.73	26	18	29	1.075	13.44%	0.00%
6.25		10	27.8	25.11	30.49	28.33	24	34	1.191	13.54%	-9.88%
12.5		10	27	23.87	30.13	27.5	20	35	1.382	16.19%	-6.72%
25		10	28.1	26.15	30.05	27.25	24	33	0.8622	9.70%	-11.07%
50		10	27	24.87	29.13	27.75	22	32	0.9428	11.04%	-6.72%
100		10	27	24.57	29.43	27	22	33	1.075	12.59%	-6.72%

Ceriodaphnia 7-d Survival and Reproduction Test

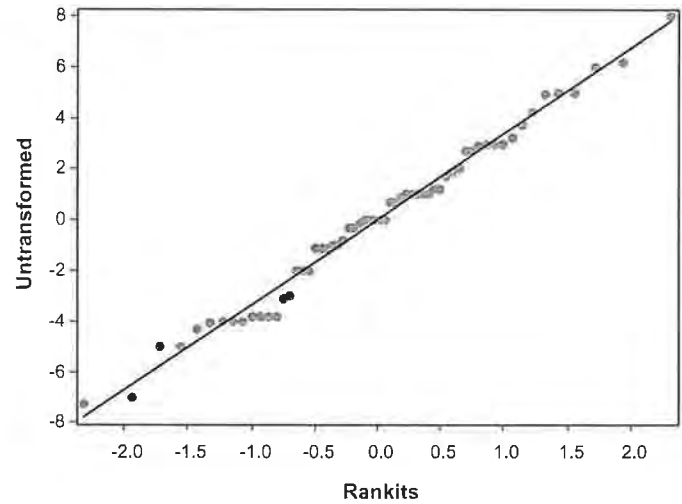
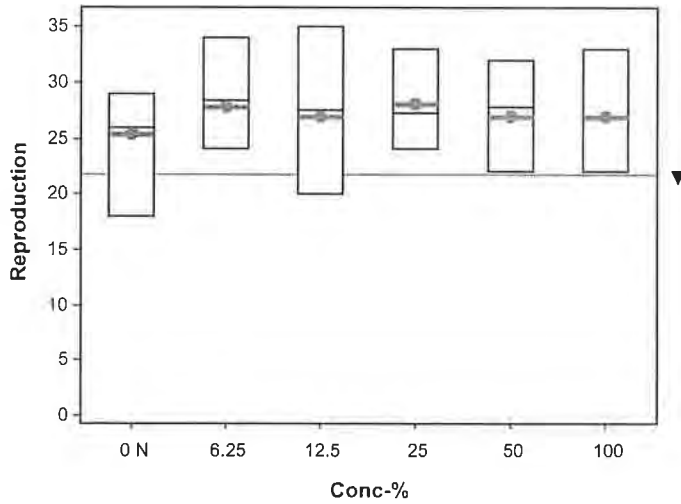
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-2967-8788 Endpoint: Reproduction CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:02 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 16 Dec-22 11:53 MD5 Hash: 5F9CE649295802849DB2DE982A76D433 Editor ID: 008-463-000-3

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		31	29	24	24	34	32	29	24	24	27
12.5		27	35	30	28	23	23	20	29	30	25
25		27	31	30	27	24	27	25	33	28	29
50		26	27	28	23	22	30	28	32	28	26
100		32	28	27	27	25	33	27	24	25	22

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:03 (p 1 of 4)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	17-2164-7806	Endpoint:	7d Survival Rate	CETIS Version:	CETISv2.1.3		
Analyzed:	16 Dec-22 12:02	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1		
Edit Date:	16 Dec-22 11:53	MD5 Hash:	521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID:	008-463-000-3		
Batch ID:	03-5376-4306	Test Type:	Reproduction-Survival (7d)	Analyst:			
Start Date:	08 Nov-22 17:50	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	15 Nov-22 16:35	Species:	Ceriodaphnia dubia	Brine:	Not Applicable		
Test Length:	6d 23h	Taxon:	Branchiopoda	Source:	Aquatic Biosystems, CO	Age:	<24
Sample ID:	06-9360-3886	Code:	VCF1122.265cer	Project:	P6010561		
Sample Date:	08 Nov-22	Material:	Sample Water	Source:	Bioassay Report		
Receipt Date:	15 Nov-22	CAS (PC):		Station:	MO-SIM		
Sample Age:	18h (10 °C)	Client:	Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

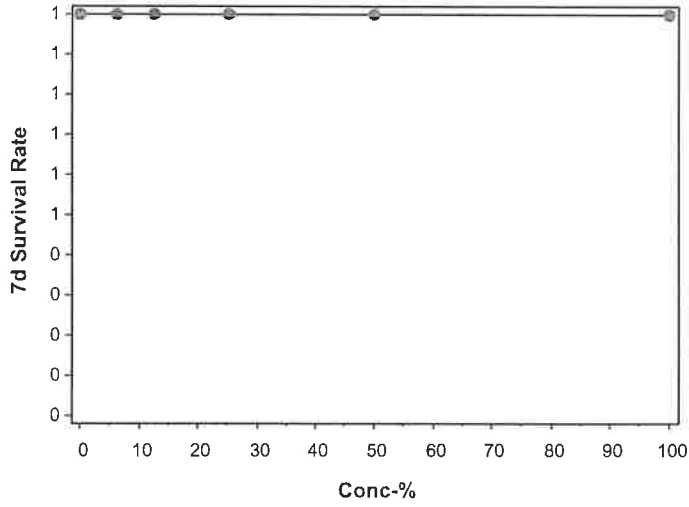
7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-2164-7806 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:02 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 11:53 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:03 (p 3 of 4)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 16-1741-2854	Endpoint: Reproduction	CETIS Version: CETISv2.1.3			
Analyzed: 16 Dec-22 12:02	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 16 Dec-22 11:53	MD5 Hash: 5F9CE649295802849DB2DE982A76D433	Editor ID: 008-463-000-3			
Batch ID: 03-5376-4306	Test Type: Reproduction-Survival (7d)	Analyst:			
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 15 Nov-22 16:35	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 06-9360-3886	Code: VCF1122.265cer	Project: P6010561			
Sample Date: 08 Nov-22	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 15 Nov-22	CAS (PC):	Station: MO-SIM			
Sample Age: 18h (10 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1300411	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	25.3	15	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Reproduction Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	25.3	26	18	29	13.44%	0.00%	27.05	0.00%
6.25		10	27.8	28.33	24	34	13.54%	-9.88%	27.05	0.00%
12.5		10	27	27.5	20	35	16.19%	-6.72%	27.05	0.00%
25		10	28.1	27.25	24	33	9.70%	-11.07%	27.05	0.00%
50		10	27	27.75	22	32	11.04%	-6.72%	27	0.18%
100		10	27	27	22	33	12.59%	-6.72%	27	0.18%

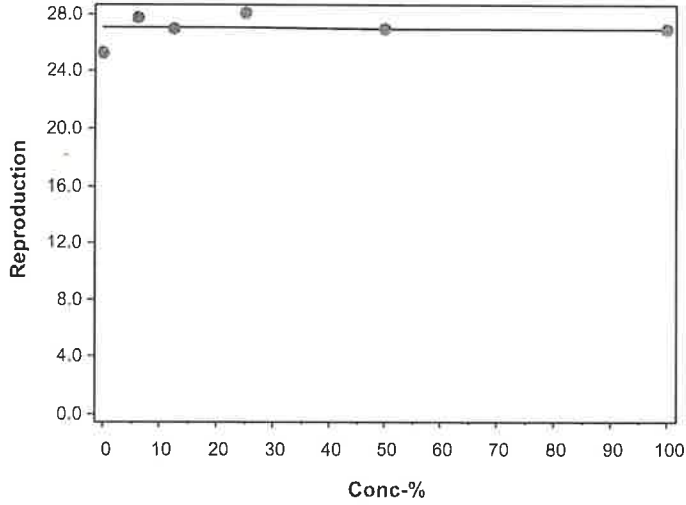
Reproduction Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	26	18	28	21	28	29	25	26	25
6.25		31	29	24	24	34	32	29	24	24	27
12.5		27	35	30	28	23	23	20	29	30	25
25		27	31	30	27	24	27	25	33	28	29
50		26	27	28	23	22	30	28	32	28	26
100		32	28	27	27	25	33	27	24	25	22

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-1741-2854 Endpoint: Reproduction CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:02 Analysis: Linear Interpolation (ICPIN) Status Level: 1
Edit Date: 16 Dec-22 11:53 MD5 Hash: 5F9CE649295802849DB2DE982A76D433 Editor ID: 008-463-000-3

Graphics



CETIS Analytical Report

Report Date: 16 Dec-22 12:03 (p 1 of 2)
Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 09-5282-7082	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.3
Analyzed: 16 Dec-22 12:02	Analysis: STP 2xK Contingency Tables	Status Level: 1
Edit Date: 16 Dec-22 11:53	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 008-463-000-3
Batch ID: 03-5376-4306	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 06-9360-3886	Code: VCF1122.265cer	Project: P6010561
Sample Date: 08 Nov-22	Material: Sample Water	Source: Bioassay Report
Receipt Date: 15 Nov-22	CAS (PC):	Station: MO-SIM
Sample Age: 18h (10 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	--	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 16 Dec-22 12:03 (p 2 of 2)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test

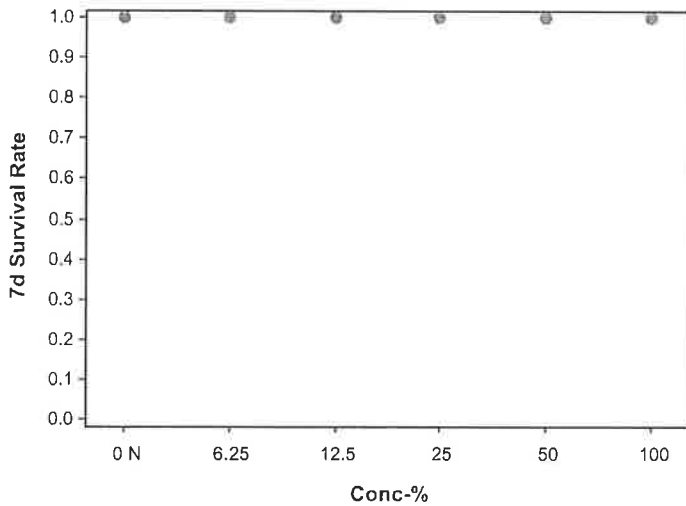
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-5282-7082 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.3
 Analyzed: 16 Dec-22 12:02 Analysis: STP 2xK Contingency Tables Status Level: 1
 Edit Date: 16 Dec-22 11:53 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF Editor ID: 008-463-000-3

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 12:03 (p 1 of 2)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-5376-4306	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 08 Nov-22 17:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Nov-22 16:35	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 06-9360-3886	Code: VCF1122.265cer	Project: P6010561
Sample Date: 08 Nov-22	Material: Sample Water	Source: Bioassay Report
Receipt Date: 15 Nov-22	CAS (PC):	Station: MO-SIM
Sample Age: 18h (10 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	60	60	60	60	60	0	0	0.00%	0
100		8	190	190	190	190	190	0	0	0.00%	0
Overall		16	125	89.23	160.8	60	190	16.78	67.13	53.71%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	365.6	362.6	368.7	362	370	0.4529	3.623	0.99%	0
6.25		8	507.4	503.8	510.9	502	515	0.5301	4.241	0.84%	0
12.5		8	644.9	642.3	647.5	642	650	0.3864	3.091	0.48%	0
25		8	1489	1484	1493	1483	1499	0.6679	5.344	0.36%	0
50		8	1852	1849	1855	1846	1857	0.4196	3.357	0.18%	0
100		8	2459	2453	2464	2452	2468	0.845	6.76	0.27%	0
Overall		48	1220	993	1446	362	2468	112.6	780	63.96%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.6	7.347	7.853	7	8.1	0.0378	0.3024	3.98%	0
6.25		8	7.575	7.323	7.827	7	8.1	0.03765	0.3012	3.98%	0
12.5		8	7.562	7.287	7.838	6.9	8.1	0.04115	0.3292	4.35%	0
25		8	7.525	7.294	7.756	7	8	0.03456	0.2765	3.67%	0
50		8	7.512	7.283	7.742	7	8	0.03435	0.2748	3.66%	0
100		8	7.525	7.247	7.803	6.9	8.1	0.04159	0.3327	4.42%	0
Overall		48	7.55	7.466	7.634	6.9	8.1	0.04168	0.2888	3.83%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	94	90.43	97.57	90	98	0.5345	4.276	4.55%	0
100		8	670	670	670	670	670	0	0	0.00%	0
Overall		16	382	223.5	540.5	90	670	74.36	297.5	77.87%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.913	7.799	8.026	7.6	8	0.01695	0.1356	1.71%	0
6.25		8	7.838	7.683	7.992	7.5	8	0.02308	0.1847	2.36%	0
12.5		8	7.813	7.643	7.982	7.4	8	0.02539	0.2031	2.60%	0
25		8	7.788	7.612	7.963	7.3	7.9	0.02625	0.21	2.70%	0
50		8	7.8	7.61	7.99	7.3	8	0.02835	0.2268	2.91%	0
100		8	7.788	7.571	8.004	7.2	8	0.03235	0.2588	3.32%	0
Overall		48	7.823	7.765	7.881	7.2	8	0.0289	0.2003	2.56%	0 (0%)

CETIS Measurement Report

Report Date: 16 Dec-22 12:03 (p 2 of 2)
 Test Code/ID: VCF1122.265cer / 19-1378-5158

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24.03	23.97	24.08	24	24.2	0.008836	0.07069	0.29%	0
12.5		8	24.05	23.97	24.13	24	24.2	0.01157	0.09255	0.38%	0
25		8	24.1	24.01	24.19	24	24.2	0.01336	0.1068	0.44%	0
50		8	24.09	24	24.17	24	24.2	0.01238	0.09904	0.41%	0
100		8	24.08	24	24.15	24	24.2	0.01107	0.08857	0.37%	0
Overall		48	24.06	24.03	24.08	24	24.2	0.0126	0.08729	0.36%	0 (0%)





December 16, 2022

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

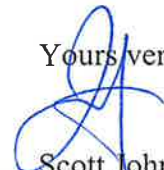
We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms EPA-821-R-02-013*. Results were as follows:

CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	MO-MPK
DATE RECEIVED:	11/8/2022
ABC LAB. NO.:	VCF1122.266

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

NOEC =	100.00 %
TU _c =	1.00
IC ₂₅ =	>100.00 %
IC ₅₀ =	>100.00 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 16 Dec-22 12:09 (p 1 of 1)
 Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 15-2275-5751	Test Type: Cell Growth	Analyst: Beth Maturino					
Start Date: 09 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 13 Nov-22 16:30	Species: Selenastrum capricornutum	Brine: Not Applicable					
Test Length: 4d 1h	Taxon: Chlorophyta	Source: Aquatic Biosystems, CO	Age: 6d				
Sample ID: 11-9206-4409	Code: VCF1122.266sel	Project: P6010561					
Sample Date: 08 Nov-22 14:20	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-MPK					
Sample Age: 26h (8 °C)	Client: Ventura County Watershed Protection Distri						

Multiple Comparison Summary									
Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S	
05-0550-7840	Cell Density	Dunnett Multiple Comparison Test	100	>100	---	11.3%	1	1	

Point Estimate Summary									
Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S	
14-4505-1965	Cell Density	Linear Interpolation (ICPIN)	IC15	>100	---	---	<1	1	
			IC20	>100	---	---	<1		
			IC25	>100	---	---	<1		
			IC40	>100	---	---	<1		
			IC50	>100	---	---	<1		

Test Acceptability								TAC Limits	
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision		
05-0550-7840	Cell Density	Control CV	0.04804	<<	0.2	Yes	Passes Criteria		
14-4505-1965	Cell Density	Control CV	0.04804	<<	0.2	Yes	Passes Criteria		
05-0550-7840	Cell Density	Control Resp	1.49E+6	1.00E+6	<<	Yes	Passes Criteria		
14-4505-1965	Cell Density	Control Resp	1.49E+6	1.00E+6	<<	Yes	Passes Criteria		

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.490E+6	1.376E+6	1.604E+6	1.417E+6	1.563E+6	3.578E+4	7.156E+4	4.80%	0.00%
6.25		4	1.634E+6	1.473E+6	1.795E+6	1.511E+6	1.724E+6	5.064E+4	1.013E+5	6.20%	-9.70%
12.5		4	1.768E+6	1.546E+6	1.990E+6	1.653E+6	1.936E+6	6.970E+4	1.394E+5	7.88%	-18.69%
25		4	1.834E+6	1.754E+6	1.914E+6	1.764E+6	1.878E+6	2.511E+4	5.022E+4	2.74%	-23.12%
50		4	2.006E+6	1.829E+6	2.183E+6	1.916E+6	2.168E+6	5.556E+4	1.111E+5	5.54%	-34.67%
100		4	1.964E+6	1.811E+6	2.118E+6	1.829E+6	2.050E+6	4.833E+4	9.665E+4	4.92%	-31.87%

Cell Density Detail						MD5: DE5308F324B2360D0DDFF885106E08BF					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4						
0	N	1.417E+6	1.538E+6	1.563E+6	1.441E+6						
6.25		1.592E+6	1.511E+6	1.710E+6	1.724E+6						
12.5		1.936E+6	1.653E+6	1.654E+6	1.830E+6						
25		1.834E+6	1.878E+6	1.764E+6	1.861E+6						
50		2.168E+6	1.980E+6	1.916E+6	1.961E+6						
100		2.050E+6	2.013E+6	1.829E+6	1.966E+6						

CETIS Analytical Report

Report Date: 16 Dec-22 12:08 (p 1 of 2)
 Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 05-0550-7840	Endpoint: Cell Density	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:03	Analysis: Parametric-Control vs Treatments	Status Level: 1			
Edit Date: 05 Dec-22 11:56	MD5 Hash: DE5308F324B2360D0DDFF885106E08BF	Editor ID: 001-068-318-4			
Batch ID: 15-2275-5751	Test Type: Cell Growth	Analyst: Beth Maturino			
Start Date: 09 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 13 Nov-22 16:30	Species: Selenastrum capricornutum	Brine: Not Applicable			
Test Length: 4d 1h	Taxon: Chlorophyta	Source: Aquatic Biosystems, CO Age: 6d			
Sample ID: 11-9206-4409	Code: VCF1122.266sel	Project: P6010561			
Sample Date: 08 Nov-22 14:20	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-MPK			
Sample Age: 26h (8 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	--	1	168800	11.33%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	-2.06	2.407	168800	CDF	0.9993	Non-Significant Effect
		12.5	6	-3.971	2.407	168800	CDF	1.0000	Non-Significant Effect
		25	6	-4.912	2.407	168800	CDF	1.0000	Non-Significant Effect
		50	6	-7.365	2.407	168800	CDF	1.0000	Non-Significant Effect
		100	6	-6.77	2.407	168800	CDF	1.0000	Non-Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04804	<<	0.2	Yes	Passes Criteria
Control Resp	1.49E+6	1.00E+6	<<	Yes	Passes Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.75E+11	1.55E+11	5	15.76	<1.0E-05	Significant Effect
Error	1.771E+11	9.836E+09	18			
Total	9.521E+11		23			

ANOVA Assumptions Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variance	Bartlett Equality of Variance Test	2.963	15.09	0.7057	Equal Variances	
	Levene Equality of Variance Test	1.539	4.248	0.2274	Equal Variances	
	Mod Levene Equality of Variance Test	0.9379	4.248	0.4802	Equal Variances	
Distribution	Anderson-Darling A2 Test	0.3628	3.878	0.4462	Normal Distribution	
	D'Agostino Kurtosis Test	1.059	2.576	0.2898	Normal Distribution	
	D'Agostino Skewness Test	0.4006	2.576	0.6887	Normal Distribution	
	D'Agostino-Pearson K2 Omnibus Test	1.281	9.21	0.5270	Normal Distribution	
	Kolmogorov-Smirnov D Test	0.1077	0.2056	0.6973	Normal Distribution	
	Shapiro-Wilk W Normality Test	0.9572	0.884	0.3853	Normal Distribution	

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.490E+6	1.376E+6	1.604E+6	1.490E+6	1.417E+6	1.563E+6	3.578E+4	4.80%	0.00%
6.25		4	1.634E+6	1.473E+6	1.795E+6	1.651E+6	1.511E+6	1.724E+6	5.064E+4	6.20%	-9.70%
12.5		4	1.768E+6	1.546E+6	1.990E+6	1.742E+6	1.653E+6	1.936E+6	6.970E+4	7.88%	-18.69%
25		4	1.834E+6	1.754E+6	1.914E+6	1.848E+6	1.764E+6	1.878E+6	2.511E+4	2.74%	-23.12%
50		4	2.006E+6	1.829E+6	2.183E+6	1.970E+6	1.916E+6	2.168E+6	5.556E+4	5.54%	-34.67%
100		4	1.964E+6	1.811E+6	2.118E+6	1.990E+6	1.829E+6	2.050E+6	4.833E+4	4.92%	-31.87%

CETIS Analytical Report

Report Date: 16 Dec-22 12:08 (p 2 of 2)
Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 05-0550-7840 Endpoint: Cell Density CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:03 Analysis: Parametric-Control vs Treatments Status Level: 1
Edit Date: 05 Dec-22 11:56 MD5 Hash: DE5308F324B2360D0DDFF885106E08BF Editor ID: 001-068-318-4

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.417E+6	1.538E+6	1.563E+6	1.441E+6
6.25		1.592E+6	1.511E+6	1.710E+6	1.724E+6
12.5		1.936E+6	1.653E+6	1.654E+6	1.830E+6
25		1.834E+6	1.878E+6	1.764E+6	1.861E+6
50		2.168E+6	1.980E+6	1.916E+6	1.961E+6
100		2.050E+6	2.013E+6	1.829E+6	1.966E+6

CETIS Analytical Report

Report Date: 16 Dec-22 12:09 (p 1 of 2)
 Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 14-4505-1965	Endpoint: Cell Density	CETIS Version: CETISv2.1.3			
Analyzed: 05 Dec-22 12:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 05 Dec-22 11:56	MD5 Hash: DE5308F324B2360D0DDFF885106E08BF	Editor ID: 001-068-318-4			
Batch ID: 15-2275-5751	Test Type: Cell Growth	Analyst: Beth Maturino			
Start Date: 09 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 13 Nov-22 16:30	Species: Selenastrum capricornutum	Brine: Not Applicable			
Test Length: 4d 1h	Taxon: Chlorophyta	Source: Aquatic Biosystems, CO Age: 6d			
Sample ID: 11-9206-4409	Code: VCF1122.266sel	Project: P6010561			
Sample Date: 08 Nov-22 14:20	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-MPK			
Sample Age: 26h (8 °C)	Client: Ventura County Watershed Protection Distri				

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04804	<<	0.2	Yes	Passes Criteria
Control Resp	1.49E+6	1.00E+6	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	>100	---	---	<1	---	---
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Cell Density Summary			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	1.490E+6	1.490E+6	1.417E+6	1.563E+6	4.80%	0.00%	1.783E+6	0.00%
6.25		4	1.634E+6	1.651E+6	1.511E+6	1.724E+6	6.20%	-9.70%	1.783E+6	0.00%
12.5		4	1.768E+6	1.742E+6	1.653E+6	1.936E+6	7.88%	-18.69%	1.783E+6	0.00%
25		4	1.834E+6	1.848E+6	1.764E+6	1.878E+6	2.74%	-23.12%	1.783E+6	0.00%
50		4	2.006E+6	1.970E+6	1.916E+6	2.168E+6	5.54%	-34.67%	1.783E+6	0.00%
100		4	1.964E+6	1.990E+6	1.829E+6	2.050E+6	4.92%	-31.87%	1.783E+6	0.00%

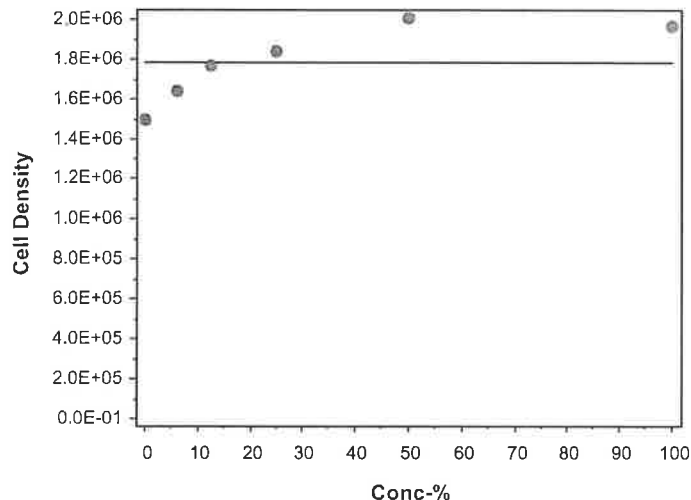
Cell Density Detail					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.417E+6	1.538E+6	1.563E+6	1.441E+6
6.25		1.592E+6	1.511E+6	1.710E+6	1.724E+6
12.5		1.936E+6	1.653E+6	1.654E+6	1.830E+6
25		1.834E+6	1.878E+6	1.764E+6	1.861E+6
50		2.168E+6	1.980E+6	1.916E+6	1.961E+6
100		2.050E+6	2.013E+6	1.829E+6	1.966E+6

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-4505-1965	Endpoint: Cell Density	CETIS Version: CETISv2.1.3
Analyzed: 05 Dec-22 12:03	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 05 Dec-22 11:56	MD5 Hash: DE5308F324B2360D0DDFF885106E08BF	Editor ID: 001-068-318-4

Graphics



CETIS Measurement Report

Report Date: 16 Dec-22 12:09 (p 1 of 2)
 Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 15-2275-5751	Test Type: Cell Growth	Analyst: Beth Maturino
Start Date: 09 Nov-22 16:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Nov-22 16:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Test Length: 4d 1h	Taxon: Chlorophyta	Source: Aquatic Biosystems, CO Age: 6d
Sample ID: 11-9206-4409	Code: VCF1122.266sel	Project: P6010561
Sample Date: 08 Nov-22 14:20	Material: Sample Water	Source: Bioassay Report
Receipt Date: 08 Nov-22 17:00	CAS (PC):	Station: MO-MPK
Sample Age: 26h (8 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	95	---	---	95	95	---	---	---	0
6.25		1	90	---	---	90	90	---	---	---	0
12.5		1	90	---	---	90	90	---	---	---	0
25		1	77	---	---	77	77	---	---	---	0
50		1	88	---	---	88	88	---	---	---	0
100		1	70	---	---	70	70	---	---	---	0
Overall		6	85	75.07	94.93	70	95	3.864	9.466	11.14%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	343.6	334	353.2	335	354	1.54	7.701	2.24%	0
6.25		5	429.8	366.1	493.5	339	460	10.26	51.3	11.94%	0
12.5		5	447.4	439.1	455.7	439	455	1.331	6.656	1.49%	0
25		5	429.2	423	435.4	422	436	0.994	4.97	1.16%	0
50		5	407.4	403.8	411	403	410	0.5762	2.881	0.71%	0
100		5	396.6	365.4	427.8	352	410	5.031	25.16	6.34%	0
Overall		30	409	393.9	424.1	335	460	7.377	40.41	9.88%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	122	---	---	122	122	---	---	---	0
6.25		1	110	---	---	110	110	---	---	---	0
12.5		1	123	---	---	123	123	---	---	---	0
25		1	220	---	---	220	220	---	---	---	0
50		1	105	---	---	105	105	---	---	---	0
100		1	74	---	---	74	74	---	---	---	0
Overall		6	125.7	73.7	177.6	74	220	20.22	49.52	39.41%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.78	7.644	7.916	7.6	7.9	0.02191	0.1095	1.41%	0
6.25		5	7.72	7.616	7.824	7.6	7.8	0.01673	0.08367	1.08%	0
12.5		5	7.72	7.616	7.824	7.6	7.8	0.01673	0.08367	1.08%	0
25		5	7.7	7.576	7.824	7.6	7.8	0.02	0.1	1.30%	0
50		5	7.7	7.576	7.824	7.6	7.8	0.02	0.1	1.30%	0
100		5	7.7	7.548	7.852	7.5	7.8	0.0245	0.1225	1.59%	0
Overall		30	7.72	7.684	7.756	7.5	7.9	0.01755	0.09613	1.25%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
6.25		5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
12.5		5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
25		5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
50		5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
100		5	25.64	25.53	25.75	25.6	25.8	0.01792	0.08958	0.35%	0
Overall		30	25.64	25.61	25.67	25.6	25.8	0.01486	0.08137	0.32%	0 (0%)

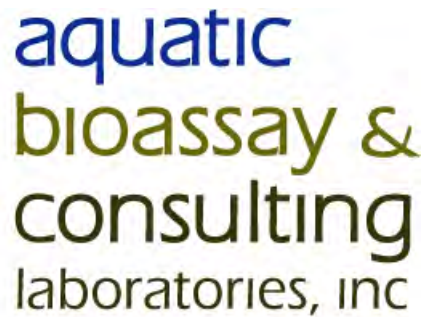
CETIS Measurement Report

Report Date: 16 Dec-22 12:09 (p 2 of 2)
Test Code/ID: VCF1122.266sel / 16-5963-7545

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Attachment A Appendix 1 



Toxicity Report for Ventura County Watershed Protection District

NPDES Stormwater Wet Season (Contract AE20-007)

PROJECT: 2022/23-3 (Wet) P6010561
CONTRACT: AE20-007
CLIENT: Ms. Kelly Hahs
VCWPD
800 South Victoria Avenue, L#1670
Ventura, CA 93003-1670
SAMPLE I.D.: ME-SCR
DATE RECEIVED: 12/12/2022
DATE REPORTED: Preliminary Results 1/10/2023, Final Report 2/7/2023
ABC LAB NO.: VCF1222.058

29 North Olive Street Ventura, California 93001 (805) 643-5621

INTRODUCTION

Toxicity tests using purple urchin (*S. purpuratus*) were performed on marine sample ME-SCR to evaluate the quality of samples for Ventura County Watershed Protection District. The sample was collected on December 11, 2022 and delivered on the following day. Testing was conducted at Aquatic Bioassay and Consulting Labs, Inc. in Ventura California from December 12, 2022 through December 13, 2022.

MATERIALS AND METHODS

Test Material

Test material consisted of 1 grab sample collected by Ventura County Watershed Protection District (VCWPD) sample water sites. Sample collection was performed by VCWPD personnel under the direction of Ms. Kelly Hahs. The sample was collected in a 5-gallon low-density polyethylene bucket and delivered to Aquatic Bioassay the following day. Sample temperature was recorded upon acceptance at Aquatic Bioassay Laboratories and is included in the report for each station.

Samples were stored at 4°C. Upon arrival at Aquatic Bioassay, an aliquot of each sample was drawn and water quality parameters of pH, dissolved oxygen (DO), conductivity, temperature, salinity, alkalinity, and hardness were measured and recorded.

Bioassay Testing

The study was performed in accordance with the United States Environmental Protection Agency (USEPA) protocols:

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002, US EPA-821-R-02-013.

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition, October 2002, US EPA-821-R-02-014.

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, First Edition, August 1995, US EPA/600/R-95-136.

Summary of results for 100% sample concentration: (Cont.)

Sample ID	Test	Endpoint	Control	100% Sample	Statistically Different From Control	TST Result	*Percent Effect
ME-SCR	Chronic Urchin	Fertilization (%)	95.50	96.50	No	Pass	-1.05

*Percent Effect at IWC = (Mean Control Response – Mean IWC Response) * 100 / Mean Control Response.

Quality Assurance

All samples were received in good condition at the appropriate temperatures, and all tests were initiated within 72 hours of sample collection. The negative controls in all tests met the minimum test acceptability criterion of 80 percent mean survival. Variability among replicates was minimal, and the ability to detect a statistical difference was deemed appropriate.

Fertilization counts were recorded immediately post exposure to ensure tests were progressing as expected. Counts were conducted similarly on the control replicates. The temperatures in samples were within the recommended range for the entire test duration.

Reference Toxicant Test

A concurrent reference toxicant test using copper chloride was conducted to assess the health of the test organisms. Mean control survival met the test acceptability criterion. The median lethal concentration (LC50) calculated for this test was within two standard deviations of the internal control chart mean, indicating test organism sensitivity was typical. Reference toxicant test results are summarized in the report.

Results and Discussion

Mean survival and statistical differences from control for the tests, error bars, results summaries including individual replicate data, statistical summaries, and raw datasheets are located in in the appendix. Appropriate chain-of-custody (COC) procedures were followed during all phases of this study, and copies of the COC forms are provided in the appendix.

Results of the purple urchin fertilization bioassay test for site ME-SCR yielded no toxicity. The sample is deemed to pass the TST analysis and exhibit no toxicity.

Data Analysis and Reporting

The response observed in this test includes survival and fertilization of the test organism. Two statistical methods were employed to determine whether there was an effect between the control and test sample: 1) A standard t-test approach following the statistical analysis decision tree in EPA 2002; and 2) A more recent EPA-recommended Test of Significant Toxicity (TST) approach (EPA 2010).

References:

United States Environmental Protection Agency, 1995. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.

United States Environmental Protection Agency, 2002. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/821/R-02-014.

United States Environmental Protection Agency, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA/821/R-02/012.

United States Environmental Protection Agency, 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document. Office of Wastewater Management. EPA 833-R-10-003.



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Toxicity - ABC Laboratories
Project P6010561

Side 1 of 1

Sampling Date: 12/11/22

Project Number: 2022/23-3 (Wet)

Sampling Team: Marissa DelHoyos, Shannon Morris, Emily McLeod

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (<i>Atherinops affinis</i>)	Chronic toxicity - inland silverside (<i>Menidia beryllina</i>)	Chronic toxicity - giant kelp (<i>Macrocystis pyrifera</i>)	Chronic toxicity - purple sea urchin (<i>Strongylocentrotus purpuratus</i>)	Chronic toxicity - fathead minnow (<i>Pimephales promelas</i>)	Chronic toxicity - daphnid (<i>Ceriodaphnia dubia</i>)	Chronic toxicity - green alga (<i>Raphidocelis subcapitata</i>)	Number of 5-Gallon Buckets	NOTES
ME-SCR	12/11/22 8:25 AM				X				2	Note 1, Note 2, Note 3
										Temp. deg. C = 15.5
										Chlorine (mg/L) = 1.01
										TSS (mg/L) = 1.01

Relinquished Printed Name KELLY HAYS / WILLIAM CAREY
 Signature Kelly Hays / William Carey
 Affiliation VCWPD Date/Time 12/11/22 / 12/12/22

Received Printed Name CHARIS SAMIA
 Signature [Signature]
 Affiliation ABC LAB Date/Time 12/12/22 1080

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100% Note 2: Please execute TIE if mortality > 50%
Note 3: Notify District within 24 hours if significant toxicity is observed.



January 5, 2023

Mr. Arne Anselm
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Mr. Anselm:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA-600/R95/136, 1995*. Results were as follows:

CLIENT:	Ventura County Watershed Protection District
SAMPLE I.D.:	ME-SCR
DATE RECEIVED:	12/12/2022
ABC LAB. NO.:	VCF1222.058

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

NOEC = 100.00 %

TU_c = 1.00

IC25 = >100.00 %

IC50 = >100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 04 Jan-23 16:08 (p 1 of 1)
 Test Code/ID: VCF1222.058urc / 06-5995-8904

Purple Sea Urchin Sperm Cell Fertilization Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 05-2537-1230	Test Type: Fertilization	Analyst:					
Start Date: 13 Dec-22 16:02	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater					
Ending Date: 13 Dec-22 16:42	Species: Strongylocentrotus purpuratus	Brine: Not Applicable					
Test Length: 40m	Taxon: Echinoidea	Source: Ventura Dive	Age:				
Sample ID: 18-2777-5782	Code: VCF1222.058urc	Project: NPDES Stormwater Wet Season (Con					
Sample Date: 11 Dec-22 08:25	Material: Sample Water	Source: Bioassay Report					
Receipt Date: 12 Dec-22 08:55	CAS (PC):	Station: ME-SCR					
Sample Age: 56h (5.5 °C)	Client: VCWPD						

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
19-0151-6701	Fertilization Rate	Dunnett Multiple Comparison Test	100	>100	---	4.73%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
15-4589-8087	Fertilization Rate	Linear Interpolation (ICPIN)	EC15	>100	---	---	<1	1
			EC20	>100	---	---	<1	
			EC25	>100	---	---	<1	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Decision
				Lower	Upper	Overlap	
15-4589-8087	Fertilization Rate	Control Resp	0.955	0.7	<<	Yes	Passes Criteria
19-0151-6701	Fertilization Rate	Control Resp	0.955	0.7	<<	Yes	Passes Criteria
19-0151-6701	Fertilization Rate	PMSD	0.04728	<<	0.25	No	Passes Criteria

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.9550	0.9458	0.9642	0.9500	0.9600	0.0029	0.0058	0.60%	0.00%
6.25		4	0.9650	0.9374	0.9926	0.9400	0.9800	0.0087	0.0173	1.79%	-1.05%
12.5		4	0.9375	0.9022	0.9728	0.9100	0.9600	0.0111	0.0222	2.37%	1.83%
25		4	0.9575	0.9177	0.9973	0.9300	0.9900	0.0125	0.0250	2.61%	-0.26%
50		4	0.9525	0.9107	0.9943	0.9300	0.9800	0.0132	0.0263	2.76%	0.26%
100		4	0.9650	0.9319	0.9981	0.9400	0.9900	0.0104	0.0208	2.16%	-1.05%

Fertilization Rate Detail MD5: 07B78009A65196D4312AC46DFA04D500

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9600	0.9500	0.9500	0.9600
6.25		0.9400	0.9700	0.9800	0.9700
12.5		0.9100	0.9300	0.9600	0.9500
25		0.9500	0.9600	0.9900	0.9300
50		0.9800	0.9700	0.9300	0.9300
100		0.9600	0.9900	0.9400	0.9700

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	96/100	95/100	95/100	96/100
6.25		94/100	97/100	98/100	97/100
12.5		91/100	93/100	96/100	95/100
25		95/100	96/100	99/100	93/100
50		98/100	97/100	93/100	93/100
100		96/100	99/100	94/100	97/100

CETIS Analytical Report

Report Date: 04 Jan-23 16:08 (p 1 of 3)
 Test Code/ID: VCF1222.058urc / 06-5995-8904

Purple Sea Urchin Sperm Cell Fertilization Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-0151-6701	Endpoint: Fertilization Rate	CETIS Version: CETISv2.1.3
Analyzed: 04 Jan-23 16:07	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 04 Jan-23 16:06	MD5 Hash: 07B78009A65196D4312AC46DFA04D500	Editor ID: 008-463-000-3
Batch ID: 05-2537-1230	Test Type: Fertilization	Analyst:
Start Date: 13 Dec-22 16:02	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 13 Dec-22 16:42	Species: Strongylocentrotus purpuratus	Brine: Not Applicable
Test Length: 40m	Taxon: Echinoidea	Source: Ventura Dive Age:
Sample ID: 18-2777-5782	Code: VCF1222.058urc	Project: NPDES Stormwater Wet Season (Con
Sample Date: 11 Dec-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 12 Dec-22 08:55	CAS (PC):	Station: ME-SCR
Sample Age: 56h (5.5 °C)	Client: VCWPD	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.04515	4.73%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	-0.7642	2.407	0.09152	CDF	0.9680	Non-Significant Effect
		12.5	6	0.9573	2.407	0.09152	CDF	0.4409	Non-Significant Effect
		25	6	-0.3876	2.407	0.09152	CDF	0.9224	Non-Significant Effect
		50	6	-0.0147	2.407	0.09152	CDF	0.8376	Non-Significant Effect
		100	6	-0.8592	2.407	0.09152	CDF	0.9749	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	0.955	0.7	<<	Yes	Passes Criteria
PMSD	0.04728	<<	0.25	No	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0127134	0.0025427	5	0.8795	0.5145	Non-Significant Effect
Error	0.0520391	0.0028911	18			
Total	0.0647526		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.803	15.09	0.3258	Equal Variances
	Levene Equality of Variance Test	1.305	4.248	0.3055	Equal Variances
	Mod Levene Equality of Variance Test	1.076	4.248	0.4063	Equal Variances
Distribution	Anderson-Darling A2 Test	0.3508	3.878	0.4747	Normal Distribution
	D'Agostino Kurtosis Test	0.5715	2.576	0.5677	Normal Distribution
	D'Agostino Skewness Test	0.685	2.576	0.4933	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.7959	9.21	0.6717	Normal Distribution
	Kolmogorov-Smirnov D Test	0.1256	0.2056	0.4194	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9567	0.884	0.3761	Normal Distribution

Fertilization Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.9550	0.9458	0.9642	0.9550	0.9500	0.9600	0.0029	0.60%	0.00%
6.25		4	0.9650	0.9374	0.9926	0.9700	0.9400	0.9800	0.0087	1.79%	-1.05%
12.5		4	0.9375	0.9022	0.9728	0.9400	0.9100	0.9600	0.0111	2.37%	1.83%
25		4	0.9575	0.9177	0.9973	0.9550	0.9300	0.9900	0.0125	2.61%	-0.26%
50		4	0.9525	0.9107	0.9943	0.9433	0.9300	0.9800	0.0132	2.76%	0.26%
100		4	0.9650	0.9319	0.9981	0.9650	0.9400	0.9900	0.0104	2.16%	-1.05%

CETIS Analytical Report

Report Date: 04 Jan-23 16:08 (p 2 of 3)
 Test Code/ID: VCF1222.058urc / 06-5995-8904

Purple Sea Urchin Sperm Cell Fertilization Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-0151-6701 Endpoint: Fertilization Rate CETIS Version: CETISv2.1.3
 Analyzed: 04 Jan-23 16:07 Analysis: Parametric-Control vs Treatments Status Level: 1
 Edit Date: 04 Jan-23 16:06 MD5 Hash: 07B78009A65196D4312AC46DFA04D500 Editor ID: 008-463-000-3

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3570	1.3350	1.3800	1.3570	1.3450	1.3690	0.0070	1.03%	0.00%
6.25		4	1.3860	1.3150	1.4580	1.3970	1.3230	1.4290	0.0224	3.22%	-2.14%
12.5		4	1.3210	1.2480	1.3940	1.3240	1.2660	1.3690	0.0229	3.46%	2.68%
25		4	1.3720	1.2590	1.4850	1.3570	1.3030	1.4710	0.0356	5.19%	-1.09%
50		4	1.3580	1.2550	1.4610	1.3340	1.3030	1.4290	0.0324	4.77%	-0.04%
100		4	1.3900	1.2920	1.4880	1.3830	1.3230	1.4710	0.0308	4.44%	-2.41%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9600	0.9500	0.9500	0.9600
6.25		0.9400	0.9700	0.9800	0.9700
12.5		0.9100	0.9300	0.9600	0.9500
25		0.9500	0.9600	0.9900	0.9300
50		0.9800	0.9700	0.9300	0.9300
100		0.9600	0.9900	0.9400	0.9700

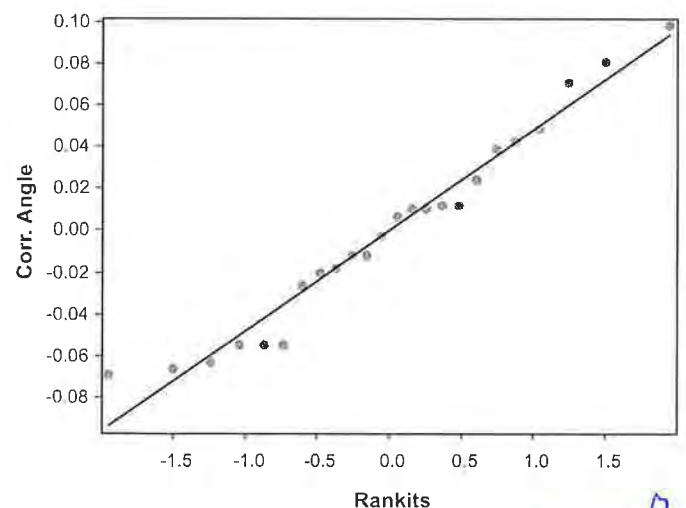
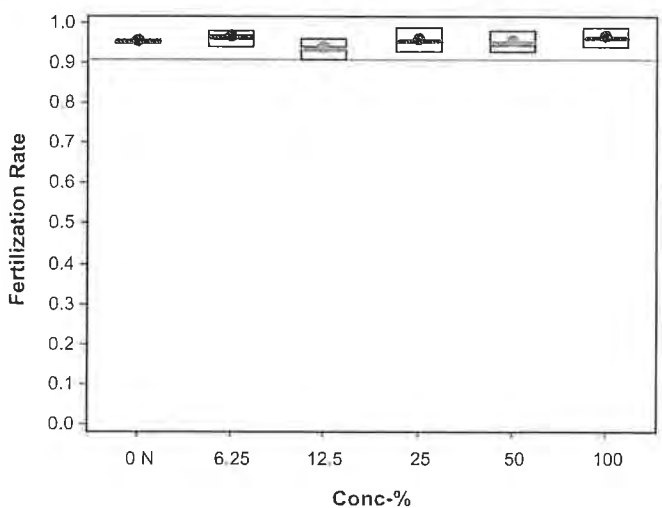
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3690	1.3450	1.3450	1.3690
6.25		1.3230	1.3970	1.4290	1.3970
12.5		1.2660	1.3030	1.3690	1.3450
25		1.3450	1.3690	1.4710	1.3030
50		1.4290	1.3970	1.3030	1.3030
100		1.3690	1.4710	1.3230	1.3970

Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	96/100	95/100	95/100	96/100
6.25		94/100	97/100	98/100	97/100
12.5		91/100	93/100	96/100	95/100
25		95/100	96/100	99/100	93/100
50		98/100	97/100	93/100	93/100
100		96/100	99/100	94/100	97/100

Graphics



CETIS Analytical Report

Report Date: 04 Jan-23 16:08 (p 1 of 2)
 Test Code/ID: VCF1222.058urc / 06-5995-8904

Purple Sea Urchin Sperm Cell Fertilization Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 15-4589-8087	Endpoint: Fertilization Rate	CETIS Version: CETISv2.1.3			
Analyzed: 04 Jan-23 16:07	Analysis: Linear Interpolation (ICPIN)	Status Level: 1			
Edit Date: 04 Jan-23 16:06	MD5 Hash: 07B78009A65196D4312AC46DFA04D500	Editor ID: 008-463-000-3			
Batch ID: 05-2537-1230	Test Type: Fertilization	Analyst:			
Start Date: 13 Dec-22 16:02	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater			
Ending Date: 13 Dec-22 16:42	Species: Strongylocentrotus purpuratus	Brine: Not Applicable			
Test Length: 40m	Taxon: Echinoidea	Source: Ventura Dive Age:			
Sample ID: 18-2777-5782	Code: VCF1222.058urc	Project: NPDES Stormwater Wet Season (Con			
Sample Date: 11 Dec-22 08:25	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 12 Dec-22 08:55	CAS (PC):	Station: ME-SCR			
Sample Age: 56h (5.5 °C)	Client: VCWPD				

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.955	0.7	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

Fertilization Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	0.9550	0.9550	0.9500	0.9600	0.60%	0.00%	382/400	0.9600	0.00%
6.25		4	0.9650	0.9700	0.9400	0.9800	1.79%	-1.05%	386/400	0.9600	0.00%
12.5		4	0.9375	0.9400	0.9100	0.9600	2.37%	1.83%	375/400	0.9531	0.72%
25		4	0.9575	0.9550	0.9300	0.9900	2.61%	-0.26%	383/400	0.9531	0.72%
50		4	0.9525	0.9433	0.9300	0.9800	2.76%	0.26%	381/400	0.9531	0.72%
100		4	0.9650	0.9650	0.9400	0.9900	2.16%	-1.05%	386/400	0.9531	0.72%

Fertilization Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.9600	0.9500	0.9500	0.9600
6.25		0.9400	0.9700	0.9800	0.9700
12.5		0.9100	0.9300	0.9600	0.9500
25		0.9500	0.9600	0.9900	0.9300
50		0.9800	0.9700	0.9300	0.9300
100		0.9600	0.9900	0.9400	0.9700

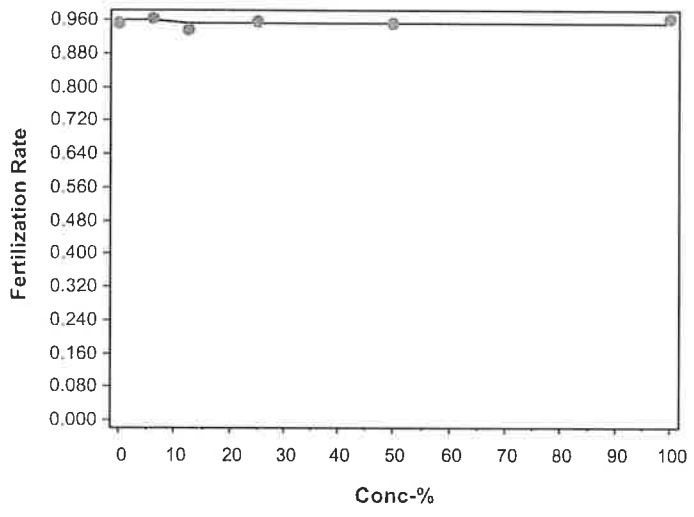
Fertilization Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	96/100	95/100	95/100	96/100
6.25		94/100	97/100	98/100	97/100
12.5		91/100	93/100	96/100	95/100
25		95/100	96/100	99/100	93/100
50		98/100	97/100	93/100	93/100
100		96/100	99/100	94/100	97/100

Purple Sea Urchin Sperm Cell Fertilization Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 15-4589-8087	Endpoint: Fertilization Rate	CETIS Version: CETISv2.1.3
Analyzed: 04 Jan-23 16:07	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 04 Jan-23 16:06	MD5 Hash: 07B78009A65196D4312AC46DFA04D500	Editor ID: 008-463-000-3

Graphics



CETIS Measurement Report

Report Date: 04 Jan-23 16:08 (p 1 of 1)
 Test Code/ID: VCF1222.058urc / 06-5995-8904

Purple Sea Urchin Sperm Cell Fertilization Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-2537-1230	Test Type: Fertilization	Analyst:
Start Date: 13 Dec-22 16:02	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 13 Dec-22 16:42	Species: Strongylocentrotus purpuratus	Brine: Not Applicable
Test Length: 40m	Taxon: Echinoidea	Source: Ventura Dive Age:
Sample ID: 18-2777-5782	Code: VCF1222.058urc	Project: NPDES Stormwater Wet Season (Con
Sample Date: 11 Dec-22 08:25	Material: Sample Water	Source: Bioassay Report
Receipt Date: 12 Dec-22 08:55	CAS (PC):	Station: ME-SCR
Sample Age: 56h (5.5 °C)	Client: VCWPD	

Parameter Acceptability Criteria

Parameter	TAC Limits				Overlap	Decision
	Min	Max	Lower	Upper		
Salinity	34	34	32	36	Yes	Passes Criteria
Temperature	15.8	15.8	11	13	Yes	Above Criteria

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.6	7.594	7.606	7.6	7.6	0	0	0.00%	0
6.25		2	7.5	7.5	7.5	7.5	7.5	0	0	0.00%	0
12.5		2	7.5	7.5	7.5	7.5	7.5	0	0	0.00%	0
25		2	7.5	7.5	7.5	7.5	7.5	0	0	0.00%	0
50		2	7.4	7.389	7.411	7.4	7.4	0	0	0.00%	0
100		2	7.3	7.283	7.317	7.3	7.3	0	0	0.00%	0
Overall		12	7.467	7.404	7.529	7.3	7.6	0.02843	0.09847	1.32%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	8.2	8.187	8.213	8.2	8.2	0	0	0.00%	0
6.25		2	8.2	8.187	8.213	8.2	8.2	0	0	0.00%	0
12.5		2	8.2	8.187	8.213	8.2	8.2	0	0	0.00%	0
25		2	8.2	8.187	8.213	8.2	8.2	0	0	0.00%	0
50		2	8.2	8.187	8.213	8.2	8.2	0	0	0.00%	0
100		2	8.3	8.275	8.325	8.3	8.3	0	0	0.00%	0
Overall		12	8.217	8.192	8.241	8.2	8.3	0.01124	0.03893	0.47%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	34	34	34	34	34	0	0	0.00%	0
6.25		2	34	34	34	34	34	0	0	0.00%	0
12.5		2	34	34	34	34	34	0	0	0.00%	0
25		2	34	34	34	34	34	0	0	0.00%	0
50		2	34	34	34	34	34	0	0	0.00%	0
100		2	34	34	34	34	34	0	0	0.00%	0
Overall		12	34	34	34	34	34	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
6.25		2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
12.5		2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
25		2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
50		2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
100		2	15.8	15.77	15.83	15.8	15.8	0	0	0.00%	0
Overall		12	15.8	15.8	15.8	15.8	15.8	0	0	0.00%	0 (0%)



Toxicity Report for Ventura County Watershed Protection District

NPDES Stormwater Wet Season (Contract AE20-007)

PROJECT: 2022/23-5 (Wet) P6010506 Most Sensitive Species Testing
CONTRACT: AE20-007
CLIENT: Ms. Kelly Hahs
VCWPD
800 South Victoria Avenue, L#1670
Ventura, CA 93003-1670
SAMPLE I.D.: RW-LC1
DATE RECEIVED: 3/10/2023
DATE REPORTED: Preliminary Results 4/4/2023, Final Report 4/13/2023
ABC LAB NO.: VCF0323.139

29 North Olive Street Ventura, California 93001 (805) 643-5621

INTRODUCTION

Toxicity tests using fathead (*P. promelas*), Ceriodaphnia (*C. dubia*), midge (*C. dilutus*), and Hyalella (*H. azteca*) were performed on freshwater sample RW-LC1 to evaluate the quality of the sample for Ventura County Watershed Protection District. The samples were collected on March 10th, 2023 and delivered on day of collection. Testing was conducted at Aquatic Bioassay and Consulting Labs, Inc. in Ventura California from March 10th, through April 4th, 2023.

MATERIALS AND METHODS

Test Material

Test material consisted of one grab sample collected by Ventura County Watershed Protection District (VCWPD) sample water site RW-LC1. Sample collection was performed by VCWPD personnel under the direction of Ms. Kelly Hahs. The sample was collected in 5-gallon low-density polyethylene buckets and delivered to Aquatic Bioassay immediately after sampling. Sample temperature was recorded upon acceptance at Aquatic Bioassay Laboratories and is included in the report for each station.

Sample was stored at 4°C. Upon arrival at Aquatic Bioassay, an aliquot of the sample was drawn and water quality parameters of pH, dissolved oxygen (DO), conductivity, temperature, salinity, alkalinity, and hardness were measured and recorded.

Bioassay Testing

The study was performed in accordance with the United States Environmental Protection Agency (USEPA) protocols:

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002, US EPA-821-R-02-013.

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition, October 2002, US EPA-821-R-02-014.

Summary of results for 100% sample concentration:

Sample ID	Test	Endpoint	Control	100% Sample	Statistically Different From Control	TST Result	*Percent Effect
RW-LC1	Chronic Fathead	Survival (%)	100.00	88.33	No	Pass	11.67
		Biomass (mg)	.3473	.2927	No	Pass	15.74
RW-LC1	Chronic Ceriodaphnia	Survival (%)	100.00	100.00	No	Pass	0.00
		Reproduction #-	27.8	30.2	No	Pass	-8.63
RW-LC1	Acute Hyalella	Survival (%)	100.00	70.00	Yes	Fail	30.00
RW-LC1	Acute Chironomus	Survival (%)	100.00	80.00	No	Pass	20.00

*Percent Effect at IWC = (Mean Control Response – Mean IWC Response) * 100 / Mean Control Response.

Quality Assurance

All samples were received in good condition at the appropriate temperatures, and all tests were initiated within 72 hours of sample collection. The negative controls in all tests met the minimum test acceptability criterion of 80 percent mean survival. Variability among replicates was minimal, and the ability to detect a statistical difference was deemed appropriate.

Survival counts were recorded daily to ensure tests were progressing as expected. Counts were conducted daily on the control replicates. The temperatures in samples were within the recommended range for the entire test duration.

Reference Toxicant Test

A concurrent reference toxicant test using copper chloride was conducted to assess the health of the test organisms. Mean control survival met the test acceptability criterion. The median lethal concentration (LC50) calculated for this test was within two standard deviations of the internal control chart mean, indicating test organism sensitivity was typical. Reference toxicant test results are summarized in the report.

Results and Discussion

Mean survival and statistical differences from control for the tests, error bars, results summaries including individual replicate data, statistical summaries, and raw datasheets are located in in the appendix. Appropriate chain-of-custody (COC) procedures were followed during all phases of this study, and copies of the COC forms are provided in the appendix.

Results of the species sensitivity screen are as follows: RW-LC1 most sensitive species is acute *Hyalella* with a percent effect of 30.00 for survival. The most sensitive species for each site is highlighted in the table above.

Data Analysis and Reporting

The response observed in this test includes survival of the test organism. Two statistical methods were employed to determine whether there was an effect between the control and test sample: 1) A standard t-test approach following the statistical analysis decision tree in EPA 2002; and 2) A more recent EPA-recommended Test of Significant Toxicity (TST) approach (EPA 2010).

References:

United States Environmental Protection Agency, 1995. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136.

United States Environmental Protection Agency, 2002. Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/821/R-02-014.

United States Environmental Protection Agency, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA/821/R-02/012.

United States Environmental Protection Agency, 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document. Office of Wastewater Management. EPA 833-R-10-003.



Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season (Contract AE20-007)
Most Sensitive Species Testing - Toxicity - ABC Laboratories
Project P6010506

Side 1 of 1

Sampling Date: 3/10/2023 Project Number: 2022/23-5 (Wet)
 Sampling Team: David Laak & Kelly Hahs

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - <i>Pimephales promelas</i> (fathead minnow)	Chronic toxicity - <i>Ceriodaphnia dubia</i> (daphnid)	Chronic toxicity - <i>Hyalella azteca</i> (Amphipod)	Chronic toxicity - <i>Chironomus dilutus</i> (midge)	Chronic toxicity - <i>Atherinops affinis</i> (topsmelt)	Chronic toxicity - <i>Macrocystis pyrifera</i> (giant kelp)	Chronic toxicity - <i>Strongylocentrotus purpuratus</i> (purple sea urchin)	Number of 5-Gallon Buckets	NOTES
RW-LC1	3/10/23 10:00	X	X	X	X				3	Note 1, Note 2, Note 3, Note 4

Relinquished Printed Name David Laak
 Signature [Signature]
 Affiliation VCWPD Date/Time 3/10/2023 11:15

Received Printed Name Jim Moran
 Signature [Signature]
 Affiliation AQUATIC BIOASSAY Date/Time 3.10.23 11:47

Other Notes: Note 1: Dilutions - 6.25%, 12.5%, 25%, 50%, 100%.
Note 2: Please contact Kelly Hahs 805-658-4375 if lethal or sublethal effect > 50%. TIE may be needed.
Note 3: Notify District within 24 hours if significant toxicity is observed.
Note 4: Please run salt controls for any sites with salinities at/above species tolerances.



April 3, 2023

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:


CLIENT: Ventura County Watershed Protection District
SAMPLE I.D.: RW-LC1
DATE RECEIVED: 03/10/2023
ABC LAB. NO.: VCF0323.139

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL NOEC = 100.00 %
 TUc = 1.00
 EC25 = >100.00 %
 EC50 = >100.00 %

BIOMASS NOEC = 100.00 %
 TUc = 1.00
 IC25 = >100.00 %
 IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 03 Apr-23 13:18 (p 1 of 2)

Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
08-3091-7681	7d Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	6.18%	1	1
20-1211-5474	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	100	>100	---	13.3%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
00-4833-2548	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
16-0490-3172	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	90.64	60.79	---	1.1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
00-4833-2548	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
08-3091-7681	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
16-0490-3172	Mean Dry Biomass-mg	Control Resp	0.3473	0.25	<<	Yes	Passes Criteria	
20-1211-5474	Mean Dry Biomass-mg	Control Resp	0.3473	0.25	<<	Yes	Passes Criteria	
20-1211-5474	Mean Dry Biomass-mg	PMSD	0.133	0.12	0.3	Yes	Passes Criteria	

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	0.8833	0.7022	1.0650	0.7333	1.0000	0.0569	0.1139	12.89%	11.67%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.3473	0.3263	0.3683	0.338	0.3667	0.006594	0.01319	3.80%	0.00%
6.25		4	0.3515	0.3389	0.3641	0.3467	0.3633	0.003966	0.007933	2.26%	-1.20%
12.5		4	0.364	0.3372	0.3908	0.3433	0.3813	0.00842	0.01684	4.63%	-4.80%
25		4	0.3598	0.3499	0.3698	0.3507	0.3647	0.00312	0.006239	1.73%	-3.60%
50		4	0.3718	0.3471	0.3966	0.3507	0.3853	0.007767	0.01553	4.18%	-7.05%
100		4	0.2927	0.197	0.3884	0.2127	0.3393	0.03008	0.06015	20.55%	15.74%

CETIS Summary Report

Report Date: 03 Apr-23 13:18 (p 2 of 2)

Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 3B30FA25B2C9D8629879C5CA013E1B85

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		0.8667	0.7333	1.0000	0.9333

Mean Dry Biomass-mg Detail

MD5: 01EC2DD552ACCD36FB5C6FEBCF44E1F

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.34	0.3667	0.338	0.3447
6.25		0.3473	0.3487	0.3467	0.3633
12.5		0.3813	0.358	0.3433	0.3733
25		0.3507	0.362	0.362	0.3647
50		0.3853	0.3813	0.37	0.3507
100		0.28	0.2127	0.3387	0.3393

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		13/15	11/15	15/15	14/15

CETIS Analytical Report

Report Date: 03 Apr-23 13:16 (p 1 of 3)
 Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-3091-7681	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 13:14	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 03 Apr-23 13:13	MD5 Hash: 3B30FA25B2C9D8629879C5CA013E1B85	Editor ID: 009-702-627-3
Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	>100	---	1	0.06177	6.18%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	18	10	1	CDF	0.8333	Non-Significant Effect
		25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		50	6	18	10	1	CDF	0.8333	Non-Significant Effect
		100	6	12	10	1	CDF	0.1424	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.12976	0.025952	5	5.075	0.0045	Significant Effect
Error	0.0920465	0.0051137	18			
Total	0.221806		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	9.044	4.248	0.0002	Unequal Variances
	Mod Levene Equality of Variance Test	8.91	4.248	0.0002	Unequal Variances
Distribution	Anderson-Darling A2 Test	6.254	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	3.829	2.576	0.0001	Non-Normal Distribution
	D'Agostino Skewness Test	0.9132	2.576	0.3611	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	15.49	9.21	0.0004	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.4167	0.2056	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.5266	0.884	<1.0E-05	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%
100		4	0.8833	0.7022	1.0000		0.7333	1.0000	0.0569	12.89%	11.67%

CETIS Analytical Report

Report Date: 03 Apr-23 13:16 (p 2 of 3)
 Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-3091-7681 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.4
 Analyzed: 03 Apr-23 13:14 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 03 Apr-23 13:13 MD5 Hash: 3B30FA25B2C9D8629879C5CA013E1B85 Editor ID: 009-702-627-3

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
6.25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
12.5		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
25		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
50		4	1.4410	1.4410	1.4420		1.4410	1.4410	0.0000	0.00%	0.00%
100		4	1.2440	0.9653	1.5230		1.0280	1.4410	0.0876	14.08%	13.69%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		0.8667	0.7333	1.0000	0.9333

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
6.25		1.4410	1.4410	1.4410	1.4410
12.5		1.4410	1.4410	1.4410	1.4410
25		1.4410	1.4410	1.4410	1.4410
50		1.4410	1.4410	1.4410	1.4410
100		1.1970	1.0280	1.4410	1.3100

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		13/15	11/15	15/15	14/15

CETIS Analytical Report

Report Date: 03 Apr-23 13:17 (p 3 of 3)
 Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-1211-5474	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 13:14	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 03 Apr-23 13:13	MD5 Hash: 01EC2DD552ACCD36FB5C6FEBCF44E1F	Editor ID: 009-702-627-3
Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	0.04619	13.30%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	22	10	0	CDF	0.9908	Non-Significant Effect
		12.5	6	23	10	0	CDF	0.9966	Non-Significant Effect
		25	6	22	10	0	CDF	0.9908	Non-Significant Effect
		50	6	25	10	0	CDF	0.9997	Non-Significant Effect
		100	6	12	10	0	CDF	0.1424	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3473	0.25	<<	Yes	Passes Criteria
PMSD	0.133	0.12	0.3	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0161536	0.0032307	5	4.387	0.0087	Significant Effect
Error	0.0132561	0.0007365	18			
Total	0.0294098		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	19.44	15.09	0.0016	Unequal Variances
	Levene Equality of Variance Test	6.185	4.248	0.0017	Unequal Variances
	Mod Levene Equality of Variance Test	4.227	4.248	0.0102	Equal Variances
Distribution	Anderson-Darling A2 Test	1.262	3.878	0.0025	Non-Normal Distribution
	D'Agostino Kurtosis Test	2.99	2.576	0.0028	Non-Normal Distribution
	D'Agostino Skewness Test	2.223	2.576	0.0262	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	13.88	9.21	0.0010	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.1821	0.2056	0.0386	Normal Distribution
	Shapiro-Wilk W Normality Test	0.8558	0.884	0.0028	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.3473	0.3263	0.3683		0.338	0.3667	0.006594	3.80%	0.00%
6.25		4	0.3515	0.3389	0.3641		0.3467	0.3633	0.003966	2.26%	-1.20%
12.5		4	0.364	0.3372	0.3908		0.3433	0.3813	0.00842	4.63%	-4.80%
25		4	0.3598	0.3499	0.3698		0.3507	0.3647	0.003119	1.73%	-3.60%
50		4	0.3718	0.3471	0.3966		0.3507	0.3853	0.007767	4.18%	-7.05%
100		4	0.2927	0.197	0.3884		0.2127	0.3393	0.03008	20.55%	15.74%

CETIS Analytical Report

Report Date: 03 Apr-23 13:18 (p 1 of 4)
 Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-4833-2548	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 13:14	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Apr-23 13:13	MD5 Hash: 3B30FA25B2C9D8629879C5CA013E1B85	Editor ID: 009-702-627-3
Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
100		4	0.8833	0.9000	0.7333	1.0000	12.89%	11.67%	53/60	0.8833	11.67%

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		0.8667	0.7333	1.0000	0.9333

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	15/15
25		15/15	15/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		13/15	11/15	15/15	14/15

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CETIS Analytical Report

Report Date: 03 Apr-23 13:18 (p 2 of 4)

Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

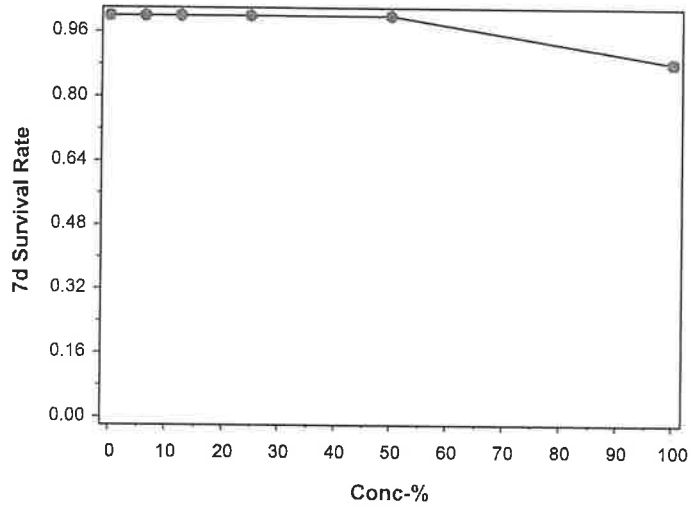
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-4833-2548
Analyzed: 03 Apr-23 13:14
Edit Date: 03 Apr-23 13:13

Endpoint: 7d Survival Rate
Analysis: Linear Interpolation (ICPIN)
MD5 Hash: 3B30FA25B2C9D8629879C5CA013E1B85

CETIS Version: CETISv2.1.4
Status Level: 1
Editor ID: 009-702-627-3

Graphics



CETIS Analytical Report

Report Date: 03 Apr-23 13:18 (p 3 of 4)
 Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-0490-3172	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 13:14	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Apr-23 13:13	MD5 Hash: 01EC2DD552ACCD36FB5C6FEBCF44E1F	Editor ID: 009-702-627-3
Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2073984	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.3473	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
IC15	90.64	60.79	---	1.1	---	1.6
IC20	>100	---	---	<1	---	---
IC25	>100	---	---	<1	---	---
IC40	>100	---	---	<1	---	---
IC50	>100	---	---	<1	---	---

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.3473	0.3423	0.338	0.3667	3.80%	0.00%	0.3589	0.00%
6.25		4	0.3515	0.348	0.3467	0.3633	2.26%	-1.20%	0.3589	0.00%
12.5		4	0.364	0.3657	0.3433	0.3813	4.63%	-4.80%	0.3589	0.00%
25		4	0.3598	0.362	0.3507	0.3647	1.73%	-3.60%	0.3589	0.00%
50		4	0.3718	0.3757	0.3507	0.3853	4.18%	-7.05%	0.3589	0.00%
100		4	0.2927	0.3093	0.2127	0.3393	20.55%	15.74%	0.2927	18.45%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.34	0.3667	0.338	0.3447
6.25		0.3473	0.3487	0.3467	0.3633
12.5		0.3813	0.358	0.3433	0.3733
25		0.3507	0.362	0.362	0.3647
50		0.3853	0.3813	0.37	0.3507
100		0.28	0.2127	0.3387	0.3393

CETIS Measurement Report

Report Date: 03 Apr-23 13:18 (p 1 of 1)

Test Code/ID: VCF0323.139fml / 07-1577-2301

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-8784-5819	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 09-3908-3556	Code: VCF0323.139fml	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	



April 3, 2023

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* EPA-821-R-02-013. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

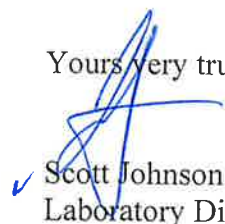
CLIENT: Ventura County Watershed Protection District
SAMPLE I.D.: RW-LC1
DATE RECEIVED: 03/10/2023
ABC LAB. NO.: VCF0323.139

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL NOEC = 100.00 %
 TUc = 1.00
 EC25 = >100.00 %
 EC50 = >100.00 %

REPRODUCTION NOEC = 100.00 %
 TUc = 1.00
 IC25 = >100.00 %
 IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 27 Mar-23 15:49 (p 1 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 07-7228-4842	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 02-2905-1393	Code: VCF0323.139cer	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
19-2140-4064	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	100	>100	---	---	1	1
04-8950-7936	Reproduction	Dunnett Multiple Comparison Test	100	>100	---	10.7%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
06-3481-5340	7d Survival Rate	Linear Interpolation (ICPIN)	✓ EC15	>100	---	---	<1	1
			✓ EC20	>100	---	---	<1	
			✓ EC25	>100	---	---	<1	
			✓ EC40	>100	---	---	<1	
			✓ EC50	>100	---	---	<1	
17-8144-3870	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	>100	---	---	<1	1
			✓ IC20	>100	---	---	<1	
			✓ IC25	>100	---	---	<1	
			✓ IC40	>100	---	---	<1	
			✓ IC50	>100	---	---	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
06-3481-5340	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
19-2140-4064	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
04-8950-7936	Reproduction	Control Resp	27.8	15	<<	Yes	Passes Criteria	
17-8144-3870	Reproduction	Control Resp	27.8	15	<<	Yes	Passes Criteria	
04-8950-7936	Reproduction	PMSD	0.1068	0.13	0.47	Yes	Below Criteria	

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	27.8	26.3	29.3	25	31	0.6633	2.098	7.55%	0.00%
6.25		10	29.1	26.57	31.63	25	36	1.12	3.542	12.17%	-4.68%
12.5		10	28.7	26.54	30.86	24	34	0.9551	3.02	10.52%	-3.24%
25		10	29.4	27.16	31.64	25	36	0.9911	3.134	10.66%	-5.76%
50		10	30.2	28.18	32.22	27	33	0.8919	2.821	9.34%	-8.63%
100		10	30.2	28.36	32.04	27	35	0.8138	2.573	8.52%	-8.63%

AND PASS

CETIS Summary Report

Report Date: 27 Mar-23 15:49 (p 2 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

MD5: 521A0DF2AE1E59D72392DBABE0C7AEFC

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Reproduction Detail

MD5: 5FC37C8E19F435DEF4B9A88A576EE537

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	27	28	31	27	25	27	28	31	29	25
6.25		34	30	28	29	28	25	25	27	29	36
12.5		34	30	31	32	28	24	26	27	28	27
25		31	29	25	25	29	29	29	30	31	36
50		33	33	29	33	27	28	27	27	32	33
100		30	30	27	28	28	31	30	29	34	35

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 27 Mar-23 15:48 (p 1 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 04-8950-7936	Endpoint: Reproduction	CETIS Version: CETISv2.1.4			
Analyzed: 27 Mar-23 10:44	Analysis: Parametric-Control vs Treatments	Status Level: 1			
Edit Date: 27 Mar-23 10:43	MD5 Hash: 0EDD5A96C3832C96E7EFB1333F552AE2	Editor ID: 007-730-798-8			
Batch ID: 07-7228-4842	Test Type: Reproduction-Survival (7d)	Analyst:			
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 17 Mar-23 14:10	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 02-2905-1393	Code: VCF0323.139cer	Project: NPDES Stormwater Wet Season (Con			
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1			
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	100	>100	---	1	2.969	10.68%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-%	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	18	-1.002	2.289	2.969	CDF	0.9844	Non-Significant Effect
		12.5	18	-0.6939	2.289	2.969	CDF	0.9634	Non-Significant Effect
		25	18	-1.234	2.289	2.969	CDF	0.9923	Non-Significant Effect
		50	18	-1.85	2.289	2.969	CDF	0.9991	Non-Significant Effect
		100	18	-1.85	2.289	2.969	CDF	0.9991	Non-Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	27.8	15	<<	Yes	Passes Criteria
PMSD	0.1068	0.13	0.47	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	42.5333	8.50667	5	1.011	0.4201	Non-Significant Effect
Error	454.2	8.41111	54			
Total	496.733		59			

ANOVA Assumptions Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variance	Bartlett Equality of Variance Test	2.647	15.09	0.7543	Equal Variances	
	Levene Equality of Variance Test	0.5521	3.377	0.7360	Equal Variances	
	Mod Levene Equality of Variance Test	0.4619	3.377	0.8028	Equal Variances	
Distribution	Anderson-Darling A2 Test	0.5517	3.878	0.1588	Normal Distribution	
	D'Agostino Kurtosis Test	0.1241	2.576	0.9012	Normal Distribution	
	D'Agostino Skewness Test	1.613	2.576	0.1067	Normal Distribution	
	D'Agostino-Pearson K2 Omnibus Test	2.618	9.21	0.2701	Normal Distribution	
	Kolmogorov-Smirnov D Test	0.1144	0.1331	0.0492	Normal Distribution	
	Shapiro-Wilk W Normality Test	0.9688	0.9459	0.1275	Normal Distribution	

Reproduction Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	27.8	26.3	29.3	27.4	25	31	0.6633	7.55%	0.00%
6.25		10	29.1	26.57	31.63	28.5	25	36	1.12	12.17%	-4.68%
12.5		10	28.7	26.54	30.86	28	24	34	0.9551	10.52%	-3.24%
25		10	29.4	27.16	31.64	29	25	36	0.9911	10.66%	-5.76%
50		10	30.2	28.18	32.22	30.5	27	33	0.8919	9.34%	-8.63%
100		10	30.2	28.36	32.04	30	27	35	0.8138	8.52%	-8.63%

CETIS Analytical Report

Report Date: 27 Mar-23 15:49 (p 1 of 4)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 06-3481-5340	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4	Analyzed: 27 Mar-23 10:44	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 27 Mar-23 10:43	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 007-730-798-8	Batch ID: 07-7228-4842	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	Ending Date: 17 Mar-23 14:10	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Age: <24	Sample ID: 02-2905-1393	Code: VCF0323.139cer
Project: NPDES Stormwater Wet Season (Con	Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report	Receipt Date: 10 Mar-23 11:17	CAS (PC):
Station: RW-LC1	Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri			

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates						
Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	>100	---	---	<1	---	---
EC20	>100	---	---	<1	---	---
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

7d Survival Rate Summary			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

7d Survival Rate Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

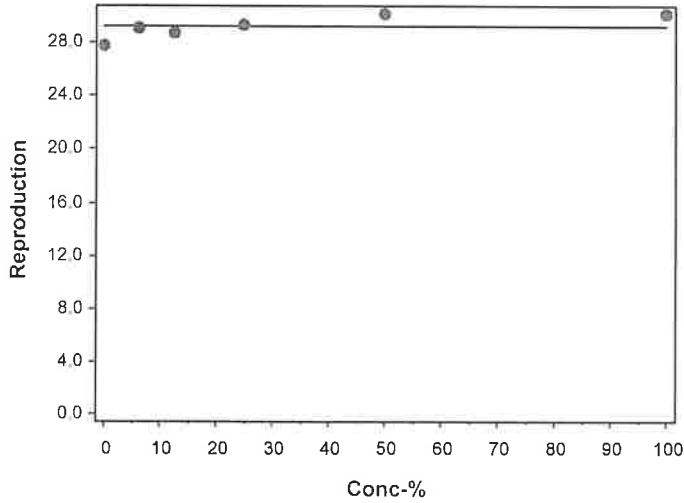
Report Date: 27 Mar-23 15:49 (p 4 of 4)
Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-8144-3870	Endpoint: Reproduction	CETIS Version: CETISv2.1.4
Analyzed: 27 Mar-23 10:44	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 27 Mar-23 10:43	MD5 Hash: 0EDD5A96C3832C96E7EFB1333F552AE2	Editor ID: 007-730-798-8

Graphics



CETIS Analytical Report

Report Date: 27 Mar-23 15:49 (p 1 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 19-2140-4064	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4			
Analyzed: 27 Mar-23 10:44	Analysis: STP 2xK Contingency Tables	Status Level: 1			
Edit Date: 27 Mar-23 10:43	MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF	Editor ID: 007-730-798-8			
Batch ID: 07-7228-4842	Test Type: Reproduction-Survival (7d)	Analyst:			
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 17 Mar-23 14:10	Species: Ceriodaphnia dubia	Brine: Not Applicable			
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24			
Sample ID: 02-2905-1393	Code: VCF0323.139cer	Project: NPDES Stormwater Wet Season (Con			
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report			
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1			
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units
Untransformed	C > T	100	>100	--	1

Fisher Exact/Bonferroni-Holm Test						
Control	vs	Conc-%	Test Stat	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	<<	Yes	Passes Criteria

7d Survival Rate Frequencies							
Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	N	10	0	10	1.0000	0.0000	0.00%
6.25		10	0	10	1.0000	0.0000	0.00%
12.5		10	0	10	1.0000	0.0000	0.00%
25		10	0	10	1.0000	0.0000	0.00%
50		10	0	10	1.0000	0.0000	0.00%
100		10	0	10	1.0000	0.0000	0.00%

7d Survival Rate Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

7d Survival Rate Detail											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

CETIS Analytical Report

Report Date: 27 Mar-23 15:49 (p 2 of 2)

Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 19-2140-4064
 Analyzed: 27 Mar-23 10:44
 Edit Date: 27 Mar-23 10:43

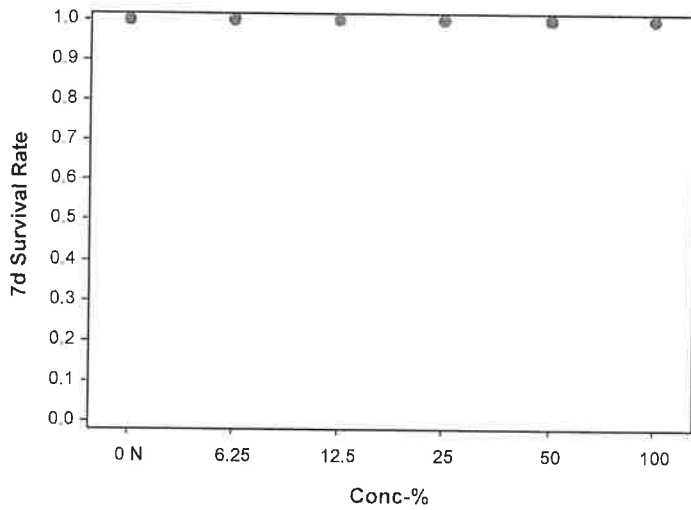
Endpoint: 7d Survival Rate
 Analysis: STP 2xK Contingency Tables
 MD5 Hash: 521A0DF2AE1E59D72392DBABE0C7AEF

CETIS Version: CETISv2.1.4
 Status Level: 1
 Editor ID: 007-730-798-8

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Graphics



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CETIS Measurement Report

Report Date: 27 Mar-23 15:49 (p 1 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 07-7228-4842	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 10 Mar-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 14:10	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 02-2905-1393	Code: VCF0323.139cer	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: Ventura County Watershed Protection Distri	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	65	65	65	65	65	0	0	0.00%	0
100		8	144	144	144	144	144	0	0	0.00%	0
Overall		16	104.5	82.76	126.2	65	144	10.2	40.8	39.04%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	370.4	366	374.8	362	377	0.6578	5.263	1.42%	0
6.25		8	510.8	507.5	514	502	515	0.4853	3.882	0.76%	0
12.5		8	586.4	583.8	588.9	582	590	0.3776	3.021	0.52%	0
25		8	760	756.6	763.4	754	766	0.5132	4.106	0.54%	0
50		8	994	990.8	997.2	989	999	0.4725	3.78	0.38%	0
100		8	1574	1570	1578	1568	1580	0.6011	4.809	0.31%	0
Overall		48	799.2	682.3	916.1	362	1580	58.09	402.5	50.36%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.75	7.56	7.94	7.3	8	0.02835	0.2268	2.93%	0
6.25		8	7.8	7.674	7.926	7.6	8	0.0189	0.1512	1.94%	0
12.5		8	7.775	7.635	7.915	7.5	8	0.02086	0.1669	2.15%	0
25		8	7.788	7.606	7.969	7.4	8	0.02709	0.2167	2.78%	0
50		8	7.813	7.615	8.01	7.4	8.1	0.02946	0.2357	3.02%	0
100		8	7.825	7.621	8.029	7.4	8.1	0.03044	0.2435	3.11%	0
Overall		48	7.792	7.734	7.85	7.3	8.1	0.02884	0.1998	2.57%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	80	80	80	80	80	0	0	0.00%	0
100		8	485	485	485	485	485	0	0	0.00%	0
Overall		16	282.5	171.1	393.9	80	485	52.29	209.1	74.03%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.962	7.874	8.051	7.7	8	0.01326	0.1061	1.33%	0
6.25		8	8	7.882	8.118	7.7	8.2	0.01768	0.1414	1.77%	0
12.5		8	8	7.911	8.089	7.8	8.2	0.01336	0.1069	1.34%	0
25		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
50		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
100		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
Overall		48	7.981	7.954	8.008	7.7	8.2	0.01353	0.09375	1.18%	0 (0%)

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CETIS Measurement Report

Report Date: 27 Mar-23 15:49 (p 2 of 2)
 Test Code/ID: VCF0323.139cer / 01-8848-9763

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
6.25		8	24	24	24	24	24	0	0	0.00%	0
12.5		8	24	24	24	24	24	0	0	0.00%	0
25		8	24	24	24	24	24	0	0	0.00%	0
50		8	24	24	24	24	24	0	0	0.00%	0
100		8	24	24	24	24	24	0	0	0.00%	0
Overall		48	24	24	24	24	24	0	0	0.00%	0 (0%)



April 3, 2023

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Ventura County Watershed Protection District
SAMPLE I.D.:	RW-LC1
DATE RECEIVED:	03/10/2023
ABC LAB. NO.:	VCF0323.139


ACUTE 96 HOURS HYALELLA AZTECA SURVIVAL BIOASSAY

% Survival = 70 % Survival in 100% Sample

*TUa = 0.87

* TU(a) Is calculated by: $\log (\% \text{ Mortality})/1.7$

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 27 Mar-23 16:06 (p 1 of 1)

Test Code/ID: VCF0323.139ahya / 11-6504-8181

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 12-8318-0801	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:10	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:03	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-2360-6355	Code: VCF0323.139ahya	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: VCWPD	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
16-7303-6948	96h Survival Rate	Steel Many-One Rank Sum Test	50	100	70.71	14.7%	2	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
13-5196-9058	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	50	30	76.67	2	1
			EC20	66.67	40	120	1.5	
			EC25	83.33	56.67	---	1.2	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
12.5		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
25		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
50		4	0.8500	0.6909	1.0090	0.8000	1.0000	0.0500	0.1000	11.76%	15.00%
100		4	0.7000	0.5163	0.8837	0.6000	0.8000	0.0577	0.1155	16.50%	30.00%

96h Survival Rate Detail

MD5: E1A033A9CA09314B540CE9F5987DDF25

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	0.8000	1.0000
25		0.8000	1.0000	1.0000	1.0000
50		0.8000	0.8000	1.0000	0.8000
100		0.8000	0.8000	0.6000	0.6000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	4/5	5/5
25		4/5	5/5	5/5	5/5
50		4/5	4/5	5/5	4/5
100		4/5	4/5	3/5	3/5

CETIS Analytical Report

Report Date: 27 Mar-23 16:06 (p 1 of 3)
 Test Code/ID: VCF0323.139ahya / 11-6504-8181

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7303-6948	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 27 Mar-23 10:53	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 27 Mar-23 10:52	MD5 Hash: E1A033A9CA09314B540CE9F5987DDF25	Editor ID: 007-730-798-8
Batch ID: 12-8318-0801	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:10	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:03	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-2360-6355	Code: VCF0323.139ahya	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: VCWPD	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	0.1474	14.74%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		6.25	6	18	10	1	CDF	0.8333	Non-Significant Effect
		12.5	6	16	10	1	CDF	0.6105	Non-Significant Effect
		25	6	16	10	1	CDF	0.6105	Non-Significant Effect
		50	6	12	10	1	CDF	0.1424	Non-Significant Effect
		100*	6	10	10	0	CDF	0.0417	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.363728	0.0727456	5	7.42	0.0006	Significant Effect
Error	0.176465	0.0098036	18			
Total	0.540194		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	5.54	4.248	0.0029	Unequal Variances
	Mod Levene Equality of Variance Test	1.006	4.248	0.4422	Equal Variances
Distribution	Anderson-Darling A2 Test	0.7595	3.878	0.0479	Normal Distribution
	D'Agostino Kurtosis Test	0.4314	2.576	0.6662	Normal Distribution
	D'Agostino Skewness Test	0.7946	2.576	0.4269	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.8174	9.21	0.6645	Normal Distribution
	Kolmogorov-Smirnov D Test	0.2083	0.2056	0.0084	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.9433	0.884	0.1928	Normal Distribution

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
25		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
50		4	0.8500	0.6909	1.0000	0.8000	0.8000	1.0000	0.0500	11.76%	15.00%
100		4	0.7000	0.5163	0.8837	0.7000	0.6000	0.8000	0.0577	16.50%	30.00%

CETIS Analytical Report

Report Date: 27 Mar-23 16:06 (p 2 of 3)
 Test Code/ID: VCF0323.139ahya / 11-6504-8181

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 16-7303-6948 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.4
 Analyzed: 27 Mar-23 10:53 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 27 Mar-23 10:52 MD5 Hash: E1A033A9CA09314B540CE9F5987DDF25 Editor ID: 007-730-798-8

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
6.25		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
12.5		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
25		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
50		4	1.1670	0.9772	1.3560	1.1070	1.1070	1.3450	0.0595	10.21%	13.28%
100		4	0.9966	0.7935	1.2000	0.9966	0.8861	1.1070	0.0638	12.81%	25.92%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	0.8000	1.0000
25		0.8000	1.0000	1.0000	1.0000
50		0.8000	0.8000	1.0000	0.8000
100		0.8000	0.8000	0.6000	0.6000

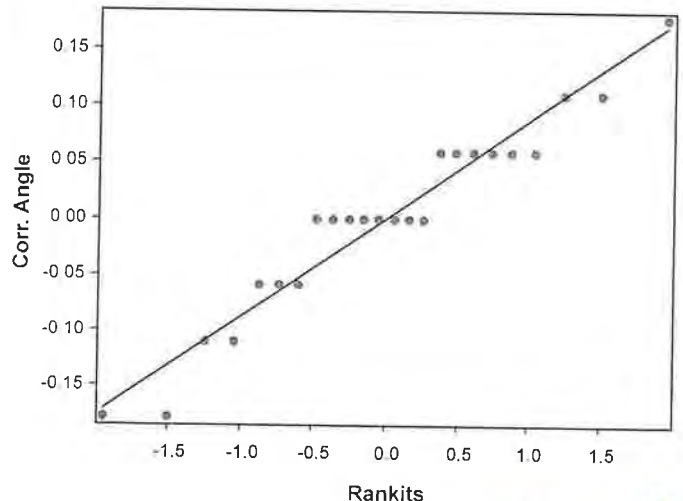
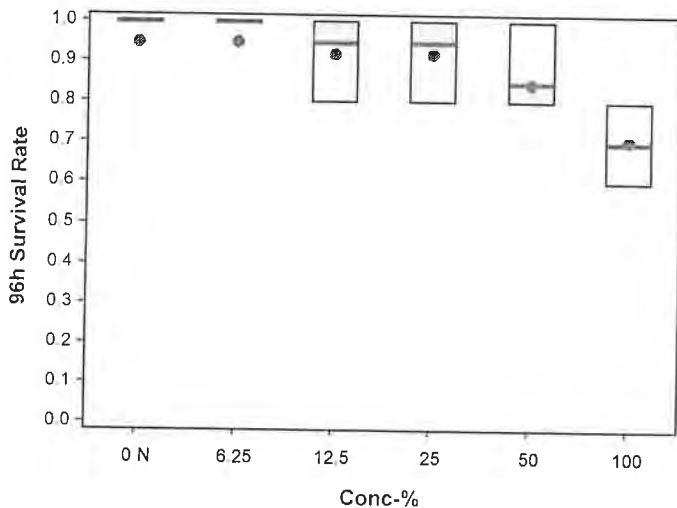
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.3450
12.5		1.3450	1.3450	1.1070	1.3450
25		1.1070	1.3450	1.3450	1.3450
50		1.1070	1.1070	1.3450	1.1070
100		1.1070	1.1070	0.8861	0.8861

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5
12.5		5/5	5/5	4/5	5/5
25		4/5	5/5	5/5	5/5
50		4/5	4/5	5/5	4/5
100		4/5	4/5	3/5	3/5

Graphics





April 3, 2023

Ms. Kelly Hahs
Ventura County Watershed Protection District
800 South Victoria Ave
Ventura, CA 93009

Dear Ms. Hahs:

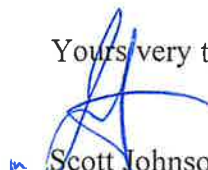
We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Ventura County Watershed Protection District
SAMPLE I.D.:	RW-LC1
DATE RECEIVED:	03/10/2023
ABC LAB. NO.:	VCF0323.139

ACUTE 96 HOURS CHIRONOMUS SURVIVAL BIOASSAY

% Survival = 80 % Survival in 100% Sample
*TUa = 0.77
* TU(a) Is calculated by: $\log (\% \text{ Mortality})/1.7$

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 27 Mar-23 16:06 (p 1 of 1)
 Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 16-7933-1716	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:13	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:15	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 4d 0h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-3204-7448	Code: VCF0323.139achi	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: VCWPD	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	TU	S
09-7553-3411	96h Survival Rate	Steel Many-One Rank Sum Test	100	>100	---	18.7%	1	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	%	95% LCL	95% UCL	TU	S
20-4624-7386	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	50	3.333	---	2	1
			EC20	100	20	---	1	
			EC25	>100	---	---	<1	
			EC40	>100	---	---	<1	
			EC50	>100	---	---	<1	

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
6.25		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
12.5		4	0.9000	0.7163	1.0840	0.8000	1.0000	0.0577	0.1155	12.83%	10.00%
25		4	0.9000	0.7163	1.0840	0.8000	1.0000	0.0577	0.1155	12.83%	10.00%
50		4	0.8500	0.6909	1.0090	0.8000	1.0000	0.0500	0.1000	11.76%	15.00%
100		4	0.8000	0.5402	1.0600	0.6000	1.0000	0.0817	0.1633	20.41%	20.00%

96h Survival Rate Detail

MD5: FEFE187132F7B1E797C62AB6FF78BE09

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	0.8000
12.5		1.0000	0.8000	1.0000	0.8000
25		0.8000	1.0000	0.8000	1.0000
50		0.8000	0.8000	0.8000	1.0000
100		0.8000	0.6000	1.0000	0.8000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	4/5
12.5		5/5	4/5	5/5	4/5
25		4/5	5/5	4/5	5/5
50		4/5	4/5	4/5	5/5
100		4/5	3/5	5/5	4/5

CETIS Analytical Report

Report Date: 27 Mar-23 16:06 (p 2 of 3)
 Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-7553-3411 Endpoint: 96h Survival Rate CETIS Version: CETISv2.1.4
 Analyzed: 27 Mar-23 10:59 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 27 Mar-23 10:58 MD5 Hash: FEFE187132F7B1E797C62AB6FF78BE09 Editor ID: 007-730-798-8

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
6.25		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
12.5		4	1.2260	1.0070	1.4450	1.2260	1.1070	1.3450	0.0687	11.21%	8.85%
25		4	1.2260	1.0070	1.4450	1.2260	1.1070	1.3450	0.0687	11.21%	8.85%
50		4	1.1670	0.9772	1.3560	1.1070	1.1070	1.3450	0.0595	10.21%	13.28%
100		4	1.1110	0.8130	1.4100	1.1070	0.8861	1.3450	0.0938	16.87%	17.38%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	0.8000
12.5		1.0000	0.8000	1.0000	0.8000
25		0.8000	1.0000	0.8000	1.0000
50		0.8000	0.8000	0.8000	1.0000
100		0.8000	0.6000	1.0000	0.8000

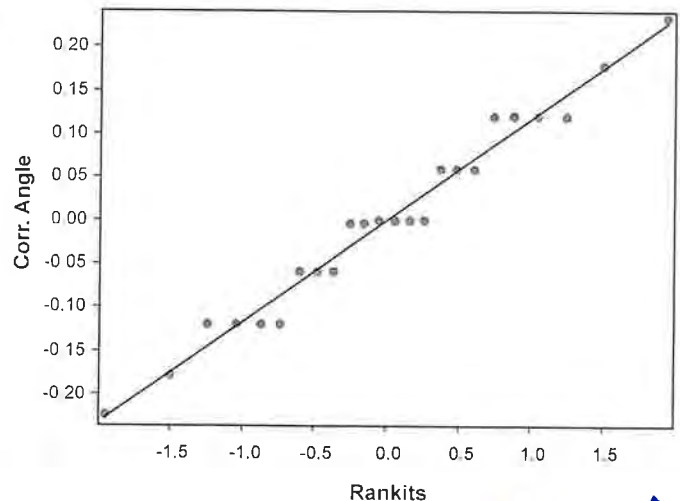
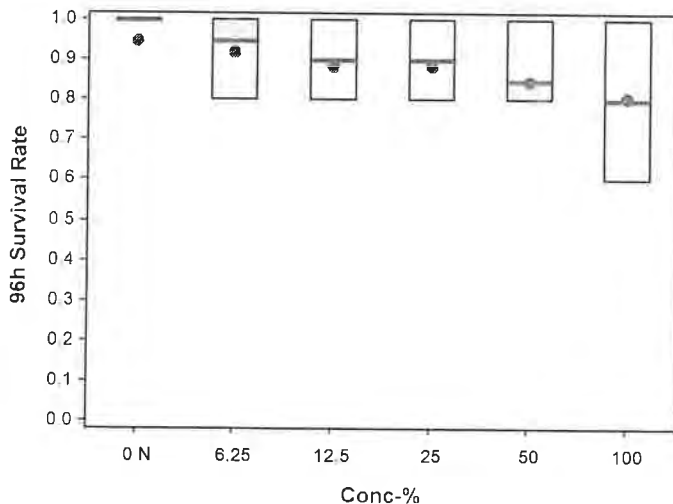
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.3450	1.3450	1.3450	1.3450
6.25		1.3450	1.3450	1.3450	1.1070
12.5		1.3450	1.1070	1.3450	1.1070
25		1.1070	1.3450	1.1070	1.3450
50		1.1070	1.1070	1.1070	1.3450
100		1.1070	0.8861	1.3450	1.1070

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	4/5
12.5		5/5	4/5	5/5	4/5
25		4/5	5/5	4/5	5/5
50		4/5	4/5	4/5	5/5
100		4/5	3/5	5/5	4/5

Graphics



CETIS Analytical Report

Report Date: 27 Mar-23 16:06 (p 1 of 2)
 Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 20-4624-7386	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4	Analyzed: 27 Mar-23 10:59	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 27 Mar-23 10:58	MD5 Hash: FEFE187132F7B1E797C62AB6FF78BE09	Editor ID: 007-730-798-8	Batch ID: 16-7933-1716	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:13	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water	Ending Date: 14 Mar-23 15:15	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 4d 0h	Taxon: Insecta	Source: Aquatic Biosystems, CO	Age:	Sample ID: 02-3204-7448	Code: VCF0323.139achi
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Project: NPDES Stormwater Wet Season (Con	Source: Bioassay Report	Receipt Date: 10 Mar-23 11:17	CAS (PC):
Sample Age: 5h (7.5 °C)	Client: VCWPD	Station: RW-LC1			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	Tox Units	95% LCL	95% UCL
EC15	50	3.333	---	2	---	30
EC20	100	20	---	1	---	5
EC25	>100	---	---	<1	---	---
EC40	>100	---	---	<1	---	---
EC50	>100	---	---	<1	---	---

96h Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
6.25		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9500	5.00%
12.5		4	0.9000	0.9000	0.8000	1.0000	12.83%	10.00%	18/20	0.9000	10.00%
25		4	0.9000	0.9000	0.8000	1.0000	12.83%	10.00%	18/20	0.9000	10.00%
50		4	0.8500	0.8000	0.8000	1.0000	11.76%	15.00%	17/20	0.8500	15.00%
100		4	0.8000	0.8000	0.6000	1.0000	20.41%	20.00%	16/20	0.8000	20.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	0.8000
12.5		1.0000	0.8000	1.0000	0.8000
25		0.8000	1.0000	0.8000	1.0000
50		0.8000	0.8000	0.8000	1.0000
100		0.8000	0.6000	1.0000	0.8000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	4/5
12.5		5/5	4/5	5/5	4/5
25		4/5	5/5	4/5	5/5
50		4/5	4/5	4/5	5/5
100		4/5	3/5	5/5	4/5

CETIS Analytical Report

Report Date: 27 Mar-23 16:06 (p 2 of 2)

Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay

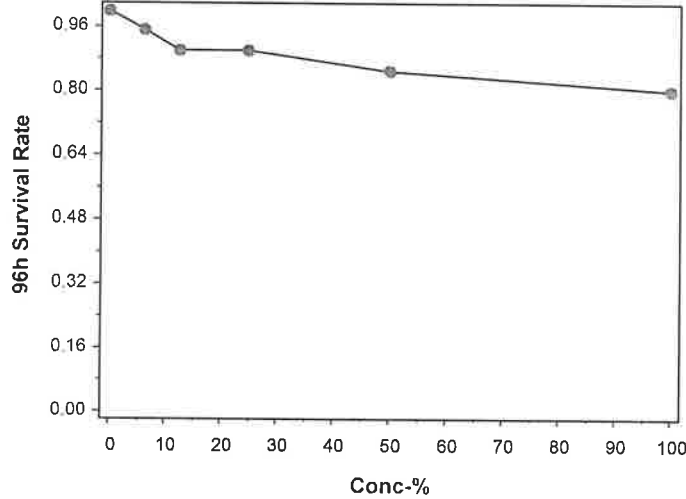
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-4624-7386
Analyzed: 27 Mar-23 10:59
Edit Date: 27 Mar-23 10:58

Endpoint: 96h Survival Rate
Analysis: Linear Interpolation (ICPIN)
MD5 Hash: FEFE187132F7B1E797C62AB6FF78BE09

CETIS Version: CETISv2.1.4
Status Level: 1
Editor ID: 007-730-798-8

Graphics



CETIS Measurement Report

Report Date: 27 Mar-23 16:06 (p 1 of 2)
 Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 16-7933-1716	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:13	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:15	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 4d 0h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-3204-7448	Code: VCF0323.139achi	Project: NPDES Stormwater Wet Season (Con
Sample Date: 10 Mar-23 10:00	Material: Sample Water	Source: Bioassay Report
Receipt Date: 10 Mar-23 11:17	CAS (PC):	Station: RW-LC1
Sample Age: 5h (7.5 °C)	Client: VCWPD	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	65	65	65	65	65	0	0	0.00%	0
100		3	144	144	144	144	144	0	0	0.00%	0
Overall		6	104.5	59.09	149.9	65	144	17.66	43.27	41.41%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	376	367	385	372	379	1.202	3.606	0.96%	0
6.25		3	509.7	492.8	526.6	502	515	2.269	6.807	1.34%	0
12.5		3	588.3	572.2	604.5	582	595	2.169	6.506	1.11%	0
25		3	758.3	747.1	769.5	754	763	1.503	4.509	0.59%	0
50		3	992	974.6	1009	984	997	2.333	7	0.71%	0
100		3	1569	1556	1581	1563	1573	1.711	5.132	0.33%	0
Overall		18	798.8	596.5	1001	372	1573	95.92	406.9	50.94%	0 (0%)

Dissolved Oxygen-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	6.309	8.891	7	7.9	0.1732	0.5196	6.84%	0
6.25		3	7.6	6.309	8.891	7	7.9	0.1732	0.5196	6.84%	0
12.5		3	7.567	6.341	8.792	7	7.9	0.1644	0.4933	6.52%	0
25		3	7.6	6.286	8.914	7	8	0.1764	0.5292	6.96%	0
50		3	7.6	6.089	9.111	6.9	8	0.2028	0.6083	8.00%	0
100		3	7.633	6.056	9.211	6.9	8	0.2117	0.6351	8.32%	0
Overall		18	7.6	7.369	7.831	6.9	8	0.1097	0.4653	6.12%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	80	80	80	80	80	0	0	0.00%	0
100		3	485	485	485	485	485	0	0	0.00%	0
Overall		6	282.5	49.71	515.3	80	485	90.56	221.8	78.52%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8	8	8	8	8	0	0	0.00%	0
6.25		3	8.067	7.78	8.354	8	8.2	0.03849	0.1155	1.43%	0
12.5		3	8.067	7.78	8.354	8	8.2	0.03849	0.1155	1.43%	0
25		3	8	8	8	8	8	0	0	0.00%	0
50		3	8	8	8	8	8	0	0	0.00%	0
100		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8.022	7.99	8.054	8	8.2	0.01524	0.06468	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 27 Mar-23 16:06 (p 2 of 2)
 Test Code/ID: VCF0323.139achi / 02-0234-0324

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
6.25		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
12.5		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
25		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
50		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
100		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
Overall		18	22.67	22.18	23.15	22	24	0.2287	0.9701	4.28%	0 (0%)



ACUTE 96 HOUR HYALELLA AZTECA SURVIVAL BIOASSAY

DATE: 3/10/2023

STANDARD TOXICANT: Copper Chloride


ENDPOINT: SURVIVAL

NOEC = 100.00 µg/L

EC25 = 108.00 µg/L

EC50 = 118.00 µg/L

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 27 Mar-23 16:10 (p 1 of 1)
 Test Code/ID: HYA031023act / 01-5148-1123

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 04-3083-8623	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:03	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:00	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-0004-6836	Code: HYA031023act	Project: REF TOX
Sample Date: 10 Mar-23 15:03	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
01-0745-5501	96h Survival Rate	Steel Many-One Rank Sum Test	100	120	109.5	11.2%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
17-6067-7645	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	104	97.6	107.2	1
			EC20	106	100.4	109.2	
			EC25	108	103.2	111.2	
			EC40	114	110.8	119.6	
			EC50	118	114.8	124.1	

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
120		4	0.4500	0.2909	0.6091	0.4000	0.6000	0.0500	0.1000	22.22%	55.00%
140		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

96h Survival Rate Detail

MD5: 9555EEC14D9C9F882498B0F18AC9DA2F

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	0.8000	1.0000	1.0000
120		0.6000	0.4000	0.4000	0.4000
140		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	4/5	5/5	5/5
120		3/5	2/5	2/5	2/5
140		0/5	0/5	0/5	0/5

Handwritten signatures and initials: "AM" and "PSS"

CETIS Analytical Report

Report Date: 27 Mar-23 16:10 (p 1 of 2)
 Test Code/ID: HYA031023act / 01-5148-1123

Hyalella 96-h Acute Survival Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 01-0745-5501	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4			
Analyzed: 27 Mar-23 11:29	Analysis: Nonparametric-Control vs Treatments	Status Level: 1			
Edit Date: 27 Mar-23 11:29	MD5 Hash: 9555EEC14D9C9F882498B0F18AC9DA2F	Editor ID: 007-730-798-8			
Batch ID: 04-3083-8623	Test Type: Survival (96h)	Analyst:			
Start Date: 10 Mar-23 15:03	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water			
Ending Date: 14 Mar-23 15:00	Species: Hyalella azteca	Brine: Not Applicable			
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:			
Sample ID: 06-0004-6836	Code: HYA031023act	Project: REF TOX			
Sample Date: 10 Mar-23 15:03	Material: Copper chloride	Source: Reference Toxicant			
Receipt Date:	CAS (PC):	Station: REF TOX			
Sample Age: ---	Client: ABC Labs				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	100	120	109.5	---	0.1123	11.23%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		40	6	18	10	1	CDF	0.8000	Non-Significant Effect
		80	6	18	10	1	CDF	0.8000	Non-Significant Effect
		100	6	16	10	1	CDF	0.5661	Non-Significant Effect
		120*	6	10	10	0	CDF	0.0350	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.14481	0.286203	4	58.86	<1.0E-05	Significant Effect
Error	0.0729397	0.0048627	15			
Total	1.21775		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	6.781	4.893	0.0025	Unequal Variances
	Mod Levene Equality of Variance Test	0.7535	4.893	0.5711	Equal Variances
Distribution	Anderson-Darling A2 Test	2.181	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	2.625	2.576	0.0087	Non-Normal Distribution
	D'Agostino Skewness Test	1.002	2.576	0.3165	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	7.893	9.21	0.0193	Normal Distribution
	Kolmogorov-Smirnov D Test	0.3	0.2235	5.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.8053	0.866	0.0010	Non-Normal Distribution

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
120		4	0.4500	0.2909	0.6091	0.4000	0.4000	0.6000	0.0500	22.22%	55.00%
140		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
40		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
80		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
100		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
120		4	0.7351	0.5749	0.8953	0.6847	0.6847	0.8861	0.0503	13.70%	45.36%
140		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0.0000	0.00%	83.24%

CETIS Analytical Report

Report Date: 27 Mar-23 16:10 (p 1 of 2)
 Test Code/ID: HYA031023act / 01-5148-1123

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-6067-7645	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 27 Mar-23 11:30	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 27 Mar-23 11:29	MD5 Hash: 9555EEC14D9C9F882498B0F18AC9DA2F	Editor ID: 007-730-798-8
Batch ID: 04-3083-8623	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:03	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:00	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO Age:
Sample ID: 06-0004-6836	Code: HYA031023act	Project: REF TOX
Sample Date: 10 Mar-23 15:03	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	104	97.6	107.2
EC20	106	100.4	109.2
EC25	108	103.2	111.2
EC40	114	110.8	119.6
EC50	118	114.8	124.1

96h Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
80		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
100		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9500	5.00%
120		4	0.4500	0.4000	0.4000	0.6000	22.22%	55.00%	9/20	0.4500	55.00%
140		4	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/20	0.0000	100.00%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	1.0000
100		1.0000	0.8000	1.0000	1.0000
120		0.6000	0.4000	0.4000	0.4000
140		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	5/5
100		5/5	4/5	5/5	5/5
120		3/5	2/5	2/5	2/5
140		0/5	0/5	0/5	0/5

P

CETIS Measurement Report

Report Date: 27 Mar-23 16:10 (p 1 of 2)
 Test Code/ID: HYA031023act / 01-5148-1123

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 04-3083-8623	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:03	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:00	Species: Hyalella azteca	Brine: Not Applicable
Test Length: 96h	Taxon: Malacostraca	Source: Aquatic Biosystems, CO
Sample ID: 06-0004-6836	Code: HYA031023act	Age:
Sample Date: 10 Mar-23 15:03	Material: Copper chloride	Project: REF TOX
Receipt Date:	CAS (PC):	Source: Reference Toxicant
Sample Age: ---	Client: ABC Labs	Station: REF TOX

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	65	65	65	65	65	0	0	0.00%	0
140		3	60	60	60	60	60	0	0	0.00%	0
Overall		6	62.5	59.63	65.37	60	65	1.118	2.739	4.38%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	376	367	385	372	379	1.202	3.606	0.96%	0
40		3	370	370	370	370	370	0	0	0.00%	0
80		3	371.7	367.9	375.5	370	373	0.5092	1.528	0.41%	0
100		3	368.3	365.5	371.2	367	369	0.3849	1.155	0.31%	0
120		3	364.7	363.2	366.1	364	365	0.1925	0.5774	0.16%	0
140		3	363.7	359.9	367.5	362	365	0.5092	1.528	0.42%	0
Overall		18	369.1	366.8	371.3	362	379	1.074	4.556	1.24%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	7.6	6.309	8.891	7	7.9	0.1732	0.5196	6.84%	0
40		3	7.5	6.362	8.638	7	7.9	0.1528	0.4583	6.11%	0
80		3	7.433	6.429	8.437	7	7.8	0.1347	0.4041	5.44%	0
100		3	7.433	6.429	8.437	7	7.8	0.1347	0.4041	5.44%	0
120		3	7.433	6.429	8.437	7	7.8	0.1347	0.4041	5.44%	0
140		3	7.467	6.432	8.501	7	7.8	0.1388	0.4163	5.58%	0
Overall		18	7.478	7.293	7.663	7	7.9	0.08765	0.3719	4.97%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	80	80	80	80	80	0	0	0.00%	0
140		3	99	99	99	99	99	0	0	0.00%	0
Overall		6	89.5	78.58	100.4	80	99	4.249	10.41	11.63%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	8	8	8	8	8	0	0	0.00%	0
40		3	8	8	8	8	8	0	0	0.00%	0
80		3	8	8	8	8	8	0	0	0.00%	0
100		3	8	8	8	8	8	0	0	0.00%	0
120		3	8	8	8	8	8	0	0	0.00%	0
140		3	8	8	8	8	8	0	0	0.00%	0
Overall		18	8	8	8	8	8	0	0	0.00%	0 (0%)

CETIS Measurement Report

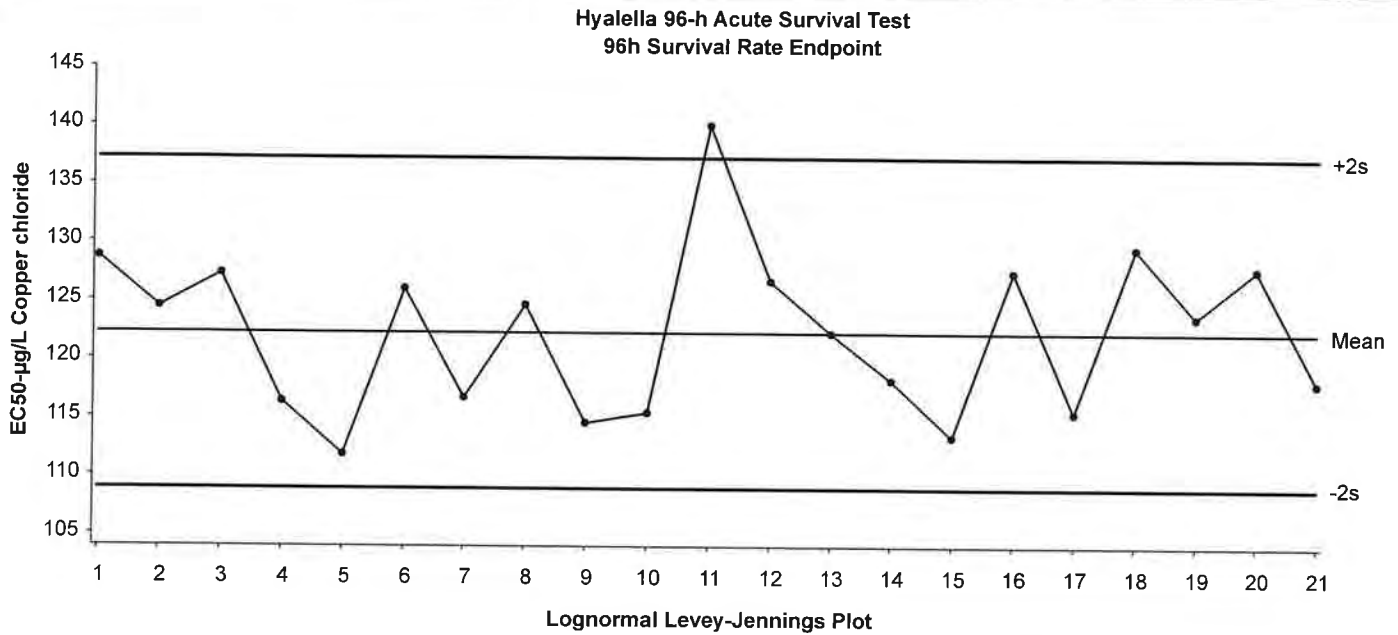
Report Date: 27 Mar-23 16:10 (p 2 of 2)
 Test Code/ID: HYA031023act / 01-5148-1123

Hyalella 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
40		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
80		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
100		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
120		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
140		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
Overall		18	22.67	22.18	23.15	22	24	0.2287	0.9701	4.28%	0 (0%)

Hyalella 96-h Acute Survival Test		Aquatic Bioassay & Consulting Labs, Inc.	
Test Type: Survival (96h)	Organism: Hyalella azteca	Material: Copper chloride	
Protocol: EPA/821/R-02-012 (2002)	Endpoint: 96h Survival Rate	Source: Reference Toxicant-REF	



Mean: 122.2 **Count:** 20 **-2s Action Limit:** 109
Sigma: NA **CV:** 5.77% **+2s Action Limit:** 137

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	Mar	2	14:30	128.8	6.508	0.9003			17-2855-1037	17-5437-3305
2			18	14:55	124.4	2.203	0.31			03-9402-2411	17-9517-1548
3		Apr	26	15:55	127.3	5.031	0.7			02-4010-5862	12-4256-8687
4		May	24	12:30	116.4	-5.878	-0.8553			21-0819-1802	01-8841-6733
5			25	14:00	111.8	-10.48	-1.555			06-4822-5118	11-1059-3254
6		Jun	16	14:40	126	3.758	0.5255			14-6137-4318	05-3892-6752
7		Jul	13	14:00	116.7	-5.575	-0.8101			00-4127-2344	20-5737-0006
8			21	15:30	124.6	2.374	0.3338			08-3732-8828	15-5642-2816
9			27	15:00	114.5	-7.696	-1.129			18-5271-2665	04-9729-7834
10		Aug	10	14:50	115.4	-6.857	-1.002			00-1184-3911	05-1119-3408
11			11	15:12	140	17.76	2.354		(+)	14-5979-6433	21-3157-0647
12			24	12:55	126.7	4.425	0.6171			02-7115-5429	16-2120-4153
13			30	12:30	122.2	-0.01947	-0.00276			18-9038-7569	17-0751-9811
14		Sep	1	15:40	118.2	-4.06	-0.5862			06-6225-3566	03-2033-6104
15			21	12:45	113.3	-8.908	-1.313			21-0857-9518	01-5738-7508
16		Nov	8	17:30	127.5	5.258	0.7309			03-9368-1006	16-9587-3277
17			30	14:55	115.4	-6.857	-1.002			08-7344-7184	18-7485-8973
18		Dec	13	14:30	129.5	7.232	0.9975			11-3799-4077	04-7256-2897
19	2023	Jan	25	15:30	123.6	1.395	0.1969			11-6183-3554	06-2809-0372
20			31	15:00	127.7	5.451	0.7571			02-4110-8674	01-8367-5878
21		Mar	10	15:03	118	-4.242	-0.6129			01-5148-1123	17-6067-7645



ACUTE 96 HOUR CHIRONOMUS DILUTUS SURVIVAL BIOASSAY

DATE: 3/10/2023

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 80.00 µg/L

EC25 = 96.00 µg/L

EC50 = 121.80 µg/L

Yours very truly,

✓ Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 04 Apr-23 11:29 (p 1 of 1)
 Test Code/ID: CHI031023act / 03-2849-8441

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-5237-0523	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:07	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 15:26	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 4d 0h	Taxon: Insecta	Source: Aquatic Biosystems, CO Age:
Sample ID: 02-3212-0882	Code: CHI031023act	Project: REF TOX
Sample Date: 10 Mar-23 15:07	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
03-1591-7132	96h Survival Rate	Steel Many-One Rank Sum Test	80	100	89.44	13.5%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
07-8723-4195	96h Survival Rate	Linear Interpolation (ICPIN)	EC15	88	75.2	96.53	1
			EC20	92	83.47	104.8	
			EC25	96	88.69	108.8	
			EC40	113.3	92	124	
			EC50	121.8	110.9	124.2	

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
80		4	0.9500	0.7909	1.1090	0.8000	1.0000	0.0500	0.1000	10.53%	5.00%
100		4	0.7000	0.5163	0.8837	0.6000	0.8000	0.0577	0.1155	16.50%	30.00%
120		4	0.5500	0.3909	0.7091	0.4000	0.6000	0.0500	0.1000	18.18%	45.00%
140		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

96h Survival Rate Detail

MD5: A2BCA2FA648F4E6B1D6E2F2EB23ED36D

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	0.8000
100		0.8000	0.6000	0.8000	0.6000
120		0.6000	0.6000	0.6000	0.4000
140		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	4/5
100		4/5	3/5	4/5	3/5
120		3/5	3/5	3/5	2/5
140		0/5	0/5	0/5	0/5

CETIS Analytical Report

Report Date: 04 Apr-23 11:29 (p 1 of 2)
 Test Code/ID: CHI031023act / 03-2849-8441

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 03-1591-7132	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4	Analyst:		
Analyzed: 04 Apr-23 11:28	Analysis: Nonparametric-Control vs Treatments	Status Level: 1	Diluent: Laboratory Water		
Edit Date: 04 Apr-23 11:28	MD5 Hash: A2BCA2FA648F4E6B1D6E2F2EB23ED36	Editor ID: 001-083-753-2	Brine: Not Applicable		
Batch ID: 20-5237-0523	Test Type: Survival (96h)		Source: Aquatic Biosystems, CO	Age:	
Start Date: 10 Mar-23 15:07	Protocol: EPA/821/R-02-012 (2002)				
Ending Date: 14 Mar-23 15:26	Species: Chironomus dilutus				
Test Length: 4d 0h	Taxon: Insecta				
Sample ID: 02-3212-0882	Code: CHI031023act	Project: REF TOX			
Sample Date: 10 Mar-23 15:07	Material: Copper chloride	Source: Reference Toxicant			
Receipt Date:	CAS (PC):	Station: REF TOX			
Sample Age: ---	Client: ABC Labs				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	80	100	89.44	---	0.1346	13.46%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		40	6	18	10	1	CDF	0.8000	Non-Significant Effect
		80	6	16	10	1	CDF	0.5661	Non-Significant Effect
		100*	6	10	10	0	CDF	0.0350	Significant Effect
		120*	6	10	10	0	CDF	0.0350	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.865195	0.216299	4	26.64	<1.0E-05	Significant Effect
Error	0.121812	0.0081208	15			
Total	0.987008		19			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	8.828	4.893	0.0007	Unequal Variances
	Mod Levene Equality of Variance Test	1.765	4.893	0.1885	Equal Variances
Distribution	Anderson-Darling A2 Test	1.367	3.878	0.0010	Non-Normal Distribution
	D'Agostino Kurtosis Test	0.5514	2.576	0.5814	Normal Distribution
	D'Agostino Skewness Test	1.802	2.576	0.0715	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	3.552	9.21	0.1693	Normal Distribution
	Kolmogorov-Smirnov D Test	0.3	0.2235	5.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.8692	0.866	0.0114	Normal Distribution

96h Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
80		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
100		4	0.7000	0.5163	0.8837	0.7000	0.6000	0.8000	0.0577	16.50%	30.00%
120		4	0.5500	0.3909	0.7091	0.6000	0.4000	0.6000	0.0500	18.18%	45.00%
140		4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
40		4	1.3450	1.3450	1.3460	1.3450	1.3450	1.3450	0.0000	0.00%	0.00%
80		4	1.2860	1.0960	1.4750	1.3450	1.1070	1.3450	0.0595	9.26%	4.43%
100		4	0.9966	0.7935	1.2000	0.9966	0.8861	1.1070	0.0638	12.81%	25.92%
120		4	0.8357	0.6755	0.9959	0.8861	0.6847	0.8861	0.0503	12.05%	37.88%
140		4	0.2255	0.2255	0.2256	0.2255	0.2255	0.2255	0.0000	0.00%	83.24%

CETIS Analytical Report

Report Date: 04 Apr-23 11:29 (p 1 of 2)
 Test Code/ID: CHI031023act / 03-2849-8441

Chironomus 96-Hour Acute Survival Bioassay			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 07-8723-4195	Endpoint: 96h Survival Rate	CETIS Version: CETISv2.1.4	Analyzed: 04 Apr-23 11:28	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 04 Apr-23 11:28	MD5 Hash: A2BCA2FA648F4E6B1D6E2F2EB23ED36	Editor ID: 001-083-753-2	Batch ID: 20-5237-0523	Test Type: Survival (96h)	Analyst:
Start Date: 10 Mar-23 15:07	Protocol: EPA/821/R-02-012 (2002)	Diluent: Laboratory Water	Ending Date: 14 Mar-23 15:26	Species: Chironomus dilutus	Brine: Not Applicable
Test Length: 4d 0h	Taxon: Insecta	Source: Aquatic Biosystems, CO	Age:	Sample ID: 02-3212-0882	Code: CHI031023act
Sample Date: 10 Mar-23 15:07	Material: Copper chloride	Project: REF TOX	Receipt Date:	Source: Reference Toxicant	Station: REF TOX
Sample Age: ---	Client: ABC Labs				

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	88	75.2	96.53
EC20	92	83.47	104.8
EC25	96	88.69	108.8
EC40	113.3	92	124
EC50	121.8	110.9	124.2

96h Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
40		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	20/20	1.0000	0.00%
80		4	0.9500	1.0000	0.8000	1.0000	10.53%	5.00%	19/20	0.9500	5.00%
100		4	0.7000	0.7000	0.6000	0.8000	16.50%	30.00%	14/20	0.7000	30.00%
120		4	0.5500	0.6000	0.4000	0.6000	18.18%	45.00%	11/20	0.5500	45.00%
140		4	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/20	0.0000	100.00%

96h Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
40		1.0000	1.0000	1.0000	1.0000
80		1.0000	1.0000	1.0000	0.8000
100		0.8000	0.6000	0.8000	0.6000
120		0.6000	0.6000	0.6000	0.4000
140		0.0000	0.0000	0.0000	0.0000

96h Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	5/5	5/5	5/5	5/5
40		5/5	5/5	5/5	5/5
80		5/5	5/5	5/5	4/5
100		4/5	3/5	4/5	3/5
120		3/5	3/5	3/5	2/5
140		0/5	0/5	0/5	0/5

CETIS Measurement Report

Report Date: 04 Apr-23 11:29 (p 2 of 2)
 Test Code/ID: CHI031023act / 03-2849-8441

Chironomus 96-Hour Acute Survival Bioassay

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
40		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
80		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
100		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
120		3	22.67	19.8	25.54	22	24	0.3849	1.155	5.09%	0
140		1	24	---	---	24	24	---	---	---	0
Overall		16	22.75	22.22	23.28	22	24	0.25	1	4.40%	0 (0%)



CHRONIC CERIODAPHNIA SURVIVAL AND REPRODUCTION BIOASSAY

DATE: 7 March - 2023

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 10.00 ug/l

EC25 = 15.00 ug/l

EC50 = 20.00 ug/l

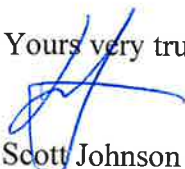
ENDPOINT: REPRODUCTION

NOEC = 10.00 ug/l

IC25 = 14.63 ug/l

IC50 = 19.75 ug/l

Yours very truly,


w Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 04 Apr-23 11:20 (p 1 of 2)
 Test Code/ID: CER030723 / 11-8200-9593

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID: 04-0989-8037	Test Type: Reproduction-Survival (7d)	Analyst:					
Start Date: 07 Mar-23 14:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water					
Ending Date: 14 Mar-23 14:53	Species: Ceriodaphnia dubia	Brine: Not Applicable					
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Age: <24				
Sample ID: 01-9737-1339	Code: CER030723	Project: REF TOX					
Sample Date: 07 Mar-23 14:30	Material: Copper chloride	Source: Reference Toxicant					
Receipt Date:	CAS (PC):	Station: REF TOX					
Sample Age: ---	Client: ABC Labs						

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
12-3601-0837	7d Survival Rate	Fisher Exact/Bonferroni-Holm Test	✓ 10	30	17.32	---	1
18-1287-1922	Reproduction	Dunnett Multiple Comparison Test	✓ 10	30	17.32	10.0%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
06-1569-8175	7d Survival Rate	Linear Interpolation (ICPIN)	EC15	13	13	13	1
			EC20	14	14	14	
			EC25	15	15	15	
			EC40	18	18	18	
			EC50	20	20	20	
07-2699-2510	Reproduction	Linear Interpolation (ICPIN)	✓ IC15	12.58	11.21	13	1
			✓ IC20	13.61	12.31	14	
			✓ IC25	14.63	13.42	15	
			✓ IC40	17.7	16.73	18	
			✓ IC50	19.75	18.94	20	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Decision
				Lower	Upper	Overlap	
06-1569-8175	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
12-3601-0837	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria
07-2699-2510	Reproduction	Control Resp	22.9	15	<<	Yes	Passes Criteria
18-1287-1922	Reproduction	Control Resp	22.9	15	<<	Yes	Passes Criteria
18-1287-1922	Reproduction	PMSD	0.1001	0.13	0.47	Yes	Below Criteria

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
3		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
10		10	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
30		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%
50		10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	---	100.00%

Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	10	22.9	21.57	24.23	20	26	0.5859	1.853	8.09%	0.00%
3		10	22.5	20.26	24.74	18	27	0.9916	3.136	13.94%	1.75%
5		10	22.3	20.95	23.65	20	25	0.5972	1.889	8.47%	2.62%
10		10	22.4	20.61	24.19	19	28	0.7916	2.503	11.18%	2.18%
30		10	0	0	0	0	0	0	0	---	100.00%
50		10	0	0	0	0	0	0	0	---	100.00%

CETIS Analytical Report

Report Date: 04 Apr-23 11:20 (p 1 of 2)
 Test Code/ID: CER030723 / 11-8200-9593

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-1287-1922	Endpoint: Reproduction	CETIS Version: CETISv2.1.4
Analyzed: 22 Mar-23 7:44	Analysis: Parametric-Control vs Treatments	Status Level: 1
Edit Date: 22 Mar-23 7:40	MD5 Hash: 2815D12133967AE436D4FC557F35CDBA	Editor ID: 007-730-798-8
Batch ID: 04-0989-8037	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Mar-23 14:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 14:53	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 01-9737-1339	Code: CER030723	Project: REF TOX
Sample Date: 07 Mar-23 14:30	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	10	30	17.32	---	2.292	10.01%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	MSD	P-Type	P-Value	Decision(α:5%)
Negative Control		3	18	0.3722	2.133	2.292	CDF	0.5995	Non-Significant Effect
		5	18	0.5583	2.133	2.292	CDF	0.5168	Non-Significant Effect
		10	18	0.4652	2.133	2.292	CDF	0.5584	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	22.9	15	<<	Yes	Passes Criteria
PMSD	0.1001	0.13	0.47	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.075	0.691667	3	0.1198	0.9479	Non-Significant Effect
Error	207.9	5.775	36			
Total	209.975		39			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.337	11.34	0.3425	Equal Variances
	Levene Equality of Variance Test	1.545	4.377	0.2195	Equal Variances
	Mod Levene Equality of Variance Test	1.103	4.377	0.3604	Equal Variances
Distribution	Anderson-Darling A2 Test	0.2615	3.878	0.7332	Normal Distribution
	D'Agostino Kurtosis Test	0.1221	2.576	0.9028	Normal Distribution
	D'Agostino Skewness Test	0.9793	2.576	0.3274	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	0.974	9.21	0.6145	Normal Distribution
	Kolmogorov-Smirnov D Test	0.08088	0.1617	0.7382	Normal Distribution
	Shapiro-Wilk W Normality Test	0.9833	0.9236	0.8103	Normal Distribution

Reproduction Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	10	22.9	21.57	24.23	22.25	20	26	0.5859	8.09%	0.00%
3		10	22.5	20.26	24.74	22	18	27	0.9916	13.94%	1.75%
5		10	22.3	20.95	23.65	22.6	20	25	0.5972	8.47%	2.62%
10		10	22.4	20.61	24.19	22.75	19	28	0.7916	11.18%	2.18%
30		10	0	0	0	0	0	0	0	---	100.00%
50		10	0	0	0	0	0	0	0	---	100.00%

CETIS Analytical Report

Report Date: 04 Apr-23 11:20 (p 1 of 4)
 Test Code/ID: CER030723 / 11-8200-9593

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 06-1569-8175	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4	Analyzed: 22 Mar-23 7:44	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 22 Mar-23 7:40	MD5 Hash: E68F14682D021D024F00396964E3E9BD	Editor ID: 007-730-798-8	Batch ID: 04-0989-8037	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Mar-23 14:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	Ending Date: 14 Mar-23 14:53	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO	Sample ID: 01-9737-1339	Code: CER030723	Age: <24
Sample Date: 07 Mar-23 14:30	Material: Copper chloride	Project: REF TOX	Receipt Date:	CAS (PC):	Source: Reference Toxicant
Sample Age: ---	Client: ABC Labs	Station: REF TOX			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	13	13	13
EC20	14	14	14
EC25	15	15	15
EC40	18	18	18
EC50	20	20	20

7d Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)							Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
3		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
5		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
10		10	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	10/10	1.0000	0.00%
30		10	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/10	0.0000	100.00%
50		10	0.0000	0.0000	0.0000	0.0000	---	100.00%	0/10	0.0000	100.00%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
30		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
10		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
30		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

CETIS Analytical Report

Report Date: 04 Apr-23 11:20 (p 3 of 4)
 Test Code/ID: CER030723 / 11-8200-9593

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-2699-2510	Endpoint: Reproduction	CETIS Version: CETISv2.1.4
Analyzed: 22 Mar-23 7:44	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 22 Mar-23 7:40	MD5 Hash: 2815D12133967AE436D4FC557F35CDBA	Editor ID: 007-730-798-8
Batch ID: 04-0989-8037	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Mar-23 14:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 14:53	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 01-9737-1339	Code: CER030723	Project: REF TOX
Sample Date: 07 Mar-23 14:30	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	401085	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	22.9	15	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC15	12.58	11.21	13
IC20	13.61	12.31	14
IC25	14.63	13.42	15
IC40	17.7	16.73	18
IC50	19.75	18.94	20

Reproduction Summary

Conc-µg/L	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	10	22.9	22.25	20	26	8.09%	0.00%	22.9	0.00%
3		10	22.5	22	18	27	13.94%	1.75%	22.5	1.75%
5		10	22.3	22.6	20	25	8.47%	2.62%	22.35	2.40%
10		10	22.4	22.75	19	28	11.18%	2.18%	22.35	2.40%
30		10	0	0	0	0	---	100.00%	0	100.00%
50		10	0	0	0	0	---	100.00%	0	100.00%

Reproduction Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	N	22	22	25	26	24	24	22	20	21	23
3		27	26	24	26	22	22	19	20	18	21
5		23	23	25	22	20	20	20	23	25	22
10		23	20	24	22	28	23	21	23	19	21
30		0	0	0	0	0	0	0	0	0	0
50		0	0	0	0	0	0	0	0	0	0

CETIS Measurement Report

Report Date: 04 Apr-23 11:20 (p 1 of 2)
 Test Code/ID: CER030723 / 11-8200-9593

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 04-0989-8037	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Mar-23 14:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Mar-23 14:53	Species: Ceriodaphnia dubia	Brine: Not Applicable
Test Length: 7d 0h	Taxon: Branchiopoda	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 01-9737-1339	Code: CER030723	Project: REF TOX
Sample Date: 07 Mar-23 14:30	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	63	63	63	63	63	0	0	0.00%	0
50		4	62	62	62	62	62	0	0	0.00%	0
Overall		12	62.67	62.35	62.98	62	63	0.1421	0.4924	0.79%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	373.5	370.6	376.4	369	379	0.4278	3.423	0.92%	0
3		8	369.2	366.6	371.9	362	373	0.3939	3.151	0.85%	0
5		8	367.2	364.7	369.8	360	369	0.3824	3.059	0.83%	0
10		8	366.6	363.9	369.4	359	369	0.4115	3.292	0.90%	0
30		6	363.7	360.1	367.3	357	367	0.5741	3.445	0.95%	0
50		3	361	352	370	357	364	1.202	3.606	1.00%	0
Overall		41	367.8	366.3	369.3	357	379	0.7447	4.769	1.30%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.763	7.495	8.03	7	8	0.04005	0.3204	4.13%	0
3		8	7.738	7.506	7.969	7.1	8	0.03468	0.2774	3.59%	0
5		8	7.712	7.454	7.971	7	8	0.03864	0.3091	4.01%	0
10		8	7.738	7.477	7.998	7	8	0.03892	0.3114	4.02%	0
30		6	7.8	7.706	7.894	7.7	7.9	0.01491	0.08944	1.15%	0
50		3	7.8	7.552	8.048	7.7	7.9	0.03333	0.1	1.28%	0
Overall		41	7.751	7.669	7.833	7	8	0.04059	0.2599	3.35%	0 (0%)

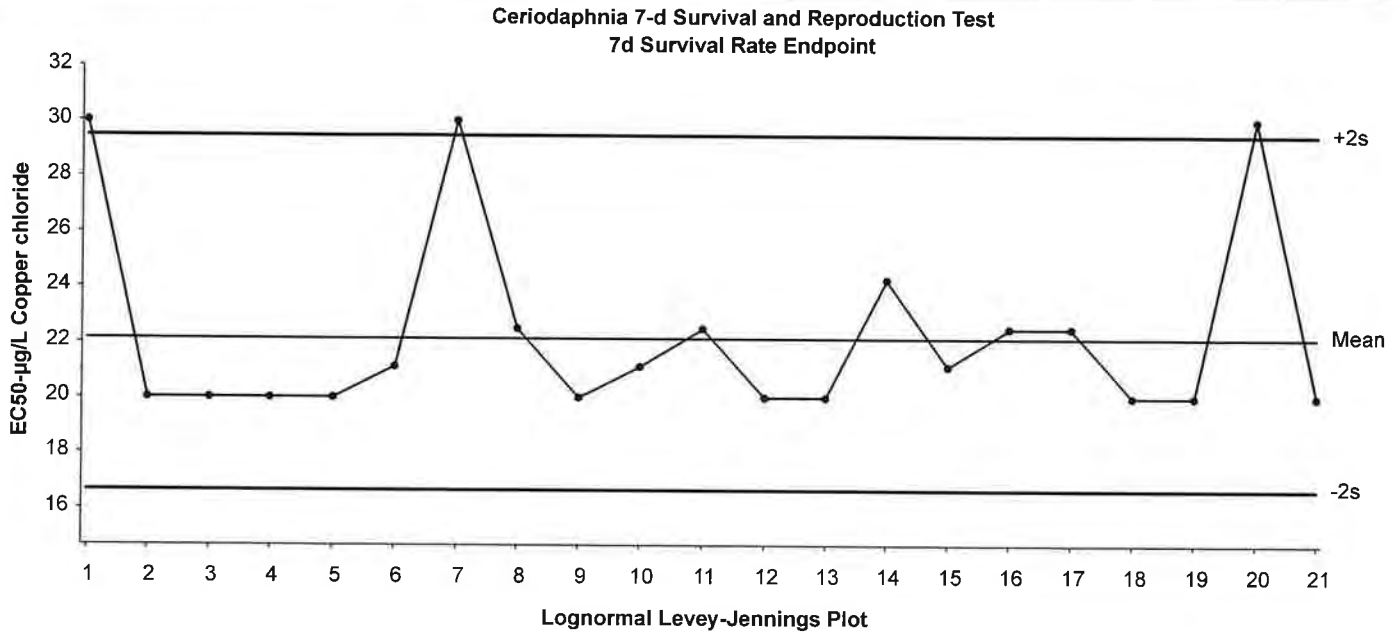
Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	96	96	96	96	96	0	0	0.00%	0
50		4	99	99	99	99	99	0	0	0.00%	0
Overall		12	97	96.06	97.94	96	99	0.4264	1.477	1.52%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	8	8	8	8	8	0	0	0.00%	0
3		8	8	8	8	8	8	0	0	0.00%	0
5		8	8	8	8	8	8	0	0	0.00%	0
10		8	7.975	7.936	8.014	7.9	8	0.005786	0.04629	0.58%	0
30		6	7.95	7.893	8.007	7.9	8	0.009127	0.05476	0.69%	0
50		3	7.967	7.823	8.11	7.9	8	0.01924	0.05773	0.72%	0
Overall		41	7.985	7.974	7.997	7.9	8	0.005589	0.03578	0.45%	0 (0%)

Ceriodaphnia 7-d Survival and Reproduction Test		Aquatic Bioassay & Consulting Labs, Inc.	
Test Type: Reproduction-Survival (7d)	Organism: Ceriodaphnia dubia	Material: Copper chloride	
Protocol: EPA/821/R-02-013 (2002)	Endpoint: 7d Survival Rate	Source: Reference Toxicant-REF	



Mean: 22.15 **Count:** 20 **-2s Action Limit:** 16.7
Sigma: NA **CV:** 14.30% **+2s Action Limit:** 29.5

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	May	25	12:00	30	7.846	2.126		(+)	06-3522-5786	04-0675-3790
2		Jun	7	11:41	20	-2.154	-0.7172			00-0934-7934	19-4116-2050
3			16	15:15	20	-2.154	-0.7172			04-0324-6709	03-4430-7828
4		Jul	6	10:26	20	-2.154	-0.7172			05-7071-7717	14-9370-2046
5			13	13:50	20	-2.154	-0.7172			20-1086-6927	15-4965-5494
6		Aug	2	14:47	21.11	-1.042	-0.338			20-1000-9492	11-4687-5874
7			24	12:00	30	7.846	2.126		(+)	06-0201-0981	01-1946-2585
8		Sep	7	12:00	22.5	0.3464	0.1088			12-8139-8350	19-5837-8402
9			21	11:29	20	-2.154	-0.7172			19-3748-8064	04-7076-1576
10		Oct	4	12:55	21.11	-1.042	-0.338			01-1529-4602	21-0029-9453
11		Nov	1	14:35	22.5	0.3464	0.1088			19-1571-4618	02-0689-0215
12			8	16:15	20	-2.154	-0.7172			01-1914-3273	06-6339-3726
13			9	13:50	20	-2.154	-0.7172			17-5038-4670	17-4864-8983
14		Dec	8	15:00	24.29	2.132	0.6444			20-5686-7704	10-6888-1928
15			13	15:45	21.11	-1.042	-0.338			17-4413-2113	09-9370-6051
16			30	15:15	22.5	0.3464	0.1088			19-9085-2787	09-6540-5264
17	2023	Jan	10	13:52	22.5	0.3464	0.1088			14-0629-8567	09-0929-4266
18			25	13:00	20	-2.154	-0.7172			20-3560-4421	06-7316-9888
19		Feb	7	14:00	20	-2.154	-0.7172			14-0030-6243	10-0781-6132
20			27	12:30	30	7.846	2.126		(+)	02-1606-7182	07-2274-0236
21		Mar	7	14:30	20	-2.154	-0.7172			11-8200-9593	06-1569-8175

Ceriodaphnia 7-d Survival and Reproduction Test

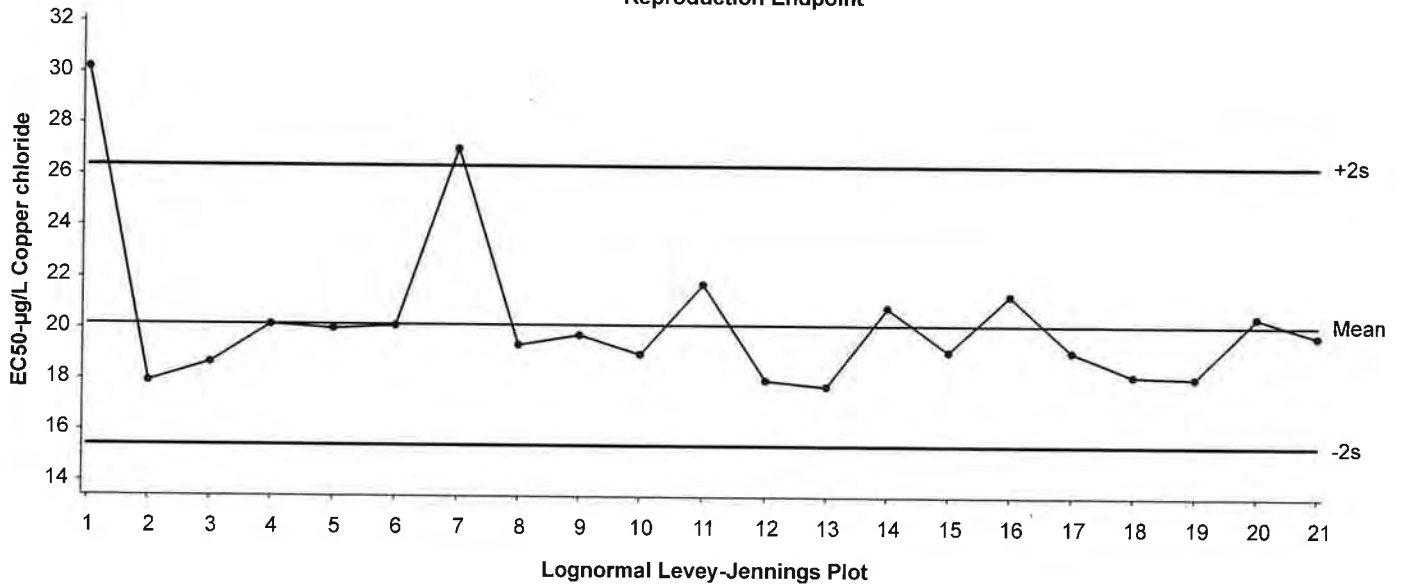
Aquatic Bioassay & Consulting Labs, Inc.

Test Type: Reproduction-Survival (7d)
 Protocol: EPA/821/R-02-013 (2002)

Organism: Ceriodaphnia dubia
 Endpoint: Reproduction

Material: Copper chloride
 Source: Reference Toxicant-REF

Ceriodaphnia 7-d Survival and Reproduction Test
 Reproduction Endpoint



Mean: 20.17 Count: 20 -2s Action Limit: 15.4
 Sigma: NA CV: 13.40% +2s Action Limit: 26.4

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	May	25	12:00	30.18	10.01	3.013		(+)	06-3522-5786	06-7251-0998
2		Jun	7	11:41	17.94	-2.226	-0.8742			00-0934-7934	03-1492-2032
3			16	15:15	18.67	-1.499	-0.5774			04-0324-6709	16-8535-9129
4		Jul	6	10:26	20.14	-0.02999	-0.01112			05-7071-7717	13-1269-7207
5			13	13:50	20	-0.166	-0.06179			20-1086-6927	13-6862-3109
6		Aug	2	14:47	20.1	-0.06727	-0.02497			20-1000-9492	10-4268-6545
7			24	12:00	27.01	6.847	2.185		(+)	06-0201-0981	00-1526-0633
8		Sep	7	12:00	19.36	-0.802	-0.3033			12-8139-8350	20-6964-0792
9			21	11:29	19.74	-0.4258	-0.1595			19-3748-8064	14-0184-3238
10		Oct	4	12:55	19.04	-1.131	-0.4314			01-1529-4602	08-0717-0088
11		Nov	1	14:35	21.76	1.597	0.5697			19-1571-4618	06-5128-3857
12			8	16:15	17.99	-2.179	-0.8547			01-1914-3273	07-5358-2765
13			9	13:50	17.78	-2.388	-0.9421			17-5038-4670	19-7751-4357
14		Dec	8	15:00	20.85	0.6867	0.2503			20-5686-7704	20-7671-4121
15			13	15:45	19.14	-1.027	-0.3907			17-4413-2113	19-2482-5639
16			30	15:15	21.32	1.149	0.4143			19-9085-2787	02-3577-1573
17	2023	Jan	10	13:52	19.12	-1.043	-0.397			14-0629-8567	09-4382-2405
18			25	13:00	18.18	-1.982	-0.7732			20-3560-4421	18-1987-7201
19		Feb	7	14:00	18.12	-2.044	-0.7987			14-0030-6243	20-1572-0105
20			27	12:30	20.5	0.3313	0.1218			02-1606-7182	01-3182-3735
21		Mar	7	14:30	19.75	-0.4121	-0.1543			11-8200-9593	07-2699-2510



CHRONIC FATHEAD MINNOW SURVIVAL AND GROWTH BIOASSAY

DATE: 10 March 2023

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 75.00 ug/l

EC25 = 76.79 ug/l

EC50 = 103.60 ug/l

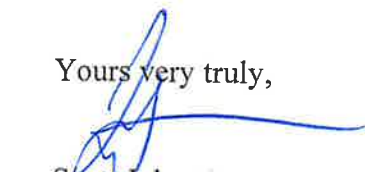
ENDPOINT: GROWTH

NOEC = 38.00 ug/l

IC25 = 61.46 ug/l

IC50 = 89.88 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 03 Apr-23 12:46 (p 1 of 2)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	PMSD	S
12-0747-6843	7d Survival Rate	Steel Many-One Rank Sum Test	75	150	106.1	10.6%	1
01-6433-6336	Mean Dry Biomass-mg	Steel Many-One Rank Sum Test	✓ 38	75	53.39	15.8%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓ Level	µg/L	95% LCL	95% UCL	S
08-7230-7916	7d Survival Rate	Linear Interpolation (ICPIN)	EC15	61.79	45.93	94.69	1
			EC20	69.71	48.57	96.99	
			EC25	76.79	51.73	99.81	
			EC40	92.86	64.29	111.3	
			EC50	103.6	79.03	119	
02-8141-3395	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	✓ IC15	51.98	44.05	71.26	1
			✓ IC20	56.72	46.46	82.87	
			✓ IC25	61.46	48.69	89.51	
			✓ IC40	75.99	55.62	106.3	
			✓ IC50	89.88	57.85	114.7	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
08-7230-7916	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
12-0747-6843	7d Survival Rate	Control Resp	1	0.8	<<	Yes	Passes Criteria	
01-6433-6336	Mean Dry Biomass-mg	Control Resp	0.344	0.25	<<	Yes	Passes Criteria	
02-8141-3395	Mean Dry Biomass-mg	Control Resp	0.344	0.25	<<	Yes	Passes Criteria	
01-6433-6336	Mean Dry Biomass-mg	PMSD	0.1578	0.12	0.3	Yes	Passes Criteria	

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
19		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
38		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
75		4	0.7667	0.4368	1.0960	0.5333	1.0000	0.1036	0.2073	27.04%	23.33%
150		4	0.0667	-0.0200	0.1533	0.0000	0.1333	0.0272	0.0544	81.65%	93.33%

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	0.344	0.3372	0.3508	0.34	0.348	0.002126	0.004251	1.24%	0.00%
10		4	0.3462	0.3374	0.355	0.3387	0.3507	0.002767	0.005534	1.60%	-0.63%
19		4	0.3413	0.3295	0.3532	0.3347	0.3493	0.003722	0.007444	2.18%	0.78%
38		4	0.3472	0.3198	0.3745	0.3353	0.3727	0.008591	0.01718	4.95%	-0.92%
75		4	0.2095	0.09235	0.3266	0.132	0.2767	0.03681	0.07362	35.14%	39.10%
150		4	0.02317	-0.00355	0.04988	0	0.04	0.008395	0.01679	72.47%	93.27%

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CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 1 of 3)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-0747-6843	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 12:45	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 03 Apr-23 12:44	MD5 Hash: 3D73E16BF3BC5A844A3E7F5EB44CB1B	Editor ID: 009-702-627-3
Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Angular (Corrected)	C > T	75	150	106.1	---	0.1065	10.65%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		10	6	18	10	1	CDF	0.8333	Non-Significant Effect
		19	6	18	10	1	CDF	0.8333	Non-Significant Effect
		38	6	18	10	1	CDF	0.8333	Non-Significant Effect
		75	6	12	10	1	CDF	0.1424	Non-Significant Effect
		150*	6	10	10	0	CDF	0.0417	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.52726	0.905452	5	63.7	<1.0E-05	Significant Effect
Error	0.255852	0.014214	18			
Total	4.78311		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test				Indeterminate
	Levene Equality of Variance Test	10.24	4.248	9.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	9.472	4.248	0.0001	Unequal Variances
Distribution	Anderson-Darling A2 Test	4.256	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	3.175	2.576	0.0015	Non-Normal Distribution
	D'Agostino Skewness Test	1.142	2.576	0.2535	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	11.38	9.21	0.0034	Non-Normal Distribution
	Kolmogorov-Smirnov D Test	0.375	0.2056	<1.0E-05	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.6889	0.884	<1.0E-05	Non-Normal Distribution

7d Survival Rate Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
19		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
38		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
75		4	0.7667	0.4368	1.0000	0.7667	0.5333	1.0000	0.1036	27.04%	23.33%
150		4	0.0667	0.0000	0.1533	0.0667	0.0000	0.1333	0.0272	81.65%	93.33%

CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 2 of 3)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-0747-6843 Endpoint: 7d Survival Rate CETIS Version: CETISv2.1.4
 Analyzed: 03 Apr-23 12:45 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 03 Apr-23 12:44 MD5 Hash: 3D73E16BF3BC5AB44A3E7F5EB44CB1B Editor ID: 009-702-627-3

Angular (Corrected) Transformed Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
10		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
19		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
38		4	1.4410	1.4410	1.4420	1.4410	1.4410	1.4410	0.0000	0.00%	0.00%
75		4	1.1030	0.6664	1.5400	1.0760	0.8188	1.4410	0.1372	24.88%	23.47%
150		4	0.2564	0.0974	0.4154	0.2612	0.1295	0.3738	0.0500	38.96%	82.21%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
19		1.0000	1.0000	1.0000	1.0000
38		1.0000	1.0000	1.0000	1.0000
75		1.0000	0.5333	0.8667	0.6667
150		0.1333	0.0667	0.0667	0.0000

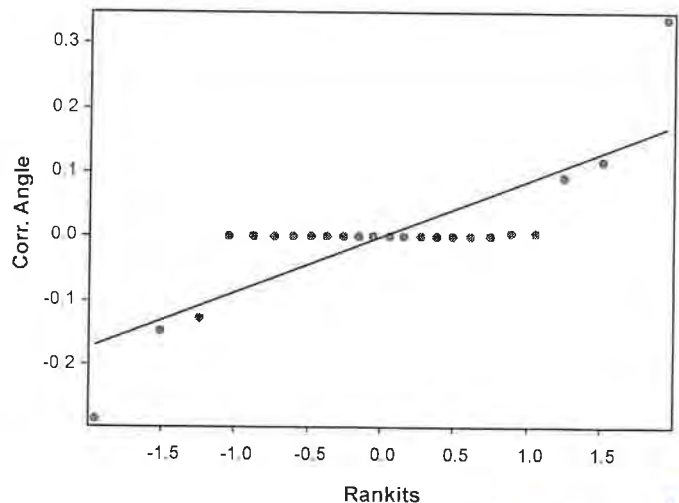
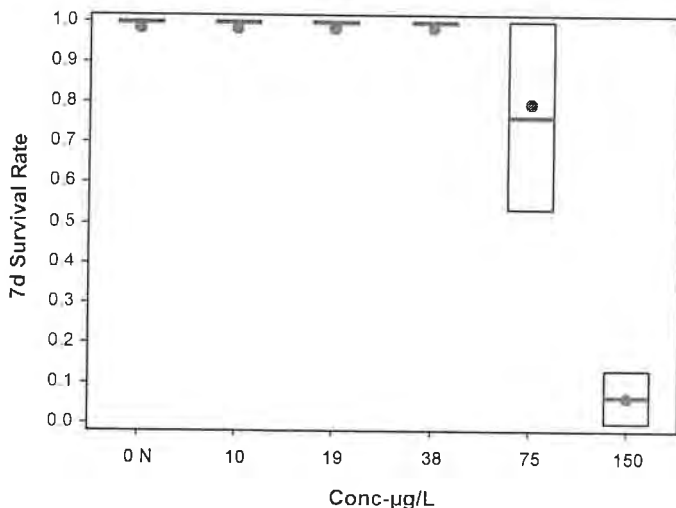
Angular (Corrected) Transformed Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.4410	1.4410	1.4410	1.4410
10		1.4410	1.4410	1.4410	1.4410
19		1.4410	1.4410	1.4410	1.4410
38		1.4410	1.4410	1.4410	1.4410
75		1.4410	0.8188	1.1970	0.9553
150		0.3738	0.2612	0.2612	0.1295

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	15/15	15/15
38		15/15	15/15	15/15	15/15
75		15/15	8/15	13/15	10/15
150		2/15	1/15	1/15	0/15

Graphics



CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 3 of 3)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-6433-6336	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 12:45	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Edit Date: 03 Apr-23 12:44	MD5 Hash: 2EA9A38F477B6053018EEAEEC6107D70	Editor ID: 009-702-627-3
Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	Tox Units	MSDu	PMSD
Untransformed	C > T	38	75	53.39	---	0.05428	15.78%

Steel Many-One Rank Sum Test

Control	vs	Conc-µg/L	df	Test Stat	Critical	Ties	P-Type	P-Value	Decision(α:5%)
Negative Control		10	6	20	10	0	CDF	0.9516	Non-Significant Effect
		19	6	16	10	0	CDF	0.6105	Non-Significant Effect
		38	6	16	10	0	CDF	0.6105	Non-Significant Effect
		75*	6	10	10	0	CDF	0.0417	Significant Effect
		150*	6	10	10	0	CDF	0.0417	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.344	0.25	<<	Yes	Passes Criteria
PMSD	0.1578	0.12	0.3	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.34758	0.0695159	5	68.36	<1.0E-05	Significant Effect
Error	0.0183036	0.0010169	18			
Total	0.365883		23			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	29.98	15.09	1.5E-05	Unequal Variances
	Levene Equality of Variance Test	36.03	4.248	<1.0E-05	Unequal Variances
	Mod Levene Equality of Variance Test	22.18	4.248	<1.0E-05	Unequal Variances
Distribution	Anderson-Darling A2 Test	1.836	3.878	<1.0E-05	Non-Normal Distribution
	D'Agostino Kurtosis Test	2.35	2.576	0.0188	Normal Distribution
	D'Agostino Skewness Test	0.3204	2.576	0.7487	Normal Distribution
	D'Agostino-Pearson K2 Omnibus Test	5.625	9.21	0.0601	Normal Distribution
	Kolmogorov-Smirnov D Test	0.224	0.2056	0.0030	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.8575	0.884	0.0030	Non-Normal Distribution

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	0.344	0.3372	0.3508	0.344	0.34	0.348	0.002126	1.24%	0.00%
10		4	0.3462	0.3374	0.355	0.3477	0.3387	0.3507	0.002767	1.60%	-0.63%
19		4	0.3413	0.3295	0.3532	0.3407	0.3347	0.3493	0.003722	2.18%	0.78%
38		4	0.3472	0.3198	0.3745	0.3403	0.3353	0.3727	0.008591	4.95%	-0.92%
75		4	0.2095	0.09235	0.3266	0.2147	0.132	0.2767	0.03681	35.14%	39.10%
150		4	0.02317	-0.00355	0.04988	0.02633	0	0.04	0.008395	72.47%	93.27%

Fathead Minnow 7-d Larval Survival and Growth Test

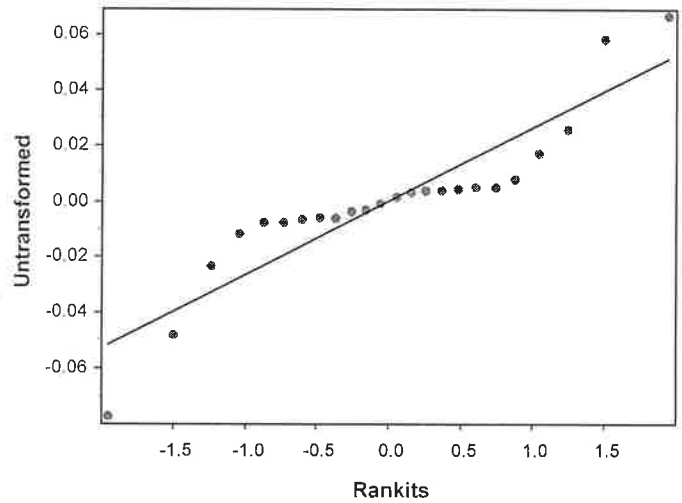
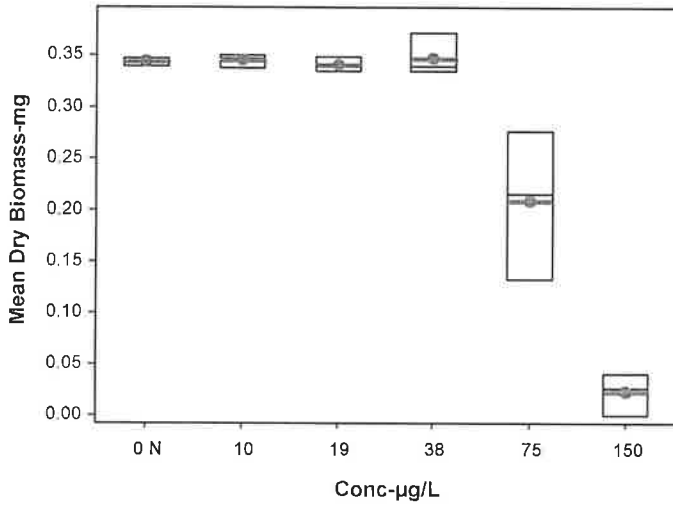
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-6433-6336 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv2.1.4
 Analyzed: 03 Apr-23 12:45 Analysis: Nonparametric-Control vs Treatments Status Level: 1
 Edit Date: 03 Apr-23 12:44 MD5 Hash: 2EA9A38F477B6053018EEAE6C6107D70 Editor ID: 009-702-627-3

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3407	0.34	0.3473	0.348
10		0.3453	0.35	0.3387	0.3507
19		0.3353	0.346	0.3347	0.3493
38		0.3393	0.3413	0.3727	0.3353
75		0.2767	0.132	0.268	0.1613
150		0.04	0.02467	0.028	0

Graphics



CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 1 of 4)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-7230-7916	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 12:45	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Apr-23 12:44	MD5 Hash: 3D73E16BF3BC5AB44A3E7F5EB44CB1B	Editor ID: 009-702-627-3
Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	1	0.8	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC15	61.79	45.93	94.69
EC20	69.71	48.57	96.99
EC25	76.79	51.73	99.81
EC40	92.86	64.29	111.3
EC50	103.6	79.03	119

7d Survival Rate Summary

Conc-µg/L	Code	Count	Calculated Variate(A/B)						Isotonic Variate		
			Mean	Median	Min	Max	CV%	%Effect	ΣA/ΣB	Mean	%Effect
0	N	4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
10		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
19		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
38		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	60/60	1.0000	0.00%
75		4	0.7667	0.7667	0.5333	1.0000	27.04%	23.33%	46/60	0.7667	23.33%
150		4	0.0667	0.0667	0.0000	0.1333	81.65%	93.33%	4/60	0.0667	93.33%

7d Survival Rate Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1.0000
10		1.0000	1.0000	1.0000	1.0000
19		1.0000	1.0000	1.0000	1.0000
38		1.0000	1.0000	1.0000	1.0000
75		1.0000	0.5333	0.8667	0.6667
150		0.1333	0.0667	0.0667	0.0000

7d Survival Rate Binomials

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	15/15	15/15	15/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	15/15	15/15
38		15/15	15/15	15/15	15/15
75		15/15	8/15	13/15	10/15
150		2/15	1/15	1/15	0/15

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CETIS Analytical Report

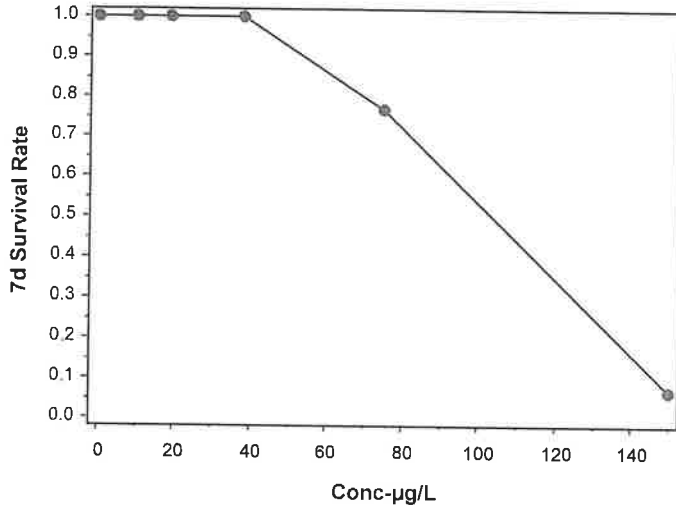
Report Date: 03 Apr-23 12:46 (p 2 of 4)
Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-7230-7916	Endpoint: 7d Survival Rate	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 12:45	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Apr-23 12:44	MD5 Hash: 3D73E16BF3BC5AB44A3E7F5EB44CB1B	Editor ID: 009-702-627-3

Graphics



CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 3 of 4)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-8141-3395	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv2.1.4
Analyzed: 03 Apr-23 12:45	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Edit Date: 03 Apr-23 12:44	MD5 Hash: 2EA9A38F477B6053018EEAEEC6107D70	Editor ID: 009-702-627-3
Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	132645	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	0.344	0.25	<<	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC15	51.98	44.05	71.26
IC20	56.72	46.46	82.87
IC25	61.46	48.69	89.51
IC40	75.99	55.62	106.3
IC50	89.88	57.85	114.7

Mean Dry Biomass-mg Summary

Conc-µg/L	Code	Count	Calculated Variate						Isotonic Variate	
			Mean	Median	Min	Max	CV%	%Effect	Mean	%Effect
0	N	4	0.344	0.344	0.34	0.348	1.24%	0.00%	0.3451	0.00%
10		4	0.3462	0.3477	0.3387	0.3507	1.60%	-0.63%	0.3451	0.00%
19		4	0.3413	0.3407	0.3347	0.3493	2.18%	0.78%	0.3443	0.23%
38		4	0.3472	0.3403	0.3353	0.3727	4.95%	-0.92%	0.3443	0.23%
75		4	0.2095	0.2147	0.132	0.2767	35.14%	39.10%	0.2095	39.29%
150		4	0.02317	0.02633	0	0.04	72.47%	93.27%	0.02317	93.29%

Mean Dry Biomass-mg Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	0.3407	0.34	0.3473	0.348
10		0.3453	0.35	0.3387	0.3507
19		0.3353	0.346	0.3347	0.3493
38		0.3393	0.3413	0.3727	0.3353
75		0.2767	0.132	0.268	0.1613
150		0.04	0.02467	0.028	0

CETIS Analytical Report

Report Date: 03 Apr-23 12:46 (p 4 of 4)

Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

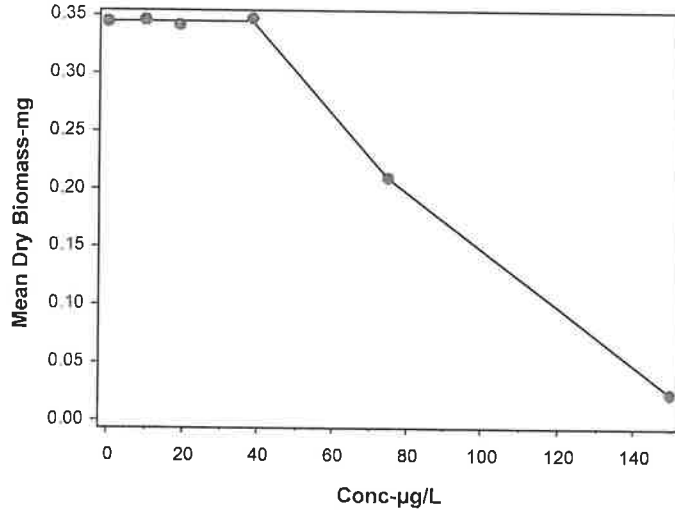
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-8141-3395
Analyzed: 03 Apr-23 12:45
Edit Date: 03 Apr-23 12:44

Endpoint: Mean Dry Biomass-mg
Analysis: Linear Interpolation (ICPIN)
MD5 Hash: 2EA9A38F477B6053018EEAEEC6107D70

CETIS Version: CETISv2.1.4
Status Level: 1
Editor ID: 009-702-627-3

Graphics



CETIS Measurement Report

Report Date: 03 Apr-23 12:46 (p 1 of 2)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-9010-1713	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 10 Mar-23 14:13	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Mar-23 12:45	Species: Pimephales promelas	Brine: Not Applicable
Test Length: 6d 23h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: <24
Sample ID: 19-3615-0969	Code: FML031023	Project: REF TOX
Sample Date: 10 Mar-23 14:13	Material: Copper chloride	Source: Reference Toxicant
Receipt Date:	CAS (PC):	Station: REF TOX
Sample Age: ---	Client: ABC Labs	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	65	65	65	65	65	0	0	0.00%	0
150		8	60	60	60	60	60	0	0	0.00%	0
Overall		16	62.5	61.12	63.88	60	65	0.6455	2.582	4.13%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	370.4	366	374.8	362	377	0.6578	5.263	1.42%	0
10		8	366.5	362.4	370.6	360	370	0.6087	4.87	1.33%	0
19		8	365.6	361.2	370.1	359	372	0.6679	5.344	1.46%	0
38		8	364.8	359.6	369.9	357	373	0.7698	6.159	1.69%	0
75		8	364.6	359.6	369.6	356	374	0.7498	5.999	1.65%	0
150		8	362.4	355.5	369.3	350	377	1.033	8.262	2.28%	0
Overall		48	365.7	363.9	367.5	350	377	0.9031	6.257	1.71%	0 (0%)

Dissolved Oxygen-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.75	7.56	7.94	7.3	8	0.02835	0.2268	2.93%	0
10		8	7.725	7.542	7.908	7.3	7.9	0.02734	0.2188	2.83%	0
19		8	7.688	7.496	7.879	7.2	7.9	0.02869	0.2295	2.99%	0
38		8	7.725	7.537	7.913	7.2	7.9	0.02815	0.2252	2.92%	0
75		8	7.738	7.548	7.927	7.2	7.9	0.0283	0.2264	2.93%	0
150		8	7.713	7.531	7.894	7.2	7.9	0.02709	0.2167	2.81%	0
Overall		48	7.723	7.661	7.785	7.2	8	0.03069	0.2126	2.75%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	80	80	80	80	80	0	0	0.00%	0
150		8	98	98	98	98	98	0	0	0.00%	0
Overall		16	89	84.05	93.95	80	98	2.324	9.295	10.44%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	7.962	7.874	8.051	7.7	8	0.01326	0.1061	1.33%	0
10		8	7.962	7.874	8.051	7.7	8	0.01326	0.1061	1.33%	0
19		8	7.962	7.874	8.051	7.7	8	0.01326	0.1061	1.33%	0
38		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
75		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
150		8	7.975	7.916	8.034	7.8	8	0.008839	0.07071	0.89%	0
Overall		48	7.969	7.944	7.994	7.7	8	0.01233	0.08544	1.07%	0 (0%)

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CETIS Measurement Report

Report Date: 03 Apr-23 12:46 (p 2 of 2)
 Test Code/ID: FML031023 / 18-9789-1933

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	8	24	24	24	24	24	0	0	0.00%	0
10		8	24	24	24	24	24	0	0	0.00%	0
19		8	24	24	24	24	24	0	0	0.00%	0
38		8	24	24	24	24	24	0	0	0.00%	0
75		8	24	24	24	24	24	0	0	0.00%	0
150		8	24	24	24	24	24	0	0	0.00%	0
Overall		48	24	24	24	24	24	0	0	0.00%	0 (0%)

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Test Type: Growth-Survival (7d)

Organism: Pimephales promelas

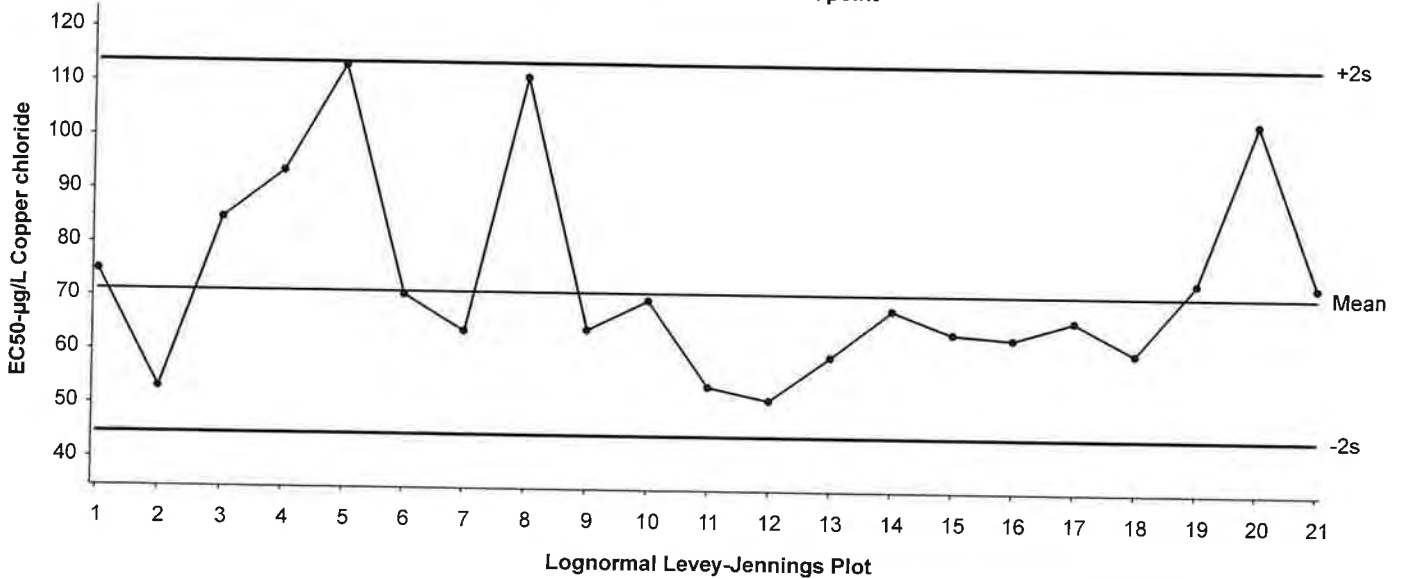
Material: Copper chloride

Protocol: EPA/821/R-02-013 (2002)

Endpoint: 7d Survival Rate

Source: Reference Toxicant-REF

Fathead Minnow 7-d Larval Survival and Growth Test
7d Survival Rate Endpoint



Mean: 71.24
Sigma: NA

Count: 20
CV: 23.70%

-2s Action Limit: 44.6
+2s Action Limit: 114

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	Dec	8	14:10	75	3.764	0.2199			02-2278-8286	06-9793-0754
2			13	15:55	53.18	-18.06	-1.249			14-7794-0703	17-9581-7525
3			14	15:10	84.68	13.44	0.7384			21-2572-6311	14-8107-0888
4			15	15:19	93.56	22.32	1.164			00-8029-8765	08-4296-5987
5			28	13:30	113.2	42	1.98			02-4267-4003	11-1782-3470
6			30	14:00	70.73	-0.5054	-0.03041			08-3672-7728	03-8477-0828
7	2023	Jan	4	14:00	64	-7.236	-0.4576			00-0436-4887	03-7442-5637
8			6	14:40	111.1	39.87	1.899			07-6103-4700	12-6335-2054
9			10	12:45	64.26	-6.978	-0.4404			03-3740-7244	17-8901-7904
10			11	15:20	69.95	-1.282	-0.07755			04-4059-8138	10-6049-4326
11			17	15:15	53.86	-17.38	-1.195			09-0791-0904	19-8399-5969
12			24	15:00	51.45	-19.78	-1.39			08-5310-2658	04-7775-4444
13			31	14:30	59.76	-11.47	-0.75			09-2705-2468	12-6940-4784
14		Feb	1	12:25	68.39	-2.843	-0.174			09-1173-5108	11-2006-8925
15			7	13:00	64.12	-7.118	-0.4497			03-1379-7571	12-4930-3373
16			14	15:45	63.23	-8.009	-0.5095			13-7949-4580	16-8221-1801
17			22	11:30	66.54	-4.693	-0.2911			02-7872-4017	01-1959-7089
18		Mar	1	13:30	60.52	-10.71	-0.6963			16-1276-7181	10-8407-3506
19			7	14:39	73.81	2.57	0.1514			10-1232-4721	02-6348-8256
20			10	14:13	103.6	32.34	1.599			18-9789-1933	08-7230-7916
21			14	15:30	73.32	2.082	0.1231			01-1632-8199	17-9719-8937

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Test Type: Growth-Survival (7d)

Organism: Pimephales promelas

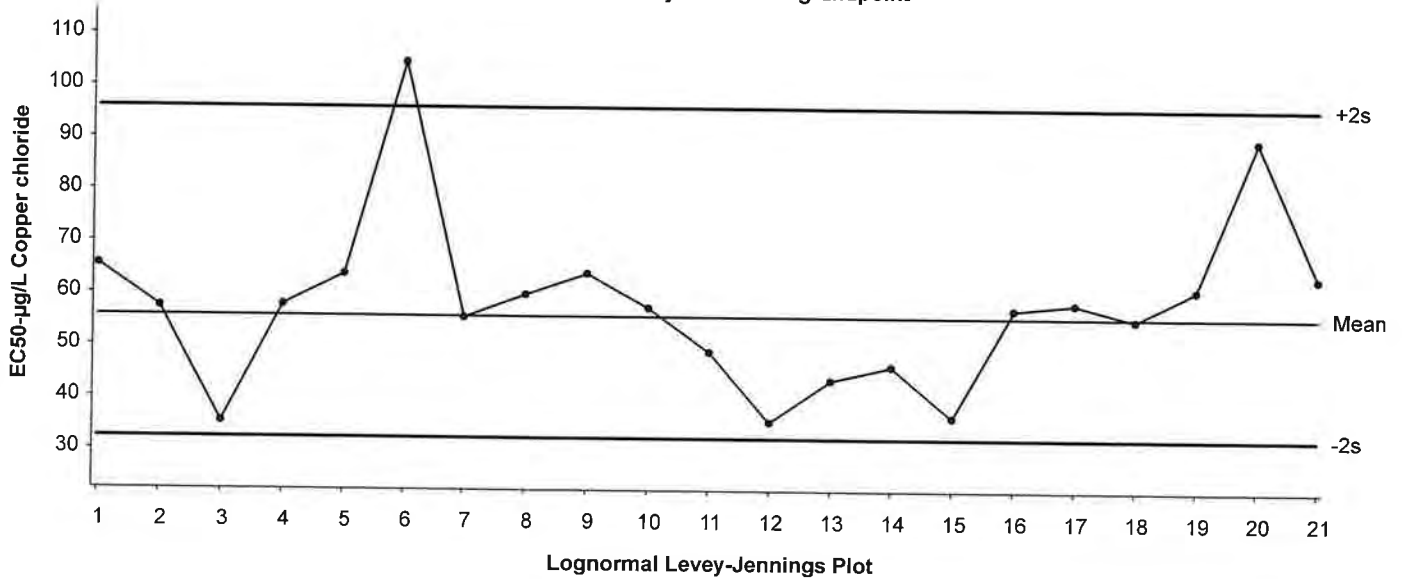
Material: Copper chloride

Protocol: EPA/821/R-02-013 (2002)

Endpoint: Mean Dry Biomass-mg

Source: Reference Toxicant-REF

Fathead Minnow 7-d Larval Survival and Growth Test
Mean Dry Biomass-mg Endpoint



Mean: 55.76

Count: 20

-2s Action Limit: 32.4

Sigma: NA

CV: 27.70%

+2s Action Limit: 96

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2022	Dec	6	14:32	65.6	9.843	0.5988			03-2200-3373	05-0959-1922
2			8	14:10	57.54	1.783	0.116			02-2278-8286	16-2906-6275
3			13	15:55	35.51	-20.25	-1.662			14-7794-0703	12-0493-7927
4			14	15:10	57.87	2.111	0.1369			21-2572-6311	01-8794-7356
5			15	15:19	63.89	8.132	0.5015			00-8029-8765	04-4644-8715
6			28	13:30	104.6	48.89	2.319			02-4267-4003	20-4895-6735
7			30	14:00	55.56	-0.1926	-0.01275		(+)	08-3672-7728	13-9267-2444
8	2023	Jan	4	14:00	59.99	4.238	0.2698			00-0436-4887	13-0551-5424
9			6	14:40	64.17	8.413	0.5176			07-6103-4700	17-8459-5583
10			10	12:45	57.47	1.717	0.1117			03-3740-7244	01-6275-2609
11			17	15:15	49.17	-6.59	-0.4633			09-0791-0904	04-7535-5392
12			24	15:00	35.58	-20.18	-1.655			08-5310-2658	07-8348-1008
13			31	14:30	43.76	-11.99	-0.8921			09-2705-2468	15-7512-7068
14		Feb	1	12:25	46.43	-9.326	-0.6742			09-1173-5108	20-5116-0967
15			7	13:00	36.6	-19.16	-1.55			03-1379-7571	09-2952-0171
16			14	15:45	57.31	1.553	0.1012			13-7949-4580	17-9351-7735
17			22	11:30	58.57	2.812	0.1813			02-7872-4017	03-4850-1343
18		Mar	1	13:30	55.49	-0.2683	-0.01777			16-1276-7181	13-1298-8140
19			7	14:39	61.28	5.523	0.3479			10-1232-4721	18-9683-4334
20			10	14:13	89.88	34.12	1.758			18-9789-1933	02-8141-3395
21			14	15:30	63.61	7.849	0.4851			01-1632-8199	05-8079-6953

CHEMICAL ANALYSIS DATA SHEET- VCF

Start Date: 3/10/23 1500

Lab#: VCFO323.139

End Date: 3/17/23 1410

Date Rec'd: 3/10

YSI Used:

Renewal Sample Used: .139 B .139 B .139 B .139 B .139 D B.139 B

DAY	3/10	3/11	1	3/12	2	3/13	3	3/14	4	3/15	5	3/16	6	3/17
Initials	EB	0915 RW		1005 MW		1100 LW		1120 RW		1150 LW		101152		EB

DISSOLVED OXYGEN mg/L

CONTROL	7.9	7.5	7.5	7.5	7.2	7.5	7.1	7.1	8.0	7.0	6.9	7.0	7.1	7.0	7.7	7.2	7.0	7.7	7.3
6.25	7.9	7.5	7.5	7.9	7.3	7.2	7.5	7.1	7.0	8.0	7.0	7.0	7.7	7.0	7.3	7.2	7.0	7.0	7.6
12.5	7.9	7.4	7.5	7.5	7.2	7.1	7.8	7.0	7.2	8.0	7.0	6.9	7.7	7.0	7.0	7.8	7.1	7.0	7.6
25	8.0	7.5	7.5	8.0	7.3	7.2	7.8	7.0	7.2	8.0	7.0	7.0	7.8	7.0	6.9	7.7	7.1	7.0	7.4
50	8.0	7.6	7.4	8.1	7.2	7.2	7.9	7.0	7.2	8.0	6.9	6.9	7.8	7.0	6.9	7.7	7.0	7.0	7.4
100	8.0	7.6	7.6	8.1	7.2	7.2	8.0	7.0	7.2	8.0	6.9	6.9	7.8	7.0	6.9	7.7	7.0	7.0	7.4

TEMPERATURE °C

CONTROL	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
6.25	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
12.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
25	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
50	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
100	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

pH

CONTROL	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.8	8.0
6.25	8.2	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.8	8.0
12.5	8.2	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.8	8.0
25	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.7	8.0
50	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.7	8.0
100	8.0	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.7	8.0

CONDUCTIVITY umohs

CONTROL	372	375	377	379	364	370	362	369
6.25	502	510	512	515	512	513	512	510
12.5	582	588	588	589	582	586	586	590
25	754	755	758	763	762	760	766	762
50	997	999	995	998	992	992	989	990
100	1570	1568	1573	1580	1577	1580	1569	1572

ALKALINITY

CONTROL	65	65	65	65	65	65	65	65
100%	144	144	144	144	144	144	144	144

HARDNESS

CONTROL	80	80	80	80	80	80	80	80
100%	485	485	485	485	485	485	485	485

Residual Chlorine 1st Sample 2.01 2nd Sample 3rd Sample

Chronic juvenile Fathead minnow (*Pimephales promelas*) toxicity test - Survival

Aquatic Bioassay & Consulting Laboratories, Inc

Company: VCF

Lab #: VCF 03 23. 139

Sample I.D.:

Date & Time Start: 3/10

Date & Time End: 3/17

Conc.	Rep.#	INITIAL	1 _N	2 _N	3 _N	4 _N	5 _N	6 _N	FINAL
CONTROL	1	[Handwritten Initials]	15	15	15	15	15	15	15
	2		15	15	15	15	15	15	
	3		15	15	15	15	15	15	
	4		15	15	15	15	15	15	
6.25%	1	[Handwritten Initials]	15	15	15	15	15	15	15
	2		15	15	15	15	15	15	
	3		15	15	15	15	15	15	
	4		15	15	15	15	15	15	
12.5%	1	[Handwritten Initials]	15	15	15	15	15	15	15
	2		15	15	15	15	15	15	
	3		15	15	15	15	15	15	
	4		15	15	15	15	15	15	
25%	1	[Handwritten Initials]	15	15	15	15	15	15	15
	2		15	15	15	15	15	15	
	3		15	15	15	15	15	15	
	4		15	15	15	15	15	15	
50%	1	[Handwritten Initials]	15	15	15	15	15	15	15
	2		15	15	15	15	15	15	
	3		15	15	15	15	15	15	
	4		15	15	15	15	15	15	
100%	1	[Handwritten Initials]	13	13	13	13	13	13	13
	2		13	13	13	11	11	11	
	3		15	15	15	15	15	15	
	4		15	15	15	15	14	14	

CHAMBER NUMBER	EFF. CONC.	REPL. #	NUMBER FISH	BOAT TARE	BOAT + FISH	FISH WEIGHT (g)	AVG. WT. PER FISH (g)
KB 1-4	CONTROL	1		0.82667	0.83177	.00510	
		2		0.83819	0.84369	.00550	
		3		0.83068	0.83575	.00507	
		4		0.82550	0.83067	.00517	
KB 5-8	6.25%	1		0.82591	0.83112	.00517	.00521
		2		0.82874	0.83397	.00523	
		3		0.83749	0.84269	.00520	
		4		0.82830	0.83375	.00545	
KB 9-12	12.5%	1		0.83620	0.84192	.00572	
		2		0.84602	0.85139	.00537	
		3		0.84598	0.85113	.00515	
		4		0.84032	0.84592	.00560	
KB 13-16	25%	1		0.82971	0.83497	.00526	
		2		0.82634	0.83177	.00543	
		3		0.83756	0.84299	.00543	
		4		0.83739	0.84286	.00547	
KB 17-20	50%	1		0.82501	0.83079	.00578	
		2		0.82920	0.83492	.00572	
		3		0.83544	0.84099	.00555	
		4		0.83866	0.84392	.00526	
KB 21-23	100%	1		0.83781	0.84201	.00420	
		2		0.83870	0.84189	.00319	
		3		0.83619	0.84127	.00508	
				0.84029	0.84133	.00507	

Chronic *Ceriodaphnia dubia* survival and reproduction - VCF

Aquatic Bioassay & Consulting Laboratories, Inc.

Start Date: 3/10 /23

Lab #: VCF 03 23. 139

End Date: 3/17 /23

Conc.	Day#	Initial	# YOUNG / REPLICATE									
			1	2	3	4	5	6	7	8	9	10
CON	3	AV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	AV	1	2	2	✓	✓	2	1	3	1	2
	5	AV	4	7	8	6	6	5	5	5	5	4
	6	AV	10	10	9	8	7	7	10	11	10	9
	7	AV	12	9	12	13	12	13	12	12	13	10
	Total			27	28	31	27	25	27	28	31	29
6.25%	3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	-	4	2	2	2	2	2	2	2	2	3
	5	-	7	7	7	7	7	6	5	5	5	7
	6	-	9	9	7	10	8	8	9	10	10	13
	7	-	14	12	12	10	11	9	9	10	12	13
	Total	-		34	30	28	29	28	25	25	27	29
12.5%	3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	-	5	3	3	3	3	✓	4	5	3	3
	5	-	7	4	5	4	5	5	5	5	4	5
	6	-	12	14	14	12	10	8	8	9	9	7
	7	-	10	9	9	13	11	11	9	8	12	12
	Total	-		34	30	31	32	28	24	26	27	28
25%	3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	-	4	3	3	3	4	3	3	3	3	5
	5	-	7	5	4	3	5	4	5	5	5	6
	6	-	7	7	6	9	10	10	8	9	11	11
	7	-	13	14	12	10	10	12	13	13	12	14
	Total	-		31	29	28	25	29	29	29	30	31
50%	3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	-	4	4	4	4	3	3	3	3	3	5
	5	-	3	5	3	5	4	4	4	2	6	7
	6	-	12	11	10	10	10	12	11	10	9	7
	7	-	13	12	12	14	10	9	9	12	14	13
	Total	-		33	33	29	33	27	28	27	27	32
100%	3	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	-	3	4	4	5	4	5	5	4	4	5
	5	-	5	4	4	4	5	5	5	5	5	5
	6	-	10	9	9	8	7	7	10	11	11	10
	7	-	12	13	10	10	12	14	10	9	13	14
	Total	-		36	30	27	27	28	31	30	29	34

Chemical Analysis Data Sheet

Aquatic Bioassay & Consulting Laboratories, Inc.

Company: VCF

Lab #: VCF 0323.139

Start date and time: 3/10/23 1510

Sample ID:

End date and time: 3/12/23 1503

Date Rec'd: 3/10

YSI Used:

Day	0 3/10	1 3/11	2 3/12	3 3/13	4 3/14
Analyst	FO	N	N	N	N
Time	1510	0945	1524	1362	1503

Dissolved Oxygen

Control	7.9	7.5	7.9	7.1	7.0
6.25%	7.9	7.5	7.9	7.1	7.0
12.5%	7.9	7.4	7.8	7.1	7.0
25%	8.0	7.5	7.8	7.1	7.0
50%	8.0	7.6	7.9	7.1	6.9
100%	8.0	7.6	8.0	7.1	6.9

Temperature

Control	24.0	22.0	22.0	22.0	22.0
6.25%	24.0	22.0	22.0	22.0	22.0
12.5%	24.0	22.0	22.0	22.0	22.0
25%	24.0	22.0	22.0	22.0	22.0
50%	24.0	22.0	22.0	22.0	22.0
100%	24.0	22.0	22.0	22.0	22.0

pH

Control	8.0	8.0	8.0	8.1	8.0
6.25%	8.2	8.0	8.0	8.0	8.0
12.5%	8.2	8.0	8.0	8.0	8.0
25%	8.0	8.0	8.0	8.0	8.0
50%	8.0	8.0	8.0	8.0	8.0
100%	8.0	8.0	8.0	8.0	8.0

Conductivity

Control	372		377		379
6.25%	502		512		516
12.5%	582		588		595
25%	754		758		763
50%	997		995		984
100%	1570		1573		1563

Alkalinity

Control	65		65		65
	144		144		144

Hardness

Control	80		80		80
	488		487		487

OC AQUATIC

Acute *Hyalella azteca* survival test

Aquatic Bioassay & Consulting Laboratories, Inc.

Client: VCF _____

Lab #: VCF D323.129

Sample ID: _____

Start Date: 3/10/23

End Date: 3/19/23

Conc.	Day#	Initials	# YOUNG / REPLICATE			
			1	2	3	4
CON	0	LD	5	5	5	5
	1	R	5	5	5	5
	2	R	5	5	5	5
	3	R	5	5	5	5
	4	R	5	5	5	5
6.25	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
12.5	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
25	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
50	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
100	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	3	3
	4	-	5	5	3	3

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Chico

Chemical Analysis Data Sheet

Aquatic Bioassay & Consulting Laboratories, Inc.

Company: VCF Lab #: VCF0323.139

Start date and time: 3/10/23 1513 Sample ID:

End date and time: 3/14/23 1514 Date Rec'd: 3/10

YSI Used: B B B B B

Day	0	1	2	3	4
Analyst	EO	N	N	N	N
Time	1513	0905	1035	1400	1538

Dissolved Oxygen

Control	7.9	7.5	7.5	7.1	7.0
6.25%	7.9	7.5	7.5	7.1	7.0
12.5%	7.9	7.4	7.8	7.1	7.0
25%	8.0	7.5	7.8	7.1	7.0
50%	8.0	7.4	7.5	7.1	6.9
100%	8.0	7.4	8.0	7.1	6.5

Temperature

Control	24.0	22.0	22.0	22.0	22.0
6.25%	24.0	22.0	22.0	22.0	22.0
12.5%	24.0	22.0	22.0	22.0	22.0
25%	24.0	22.0	22.0	22.0	22.0
50%	24.0	22.0	22.0	22.0	22.0
100%	24.0	22.0	22.0	22.0	22.0

pH

Control	8.0	8.0	8.0	8.1	8.0
6.25%	8.2	8.0	8.0	8.0	8.0
12.5%	8.2	8.0	8.0	8.0	8.0
25%	8.0	8.0	8.0	8.0	8.0
50%	8.0	8.0	8.0	8.0	8.0
100%	8.0	8.0	8.0	8.0	8.0

Conductivity

Control	372		377		379
6.25%	502		512		515
12.5%	582		588		595
25%	754		758		763
50%	997		995		984
100%	1570		1573		1563

Alkalinity

Control	65		65		65
W	144		144		144

Hardness

Control	82		82		82
W	481		481		485

Acute Chironomus survival toxicity test
 Aquatic Bioassay & Consulting Laboratories, Inc

Company: VCF
 Sample ID:
 Date Time & Start: 3/10/23 5/17/23

Lab #: VCF0323.139

Conc.	Rep.#	INITIAL	1	2	3	FINAL
CONTROL	1	0	0	0	0	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	0	0	0	0	0
6.25	1	0	0	0	0	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	0	0	0	0	5
12.5	1	0	0	0	0	0
	2	0	0	0	0	5
	3	0	0	0	0	0
	4	0	0	0	0	5
25	1	0	0	0	0	5
	2	0	0	0	0	5
	3	0	0	0	0	5
	4	0	0	0	0	5
50	1	0	0	0	0	5
	2	0	0	0	0	5
	3	0	0	0	0	5
	4	0	0	0	0	0
100	1	0	0	0	0	5
	2	0	0	0	0	5
	3	0	0	0	0	5
	4	0	0	0	0	5

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Chemical Analysis Data Sheet

Aquatic Bioassay & Consulting Laboratories, Inc.

Company: HYALELLA STD TOX Lab #: HYA 031023
 Start date and time: 3/10/23 1503 Sample ID:
 End date and time: 3/14/23 1500 Date Rec'd:
 YSI Used: 8 0 0 0 8

Day	0 3/10	1 3/11	2 3/12	3 3/13	4 3/14
Analyst	EO	W	SR	W	W
Time	1503	0940	1020	1350	1500

Dissolved Oxygen

Control	7.9	7.5	7.5	7.1	7.0
40	7.9	7.7	7.6	7.0	7.0
80	7.8	7.4	7.5	7.0	7.0
100	7.8	7.5	7.5	7.0	7.0
120	7.8	7.5	7.5	7.0	7.0
140	7.8	7.4	7.6	7.0	7.0

Temperature

Control	21.0	22.0	21.0	21.0	21.0
40	21.0	22.0	22.0	21.0	22.0
80	21.0	22.0	22.0	21.0	22.0
100	21.0	22.0	22.0	21.0	22.0
120	21.0	22.0	22.0	21.0	22.0
140	21.0	22.0	22.0	22.0	22.0

pH

Control	8.0	8.0	8.0	8.1	8.0
40	8.0	8.0	8.0	8.0	8.0
80	8.0	8.0	8.0	8.0	8.0
100	8.0	8.0	8.0	8.0	8.0
120	8.0	8.0	8.0	8.0	8.0
140	8.0	8.0	8.0	8.0	8.0

Conductivity

Control	372		377		379
40	370		370		370
80	372		373		370
100	367		369		365
120	364		365		365
140	362		365		364

Alkalinity

Control	65		65		65
140	60		60		60

Hardness

Control	99		99		99
140	99		99		99

Acute *Hyalella azteca* survival test

Aquatic Bioassay & Consulting Laboratories, Inc.

Client: STD TOX. _____

Lab #: HYA 031023

Sample ID: _____

Start Date: 3/10/ _____

End Date: ___ / ___ / _____

Conc.	Day#	Initials	# YOUNG / REPLICATE			
			1	2	3	4
CON	0	FD	5	5	5	5
	1	FD	5	5	5	5
	2	FD	5	5	5	5
	3	FD	5	5	5	5
	4	FD	5	5	5	5
40	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
80	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
100	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	5	5	5	5
120	0	-	5	5	5	5
	1	-	5	5	5	5
	2	-	5	5	5	5
	3	-	5	5	5	5
	4	-	3	2	2	2
140	0	-	5	5	5	5
	1	-	4	4	5	5
	2	-	2	2	5	5
	3	-	0	0	0	0
	4	-				

Chemical Analysis Data Sheet

Aquatic Bioassay & Consulting Laboratories, Inc.

Company: CHIRONOMUS STD TOX Lab #: CHI 031023

Start date and time: 3/10/23 1507 Sample ID:

End date and time: 3/14/23 1526 Date Rec'd:

YSI Used: B B B B B

Day	0	1	2	3	4
Analyst	PD	L	M	M	M
Time	1507	0950	1030	1355	1526

Dissolved Oxygen

Control	7.9	7.5	7.9	7.1	7.0
40	7.9	7.7	7.6	7.0	7.0
80	7.8	7.7	7.5	7.0	7.0
100	7.8	7.5	7.5	7.0	7.0
120	7.8	7.5	7.6	7.0	7.0
140	7.8	7.7			

Temperature

Control	24.0	22.0	22.0	22.0	22.0
40	24.0	22.0	22.0	22.0	22.0
80	24.0	22.0	22.0	22.0	22.0
100	24.0	22.0	22.0	22.0	22.0
120	24.0	22.0	22.0	22.0	22.0
140	24.0	22.0			

pH

Control	8.0	8.0	8.0	8.1	8.0
40	8.0	8.0	8.0	8.0	8.0
80	8.0	8.0	8.0	8.0	8.0
100	8.0	8.0	8.0	8.0	8.0
120	8.0	8.0	8.0	8.0	8.0
140	8.0	8.0			

Conductivity

Control	372		377		375
40	370		370		370
80	372		373		370
100	367		369		365
120	364		366		366
140	362	365			

Alkalinity

Control	65		65		65
140	60	60			

Hardness

Control	80		80		80
140	99	99			

Acute Chironomus survival toxicity test

Aquatic Bioassay & Consulting Laboratories, Inc

Company: STD TOX

Lab #: CH1031023

Sample ID:

Date Time & Start: 3/10/23 3/14/23

Conc.	Rep.#	INITIAL	1 ~	2 ~	3 ~	FINAL
CONTROL	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓
40	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓
80	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓
100	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓
120	1	✓	✓	✓	3/203	✓ + 3
	2	✓	✓	✓	3	✓ + 3
	3	✓	✓	✓	✓ + 3	✓ + 3
	4	✓	✓	✓	✓ + 2	✓ + 3
140	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓

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