Ventura Countywide Stormwater Quality Management Program

2015-2016 Permit Year

Ventura Countywide Stormwater Quality Management Program Annual Report

Attachment D Monitoring Appendix I, J and K

December 15, 2016

Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District

Appendix I. Aquatic Toxicity Testing Lab Results

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.125

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

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

Yours very truly,

for Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 10 Nov-15 10:03 (p 1 of 1)
Test Code: VCF0915.125sel | 15-9177-3437

Selenastrum Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	15-3236-7301	Test Type:	Cell Growth	Analyst:	
Start Date:	16 Sep-15 12:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	20 Sep-15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	84h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	01-1520-5899	Code:	VCF0915.125s	Client:	VCWPD
Sample Date:	15 Sep-15 04:43	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (17.4 °C)	Station:	MO-MPK		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
01-8238-0173	Cell Density	100	>100	NA	8.82%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
02-4254-1493	Cell Density	IC5	62.74	41.23	70.08	1.594	Linear Interpolation (ICPIN)
		IC10	78.23	63.73	89.15	1.278	
		IC15	93.71	79.51	N/A	1.067	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-8238-0173	Cell Density	Control CV	0.01468	NL - 0.2	Yes	Passes Acceptability Criteria
02-4254-1493	Cell Density	Control CV	0.01468	NL - 0.2	Yes	Passes Acceptability Criteria
01-8238-0173	Cell Density	Control Resp	1.07E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
02-4254-1493	Cell Density	Control Resp	1.07E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
01-8238-0173	Cell Density	PMSD	0.08825	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.072E+6	1.047E+6	1.097E+6	1.059E+6	1.095E+6	7.867E+3	1.573E+4	1.47%	0.0%
6.25		4	1.331E+6	1.255E+6	1.406E+6	1.287E+6	1.397E+6	2.364E+4	4.728E+4	3.58%	-24.08%
12.5		4	1.395E+6	1.325E+6	1.466E+6	1.351E+6	1.457E+6	2.223E+4	4.446E+4	3.19%	-30.12%
25		4	1.591E+6	1.443E+6	1.739E+6	1.478E+6	1.704E+6	4.651E+4	9.302E+4	5.85%	-48.36%
50		4	1.335E+6	1.241E+6	1.430E+6	1.252E+6	1.385E+6	2.974E+4	5.948E+4	4.46%	-24.53%
100		4	1.118E+6	1.049E+6	1.186E+6	1.062E+6	1.159E+6	2.153E+4	4.306E+4	3.85%	-4.24%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.059E+6	1.066E+6	1.069E+6	1.095E+6
6.25		1.330E+6	1.308E+6	1.287E+6	1.397E+6
12.5		1.351E+6	1.385E+6	1.388E+6	1.457E+6
25		1.605E+6	1.576E+6	1.478E+6	1.704E+6
50		1.385E+6	1.252E+6	1.370E+6	1.334E+6
100		1.143E+6	1.062E+6	1.159E+6	1.107E+6

CETIS Analytical Report

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	01-8238-0173	Endpoint:	Cell Density	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	15-3236-7301	Test Type:	Cell Growth	Analyst:	
Start Date:	16 Sep-15 12:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	20 Sep-15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	84h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	01-1520-5899	Code:	VCF0915.125s	Client:	VCWPD
Sample Date:	15 Sep-15 04:43	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Repor		
Sample Age:	32h (17.4 °C)	Station:	MO-MPK		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	8.82%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-6.57	2.407	94620	6	1.0000	CDF	Non-Significant Effect
		12.5	-8.217	2.407	94620	6	1.0000	CDF	Non-Significant Effect
		25	-13.19	2.407	94620	6	1.0000	CDF	Non-Significant Effect
		50	-6.69	2.407	94620	6	1.0000	CDF	Non-Significant Effect
		100	-1.157	2.407	94620	6	0.9888	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control CV	0.01468	NL - 0.2	Yes	Passes Acceptability Criteria
Control Resp	1.07E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
PMSD	0.08825	0.091 - 0.29	Yes	Below Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.223022E+11	1.444604E+11	5	46.74	<0.0001	Significant Effect
Error	55628750000	3090486000	18			
Total	7.779309E+11		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	6.97	15.09	0.2229	Equal Variances
Variances	Mod Levene Equality of Variance	1.02	4.248	0.4351	Equal Variances
Variances	Levene Equality of Variance	1.101	4.248	0.3942	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9785	0.884	0.8671	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1321	0.2056	0.3386	Normal Distribution
Distribution	D'Agostino Skewness	0.1116	2.576	0.9111	Normal Distribution
Distribution	D'Agostino Kurtosis	1.003	2.576	0.3159	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	1.018	9.21	0.6010	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.3606	3.878	0.4514	Normal Distribution

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.072E+6	1.047E+6	1.097E+6	1068000	1.059E+6	1.095E+6	7.868E+3	1.47%	0.0%
6.25		4	1.331E+6	1.255E+6	1.406E+6	1319000	1.287E+6	1.397E+6	2.384E+4	3.58%	-24.08%
12.5		4	1.395E+6	1.325E+6	1.466E+6	1387000	1.351E+6	1.457E+6	2.223E+4	3.19%	-30.12%
25		4	1.591E+6	1.443E+6	1.739E+6	1591000	1.478E+6	1.704E+6	4.651E+4	5.85%	-48.36%
50		4	1.335E+6	1.241E+6	1.430E+6	1352000	1.252E+6	1.385E+6	2.974E+4	4.46%	-24.53%
100		4	1.118E+6	1.049E+6	1.186E+6	1125000	1.062E+6	1.159E+6	2.153E+4	3.85%	-4.24%

Analysis ID: 01-8238-0173 Endpoint: Cell Density CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:54 Analysis: Parametric-Control vs Treatments Official Results: Yes

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1 059E+6	1.066E+6	1.069E+6	1.095E+6
6.25		1 330E+6	1.308E+6	1.287E+6	1.397E+6
12.5		1 351E+6	1 385E+6	1.388E+6	1.457E+6
25		1 605E+6	1 576E+6	1.478E+6	1.704E+6
50		1 385E+6	1 252E+6	1,370E+6	1.334E+6
100		1.143E+6	1 062E+6	1,159E+6	1.107E+6

Selenastrum Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	02-4254-1493	Endpoint:	Cell Density	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	15-3236-7301	Test Type:	Cell Growth	Analyst:	
Start Date:	16 Sep-15 12:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	20 Sep-15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	84h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	01-1520-5899	Code:	VCF0915 125s	Client:	VCWPD
Sample Date:	15 Sep-15 04:43	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (17.4 °C)	Station:	MO-MPK		

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
Control CV	0.01468	NL - 0.2	Yes	Passes Acceptability Criteria
Control Resp	1.07E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	62.74	41.23	70.08	1.594	1.427	2.425
IC10	78.23	63.73	89.15	1.278	1.122	1.569
IC15	93.71	79.51	N/A	1.067	NA	1.258
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Cell Density Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.072E+6	1.059E+6	1.095E+6	7.868E+3	1.574E+4	1.47%	0.0%
6.25		4	1.331E+6	1.287E+6	1.397E+6	2.384E+4	4.768E+4	3.58%	-24.08%
12.5		4	1.395E+6	1.351E+6	1.457E+6	2.223E+4	4.446E+4	3.19%	-30.12%
25		4	1.591E+6	1.478E+6	1.704E+6	4.651E+4	9.302E+4	5.85%	-48.36%
50		4	1.335E+6	1.252E+6	1.385E+6	2.974E+4	5.948E+4	4.46%	-24.53%
100		4	1.118E+6	1.062E+6	1.159E+6	2.153E+4	4.306E+4	3.85%	-4.24%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.059E+6	1.066E+6	1.059E+6	1.095E+6
6.25		1.330E+6	1.308E+6	1.287E+6	1.397E+6
12.5		1.351E+6	1.385E+6	1.388E+6	1.457E+6
25		1.605E+6	1.576E+6	1.478E+6	1.704E+6
50		1.385E+6	1.252E+6	1.370E+6	1.334E+6
100		1.143E+6	1.062E+6	1.159E+6	1.107E+6

Analysis ID:	02-4254-1493	Endpoint:	Cell Density	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

CETIS Measurement Report

Report Date: 10 Nov-15 10:03 (p 1 of 2)
Test Code: VCF0915.125sel | 15-9177-3437

Selenastrum Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	15-3206-7301	Test Type:	Cell Growth	Analyst:	
Start Date:	16 Sep-15 12:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	20 Sep-15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	84h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	01-1520-6899	Code:	VCF0915.125s	Client:	VCWPD
Sample Date:	15 Sep-15 04:43	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (17.4 °C)	Station:	MO-MPK		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	60			60	60	0	0	0.0%	0
6.25		1	70			70	70	0	0	0.0%	0
12.5		1	68			68	68	0	0	0.0%	0
25		1	60			60	60	0	0	0.0%	0
50		1	59			59	59	0	0	0.0%	0
100		1	51			51	51	0	0	0.0%	0
Overall		6	61.33			51	70				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	429.8	428.8	430.8	429	431	0.3742	0.8367	0.19%	0
6.25		5	434	429.6	438.4	429	438	1.581	3.536	0.81%	0
12.5		5	429	424.6	433.4	426	435	1.581	3.536	0.82%	0
25		5	427.6	426.2	429	426	429	0.5099	1.14	0.27%	0
50		5	425	422.8	427.2	424	428	0.7746	1.732	0.41%	0
100		5	424.2	421.4	427	421	427	1.02	2.28	0.54%	0
Overall		30	428.3			421	438				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
6.25		1	100			100	100	0	0	0.0%	0
12.5		1	109			109	109	0	0	0.0%	0
25		1	111			111	111	0	0	0.0%	0
50		1	118			118	118	0	0	0.0%	0
100		1	121			121	121	0	0	0.0%	0
Overall		6	109.7			99	121				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.7	7.485	7.915	7.4	7.8	0.07746	0.1732	2.25%	0
6.25		5	7.68	7.476	7.884	7.4	7.8	0.07349	0.1643	2.14%	0
12.5		5	7.68	7.476	7.884	7.4	7.8	0.07349	0.1643	2.14%	0
25		5	7.66	7.452	7.868	7.4	7.8	0.07483	0.1673	2.19%	0
50		5	7.62	7.458	7.782	7.4	7.7	0.05831	0.1304	1.71%	0
100		5	7.56	7.352	7.768	7.3	7.7	0.07483	0.1673	2.21%	0
Overall		30	7.65			7.3	7.8				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
6.25		5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
12.5		5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
25		5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
50		5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
100		5	24.3	24.05	24.55	24.1	24.5	0.08944	0.2	0.82%	0
Overall		30	24.3			24.1	24.5				0 (0%)

Selenastrum Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1
0	Negative Contr	60
6.25		70
12.5		68
25		60
50		59
100		51

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5
0	Negative Contr	430	429	431	430	429
6.25		432	429	438	438	435
12.5		426	427	428	429	435
25		426	427	428	428	429
50		424	424	424	425	428
100		421	423	425	425	427

Hardness (CaCO3)-mg/L

C-%	Control Type	1
0	Negative Contr	99
6.25		100
12.5		109
25		111
50		118
100		121

pH-Units

C-%	Control Type	1	2	3	4	5
0	Negative Contr	7.4	7.7	7.8	7.8	7.8
6.25		7.4	7.7	7.7	7.8	7.8
12.5		7.4	7.7	7.7	7.8	7.8
25		7.4	7.6	7.7	7.8	7.8
50		7.4	7.6	7.7	7.7	7.7
100		7.3	7.5	7.6	7.7	7.7

Temperature-°C

C-%	Control Type	1	2	3	4	5
0	Negative Contr	24.1	24.1	24.3	24.5	24.5
6.25		24.1	24.1	24.3	24.5	24.5
12.5		24.1	24.1	24.3	24.5	24.5
25		24.1	24.1	24.3	24.5	24.5
50		24.1	24.1	24.3	24.5	24.5
100		24.1	24.1	24.3	24.5	24.5

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.123

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %
REPRODUCTION	NOEC =	50.00 %
	TUc =	2.00
	IC25 =	43.13 %
	IC50 =	61.84 %

Yours very truly,

Scott Johnson
Laboratory Director

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

Batch ID:	17-0097-4706	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14 16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14 50	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-4882-2384	Code:	VCF0915 123c	Client:	VCWPD
Sample Date:	15 Sep-15 04 45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10 15	Source:	Bioassay Report		
Sample Age:	34h (18 4 °C)	Station:	MO-HUE		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-8655-1249	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
09-2189-7862	Reproduction	50	100	70.71	40.9%	2	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
19-4991-4782	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
07-5486-4581	Reproduction	IC5	28.63	27 67	30.94	3.493	Linear Interpolation (ICPIN)
		IC10	32.25	30 35	36.89	3.101	
		IC15	35.88	33 02	42.83	2.787	
		IC20	39.5	35.7	48.78	2.532	
		IC25	43.13	38.37	52.51	2.319	
		IC40	54.21	45.39	62.01	1.845	
		IC50	61.84	53.05	68.34	1.617	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-8655-1249	7d Survival Rate	Control Resp	1	0 8 - NL	Yes	Passes Acceptability Criteria
19-4991-4782	7d Survival Rate	Control Resp	1	0 8 - NL	Yes	Passes Acceptability Criteria
07-5486-4581	Reproduction	Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
09-2189-7862	Reproduction	Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
09-2189-7862	Reproduction	PMSD	0.4094	0 13 - 0.47	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	1	1	1	1	1	0	0	0 0%	0 0%
6.25		10	1	1	1	1	1	0	0	0.0%	0 0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	0.0%
50		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.3	13.22	17.38	10	20	0 9195	2.908	19.01%	0.0%
6.25		10	27.4	20.32	34.48	9	42	3 131	9.902	36.14%	-79.08%
12.5		10	25.3	20.89	29.71	19	39	1.95	6.165	24.37%	-65.36%
25		10	30.9	27.06	34.74	23	36	1.695	5.363	17.36%	-102 0%
50		10	16.2	12 6	19.8	7	23	1.59	5.029	31.04%	-5 86%
100		10	0	0	0	0	0	0	0		100 0%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	15	17	17	16	16	11	10	16	15
6.25		36	27	21	38	24	23	9	21	33	42
12.5		31	25	23	24	22	19	22	19	39	29
25		35	30	24	36	33	30	23	24	32	36
50		16	23	7	22	13	19	21	13	13	15
100		0	0	0	0	0	0	0	0	0	0

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

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

Analysis ID:	09-2189-7862	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	17-0097-4708	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:50	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-4882-2384	Code:	VCF0915.123c	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	34h (18.4 °C)	Station:	MO-HUE		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	40.9%	50	100	70.71	2

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-4.293	2.222	6.263	18	1.0000	CDF	Non-Significant Effect
		12.5	-3.548	2.222	6.263	18	1.0000	CDF	Non-Significant Effect
		25	-5.535	2.222	6.263	18	1.0000	CDF	Non-Significant Effect
		50	-0.3193	2.222	6.263	18	0.8878	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.4094	0.13 - 0.47	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1925.88	481.47	4	12.12	<0.0001	Significant Effect
Error	1787.1	39.71333	45			
Total	3712.98		49			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	12.59	13.28	0.0135	Equal Variances
Variances	Mod Levene Equality of Variance	2.821	3.767	0.0359	Equal Variances
Variances	Levene Equality of Variance	3.649	3.767	0.0117	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9754	0.9367	0.3769	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.06843	0.1463	0.8233	Normal Distribution
Distribution	D'Agostino Skewness	0.1706	2.576	0.8646	Normal Distribution
Distribution	D'Agostino Kurtosis	1.515	2.576	0.1297	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	2.325	9.21	0.3127	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.3694	3.878	0.4312	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	15.3	13.22	17.38	16	10	20	0.9195	19.01%	0.0%
6.25		10	27.4	20.32	34.48	25.5	9	42	3.131	36.14%	-79.08%
12.5		10	25.3	20.89	29.71	23.5	19	39	1.95	24.37%	-65.36%
25		10	30.9	27.06	34.74	32.5	23	36	1.696	17.36%	-102.0%
50		10	16.2	12.6	19.8	15.5	7	23	1.59	31.04%	-5.88%
100		10	0	0	0	0	0	0	0		100.0%

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

Analysis ID: 09-2189-7862 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9 54 Analysis: Parametric-Control vs Treatments Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	15	17	17	15	16	11	10	16	15
6 25		36	27	21	38	24	23	9	21	33	42
12.5		31	25	23	24	22	19	22	19	39	29
25		35	30	24	35	33	35	23	24	32	36
50		16	23	7	22	13	19	21	13	13	15
100		0	0	0	0	0	0	0	0	0	0

CETIS Analytical Report

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

Analysis ID:	19-4991-4782	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	17-0097-4706	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:50	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-4882-2384	Code:	VCF0915.123c	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	34h (18.4 °C)	Station:	MD-HUE		

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
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	10	1	1	1	0	0	0.0%	0.0%	10	10
6.25		10	1	1	1	0	0	0.0%	0.0%	10	10
12.5		10	1	1	1	0	0	0.0%	0.0%	10	10
25		10	1	1	1	0	0	0.0%	0.0%	10	10
50		10	1	1	1	0	0	0.0%	0.0%	10	10
100		10	1	1	1	0	0	0.0%	0.0%	10	10

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

Analysis ID:	19-4991-4782	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

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

Analysis ID:	07-5486-4581	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	17-0097-4706	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:50	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-4882-2384	Code:	VCF0915.123c	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	34h (18.4 °C)	Station:	MO-HUE		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2104798	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	28.63	27.67	30.94	3.493	3.232	3.614
IC10	32.25	30.35	36.89	3.101	2.711	3.295
IC15	35.88	33.02	42.63	2.787	2.335	3.028
IC20	39.5	35.7	48.78	2.532	2.05	2.801
IC25	43.13	38.37	62.61	2.319	1.904	2.606
IC40	54.21	46.39	62.01	1.845	1.613	2.156
IC50	61.84	53.05	68.34	1.617	1.463	1.885

Reproduction Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.3	10	20	0.9195	2.908	19.01%	0.0%
6.25		10	27.4	9	42	3.131	9.902	36.14%	-79.08%
12.5		10	25.3	19	39	1.95	6.165	24.37%	-65.36%
25		10	30.9	23	38	1.696	5.363	17.36%	-102.0%
50		10	16.2	7	23	1.59	5.029	31.04%	-5.88%
100		10	0	0	0	0	0		100.0%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	15	17	17	16	16	11	10	16	15
6.25		36	27	21	38	24	23	9	21	33	42
12.5		31	25	23	24	22	19	22	19	39	29
25		35	30	24	36	33	36	23	24	32	36
50		16	23	7	22	13	19	21	13	13	16
100		0	0	0	0	0	0	0	0	0	0

Analysis ID: 07-5486-4581 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:54 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	14-8055-1249	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes
Batch ID:	17-0097-4706	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	
Start Date:	16 Sep-15 14:16	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	23 Sep-15 14:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	7d 1h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	11-4882-2364	**Code:**	VCF0915.123c	**Client:**	VCWPD
Sample Date:	15 Sep-15 04:45	**Material:**	Sample Water	**Project:**	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	**Source:**	Bioassay Report		
Sample Age:	34h (18.4 °C)	**Station:**	MO-HUF		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

Analysis ID:	14-8655-1249	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Analysis ID:	14-8655-1249	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:54	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

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

Batch ID:	17-0097-4706	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:16	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:50	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	11-4882-2384	Code:	VCF0915.123c	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	34h (18.4 °C)	Station:	MO-HUE		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		3	211	211	211	211	211	0	0	0.0%	0
Overall		11	137.4			62	211				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	854	822.6	885.4	811	913	13.26	37.5	4.39%	0
12.5		8	1352	1316	1387	1301	1416	14.93	42.22	3.12%	0
25		8	2424	2392	2456	2364	2493	13.53	38.27	1.58%	0
50		8	4400	4367	4434	4357	4450	14.03	39.68	0.9%	0
100		3	8364	7874	8893	8251	8620	118.5	205.2	2.45%	0
Overall		43	2958			326	8620				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	6.725	6.064	7.386	5.2	7.8	0.2795	0.7906	11.76%	0
12.5		8	6.725	6.101	7.349	5.2	7.6	0.2637	0.7459	11.09%	0
25		8	6.388	5.458	7.317	4	7.3	0.393	1.112	17.4%	0
50		8	5.888	5.041	6.734	4.1	7.2	0.3578	1.012	17.19%	0
100		2	6.55	4.644	8.456	6.4	6.7	0.15	0.2121	3.24%	0
Overall		42	6.65			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		3	1196	1196	1196	1196	1196	0	0	0.0%	0
Overall		11	639.6			82	1196				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.763	7.539	7.986	7.2	8	0.09437	0.2669	3.44%	0
12.5		8	7.588	7.341	7.834	7	7.9	0.1043	0.2949	3.89%	0
25		8	7.488	7.262	7.713	7	7.8	0.09531	0.2696	3.6%	0
50		8	7.513	7.326	7.699	7.1	7.8	0.07892	0.2232	2.97%	0
100		2	7.7	7.696	7.704	7.7	7.7	0	0	0.0%	0
Overall		42	7.694			7	8.3				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.79	24.47	25 1	24.3	25.5	0.1329	0 3758	1.52%	0
6.25		8	24.7	24.41	24 99	24 2	25 1	0 1239	0 3505	1.42%	0
12 5		8	24.61	24.36	24 86	24 2	25	0.106	0 2997	1.22%	0
25		8	24 75	24.51	24.99	24.3	25 2	0.1018	0 2879	1.16%	0
50		8	24 54	24.2	24 87	24 2	25 4	0 1426	0.4033	1.64%	0
100		3	25	22.72	27.28	24 2	26	0.5291	0.9165	3.67%	0
Overall		43	24 73			24 2	26				0 (0%)

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

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
6.25									
12.5									
25									
50									
100		211	211	211					

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6 25		820	811	913	870	895	865	824	834
12.5		1320	1347	1358	1358	1301	1309	1405	1416
25		2388	2425	2493	2421	2364	2444	2420	2437
50		4425	4415	4450	4360	4359	4449	4357	4388
100		8251	8280	8520					

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7 9	7.1	7.8	7 8	8 7	7.7	6 5
6.25		6.8	7 8	6.1	7	7	6 6	7.3	5 2
12.5		7 3	7 6	6.2	6.9	7	6 6	7	5 2
25		7.1	7.3	5.5	6.9	7	6.5	6.8	4
50		7.2	7	4.9	5.9	6	6	6	4.1
100		6.4	6.7						

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
6.25									
12.5									
25									
50									
100		1198	1196	1196					

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8 2	8.3	8.2	8.2	8.1	7.8
6.25		8	7.6	7.9	7.9	8	7.8	7.7	7.2
12.5		7.9	7.4	7.7	7 7	7.9	7.5	7.6	7
25		7.8	7.3	7.6	7 7	7.7	7.3	7.5	7
50		7.8	7.3	7.6	7 5	7.6	7.7	7.5	7.1
100		7.7	7.7						

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25.1	24.7	24.6	25.5	24 7	24.9	24.5	24.3
6 25		24.7	24.5	24.2	25.1	25	25.1	24.7	24.3
12.5		24.7	25	24.2	25	24 7	24.4	24.6	24.3
25		24.7	25.2	24.5	24.8	25	24.9	24.6	24.3
50		24.6	25.4	24.2	24.4	24.8	24.2	24.4	24.3
100		24.8	26	24 2					

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.124

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %
REPRODUCTION	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

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

Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-1338-0515	Code:	VCF0915 124c	Client:	VCWPD
Sample Date:	15 Sep-15 06:18	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (16.5 °C)	Station:	MO-THO		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
21-2789-6449	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
19-4650-7443	Reproduction	100	>100	NA	58.0%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
05-5459-3866	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
00-2094-4399	Reproduction	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-5459-3866	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
21-2789-6449	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
00-2094-4399	Reproduction	Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
19-4650-7443	Reproduction	Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
19-4650-7443	Reproduction	PMSD	0.5802	0.13 - 0.47	Yes	Above Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	1	1	1	1	1	0	0	0.0%	0.0%
6.25		10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	0.0%
50		10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.3	13.22	17.38	10	20	0.9195	2.908	19.01%	0.0%
6.25		10	27.4	19.9	34.9	11	43	3.314	10.48	38.25%	-79.08%
12.5		10	28.9	21.33	36.47	10	46	3.345	10.58	36.6%	-88.89%
25		10	26.8	20.25	33.35	13	37	2.894	9.151	34.14%	-75.16%
50		10	26	22.44	33.56	9	36	2.459	7.775	27.77%	-83.01%
100		10	33.2	26.93	39.47	21	45	2.772	8.768	26.4%	-117.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	16	17	17	16	16	11	10	16	15
6.25		41	43	21	37	20	32	19	11	25	25
12.5		39	35	21	31	21	32	10	21	33	46
25		35	14	24	36	28	25	13	20	36	37
50		32	35	9	31	30	27	30	28	36	22
100		43	42	37	21	45	32	23	36	24	29

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

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

Analysis ID:	19 4650-7443	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-1338-0515	Code:	VCF0915.124c	Client:	VCWPD
Sample Date:	15 Sep-15 08:18	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (16.5 °C)	Station:	MO-THO		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	58.0%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-3.12	2.289	8.878	18	1.0000	CDF	Non-Significant Effect
		12.5	-3.607	2.289	8.878	18	1.0000	CDF	Non-Significant Effect
		25	-2.965	2.289	8.878	18	1.0000	CDF	Non-Significant Effect
		50	-3.275	2.289	8.878	18	1.0000	CDF	Non-Significant Effect
		100	-4.616	2.289	8.878	18	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.5802	0.13 - 0.47	Yes	Above Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1791.8	358.36	5	4.766	0.0011	Significant Effect
Error	4060.6	75.1963	54			
Total	5852.4		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	12.93	15.09	0.0241	Equal Variances
Variances	Mod Levene Equality of Variance	2.231	3.377	0.0643	Equal Variances
Variances	Levene Equality of Variance	3.059	3.377	0.0167	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9849	0.9459	0.6847	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.06891	0.1331	0.6550	Normal Distribution
Distribution	D'Agostino Skewness	0.9029	2.576	0.3666	Normal Distribution
Distribution	D'Agostino Kurtosis	0.2947	2.576	0.7682	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	0.9021	9.21	0.6369	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.2779	3.878	0.6800	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	15.3	13.22	17.38	16	10	20	0.9195	19.01%	0.0%
6.25		10	27.4	19.9	34.9	25	11	43	3.314	38.25%	-79.08%
12.5		10	28.9	21.33	36.47	31.5	10	46	3.345	36.6%	-88.89%
25		10	26.8	20.25	33.35	26.5	13	37	2.894	34.14%	-75.16%
50		10	28	22.44	33.56	30	9	36	2.459	27.77%	-83.01%
100		10	33.2	26.93	39.47	34	21	45	2.772	26.4%	-117.0%

Analysis ID: 19-4650-7443 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:55 Analysis: Parametric-Control vs Treatments Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	15	17	17	16	16	11	10	16	15
6.25		41	43	21	37	20	32	19	11	25	25
12.5		39	35	21	31	21	32	10	21	33	46
25		35	14	24	36	28	25	13	20	36	37
50		32	35	9	31	30	27	30	28	36	22
100		43	42	37	21	45	32	23	36	24	29

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

Analysis ID:	05-5459-3866	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-1338-0515	Code:	VCF0915 124c	Client:	VCWPD
Sample Date:	15 Sep-15 05:18	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (16.5 °C)	Station:	MO-THO		

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
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	10	1	1	1	0	0	0.0%	0.0%	10	10
6.25		10	1	1	1	0	0	0.0%	0.0%	10	10
12.5		10	1	1	1	0	0	0.0%	0.0%	10	10
25		10	1	1	1	0	0	0.0%	0.0%	10	10
50		10	1	1	1	0	0	0.0%	0.0%	10	10
100		10	1	1	1	0	0	0.0%	0.0%	10	10

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

Analysis ID:	05-5459-3866	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	00-2094-4399	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems CO	Age:	
Sample ID:	03-1338-0515	Code:	VCF0915.124c	Client:	VCWPD
Sample Date:	15 Sep-15 06:18	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (16.5 °C)	Station:	MO-THO		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	383442	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.3	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Reproduction Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.3	10	20	0.9195	2.908	19.01%	0.0%
6.25		10	27.4	11	43	3.314	10.48	38.25%	-79.08%
12.5		10	28.9	10	46	3.346	10.58	36.6%	-88.89%
25		10	26.8	13	37	2.894	9.151	34.14%	-75.16%
50		10	28	9	36	2.459	7.775	27.77%	-83.01%
100		10	33.2	21	45	2.772	8.766	26.4%	-117.0%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	20	15	17	17	16	16	11	10	16	15
6.25		41	43	21	37	20	32	19	11	25	25
12.5		39	35	21	31	21	32	10	21	33	46
25		35	14	24	36	28	25	13	20	36	37
50		32	35	9	31	30	27	30	28	36	22
100		43	42	37	21	45	32	23	36	24	29

Analysis ID:	00-2094-4399	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	21-2789-6449	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-1336-0515	Code:	VCF0915.124c	Client:	VCWPD
Sample Date:	15 Sep-15 06:18	Material:	Sample Water	Project:	2015/16-1(Wat)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (16.5 °C)	Station:	MO-THO		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	10	0	10	1	0	0.0%
6.25		10	0	10	1	0	0.0%
12.5		10	0	10	1	0	0.0%
25		10	0	10	1	0	0.0%
50		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	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

Analysis ID:	21-2769-6449	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Analysis ID:	21-2789-6449	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

CETIS Measurement Report

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

Batch ID:	09-1316-3617	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:20	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:52	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-1338-0515	Code:	VCF0915.124c	Client:	VCWPD
Sample Date:	15 Sep-15 06:18	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Jun-15 10:15	Source:	Bioassay Report		
Sample Age:	32h (18.5 °C)	Station:	MO-THO		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	63	63	63	63	63	0	0	0.0%	0
Overall		16	63.44			62	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	352.9	338.5	367.3	342	395	6.09	17.22	4.88%	0
12.5		8	338.8	332.8	344.7	331	347	2.527	7.146	2.11%	0
25		8	351.6	332.3	370.9	331	391	8.161	23.08	6.57%	0
50		8	336.8	334.7	342.8	334	345	1.698	4.803	1.42%	0
100		8	348.4	332.7	366.1	336	398	7.058	19.96	5.71%	0
Overall		48	344.6			326	398				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	7.163	6.54	7.786	5.9	8	0.2632	0.7444	10.39%	0
12.5		8	6.9	6.237	7.563	5.2	7.7	0.2803	0.7928	11.49%	0
25		8	6.55	5.758	7.342	4.6	7.4	0.3349	0.9472	14.46%	0
50		8	6.163	5.283	7.042	4	7.1	0.3717	1.051	17.06%	0
100		8	5.825	5.07	6.58	4	7.1	0.3195	0.9036	15.51%	0
Overall		48	6.704			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	113	113	113	113	113	0	0	0.0%	0
Overall		16	98.06			82	113				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	8.238	8.175	8.3	8.1	8.3	0.0263	0.07439	0.9%	0
12.5		8	8.088	7.974	8.201	7.9	8.3	0.04795	0.1356	1.68%	0
25		8	7.95	7.75	8.15	7.7	8.3	0.08451	0.239	3.01%	0
50		8	7.838	7.589	8.086	7.4	8.3	0.1051	0.2973	3.79%	0
100		8	7.65	7.325	7.975	7	8.3	0.1376	0.3891	5.09%	0
Overall		48	7.979			7	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.76	24.24	25.29	24	25.8	0.2212	0.6255	2.53%	0
6.25		8	24.79	24.26	25.32	24	25.8	0.2248	0.6357	2.57%	0
12.5		8	24.6	24.33	24.87	24.2	25.1	0.1134	0.3207	1.3%	0
25		8	23.31	20.46	26.16	14.9	25	1.205	3.408	14.62%	0
50		8	24.6	24.12	25.08	24	25.8	0.2027	0.5732	2.33%	0
100		8	24.56	23.95	25.18	24	26	0.2591	0.7328	2.98%	0
Overall		48	24.44			14.9	26				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		63	63	63	63	63	63	63	63

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		342	395	344	347	348	349	350	348
12.5		345	332	331	346	347	331	335	343
25		364	331	332	340	343	334	378	391
50		335	334	334	345	344	336	338	344
100		345	339	338	398	340	343	343	349

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.5	8	6.3	7.5	7.7	6.8	7.6	5.9
12.5		7.5	7.7	6.4	7	7.3	6.9	7.2	5.2
25		7.4	7.2	5.7	6.9	7.2	6.8	6.6	4.6
50		7	6.8	5.3	6.5	7.1	6.6	6	4
100		5.7	5.9	5.4	6.4	7.1	6.3	5.8	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		113	113	113	113	113	113	113	113

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		8.2	8.2	8.3	8.3	8.2	8.3	8.3	8.1
12.5		8	8	8.1	8.3	8.2	8	8.2	7.9
25		8	7.7	7.9	8.3	8.3	7.8	7.9	7.7
50		7.9	7.4	7.8	8.2	8.3	7.7	7.8	7.6
100		7.7	7	7.7	8	8.3	7.5	7.6	7.4

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	25.8	24.5	24.5	24.8	25.6	24.6	24.3
6.25		24	25.8	24.4	24.5	25.5	25.2	24.6	24.3
12.5		24.4	25.1	24.2	24.6	24.7	25	24.5	24.3
25		14.9	25	24.2	24.5	24.7	24.4	24.5	24.3
50		25	25.8	24.2	24.4	24.7	24	24.4	24.3
100		25.4	26	24.4	24	24.2	24	24.2	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.126

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %
REPRODUCTION	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

R. Scott Johnson
Laboratory Director

CETIS Summary Report

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

Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	02-0823-7794	Code:	VCF0915.126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	33h (15.6 °C)	Station:	MO-SJM		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
15-5451-4228	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
14-3870-8073	Reproduction	100	>100	NA	40.2%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
01-0659-3688	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
12-7522-4430	Reproduction	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-0659-3688	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria
15-5451-4228	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria
12-7522-4430	Reproduction	Control Resp	15	15 - NL	Yes	Passes Acceptability Criteria
14-3870-8073	Reproduction	Control Resp	15	15 - NL	Yes	Passes Acceptability Criteria
14-3870-8073	Reproduction	PMSD	0.4021	0.13 - 0.47	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
6.25		10	1	1	1	1	1	0	0	0.0%	-11.11%
12.5		10	1	1	1	1	1	0	0	0.0%	-11.11%
25		10	1	1	1	1	1	0	0	0.0%	-11.11%
50		10	1	1	1	1	1	0	0	0.0%	-11.11%
100		10	1	1	1	1	1	0	0	0.0%	-11.11%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15	10.63	19.37	0	21	1.932	6.11	40.73%	0.0%
6.25		10	18.8	15.6	22	13	27	1.413	4.467	23.76%	-25.33%
12.5		10	23.2	19.87	26.53	18	32	1.474	4.662	20.09%	-54.67%
25		10	20.6	16.17	25.03	11	30	1.966	6.186	30.03%	-37.33%
50		10	28.3	23.42	33.18	19	39	2.155	6.815	24.08%	-88.67%
100		10	25.6	20.83	30.37	11	36	2.109	6.67	26.05%	-70.67%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	0	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	18	0	17	13	13	14	21	14	19	21
6.25		18	23	27	23	16	16	15	16	21	13
12.5		23	26	21	20	30	20	18	32	22	20
25		24	16	11	23	30	23	15	23	27	15
50		25	30	28	24	36	19	22	34	39	24
100		27	31	25	23	36	11	21	30	26	26

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	0/1	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

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	14-3870-8073	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:55	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-0823-7794	Code:	VCF0915.126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Reprl		
Sample Age:	33h (15.6 °C)	Station:	MO-SIM		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	40.2%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-1.442	2.289	6.031	18	0.9961	CDF	Non-Significant Effect
		12.5	-3.112	2.289	6.031	18	1.0000	CDF	Non-Significant Effect
		25	-2.126	2.289	6.031	18	0.9997	CDF	Non-Significant Effect
		50	-5.048	2.289	6.031	18	1.0000	CDF	Non-Significant Effect
		100	-4.023	2.289	6.031	18	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.4021	0.13 - 0.47	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1152.483	230.4967	5	6.641	<0.0001	Significant Effect
Error	1874.1	34.70555	54			
Total	3026.583		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	2.682	15.09	0.7489	Equal Variances
Variances	Mod Levene Equality of Variance	0.3686	3.377	0.8679	Equal Variances
Variances	Levene Equality of Variance	0.5196	3.377	0.7603	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9772	0.9459	0.3216	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.05838	0.1331	0.6678	Normal Distribution
Distribution	D'Agostino Skewness	0.8915	2.576	0.3726	Normal Distribution
Distribution	D'Agostino Kurtosis	0.5922	2.576	0.5537	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	1.146	9.21	0.5640	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.3316	3.878	0.5234	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	15	10.63	19.37	15.5	0	21	1.932	40.73%	0.0%
6.25		10	18.8	15.6	22	17	13	27	1.413	23.76%	-25.33%
12.5		10	23.2	19.87	26.53	21.5	18	32	1.474	20.09%	-54.67%
25		10	20.6	16.17	25.03	23	11	30	1.956	30.03%	-37.33%
50		10	28.3	23.42	33.18	26.5	19	39	2.155	24.08%	-88.67%
100		10	25.6	20.83	30.37	26	11	36	2.109	26.05%	-70.67%

Analysis ID: 14-3870-8073 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:55 Analysis: Parametric-Control vs Treatments Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	18	0	17	13	13	14	21	14	19	21
6.25		18	23	27	23	16	16	15	16	21	13
12.5		23	26	21	20	30	20	18	32	22	20
25		24	15	11	23	30	23	15	23	27	15
50		25	30	28	24	38	19	22	34	39	24
100		27	31	25	23	36	11	21	30	26	26

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

Analysis ID:	01-0659-3688	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-0823-7794	Code:	VCF0915.126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	33h (15.6 °C)	Station:	MO-SIM		

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
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
6.25		10	1	1	1	0	0	0.0%	-11.11%	10	10
12.5		10	1	1	1	0	0	0.0%	-11.11%	10	10
25		10	1	1	1	0	0	0.0%	-11.11%	10	10
50		10	1	1	1	0	0	0.0%	-11.11%	10	10
100		10	1	1	1	0	0	0.0%	-11.11%	10	10

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	0	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	0/1	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

Analysis ID:	01-0659-3688	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	12-7522-4430	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-0823-7794	Code:	VCF0915 126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	33h (15.6 °C)	Station:	MO-SIM		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1937294	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Reproduction Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15	0	21	1.932	6.11	40.73%	0.0%
6.25		10	18.8	13	27	1.413	4.467	23.76%	-25.33%
12.5		10	23.2	18	32	1.474	4.662	20.09%	-54.67%
25		10	20.6	11	30	1.955	6.186	30.03%	-37.33%
50		10	28.3	19	39	2.155	6.816	24.08%	-88.67%
100		10	25.6	11	36	2.109	6.67	26.05%	-70.67%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	18	0	17	13	13	14	21	14	19	21
6.25		18	23	27	23	16	16	15	16	21	13
12.5		23	26	21	20	30	20	18	32	22	20
25		24	15	11	23	30	23	15	23	27	15
50		25	30	26	24	38	19	22	34	39	24
100		27	31	25	23	36	11	21	30	26	26

Analysis ID:	12-7522-4430	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	15-5451-4228	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-0823-7794	Code:	VCF0915.126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16 1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	33h (15.6 °C)	Station:	MO-SIM		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	9	1	10	0.9	0.1	0.0%
6.25		10	0	10	1	0	-11.11%
12.5		10	0	10	1	0	-11.11%
25		10	0	10	1	0	-11.11%
50		10	0	10	1	0	-11.11%
100		10	0	10	1	0	-11.11%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	0	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	0/1	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

Analysis ID:	15-5451-4228	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Analysis ID:	15-5451-4228	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

CETIS Measurement Report

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

Batch ID:	09-0661-2287	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:28	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:15	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-0823-7794	Code:	VCF0915 126c	Client:	VCWPD
Sample Date:	15 Sep-15 05:30	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	33h (15.6 °C)	Station:	MO-StM		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	45	45	45	45	45	0	0	0.0%	0
Overall		16	54.44			45	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	328.4	326.4	330.4	326	332	0.8438	2.387	0.73%	0
12.5		8	331.1	329.8	332.4	329	334	0.5489	1.553	0.47%	0
25		8	333.9	332.6	335.2	332	337	0.5489	1.553	0.47%	0
50		8	338	336.3	339.7	335	342	0.7071	2	0.59%	0
100		8	348.6	343.5	353.7	339	357	2.162	6.116	1.75%	0
Overall		48	336			326	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	6.9	6.159	7.641	5.1	7.9	0.3134	0.8864	12.85%	0
12.5		8	6.663	5.891	7.434	4.8	7.8	0.3262	0.9226	13.85%	0
25		8	6.25	5.385	7.115	4.3	7.6	0.366	1.035	16.56%	0
50		8	6.125	5.31	6.94	4.2	7.2	0.3447	0.975	15.92%	0
100		8	5.55	4.901	6.199	4	6.3	0.2745	0.7764	13.99%	0
Overall		48	6.519			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	89	89	89	89	89	0	0	0.0%	0
Overall		16	86.06			82	89				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.05105	0.1727	2.13%	0
6.25		8	7.6	7.304	7.896	7	8	0.1254	0.3546	4.67%	0
12.5		8	7.575	7.323	7.827	7.1	7.9	0.1065	0.3012	3.98%	0
25		8	7.5	7.236	7.764	7	7.9	0.1118	0.3162	4.22%	0
50		8	7.45	7.178	7.722	6.9	7.8	0.115	0.3251	4.36%	0
100		8	7.35	7.097	7.603	6.8	7.7	0.1069	0.3024	4.11%	0
Overall		48	7.598			6.8	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.68	24.37	24.98	24.3	25.4	0.1278	0.3615	1.47%	0
6.25		8	24.7	24.38	25.02	24.3	25.5	0.1363	0.3855	1.56%	0
12.5		8	24.56	24.41	24.72	24.3	24.9	0.06531	0.1847	0.75%	0
25		8	24.44	24.26	24.62	24.1	24.7	0.07546	0.2134	0.87%	0
50		8	24.5	24.24	24.76	24	24.9	0.1086	0.3071	1.25%	0
100		8	24.51	24.21	24.81	24	25	0.126	0.3563	1.45%	0
Overall		48	24.56			24	25.5				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		45	45	45	45	45	45	45	45

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		326	327	330	330	330	326	326	332
12.5		330	331	332	331	332	330	329	334
25		333	333	335	334	334	332	333	337
50		338	338	338	337	337	339	335	342
100		351	350	349	339	340	351	352	357

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.8	7.9	6.5	6.7	6.9	6.9	7.4	5.1
12.5		7.6	7.8	6.2	6.5	6.8	6.9	6.7	4.8
25		7.3	7.6	5.6	6.1	6.2	6.8	6.1	4.3
50		7.2	7.2	5.5	6	6.1	6.6	6.2	4.2
100		6.1	6	4.8	5.9	5.8	6.3	5.5	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		89	89	89	89	89	89	89	89

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		7.8	7	7.6	8	8	7.6	7.6	7.2
12.5		7.8	7.1	7.6	7.9	7.9	7.5	7.6	7.2
25		7.7	7	7.5	7.9	7.8	7.5	7.5	7.1
50		7.7	6.9	7.4	7.8	7.8	7.4	7.5	7.1
100		7.5	6.8	7.3	7.7	7.7	7.3	7.4	7.1

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24.6	24.7	24.4	24.5	25.4	25	24.5	24.3
6.25		24.7	24.6	24.5	24.4	25.5	25	24.6	24.3
12.5		24.6	24.6	24.5	24.4	24.9	24.7	24.5	24.3
25		24.7	24.6	24.3	24.1	24.6	24.6	24.3	24.3
50		24.9	24.9	24.6	24	24.5	24.5	24.3	24.3
100		25	25	24.6	24	24.3	24.6	24.3	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.127

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

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

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

Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	17-0139-8605	Code:	VCF0915 127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MO-FIL		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
01-1274-4920	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
06-5567-3242	Reproduction	100	>100	NA	47.8%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
07-0056-7579	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
01-6763-2918	Reproduction	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-1274-4920	7d Survival Rate	Control Resp	0.9	0.6 - NL	Yes	Passes Acceptability Criteria
07-0056-7579	7d Survival Rate	Control Resp	0.9	0.6 - NL	Yes	Passes Acceptability Criteria
01-6763-2918	Reproduction	Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
06-5567-3242	Reproduction	Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
06-5567-3242	Reproduction	PMSD	0.4778	0.13 - 0.47	Yes	Above Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
6.25		10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
12.5		10	1	1	1	1	1	0	0	0.0%	-11.11%
25		10	1	1	1	1	1	0	0	0.0%	-11.11%
50		10	1	1	1	1	1	0	0	0.0%	-11.11%
100		10	1	1	1	1	1	0	0	0.0%	-11.11%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.8	9.564	22.02	0	32	2.746	8.69	55.0%	0.0%
6.25		10	17.1	12.13	22.07	0	26	2.198	6.951	40.65%	-8.23%
12.5		10	26.1	20.72	31.48	9	37	2.378	7.52	28.81%	-65.19%
25		10	25.5	20.73	30.27	15	39	2.11	6.671	26.16%	-61.39%
50		10	25.4	20.85	29.95	15	39	2.012	6.363	25.05%	-60.76%
100		10	27.7	22.12	33.28	13	36	2.468	7.804	28.17%	-75.32%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	0	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6.25		20	0	13	16	18	20	19	26	22	17
12.5		29	28	30	28	9	31	37	28	21	22
25		32	24	23	20	23	29	39	27	23	15
50		39	25	25	23	15	28	24	23	21	31
100		36	33	32	23	21	31	34	34	20	13

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
6.25		1/1	0/1	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:	06-5567-3242	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	17-0139-8605	Code:	VCF0915.127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16 1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MO-FIL		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	47.8%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-0.3942	2.289	7.549	18	0.9246	CDF	Non-Significant Effect
		12.5	-3.123	2.289	7.549	18	1.0000	CDF	Non-Significant Effect
		25	-2.941	2.289	7.549	18	1.0000	CDF	Non-Significant Effect
		50	-2.911	2.289	7.549	18	1.0000	CDF	Non-Significant Effect
		100	-3.608	2.289	7.549	18	1.0000	CDF	Non Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.4778	0.13 - 0.47	Yes	Above Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1303.333	260.6667	5	4.794	0.0011	Significant Effect
Error	2936.4	54.37778	54			
Total	4239.733		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	1.146	16.09	0.9500	Equal Variances
Variances	Mod Levene Equality of Variance	0.2934	3.377	0.9145	Equal Variances
Variances	Levene Equality of Variance	0.4647	3.377	0.8008	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9736	0.9459	0.2177	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.07906	0.1331	0.4303	Normal Distribution
Distribution	D'Agostino Skewness	1.182	2.576	0.2373	Normal Distribution
Distribution	D'Agostino Kurtosis	1.016	2.576	0.3095	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	2.43	9.21	0.2968	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.5128	3.878	0.1978	Normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	15.8	9.584	22.02	14.5	0	32	2.748	55.0%	0.0%
6.25		10	17.1	12.13	22.07	18.5	0	26	2.198	40.65%	-8.23%
12.5		10	26.1	20.72	31.48	28	9	37	2.378	28.81%	-65.19%
25		10	25.5	20.73	30.27	23.5	16	39	2.11	26.16%	-61.39%
50		10	25.4	20.85	29.95	24.5	16	39	2.012	25.05%	-60.76%
100		10	27.7	22.12	33.28	31.5	13	36	2.468	28.17%	-75.32%

Analysis ID: 06-5567-3242 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:56 Analysis: Parametric-Control vs Treatments Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6 25		20	0	13	16	16	20	19	26	22	17
12.5		29	28	30	26	9	31	37	28	21	22
25		32	24	23	20	23	29	39	27	23	15
50		39	25	25	23	15	28	24	23	21	31
100		36	33	32	23	21	31	34	34	20	13

CETIS Analytical Report

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

Analysis ID:	07-0056-7579	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	17-0139-8605	Code:	VCF0915.127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MG-FIL		

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
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
6.25		10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
12.5		10	1	1	1	0	0	0.0%	-11.11%	10	10
25		10	1	1	1	0	0	0.0%	-11.11%	10	10
50		10	1	1	1	0	0	0.0%	-11.11%	10	10
100		10	1	1	1	0	0	0.0%	-11.11%	10	10

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	0	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
6.25		1/1	0/1	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

Analysis ID:	07-0056-7579	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	01-6703-2918	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	17-0139-8605	Code:	VCF0915.127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MO-FIL		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	556318	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Reproduction Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.8	0	32	2.748	8.69	55.0%	0.0%
6.25		10	17.1	0	26	2.198	6.951	40.65%	-8.23%
12.5		10	26.1	9	37	2.378	7.52	28.81%	-65.19%
25		10	25.5	15	39	2.11	6.671	26.16%	-61.39%
50		10	25.4	15	39	2.012	6.363	25.05%	-60.76%
100		10	27.7	13	36	2.468	7.804	28.17%	-75.32%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6.25		20	0	13	16	18	20	19	26	22	17
12.5		29	28	30	26	9	31	37	28	21	22
25		32	24	23	20	23	29	39	27	23	15
50		39	25	25	23	15	28	24	23	21	31
100		36	33	32	23	21	31	34	34	20	13

Analysis ID:	01-0763-2918	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	01-1274-4920	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	17-0139-8605	Code:	VCF0915.127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MO-FII.		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	0.7632	1.0000	Exact	Non-Significant Effect
		12.5	1	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	1	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	9	1	10	0.9	0.1	0.0%
6.25		9	1	10	0.9	0.1	0.0%
12.5		10	0	10	1	0	-11.11%
25		10	0	10	1	0	-11.11%
50		10	0	10	1	0	-11.11%
100		10	0	10	1	0	-11.11%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	0	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1
6.25		1/1	0/1	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

Analysis ID:	01-1274-4920	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Analysis ID:	01-1274-4920	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 9:56	**Analysis:**	STP 2x2 Contingency Tables	**Official Results:**	Yes

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

Batch ID:	00-8356-1573	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:30	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	17-0139-8605	Code:	VCF0915.127c	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10.15	Source:	Bioassay Report		
Sample Age:	35h (14 °C)	Station:	MO-FIL		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	37	37	37	37	37	0	0	0.0%	0
Overall		16	50.44			37	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	321	318.2	323.8	318	328	1.18	3.338	1.04%	0
12.5		8	314.6	311.6	317.7	310	320	1.295	3.662	1.16%	0
25		8	297.4	295.8	299	295	300	0.6797	1.923	0.65%	0
50		8	264.1	262.4	265.9	262	268	0.7425	2.1	0.8%	0
100		8	198.3	196	200.5	195	202	0.9402	2.659	1.34%	0
Overall		48	288.6			195	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	6.963	6.406	7.519	5.7	7.8	0.2352	0.6653	9.56%	0
12.5		8	6.788	6.073	7.502	5	7.7	0.302	0.8543	12.59%	0
25		8	6.45	5.615	7.285	4.4	7.5	0.353	0.9986	15.48%	0
50		8	6.113	5.272	6.953	4	7	0.3553	1.005	16.44%	0
100		8	5.563	4.781	6.344	4	6.9	0.3306	0.9349	16.81%	0
Overall		48	6.583			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	65	65	65	65	65	0	0	0.0%	0
Overall		16	74.06			65	85				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.475	7.179	7.771	6.9	8	0.125	0.3536	4.73%	0
12.5		8	7.413	7.132	7.693	6.9	7.9	0.1187	0.3357	4.53%	0
25		8	7.388	7.133	7.642	6.9	7.8	0.1076	0.3044	4.12%	0
50		8	7.338	7.085	7.59	6.8	7.7	0.1068	0.3021	4.12%	0
100		8	7.25	7.001	7.499	6.7	7.6	0.1052	0.2976	4.11%	0
Overall		48	7.496			6.7	8.3				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.89	24.43	25.35	24.3	25.7	0.195	0.5515	2.22%	0
6.25		8	24.66	24.3	25.03	24.3	25.6	0.1546	0.4373	1.77%	0
12.5		8	24.61	24.29	24.93	24.3	25.3	0.1356	0.3834	1.56%	0
25		8	24.48	24.19	24.76	24.1	24.9	0.1192	0.337	1.38%	0
50		8	24.46	24.21	24.71	24	24.8	0.1051	0.2973	1.22%	0
100		8	24.49	24.14	24.83	24	25.2	0.1469	0.4155	1.7%	0
Overall		48	24.6			24	25.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		37	37	37	37	37	37	37	37

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		319	320	320	322	328	318	318	323
12.5		312	314	314	315	320	310	312	320
25		295	297	298	299	300	296	295	299
50		262	263	263	266	268	264	262	265
100		202	195	196	199	195	199	199	201

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.3	7.8	6.5	6.9	7.3	6.7	7.5	5.7
12.5		7.6	7.7	6.3	6.8	7.2	6.8	6.9	5
25		7.2	7.5	5.7	6.3	7	6.9	6.6	4.4
50		6.8	6.7	5.4	6.2	7	6.8	6	4
100		5.3	5.5	4.6	6.1	6.9	6.3	5.8	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		65	65	65	65	65	65	65	65

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		7.6	6.9	7.4	7.8	8	7.5	7.5	7.1
12.5		7.6	6.9	7.4	7.7	7.9	7.4	7.4	7
25		7.6	6.9	7.4	7.6	7.8	7.4	7.4	7
50		7.6	6.8	7.3	7.5	7.7	7.4	7.4	7
100		7.5	6.7	7.1	7.4	7.6	7.4	7.3	7

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25.1	24.7	24.5	24.5	25.7	25.7	24.6	24.3
6.25		24.9	24.7	24.3	24.4	25.6	24.7	24.4	24.3
12.5		24.9	24.9	24.3	24.3	24.6	25.3	24.3	24.3
25		24.9	24.6	24.1	24.1	24.8	24.8	24.2	24.3
50		24.8	24.7	24.3	24	24.7	24.7	24.2	24.3
100		25.2	25	24.5	24	24.2	24.5	24.2	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.132

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %
REPRODUCTION	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

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

Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	20-3192-2550	Code:	VCF0915.132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VEN		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-8888-8269	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact/Bonferroni-Holm Test
12-4734-4404	Reproduction	100	>100	NA	70.8%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
00-8068-3921	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
18-0696-2847	Reproduction	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-8068-3921	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria
08-8888-8269	7d Survival Rate	Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria
12-4734-4404	Reproduction	Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
18-0895-2847	Reproduction	Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
12-4734-4404	Reproduction	PMSD	0.7079	0.13 - 0.47	Yes	Above Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
6.25		10	1	1	1	1	1	0	0	0.0%	-11.11%
12.5		10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
25		10	1	1	1	1	1	0	0	0.0%	-11.11%
50		10	0.9	0.6738	1	0	1	0.1	0.3162	35.14%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	-11.11%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.8	9.584	22.02	0	32	2.748	8.69	55.0%	0.0%
6.25		10	22.3	15.88	28.72	1	31	2.836	8.97	40.22%	-41.14%
12.5		10	25.7	15.62	35.78	0	41	4.455	14.09	54.81%	-62.66%
25		10	26.7	18.41	34.99	0	42	3.667	11.6	43.43%	-68.99%
50		10	26.9	17.78	36.02	0	41	4.032	12.75	47.4%	-70.25%
100		10	33.3	27.55	39.05	20	43	2.543	8.042	24.15%	-110.8%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	0	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	0	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6.25		31	28	28	23	1	25	24	28	13	22
12.5		29	23	39	41	2	33	33	26	0	31
25		42	28	38	26	0	29	26	29	17	32
50		41	31	37	30	0	9	35	27	27	32
100		43	42	38	26	29	39	40	26	30	20

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	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	0/1	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	0/1	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

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

Analysis ID:	12-4734-4404	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:57	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	20-3192-2550	Code:	VCF0915 132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VFN		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	70.8%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	130	75	3	18	0.9894	Asymp	Non-Significant Effect
		12.5	132	75	2	18	0.9897	Asymp	Non-Significant Effect
		25	136	75	2	18	0.9899	Asymp	Non-Significant Effect
		50	132	75	2	18	0.9897	Asymp	Non-Significant Effect
		100	148	75	0	18	1.0000	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria
PMSD	0.7079	0.13 - 0.47	Yes	Above Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1677.283	335.4567	5	2.811	0.0251	Significant Effect
Error	6444.9	119.35	54			
Total	8122.183		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.557	15.09	0.4723	Equal Variances
Variances	Mod Levene Equality of Variance	0.3148	3.377	0.9020	Equal Variances
Variances	Levene Equality of Variance	0.5356	3.377	0.7484	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9086	0.9459	0.0003	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1566	0.1331	0.0009	Non-normal Distribution
Distribution	D'Agostino Skewness	3.104	2.576	0.0019	Non-normal Distribution
Distribution	D'Agostino Kurtosis	1.332	2.576	0.1828	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	11.41	9.21	0.0033	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	1.898	3.878	<0.0001	Non-normal Distribution

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	15.8	9.584	22.02	14.5	0	32	2.748	55.0%	0.0%
6.25		10	22.3	15.88	28.72	24.5	1	31	2.836	40.22%	-41.14%
12.5		10	25.7	19.62	35.78	30	0	41	4.455	54.81%	-62.66%
25		10	26.7	18.41	34.99	28.5	0	42	3.667	43.43%	-68.99%
50		10	26.9	17.78	36.02	30.5	0	41	4.032	47.4%	-70.25%
100		10	33.3	27.55	39.05	34	20	43	2.543	24.15%	-110.8%

Analysis ID: 12-4734-4404 Endpoint: Reproduction CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:57 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6.25		31	28	28	23	1	25	24	28	13	22
12.5		29	23	39	41	2	33	33	26	0	31
25		42	28	38	26	0	29	26	29	17	32
50		41	31	37	30	0	9	35	27	27	32
100		43	42	38	26	29	39	40	26	30	20

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

Analysis ID:	00-6068 3921	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	20-3192-2550	Code:	VCF0915 132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VEN		

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
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
6.25		10	1	1	1	0	0	0.0%	-11.11%	10	10
12.5		10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
25		10	1	1	1	0	0	0.0%	-11.11%	10	10
50		10	0.9	0	1	0.1	0.3162	35.14%	0.0%	9	10
100		10	1	1	1	0	0	0.0%	-11.11%	10	10

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	0	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	0	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	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	0/1	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	0/1	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

Analysis ID: 00-8068-3921 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:58 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

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

Analysis ID:	18-0895-2847	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	20-3192-2550	Code:	VCF0915.132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VEN		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	301167	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	15.8	15 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Reproduction Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	15.8	0	32	2.748	8.69	55.0%	0.0%
6.25		10	22.3	1	31	2.836	8.97	40.22%	-41.14%
12.5		10	25.7	0	41	4.455	14.09	54.81%	-62.66%
25		10	26.7	0	42	3.667	11.6	43.43%	-68.99%
50		10	26.9	0	41	4.032	12.75	47.4%	-70.25%
100		10	33.3	20	43	2.543	8.042	24.15%	-110.8%

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	32	16	13	18	13	10	0	23	11	22
6.25		31	28	26	23	1	25	24	28	13	22
12.5		29	23	39	41	2	33	33	26	0	31
25		42	28	38	26	0	29	26	29	17	32
50		41	31	37	30	0	9	35	27	27	32
100		43	42	38	26	29	39	40	26	30	20

Analysis ID:	18-0895-2847	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

CETIS Analytical Report

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

Analysis ID:	08-8888-8269	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes
Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubia	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	20-3192-2550	Code:	VCF0915 132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VEN		

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	100	>100	NA	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	1	1.0000	Exact	Non-Significant Effect
		12.5	0.7632	1.0000	Exact	Non-Significant Effect
		25	1	1.0000	Exact	Non-Significant Effect
		50	0.7632	1.0000	Exact	Non-Significant Effect
		100	1	1.0000	Exact	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9	0.8 - NL	Yes	Passes Acceptability Criteria

Data Summary

C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	9	1	10	0.9	0.1	0.0%
6.25		10	0	10	1	0	-11.11%
12.5		9	1	10	0.9	0.1	0.0%
25		10	0	10	1	0	-11.11%
50		9	1	10	0.9	0.1	0.0%
100		10	0	10	1	0	-11.11%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	0	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	0	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	0	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	0/1	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	0/1	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	0/1	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

Analysis ID:	05-8688-8269	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

Analysis ID:	08-8883-8269	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	STP 2x2 Contingency Tables	Official Results:	Yes

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

Batch ID:	08-7640-4467	Test Type:	Reproduction-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 14:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 15:40	Species:	Ceriodaphnia dubra	Brine:	Not Applicable
Duration:	7d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	20-3192-2550	Code:	VCF0915.132c	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (11.5 °C)	Station:	MO-VEN		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	32	32	32	32	32	0	0	0.0%	0
Overall		16	47.94			32	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	316.3	313.7	318.8	313	321	1.082	3.059	0.97%	0
12.5		8	308.9	307.4	310.3	305	311	0.6105	1.727	0.56%	0
25		8	288.5	286.6	290.4	285	293	0.8238	2.33	0.81%	0
50		8	246.3	245.1	247.4	245	249	0.491	1.389	0.56%	0
100		8	164.4	160.8	168	160	170	1.523	4.307	2.62%	0
Overall		48	276.7			160	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	6.925	6.233	7.617	5.2	8	0.2926	0.8276	11.95%	0
12.5		8	6.738	6.016	7.459	5.2	7.7	0.3053	0.8634	12.82%	0
25		8	6.513	5.672	7.353	4.3	7.4	0.3553	1.005	15.43%	0
50		8	6.188	5.39	6.985	4.1	6.9	0.3372	0.9538	15.42%	0
100		8	5.813	5.084	6.541	4	6.7	0.3079	0.8709	14.98%	0
Overall		48	6.633			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	52	52	52	52	52	0	0	0.0%	0
Overall		16	67.56			52	85				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.958	8.267	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.363	7.034	7.691	6.8	7.9	0.1388	0.3926	5.33%	0
12.5		8	7.375	7.09	7.66	6.9	7.8	0.1206	0.3412	4.63%	0
25		8	7.363	7.091	7.634	6.9	7.7	0.1149	0.3249	4.41%	0
50		8	7.325	7.036	7.614	6.8	7.7	0.1221	0.3454	4.72%	0
100		8	7.288	6.98	7.595	6.7	7.7	0.1302	0.3682	5.05%	0
Overall		48	7.471			6.7	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.71	24.42	25	24.3	25.2	0.1217	0.3441	1.39%	0
6.25		8	24.73	24.38	25.07	24.3	25.4	0.1461	0.4132	1.67%	0
12.5		8	24.59	24.38	24.8	24.3	25	0.08952	0.2532	1.03%	0
25		8	24.48	24.22	24.73	24	24.9	0.1065	0.3012	1.23%	0
50		8	24.48	24.19	24.76	24.1	25	0.1221	0.3454	1.41%	0
100		8	24.48	24.06	24.89	24	25.4	0.177	0.5007	2.05%	0
Overall		48	24.58			24	25.4				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		32	32	32	32	32	32	32	32

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		314	318	314	320	321	314	313	316
12.5		306	310	309	310	311	308	307	310
25		288	288	288	289	293	287	285	290
50		245	247	246	245	246	247	245	249
100		160	160	161	170	170	163	163	168

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.2	8	6.5	6.8	7.1	7.1	7.5	5.2
12.5		7.5	7.7	6.7	6.7	7	7	7.1	5.2
25		7.4	7.4	6.2	6.2	6.8	7	6.8	4.3
50		6.9	6.9	5.6	6.2	6.7	6.8	6.3	4.1
100		6.2	6.4	5.1	6.1	6.7	6.2	5.8	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		52	52	52	52	52	52	52	52

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		7.5	6.8	7.3	7.8	7.9	7.5	7.2	6.9
12.5		7.6	6.9	7.3	7.7	7.8	7.5	7.3	6.9
25		7.6	6.9	7.3	7.7	7.7	7.5	7.3	6.9
50		7.6	6.8	7.2	7.7	7.7	7.4	7.3	6.9
100		7.6	6.7	7.2	7.7	7.7	7.3	7.2	6.9

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25.1	24.7	24.5	24.5	25	25.2	24.4	24.3
6.25		24.9	24.7	24.3	24.6	25.4	25.2	24.4	24.3
12.5		24.8	24.7	24.3	24.5	24.7	25	24.4	24.3
25		24.9	24.7	24	24.4	24.3	24.8	24.4	24.3
50		24.9	25	24.1	24.2	24.2	24.7	24.4	24.3
100		25.1	25.4	24.3	24	24.2	24.4	24.1	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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-OXN
DATE RECEIVED:	9/15/2015
ABC LAB. NO.:	VCF0915.122

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

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

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

Batch ID:	12-7395-2517	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:05	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:10	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	12-0628-3036	Code:	VCF0915 122f	Client:	VCWPD
Sample Date:	15 Sep-15 03:00	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (17.6 °C)	Station:	MO-OXN		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-3774-4966	7d Survival Rate	100	>100	NA	7.06%	1	Steel Many-One Rank Sum Test
06-1624-0754	Mean Dry Biomass-mg	100	>100	NA	10.3%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
04-2593-3915	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
20-7949-7374	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-3774-4966	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
04-2593-3915	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
06-1624-0754	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
20-7949-7374	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
06-1624-0754	Mean Dry Biomass-mg	PMSD	0.1027	0.12 - 0.3	Yes	Below Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
6.25		4	1	1	1	1	1	0	0	0.0%	-1.7%
12.5		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
25		4	0.9333	0.7833	1	0.8	1	0.04714	0.09428	10.1%	5.09%
50		4	1	1	1	1	1	0	0	0.0%	-1.7%
100		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2736	0.2691	0.2786	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.269	0.2248	0.3132	0.228	0.2867	0.01388	0.02777	10.32%	1.77%
12.5		4	0.2788	0.2625	0.2952	0.2687	0.2907	0.005138	0.01028	3.69%	-1.83%
25		4	0.2735	0.237	0.31	0.2433	0.2927	0.01147	0.02295	8.39%	0.12%
50		4	0.2812	0.2577	0.3046	0.2647	0.2987	0.007365	0.01473	5.24%	-2.66%
100		4	0.2693	0.265	0.2737	0.2673	0.2733	0.001361	0.002722	1.01%	1.64%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		1	1	1	0.9333
25		0.8	0.9333	1	1
50		1	1	1	1
100		0.9333	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.228	0.2827	0.2687	0.2767
12.5		0.264	0.2907	0.2687	0.272
25		0.2433	0.268	0.29	0.2927
50		0.2987	0.2747	0.2867	0.2647
100		0.2673	0.2733	0.268	0.2687

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	14/15
25		12/15	14/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		14/15	15/15	15/15	15/15

CETIS Analytical Report

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

Analysis ID:	02-3774-4966	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9 58	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	12-7395-2517	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:05	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:10	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	12-0628-3036	Code:	VCF0915.122f	Client:	VCWPD
Sample Date:	15 Sep-15 03:00	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (17.6 °C)	Station:	MO-OXN		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	7.06%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	20	10	1	6	0.9516	Asymp	Non-Significant Effect
		12 5	18	10	2	6	0.8333	Asymp	Non-Significant Effect
		25	15 5	10	2	6	0.5438	Asymp	Non-Significant Effect
		50	20	10	1	6	0.9516	Asymp	Non-Significant Effect
		100	18	10	2	6	0.8333	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0 9833	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03638339	0 007276678	5	1.151	0 3704	Non-Significant Effect
Error	0.113787	0 0063215	18			
Total	0 1501704		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1.877	4.248	0.1486	Equal Variances
Variances	Levene Equality of Variance	4.384	4 248	0.0087	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8163	0 884	0 0006	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.2917	0.2056	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	2.614	2.576	0.0089	Non-normal Distribution
Distribution	D'Agostino Kurtosis	2.383	2.576	0 0172	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	12 51	9.21	0 0019	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	2.155	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	1	0.9333	1	0 01667	3.39%	0.0%
6 25		4	1	1	1	1	1	1	0	0.0%	-1.7%
12.5		4	0.9833	0 9303	1	1	0.9333	1	0 01667	3.39%	0.0%
25		4	0.9333	0 7633	1	0.9667	0.8	1	0 04714	10 1%	5.09%
50		4	1	1	1	1	1	1	0	0.0%	-1 7%
100		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3 39%	0.0%

Analysis ID: 02-3774-4966 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:58 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%
6.25		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	-2.34%
12.5		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%
25		4	1.325	1.074	1.576	1.375	1.107	1.441	0.07893	11.92%	5.93%
50		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	-2.34%
100		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		1	1	1	0.9333
25		0.8	0.9333	1	1
50		1	1	1	1
100		0.9333	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.441	1.441	1.31	1.441
6.25		1.441	1.441	1.441	1.441
12.5		1.441	1.441	1.441	1.31
25		1.107	1.31	1.441	1.441
50		1.441	1.441	1.441	1.441
100		1.31	1.441	1.441	1.441

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	14/15
25		12/15	14/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		14/15	15/15	15/15	15/15

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

Analysis ID:	06-1624-0754	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	12-7395-2517	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:05	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:10	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	12-0628-3036	Code:	VCF0915 122f	Client:	VCWPD
Sample Date:	15 Sep-15 03:00	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (17.6 °C)	Station:	MO-OXN		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	10.3%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	21	10	0	6	0.9778	Asymp	Non-Significant Effect
		12.5	20	10	0	6	0.9516	Asymp	Non-Significant Effect
		25	18	10	0	6	0.8333	Asymp	Non-Significant Effect
		50	20	10	0	6	0.9516	Asymp	Non-Significant Effect
		100	12	10	0	6	0.1424	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1027	0.12 - 0.3	Yes	Below Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0004852593	9.705185E-05	5	0.3558	0.8716	Non-Significant Effect
Error	0.004910219	0.00027279	18			
Total	0.005395479		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	17.26	15.09	0.0040	Unequal Variances
Variances	Mod Levene Equality of Variance	1.503	4.248	0.2380	Equal Variances
Variances	Levene Equality of Variance	3.869	4.248	0.0148	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9135	0.884	0.0421	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1533	0.2056	0.1508	Normal Distribution
Distribution	D'Agostino Skewness	2.264	2.576	0.0236	Normal Distribution
Distribution	D'Agostino Kurtosis	1.717	2.576	0.0859	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	8.076	9.21	0.0176	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.6743	3.878	0.0784	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.2738	0.2691	0.2786	0.2733	0.2713	0.2773	0.0015	1.1%	0.0%
6.25		4	0.269	0.2248	0.3132	0.2797	0.228	0.2887	0.01388	10.32%	1.77%
12.5		4	0.2786	0.2625	0.2952	0.278	0.2687	0.2907	0.005138	3.69%	-1.83%
25		4	0.2735	0.237	0.31	0.279	0.2433	0.2927	0.01147	8.39%	0.12%
50		4	0.2812	0.2577	0.3046	0.2807	0.2647	0.2987	0.007365	5.24%	-2.68%
100		4	0.2693	0.265	0.2737	0.2683	0.2673	0.2733	0.001361	1.01%	1.64%

Analysis ID: 06-1624-0754 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:58 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.228	0.2827	0.2887	0.2767
12.5		0.284	0.2907	0.2687	0.272
25		0.2433	0.268	0.29	0.2927
50		0.2987	0.2747	0.2867	0.2647
100		0.2673	0.2733	0.268	0.2687

CETIS Analytical Report

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

Analysis ID:	04-2593-3915	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	12-7395-2517	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:05	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:10	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	12-0626-3036	Code:	VCF0915.122f	Client:	VCWPD
Sample Date:	15 Sep-15 03:00	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (17.6 °C)	Station:	MO-OXN		

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
Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
6.25		4	1	1	1	0	0	0.0%	-1.7%	60	60
12.5		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
25		4	0.9333	0.8	1	0.04714	0.09428	10.1%	5.08%	56	60
50		4	1	1	1	0	0	0.0%	-1.7%	60	60
100		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		1	1	1	0.9333
25		0.8	0.9333	1	1
50		1	1	1	1
100		0.9333	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		15/15	15/15	15/15	14/15
25		12/15	14/15	15/15	15/15
50		15/15	15/15	15/15	15/15
100		14/15	15/15	15/15	15/15

Analysis ID:	04-2593-3915	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	20-7949-7374	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	12-7395-2517	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:05	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:10	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	12-0628-3036	Code:	VCF0915.122f	Client:	VCWPD
Sample Date:	15 Sep-15 03:00	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (17.6 °C)	Station:	MO-OXN		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	46498	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2738	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.269	0.228	0.2887	0.01388	0.02777	10.32%	1.77%
12.5		4	0.2788	0.2687	0.2907	0.005138	0.01028	3.69%	-1.83%
25		4	0.2735	0.2433	0.2927	0.01147	0.02295	8.39%	0.12%
50		4	0.2812	0.2647	0.2987	0.007365	0.01473	5.24%	-2.68%
100		4	0.2693	0.2673	0.2733	0.001361	0.002722	1.01%	1.64%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.228	0.2627	0.2887	0.2767
12.5		0.284	0.2907	0.2687	0.272
25		0.2433	0.268	0.29	0.2927
50		0.2987	0.2747	0.2867	0.2647
100		0.2673	0.2733	0.268	0.2687

Analysis ID:	20-7949-7374	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

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

Batch ID:	12-7395-2517	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	16 Sep-15 16:05	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	23 Sep-15 14:10	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	12-0628-3036	**Code:**	VCF0915 122f	**Client:**	VCWPD
Sample Date:	15 Sep-15 03:00	**Material:**	Sample Water	**Project:**	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	**Source:**	Bioassay Report		
Sample Age:	37h (17.6 °C)	**Station:**	MO-OXN		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	31	31	31	31	31	0	0	0.0%	0
Overall		16	47.44			31	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	313.8	310.6	316.9	309	321	1.319	3.732	1.19%	0
12.5		8	302.4	299.6	305.1	298	309	1.164	3.292	1.09%	0
25		8	276.8	271.5	282	270	288	2.216	6.274	2.27%	0
50		8	214.1	211.3	217	211	220	1.202	3.399	1.59%	0
100		8	88.75	83.25	94.25	81	99	2.328	6.585	7.42%	0
Overall		48	255.3			81	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	7.125	6.543	7.707	5.6	7.8	0.2462	0.6964	9.77%	0
12.5		8	6.913	6.207	7.618	5.1	7.7	0.2985	0.8442	12.21%	0
25		8	6.75	5.988	7.512	4.6	7.5	0.3224	0.9118	13.51%	0
50		8	6.475	5.619	7.331	4	7.1	0.3619	1.024	15.81%	0
100		8	5.863	5.119	6.606	4	6.8	0.3145	0.8895	15.17%	0
Overall		48	6.792			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	72	72	72	72	72	0	0	0.0%	0
Overall		16	77.56			72	85				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.375	7.063	7.687	6.8	7.8	0.1319	0.3732	5.06%	0
12.5		8	7.338	7.077	7.598	6.9	7.7	0.1101	0.3114	4.24%	0
25		8	7.313	7.078	7.547	6.9	7.6	0.09899	0.28	3.83%	0
50		8	7.3	7.077	7.523	6.9	7.5	0.09449	0.2673	3.66%	0
100		8	7.213	6.978	7.447	6.7	7.5	0.09899	0.28	3.88%	0
Overall		48	7.442			6.7	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.25	23.75	24.75	24	25 7	0 2104	0 5952	2.46%	0
6.25		8	24.16	23.9	24.43	24	24 9	0 1117	0.316	1.31%	0
12.5		8	24.13	23.94	24.31	24	24.6	0.07735	0.2188	0.91%	0
25		8	24.18	23.97	24.38	24	24.7	0.08814	0.2493	1.03%	0
50		8	24 13	23.98	24.27	24	24.4	0.06197	0.1753	0.73%	0
100		8	24 18	23.96	24.39	24	24.6	0.09014	0.255	1.06%	0
Overall		48	24 17			24	25.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		31	31	31	31	31	31	31	31

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		316	309	311	315	321	314	311	313
12.5		301	300	301	303	304	309	298	303
25		271	273	270	278	283	288	273	278
50		212	211	211	217	212	213	217	220
100		81	85	88	84	85	90	98	99

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7 8	7.8	8.7	7.7	6.5
6.25		7.6	7 8	6 9	7.3	7.3	8.9	7.6	5 6
12.5		7.5	7 7	6 3	7.2	7.1	7	7.4	5 1
25		7.3	7.5	6.6	7.1	6.8	7	7 1	4.6
50		7	7.1	6.4	7	6.7	6.8	6 8	4
100		6 1	5.9	5.3	6.8	6.7	6 2	5.9	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		72	72	72	72	72	72	72	72

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7 9	8.2	8.3	8.2	8.2	8.1	7 8
6.25		7.7	6.8	7.3	7 7	7.8	7.5	7.3	6 9
12 5		7.6	6.9	7.4	7.6	7.7	7.4	7 2	6 9
25		7.5	6.9	7 5	7.5	7.6	7.4	7 2	6 9
50		7 5	6.9	7.5	7.5	7.5	7.4	7 2	6 9
100		7 3	6.7	7.3	7.5	7 5	7.3	7 2	6.9

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	25 7	24	24	24	24	24.3
6.25		24	24.1	24 9	24	24	24	24	24 3
12.5		24	24 1	24.6	24	24	24	24	24 3
25		24	24.3	24 7	24.1	24	24	24	24 3
50		24	24.4	24	24.3	24	24	24	24 3
100		24	24.6	24	24.5	24	24	24	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.128

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,

/s/ Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

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

Batch ID:	09-6150-6759	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:15	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	07-0311-3820	Code:	VCF0915.128/	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (14.4 °C)	Station:	MO-SPA		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-6750-9683	7d Survival Rate	100	>100	NA	3.46%	1	Steel Many-One Rank Sum Test
02-6255-2773	Mean Dry Biomass-mg	100	>100	NA	13.1%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
06-6640-1944	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
08-6903-8073	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
06-6640-1944	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
14-6750-9683	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
02-6255-2773	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
08-6903-8073	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
02-6255-2773	Mean Dry Biomass-mg	PMSD	0.1314	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
6.25		4	1	1	1	1	1	0	0	0.0%	-1.7%
12.5		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
25		4	1	1	1	1	1	0	0	0.0%	-1.7%
50		4	1	1	1	1	1	0	0	0.0%	-1.7%
100		4	1	1	1	1	1	0	0	0.0%	-1.7%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2738	0.2691	0.2786	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.2803	0.2488	0.3118	0.2693	0.31	0.009898	0.0198	7.06%	-2.37%
12.5		4	0.2708	0.2579	0.2837	0.2627	0.282	0.004049	0.008099	2.99%	1.1%
25		4	0.2712	0.2285	0.3139	0.2493	0.308	0.01341	0.02683	9.89%	0.97%
50		4	0.29	0.2312	0.3488	0.256	0.338	0.01847	0.03693	12.73%	-5.9%
100		4	0.2756	0.2577	0.2939	0.268	0.2927	0.005692	0.01138	4.13%	-0.73%

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

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		0.9333	1	1	1
25		1	1	1	1
50		1	1	1	1
100		1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2713	0.2707	0.2693	0.31
12.5		0.2687	0.2627	0.282	0.27
25		0.2493	0.308	0.274	0.2533
50		0.2667	0.338	0.2993	0.256
100		0.2927	0.27	0.268	0.2727

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		14/15	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

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

Analysis ID:	14-6750-9683	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-6150-6759	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:15	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	07-0311-3820	Code:	VCF0915.128f	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (14.4 °C)	Station:	MO-SPA		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	3.46%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	20	10	1	6	0.9516	Asymp	Non-Significant Effect
		12.5	18	10	2	6	0.8333	Asymp	Non-Significant Effect
		25	20	10	1	6	0.9516	Asymp	Non-Significant Effect
		50	20	10	1	6	0.9516	Asymp	Non-Significant Effect
		100	20	10	1	6	0.9516	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.005781335	0.001156267	5	0.8	0.5640	Non-Significant Effect
Error	0.02601601	0.001445334	18			
Total	0.03179734		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	0.8	4.248	0.5640	Equal Variances
Variances	Levene Equality of Variance	7.2	4.248	0.0007	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.6164	0.884	<0.0001	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.4167	0.2056	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	3.704	2.576	0.0002	Non-normal Distribution
Distribution	D'Agostino Kurtosis	3.005	2.576	0.0027	Non-normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	22.75	9.21	<0.0001	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	4.32	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	0.0%
6.25		4	1	1	1	1	1	1	0	0.0%	-1.7%
12.5		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	0.0%
25		4	1	1	1	1	1	1	0	0.0%	-1.7%
50		4	1	1	1	1	1	1	0	0.0%	-1.7%
100		4	1	1	1	1	1	1	0	0.0%	-1.7%

Analysis ID: 14-6750-9683 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9 58 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.408	1.304	1.513	1.441	1 31	1.441	0.03292	4.68%	0.0%
6.25		4	1.441	1.441	1.442	1.441	1 441	1.441	0	0.0%	-2.34%
12 5		4	1.408	1.304	1.513	1.441	1 31	1.441	0.03292	4.68%	0.0%
25		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	-2.34%
50		4	1.441	1.441	1.442	1.441	1 441	1.441	0	0.0%	-2.34%
100		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	-2.34%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		0 9333	1	1	1
25		1	1	1	1
50		1	1	1	1
100		1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.441	1.441	1.31	1.441
6.25		1.441	1.441	1.441	1.441
12.5		1.31	1.441	1.441	1.441
25		1.441	1.441	1.441	1.441
50		1.441	1.441	1.441	1.441
100		1.441	1.441	1.441	1.441

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		14/15	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

Analysis ID:	02-6255-2773	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:58	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-6150-6759	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 10:15	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	07-0311-3820	Code:	VCF0915.126f	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (14.4 °C)	Station:	MO-SPA		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	13.1%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-0.435	2.407	0.036	6	0.9301	CDF	Non-Significant Effect
		12.5	0.2008	2.407	0.036	6	0.7675	CDF	Non-Significant Effect
		25	0.1784	2.407	0.036	6	0.7754	CDF	Non-Significant Effect
		50	-1.082	2.407	0.036	6	0.9862	CDF	Non-Significant Effect
		100	-0.1338	2.407	0.036	6	0.8697	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1314	0.12 - 0.3	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001054221	0.0002108441	5	0.4721	0.7922	Non-Significant Effect
Error	0.00803911	0.0004466172	18			
Total	0.009093331		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	14.86	15.09	0.0110	Equal Variances
Variances	Mod Levene Equality of Variance	2.209	4.248	0.0984	Equal Variances
Variances	Levene Equality of Variance	3.715	4.248	0.0174	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9336	0.884	0.1176	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1757	0.2056	0.0534	Normal Distribution
Distribution	D'Agostino Skewness	1.853	2.576	0.0639	Normal Distribution
Distribution	D'Agostino Kurtosis	1.319	2.576	0.1873	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	5.173	9.21	0.0753	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.7928	3.878	0.0398	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.2738	0.2691	0.2786	0.2733	0.2713	0.2773	0.0015	1.1%	0.0%
6.25		4	0.2803	0.2488	0.3118	0.271	0.2693	0.31	0.009898	7.06%	-2.37%
12.5		4	0.2708	0.2579	0.2837	0.2693	0.2627	0.282	0.00405	2.99%	1.1%
25		4	0.2712	0.2285	0.3139	0.2637	0.2493	0.308	0.01341	9.89%	0.97%
50		4	0.29	0.2312	0.3488	0.283	0.256	0.338	0.01647	12.73%	-5.9%
100		4	0.2758	0.2577	0.2939	0.2713	0.268	0.2927	0.005692	4.13%	-0.73%

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

Analysis ID: 02-6255-2773 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:58 Analysis: Parametric-Control vs Treatments Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2713	0.2707	0.2693	0.31
12.5		0.2687	0.2627	0.282	0.27
25		0.2493	0.308	0.274	0.2533
50		0.2667	0.336	0.2993	0.256
100		0.2927	0.27	0.268	0.2727

CETIS Analytical Report

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

Analysis ID:	06-6640-1944	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-6150-6759	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:15	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	07-0311-3820	Code:	VCF0915.128f	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	16 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (14.4 °C)	Station:	MO-SPA		

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
Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
6.25		4	1	1	1	0	0	0.0%	-1.7%	60	60
12.5		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
25		4	1	1	1	0	0	0.0%	-1.7%	60	60
50		4	1	1	1	0	0	0.0%	-1.7%	60	60
100		4	1	1	1	0	0	0.0%	-1.7%	60	60

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	1	1	1
12.5		0.9333	1	1	1
25		1	1	1	1
50		1	1	1	1
100		1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	15/15	15/15	15/15
12.5		14/15	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: 10 Nov-15 10:05 (p 2 of 4)
Test Code: VCF0915.128final | 18-6765-9351
Aquatic Bioassay & Consulting Labs, Inc.

Fathead Minnow 7-d Larval Survival and Growth Test

CETIS Version: CETISv1.8.7
Official Results: Yes

Analysis ID: 06-6640-1944
Analyzed: 10 Nov-15 9:59

Endpoint: 7d Survival Rate
Analysis: Linear Interpolation (ICPIN)

Analyst: ____ QA: ____

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

Analysis ID:	08-6903-8073	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-6150-6759	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:15	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	07-0311-3820	Code:	VCF0915.128/	Client:	VCWPD
Sample Date:	15 Sep-15 03:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (14.4 °C)	Station:	MO-SPA		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1386555	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2738	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.2803	0.2693	0.31	0.009898	0.0198	7.06%	-2.37%
12.5		4	0.2708	0.2627	0.282	0.00405	0.008099	2.99%	1.1%
25		4	0.2712	0.2493	0.308	0.01341	0.02683	9.89%	0.97%
50		4	0.29	0.256	0.338	0.01847	0.03693	12.73%	-5.9%
100		4	0.2755	0.258	0.2927	0.005692	0.01138	4.13%	-0.73%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2713	0.2707	0.2693	0.31
12.5		0.2687	0.2627	0.282	0.27
25		0.2493	0.308	0.274	0.2533
50		0.2667	0.338	0.2993	0.256
100		0.2927	0.27	0.268	0.2727

Analysis ID: 08-6503-8073 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

CETIS Measurement Report

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

Batch ID:	09-6150-6759	**Test Type:**	Growth-Survival (7d)	**Analyst:**	
Start Date:	16 Sep-15 16:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Laboratory Water
Ending Date:	23 Sep-15 14:15	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 22h	**Source:**	Aquatic Biosystems, CO	**Age:**	
Sample ID:	07-0311-3820	**Code:**	VCF0915.128/	**Client:**	VCWPD
Sample Date:	15 Sep-15 03:10	**Material:**	Sample Water	**Project:**	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	**Source:**	Bioassay Report		
Sample Age:	37h (14.4 °C)	**Station:**	MO-SPA		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	23	23	23	23	23	0	0	0.0%	0
Overall		16	43.44			23	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	309.9	306	311.7	307	313	0.7892	2.232	0.72%	0
12.5		8	298.5	297.5	299.5	296	300	0.4226	1.195	0.4%	0
25		8	266.9	264.5	269.3	264	273	1.025	2.9	1.09%	0
50		8	201.8	195.8	207.7	194	215	2.512	7.106	3.52%	0
100		8	65.75	60.45	73.05	57	78	2.664	7.536	11.29%	0
Overall		48	246.6			57	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	7.2	6.683	7.717	5.9	7.8	0.2188	0.6188	8.59%	0
12.5		8	7.075	6.464	7.686	5.5	7.8	0.2583	0.7305	10.32%	0
25		8	6.788	5.984	7.591	4.6	7.7	0.3399	0.9613	14.16%	0
50		8	6.5	5.606	7.394	4	7.5	0.378	1.069	16.45%	0
100		8	5.875	5.141	6.609	4	6.8	0.3104	0.8779	14.94%	0
Overall		48	6.844			4	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	35	35	35	35	35	0	0	0.0%	0
Overall		16	59.06			35	85				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.45	7.073	7.827	6.7	8	0.1592	0.4504	6.05%	0
12.5		8	7.338	7.041	7.634	6.8	7.8	0.1253	0.3543	4.83%	0
25		8	7.275	7.035	7.515	6.8	7.6	0.1013	0.2866	3.94%	0
50		8	7.225	7.007	7.443	6.8	7.5	0.0921	0.2605	3.61%	0
100		8	7.1	6.905	7.295	6.7	7.4	0.08238	0.233	3.28%	0
Overall		48	7.417			6.7	8.3				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.24	23.77	24.71	24	25.6	0.1982	0.5605	2.31%	0
6.25		8	24.21	23.8	24.62	24	25.4	0.1737	0.4912	2.03%	0
12.5		8	24.2	23.85	24.55	24	25.2	0.1476	0.4175	1.73%	0
25		8	24.16	23.9	24.43	24	24.9	0.1117	0.316	1.31%	0
50		8	24.19	23.95	24.42	24	24.8	0.09899	0.28	1.16%	0
100		8	24.1	23.97	24.23	24	24.4	0.0567	0.1604	0.67%	0
Overall		48	24.18			24	25.6				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		23	23	23	23	23	23	23	23

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		309	313	308	310	312	312	307	305
12.5		300	296	299	296	299	299	298	299
25		266	267	265	265	264	273	266	269
50		199	199	199	195	194	215	205	208
100		57	60	63	65	65	69	77	78

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.3	7.8	6.9	7.1	7.2	7.8	7.6	5.9
12.5		7.5	7.7	6.8	6.9	7.1	7.8	7.3	5.5
25		7.2	7.6	6.7	6.8	6.8	7.7	6.9	4.6
50		7	7.1	6.4	6.7	6.5	7.5	6.8	4
100		6.4	5.8	5.3	6.1	6.3	6.8	6.3	4

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		35	35	35	35	35	35	35	35

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		7.5	6.7	7.4	7.8	7.9	8	7.3	7
12.5		7.4	6.8	7.4	7.7	7.8	7.5	7.2	6.9
25		7.4	6.9	7.4	7.5	7.6	7.4	7.2	6.8
50		7.4	6.9	7.4	7.4	7.5	7.3	7.1	6.8
100		7.3	6.7	7	7.3	7.4	7.1	7.1	6.9

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	25.6	24	24	24	24	24.3
6.25		24	24	25.4	24	24	24	24	24.3
12.5		24	24.1	25.2	24	24	24	24	24.3
25		24	24.1	24.9	24	24	24	24	24.3
50		24	24.3	24.8	24	24	24	24.1	24.3
100		24	24.4	24	24	24	24	24.1	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.131

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

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

Batch ID:	01-2356-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915.131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MO-CAM		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-7513-3519	7d Survival Rate	100	>100	NA	6.51%	1	Dunnett Multiple Comparison Test
05-6561-4657	Mean Dry Biomass-mg	100	>100	NA	6.14%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
09-0101-9144	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
06-1665-9054	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
03-7513-3519	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
09-0101-9144	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
05-6561-4657	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
06-1665-9054	Mean Dry Biomass-mg	Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
05-6561-4657	Mean Dry Biomass-mg	PMSD	0.06139	0.12 - 0.3	Yes	Below Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
6.25		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
12.5		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
25		4	0.9667	0.9054	1	0.9333	1	0.01925	0.03849	3.98%	1.7%
50		4	0.95	0.8484	1	0.8667	1	0.03191	0.06383	6.72%	3.39%
100		4	1	1	1	1	1	0	0	0.0%	-1.7%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2738	0.2691	0.2786	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.2777	0.2566	0.2987	0.268	0.2967	0.006614	0.01323	4.76%	-1.4%
12.5		4	0.2815	0.256	0.307	0.2647	0.3013	0.008011	0.01602	5.69%	-2.8%
25		4	0.2757	0.266	0.2854	0.2713	0.2847	0.003049	0.006098	2.21%	-0.67%
50		4	0.2728	0.262	0.2837	0.2647	0.2813	0.003414	0.006829	2.5%	0.37%
100		4	0.2732	0.2608	0.2856	0.2673	0.2847	0.0039	0.007801	2.86%	0.24%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	0.9333	1	1
12.5		1	1	0.9333	1
25		0.9333	0.9333	1	1
50		1	1	0.8667	0.9333
100		1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2767	0.2967	0.2693	0.268
12.5		0.2647	0.3013	0.2733	0.2867
25		0.2727	0.2847	0.274	0.2713
50		0.2813	0.2733	0.2647	0.272
100		0.2673	0.2707	0.27	0.2847

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		15/15	15/15	14/15	15/15
25		14/15	14/15	15/15	15/15
50		15/15	15/15	13/15	14/15
100		15/15	15/15	15/15	15/15

CETIS Analytical Report

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

Analysis ID:	03-7513-3519	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1 8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	01-2366-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915.131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MD-CAM		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	6.51%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	0	2.407	0.126	6	0.8333	CDF	Non-Significant Effect
		12.5	0	2.407	0.126	6	0.8333	CDF	Non-Significant Effect
		25	0.6308	2.407	0.126	6	0.5894	CDF	Non-Significant Effect
		50	1.17	2.407	0.126	6	0.3492	CDF	Non-Significant Effect
		100	-0.6308	2.407	0.126	6	0.9556	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.02110905	0.00422181	5	0.775	0.5803	Non-Significant Effect
Error	0.09806059	0.00544781	18			
Total	0.1191696		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1.566	4.248	0.2200	Equal Variances
Variances	Levene Equality of Variance	4.184	4.248	0.0107	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9004	0.884	0.0219	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.2346	0.2056	0.0014	Non-normal Distribution
Distribution	D'Agostino Skewness	1.59	2.576	0.1118	Normal Distribution
Distribution	D'Agostino Kurtosis	0.02235	2.576	0.9822	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	2.529	9.21	0.2824	Normal Distribution
Distribution	Anderson-Darling A2 Normality	1.261	3.878	0.0025	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	0.0%
6.25		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	0.0%
12.5		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	0.0%
25		4	0.9667	0.9054	1	0.9667	0.9333	1	0.01924	3.98%	1.7%
50		4	0.95	0.8484	1	0.9667	0.8667	1	0.03191	6.72%	3.39%
100		4	1	1	1	1	1	1	0	0.0%	-1.7%

Analysis ID: 03-7513-3519 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Parametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%
6.25		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%
12.5		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	0.0%
25		4	1.375	1.254	1.496	1.375	1.31	1.441	0.03802	5.53%	2.34%
50		4	1.347	1.16	1.535	1.375	1.197	1.441	0.05894	8.75%	4.34%
100		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	-2.34%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	0.9333	1	1
12.5		1	1	0.9333	1
25		0.9333	0.9333	1	1
50		1	1	0.8667	0.9333
100		1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.441	1.441	1.31	1.441
6.25		1.441	1.31	1.441	1.441
12.5		1.441	1.441	1.31	1.441
25		1.31	1.31	1.441	1.441
50		1.441	1.441	1.197	1.31
100		1.441	1.441	1.441	1.441

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		15/15	15/15	14/15	15/15
25		14/15	14/15	15/15	15/15
50		15/15	15/15	13/15	14/15
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:	05-8561-4657	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	01-2366-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915.131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MO-CAM		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	6.14%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-0.5489	2.407	0.017	6	0.9461	CDF	Non-Significant Effect
		12.5	-1.098	2.407	0.017	6	0.9868	CDF	Non-Significant Effect
		25	-0.2625	2.407	0.017	6	0.8990	CDF	Non-Significant Effect
		50	0.1432	2.407	0.017	6	0.7877	CDF	Non-Significant Effect
		100	0.09545	2.407	0.017	6	0.8037	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria
PMSD	0.06139	0.12 - 0.3	Yes	Below Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0002223708	4.447416E-05	5	0.4559	0.8036	Non-Significant Effect
Error	0.001755998	9.755546E-05	18			
Total	0.001978369		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	7.984	15.09	0.1571	Equal Variances
Variances	Mod Levene Equality of Variance	1.473	4.248	0.2474	Equal Variances
Variances	Levene Equality of Variance	2.222	4.248	0.0968	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9408	0.884	0.1703	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.163	0.2056	0.0987	Normal Distribution
Distribution	D'Agostino Skewness	1.525	2.576	0.1273	Normal Distribution
Distribution	D'Agostino Kurtosis	0.8754	2.576	0.3814	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	3.091	9.21	0.2132	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.6998	3.878	0.0677	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.2738	0.2691	0.2786	0.2733	0.2713	0.2773	0.0015	1.1%	0.0%
6.25		4	0.2777	0.2566	0.2987	0.273	0.268	0.2967	0.006614	4.76%	-1.4%
12.5		4	0.2815	0.256	0.307	0.28	0.2647	0.3013	0.008011	5.69%	-2.8%
25		4	0.2757	0.266	0.2854	0.2733	0.2713	0.2847	0.003049	2.21%	-0.67%
50		4	0.2726	0.262	0.2837	0.2727	0.2647	0.2813	0.003414	2.5%	0.37%
100		4	0.2732	0.2608	0.2856	0.2703	0.2673	0.2847	0.0039	2.86%	0.24%

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

Analysis ID: 05-6561-4657 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Parametric-Control vs Treatments Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2767	0.2967	0.2693	0.268
12.5		0.2647	0.3013	0.2733	0.2857
25		0.2727	0.2847	0.274	0.2713
50		0.2813	0.2733	0.2647	0.272
100		0.2673	0.2707	0.27	0.2847

CETIS Analytical Report

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

Analysis ID:	09-0101-9144	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	01-2366-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915.131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MO-CAM		

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
Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
6.25		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
12.5		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60
25		4	0.9667	0.9333	1	0.01924	0.03849	3.98%	1.7%	58	60
50		4	0.95	0.8667	1	0.03191	0.06383	6.72%	3.39%	57	60
100		4	1	1	1	0	0	0.0%	-1.7%	60	60

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
6.25		1	0.9333	1	1
12.5		1	1	0.9333	1
25		0.9333	0.9333	1	1
50		1	1	0.8667	0.9333
100		1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		15/15	15/15	14/15	15/15
25		14/15	14/15	15/15	15/15
50		15/15	15/15	13/15	14/15
100		15/15	15/15	15/15	15/15

Analysis ID:	09-0101-9144	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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

Analysis ID:	06-1665-9054	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	01-2366-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915 131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MO-CAM		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	276821	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.2738	0.25 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2738	0.2713	0.2773	0.0015	0.003	1.1%	0.0%
6.25		4	0.2777	0.268	0.2967	0.006614	0.01323	4.76%	-1.4%
12.5		4	0.2815	0.2647	0.3013	0.008011	0.01602	5.69%	-2.8%
25		4	0.2757	0.2713	0.2847	0.003049	0.006098	2.21%	-0.67%
50		4	0.2728	0.2647	0.2813	0.003414	0.006829	2.5%	0.37%
100		4	0.2732	0.2673	0.2847	0.0039	0.007801	2.86%	0.24%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2773	0.2713	0.2713	0.2753
6.25		0.2767	0.2967	0.2693	0.268
12.5		0.2647	0.3013	0.2733	0.2867
25		0.2727	0.2847	0.274	0.2713
50		0.2813	0.2733	0.2647	0.272
100		0.2673	0.2707	0.27	0.2847

Analysis ID:	06-1665-9054	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

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

Batch ID:	01-2366-7711	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 16:42	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	23 Sep-15 14:45	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	19-3797-2229	Code:	VCF0915.131f	Client:	VCWPD
Sample Date:	15 Sep-15 03:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (11.5 °C)	Station:	MO-CAM		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.88	61.71	66.04	62	67	0.9149	2.588	4.05%	0
100		8	29	29	29	29	29	0	0	0.0%	0
Overall		16	46.44			29	67				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	336.1	326.9	345.4	326	358	3.903	11.04	3.28%	0
6.25		8	313.5	310.5	316.5	307	318	1.268	3.586	1.14%	0
12.5		8	309.3	306.2	312.3	302	314	1.292	3.655	1.18%	0
25		8	291	283	299	269	299	3.396	9.607	3.3%	0
50		8	255.5	245.5	265.5	242	270	4.217	11.93	4.67%	0
100		8	190.1	172.2	208	160	210	7.565	21.4	11.25%	0
Overall		48	282.6			160	358				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.091	8.159	6.5	8.7	0.2258	0.6386	8.38%	0
6.25		8	7.163	6.659	7.666	5.9	7.8	0.2129	0.6022	8.41%	0
12.5		8	7.088	6.511	7.664	5.6	7.8	0.2438	0.6896	9.73%	0
25		8	6.863	6.149	7.576	5	7.8	0.3017	0.8535	12.44%	0
50		8	6.638	5.945	7.33	4.8	7.6	0.2927	0.828	12.47%	0
100		8	5.825	5.032	6.618	4.2	7.1	0.3353	0.9483	16.28%	0
Overall		48	6.867			4.2	8.7				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	83.13	81.83	84.42	82	85	0.5489	1.553	1.87%	0
100		8	56	56	56	56	56	0	0	0.0%	0
Overall		16	69.56			56	85				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.113	7.968	8.257	7.8	8.3	0.06105	0.1727	2.13%	0
6.25		8	7.338	7.025	7.65	6.7	7.8	0.1322	0.3739	5.1%	0
12.5		8	7.263	6.991	7.534	6.9	7.7	0.1149	0.3249	4.47%	0
25		8	7.238	7.023	7.452	6.9	7.6	0.09051	0.256	3.54%	0
50		8	7.15	6.977	7.323	6.9	7.5	0.07319	0.207	2.9%	0
100		8	6.925	6.658	7.192	6.5	7.5	0.113	0.3196	4.62%	0
Overall		48	7.337			6.5	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.25	23.75	24.75	24	25.7	0.2104	0.5952	2.46%	0
6.25		8	24.26	23.78	24.77	24	25.7	0.2077	0.5874	2.42%	0
12.5		8	24.23	23.91	24.54	24	25.1	0.1333	0.377	1.56%	0
25		8	24.23	23.96	24.49	24	24.9	0.1114	0.3151	1.3%	0
50		8	24.2	24.02	24.38	24	24.5	0.07792	0.2204	0.91%	0
100		8	24.15	23.97	24.33	24	24.5	0.0756	0.2138	0.89%	0
Overall		48	24.22			24	25.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	62	62	62	62	62	67	67	67
100		29	29	29	29	29	29	29	29

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	358	326	335	329	335	332	327	347
6.25		315	315	315	316	318	307	312	310
12.5		308	308	314	312	312	302	309	309
25		289	289	298	299	295	269	294	295
50		248	244	268	270	270	242	249	253
100		160	166	206	208	210	168	201	202

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.1	7.8	7.8	8.7	7.7	6.5
6.25		7.2	7.8	6.8	7.1	7.3	7.6	7.6	5.9
12.5		7.3	7.8	6.9	7	7.2	7.8	7.1	5.6
25		7.2	7.6	6.6	6.9	6.8	7.8	7	5
50		6.9	7.1	6.3	6.8	6.7	7.6	6.9	4.8
100		5.8	4.9	5.5	6.1	6.7	7.1	6.3	4.2

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	82	82	82	82	82	85	85	85
100		56	56	56	56	56	56	56	56

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.2	7.9	8.2	8.3	8.2	8.2	8.1	7.8
6.25		7.5	6.7	7.3	7.8	7.8	7.3	7.3	7
12.5		7.4	6.9	7.2	7.7	7.7	7.3	7	6.9
25		7.4	7	7.2	7.5	7.6	7.3	7	6.9
50		7.3	6.9	7.2	7.3	7.5	7	7	7
100		6.5	6.6	6.7	7.1	7.5	7	7	7

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	25.7	24	24	24	24	24.3
6.25		24	24	25.7	24	24.2	24	24	24.3
12.5		24	24.1	25.1	24	24.3	24	24	24.3
25		24	24.2	24.9	24	24.4	24	24	24.3
50		24	24.4	24.5	24	24.4	24	24	24.3
100		24	24.5	24	24	24.4	24	24	24.3

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 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:	9/15/2015
ABC LAB. NO.:	VCF0915.130

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

Survival	NOEC	=	100.00
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %
Biomass	NOEC	=	100.00 %
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

CETIS Summary Report

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.130t	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (14.2 °C)	Station:	ME-VR2		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-8111-0707	7d Survival Rate	100	>100	NA	9.02%	1	Steel Many-One Rank Sum Test
20-6978-0664	Mean Dry Biomass-mg	100	>100	NA	18.1%	1	Steel Many-One Rank Sum Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
08-7777-1280	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
00-8997-4228	Mean Dry Biomass-mg	IC5	4.153	0.3265	N/A	24.08	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
08-7777-1280	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
08-8111-0707	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
00-8997-4228	Mean Dry Biomass-mg	Control Resp	1.494	0.85 - NL	Yes	Passes Acceptability Criteria
20-6978-0664	Mean Dry Biomass-mg	Control Resp	1.494	0.85 - NL	Yes	Passes Acceptability Criteria
08-8111-0707	7d Survival Rate	PMSD	0.0902	NL - 0.25	No	Passes Acceptability Criteria
20-6978-0664	Mean Dry Biomass-mg	PMSD	0.1815	NL - 0.5	No	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	0	0	0.0%	0.0%
6.25		5	1	1	1	1	1	0	0	0.0%	0.0%
12.5		5	1	1	1	1	1	0	0	0.0%	0.0%
25		5	0.92	0.784	1	0.8	1	0.04899	0.1095	11.91%	8.0%
50		5	1	1	1	1	1	0	0	0.0%	0.0%
100		5	1	1	1	1	1	0	0	0.0%	0.0%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1.494	1.004	1.923	0.916	1.848	0.1547	0.3458	23.15%	0.0%
6.25		5	1.244	1.014	1.474	1.06	1.532	0.08299	0.1856	14.92%	16.71%
12.5		5	1.342	1.222	1.462	1.22	1.474	0.04331	0.09684	7.22%	10.15%
25		5	1.326	1.15	1.501	1.162	1.47	0.06313	0.1412	10.65%	11.25%
50		5	1.279	1.172	1.386	1.13	1.354	0.03849	0.08608	6.73%	14.38%
100		5	1.716	1.613	1.818	1.608	1.824	0.03699	0.08272	4.82%	-14.86%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	0.8	1	0.8
50		1	1	1	1	1
100		1	1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.604	1.532	1.848	1.568	0.916
6.25		1.114	1.214	1.3	1.532	1.06
12.5		1.474	1.22	1.366	1.28	1.37
25		1.468	1.47	1.218	1.31	1.162
50		1.308	1.3	1.13	1.354	1.302
100		1.726	1.666	1.608	1.824	1.754

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	5/5	4/5
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

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	08-8111-0707	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.130t	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (14.2 °C)	Station:	ME-VR2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	9.02%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		12.5	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		25	22.5	16	1	8	0.3937	Asymp	Non-Significant Effect
		50	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		100	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
PMSD	0.0902	NL - 0.25	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.03780527	0.007561053	5	2.667	0.0471	Significant Effect
Error	0.06804948	0.002835395	24			
Total	0.1058547		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	3	4.248	0.0384	Equal Variances
Variances	Levene Equality of Variance	96	3.895	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.5505	0.9031	<0.0001	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.4333	0.1853	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	2.356	2.576	0.0185	Normal Distribution
Distribution	D'Agostino Kurtosis	3.067	2.576	0.0022	Non-normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	14.96	9.21	0.0006	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	7.491	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	1	0	0.0%	0.0%
6.25		5	1	1	1	1	1	1	0	0.0%	0.0%
12.5		5	1	1	1	1	1	1	0	0.0%	0.0%
25		5	0.92	0.784	1	1	0.8	1	0.04899	11.91%	8.0%
50		5	1	1	1	1	1	1	0	0.0%	0.0%
100		5	1	1	1	1	1	1	0	0.0%	0.0%

Analysis ID: 08-8111-0707 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
6.25		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
12.5		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
25		5	1.25	1.088	1.412	1.345	1.107	1.345	0.05833	10.43%	7.08%
50		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
100		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	0.8	1	0.8
50		1	1	1	1	1
100		1	1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.345	1.345	1.345	1.345	1.345
6.25		1.345	1.345	1.345	1.345	1.345
12.5		1.345	1.345	1.345	1.345	1.345
25		1.345	1.345	1.107	1.345	1.107
50		1.345	1.345	1.345	1.345	1.345
100		1.345	1.345	1.345	1.345	1.345

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	5/5	4/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	20-6978-0664	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1 8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.130l	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (14.2 °C)	Station:	ME-VR2		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	18.1%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	20.5	16	1	8	0.2245	Asymp	Non-Significant Effect
		12.5	20	16	0	8	0.1899	Asymp	Non-Significant Effect
		25	20	16	0	8	0.1899	Asymp	Non-Significant Effect
		50	20	16	0	8	0.1899	Asymp	Non-Significant Effect
		100	35	16	0	8	0.9979	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1.494	0.85 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1815	NL - 0.5	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.7814456	0.1562891	5	4.746	0.0037	Significant Effect
Error	0.7903903	0.03293293	24			
Total	1.571836		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	12.71	15.09	0.0262	Equal Variances
Variances	Mod Levene Equality of Variance	1.148	4.248	0.3720	Equal Variances
Variances	Levene Equality of Variance	1.726	3.895	0.1669	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.8998	0.9031	0.0080	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1251	0.1853	0.2617	Normal Distribution
Distribution	D'Agostino Skewness	2.428	2.576	0.0152	Normal Distribution
Distribution	D'Agostino Kurtosis	2.951	2.576	0.0032	Non-normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	14.61	9.21	0.0007	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	0.9076	3.878	0.0207	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1.494	1.064	1.923	1.568	0.916	1.848	0.1547	23.15%	0.0%
6.25		5	1.244	1.014	1.474	1.214	1.06	1.532	0.08299	14.92%	16.71%
12.5		5	1.342	1.222	1.462	1.366	1.22	1.474	0.04331	7.22%	10.15%
25		5	1.326	1.15	1.501	1.31	1.162	1.47	0.06313	10.65%	11.25%
50		5	1.279	1.172	1.386	1.302	1.13	1.354	0.03849	6.73%	14.36%
100		5	1.716	1.613	1.818	1.726	1.606	1.824	0.03699	4.82%	-14.86%

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	20-6978-0664	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.804	1.532	1.848	1.568	0.916
6.25		1.114	1.214	1.3	1.532	1.06
12.5		1.474	1.22	1.366	1.28	1.37
25		1.468	1.47	1.218	1.31	1.162
50		1.308	1.3	1.13	1.354	1.302
100		1.726	1.666	1.608	1.824	1.754

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	08-7777-1280	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.1301	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (14.2 °C)	Station:	ME-VR2		

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
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	1	1	1	0	0	0.0%	0.0%	25	25
6.25		5	1	1	1	0	0	0.0%	0.0%	25	25
12.5		5	1	1	1	0	0	0.0%	0.0%	25	25
25		5	0.92	0.8	1	0.04899	0.1095	11.91%	8.0%	23	25
50		5	1	1	1	0	0	0.0%	0.0%	25	25
100		5	1	1	1	0	0	0.0%	0.0%	25	25

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	0.8	1	0.8
50		1	1	1	1	1
100		1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	5/5	4/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Analysis ID:	08-7777-1280	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	00-6997-4228	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.130t	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (14.2 °C)	Station:	ME-VR2		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2022162	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1.494	0.85 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	4.153	0.3265	N/A	24.08	NA	306.3
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1.494	0.916	1.848	0.1547	0.3458	23.15%	0.0%
6.25		5	1.244	1.06	1.532	0.08299	0.1856	14.92%	16.71%
12.5		5	1.342	1.22	1.474	0.04331	0.09684	7.22%	10.15%
25		5	1.326	1.162	1.47	0.06313	0.1412	10.65%	11.25%
50		5	1.279	1.13	1.354	0.03849	0.08608	6.73%	14.38%
100		5	1.716	1.608	1.824	0.03699	0.08272	4.82%	-14.86%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.604	1.532	1.848	1.568	0.916
6.25		1.114	1.214	1.3	1.532	1.06
12.5		1.474	1.22	1.366	1.28	1.37
25		1.468	1.47	1.218	1.31	1.162
50		1.308	1.3	1.13	1.354	1.302
100		1.726	1.666	1.608	1.824	1.754

Analysis ID:	00-8997-4228	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Pacific Topsmolt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	03-3242-7772	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:38	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:55	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	02-4869-0728	Code:	VCF0915.130t	Client:	VCWPD
Sample Date:	15 Sep-15 05:10	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (14.2 °C)	Station:	ME-VR2		

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	6.938	6.701	7.174	6.6	7.4	0.09989	0.2825	4.07%	0
6.25		8	6.563	5.937	7.188	4.8	7.2	0.2645	0.7482	11.4%	0
12.5		8	6.688	6.274	7.101	5.6	7.3	0.1747	0.4941	7.39%	0
25		8	6.563	6.041	7.084	5.2	7.2	0.2203	0.6232	9.5%	0
50		8	6.175	5.372	6.978	4	7	0.3395	0.9603	15.55%	0
100		8	6.088	5.31	6.865	4.1	6.9	0.3287	0.9296	15.27%	0
Overall		48	6.502			4	7.4				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.478	7.772	7.3	7.9	0.03196	0.1753	2.3%	0
6.25		8	7.85	7.761	7.939	7.7	8	0.0378	0.1069	1.36%	0
12.5		8	7.868	7.834	7.941	7.8	8	0.02266	0.06408	0.81%	0
25		8	7.913	7.883	7.942	7.9	8	0.01249	0.03533	0.45%	0
50		8	7.938	7.894	7.981	7.9	8	0.01829	0.05174	0.65%	0
100		8	7.95	7.887	8.013	7.9	8.1	0.02672	0.07559	0.95%	0
Overall		48	7.86			7.3	8.1				0 (0%)

Salinity-ppt

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	25	25	25	25	25	0	0	0.0%	0
6.25		8	25	25	25	25	25	0	0	0.0%	0
12.5		8	25	25	25	25	25	0	0	0.0%	0
25		8	25	25	25	25	25	0	0	0.0%	0
50		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
Overall		48	25			25	25				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	21	21	21	21	21	0	0	0.0%	0
6.25		8	21	21	21	21	21	0	0	0.0%	0
12.5		8	21	21	21	21	21	0	0	0.0%	0
25		8	21	21	21	21	21	0	0	0.0%	0
50		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		48	21			21	21				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	6 8	7.3	6.6	6.8	6.9	7.4	7	6 7
6 25		6 8	7.2	6.7	6.8	6.8	7	6.4	4.8
12.5		6 9	7.3	6.8	6.8	6.7	6.9	6.6	5.6
25		7 1	7 2	6.7	6.8	6.7	6.5	6.3	5.2
50		7	6.4	6.6	6.8	6.7	5.8	6.1	4
100		6.9	6.5	6.3	6.7	6.7	5.4	6.1	4.1

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7 9	7 3	7 7	7.7	7.7	7 6	7 6
6.25		7.9	7 9	7 9	7 8	7 7	8	7 9	7.7
12.5		7.9	7 9	7 9	7 9	7 8	8	7 9	7.8
25		7.9	7.9	7.9	7.9	7.9	8	7.9	7.9
50		8	7.9	7.9	7 9	7.9	8	7.9	8
100		7.9	8	7.9	7.9	7.9	8	7.9	8.1

Salinity-ppt

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25	25	25	25	25	25	25	25
6.25		25	25	25	25	25	25	25	25
12.5		25	25	25	25	25	25	25	25
25		25	25	25	25	25	25	25	25
50		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	21	21	21	21	21	21	21	21
6.25		21	21	21	21	21	21	21	21
12.5		21	21	21	21	21	21	21	21
25		21	21	21	21	21	21	21	21
50		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receving 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:	9/15/2015
ABC LAB. NO.:	VCF0915.129

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

Survival	NOEC	=	100.00
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %
Biomass	NOEC	=	100.00 %
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

Pacific Topsmolt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-1610-5753	Code:	VCF0915.129t	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (17.5 °C)	Station:	ME-CC		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
15-2979-3215	7d Survival Rate	100	>100	N/A	12.1%	1	Steel Many-One Rank Sum Test
05-6326-5392	Mean Dry Biomass-mg	100	>100	N/A	27.4%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
06-2792-4719	7d Survival Rate	EC5	100	N/A	N/A	1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
15-7559-2422	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
06-2792-4719	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
15-2979-3215	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
05-6326-5392	Mean Dry Biomass-mg	Control Resp	1.091	0.85 - NL	Yes	Passes Acceptability Criteria
15-7559-2422	Mean Dry Biomass-mg	Control Resp	1.091	0.85 - NL	Yes	Passes Acceptability Criteria
15-2979-3215	7d Survival Rate	PMSD	0.1211	NL - 0.25	No	Passes Acceptability Criteria
05-6326-5392	Mean Dry Biomass-mg	PMSD	0.2738	NL - 0.5	No	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	0	0	0.0%	0.0%
6.25		5	1	1	1	1	1	0	0	0.0%	0.0%
12.5		5	0.92	0.784	1	0.8	1	0.04899	0.1095	11.91%	8.0%
25		5	0.92	0.784	1	0.8	1	0.04899	0.1095	11.91%	8.0%
50		5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	4.0%
100		5	1	1	1	1	1	0	0	0.0%	0.0%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1.091	0.952	1.23	1.004	1.26	0.05015	0.1121	10.28%	0.0%
6.25		5	1.084	0.9558	1.212	1.008	1.254	0.04616	0.1032	9.52%	0.66%
12.5		5	1.119	0.9793	1.259	0.992	1.228	0.05038	0.1127	10.07%	-2.57%
25		5	1.05	0.9133	1.186	0.924	1.212	0.0491	0.1098	10.46%	3.81%
50		5	1.2	0.8665	1.534	0.94	1.578	0.1203	0.2691	22.43%	-9.93%
100		5	1.494	1.064	1.923	0.916	1.848	0.1547	0.3458	23.15%	-36.88%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		0.8	1	1	0.8	1
25		1	0.8	1	1	0.8
50		1	1	1	0.8	1
100		1	1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.028	1.106	1.004	1.28	1.036
6.25		1.03	1.018	1.11	1.254	1.008
12.5		1.136	1.228	1.014	0.992	1.226
25		1.054	0.924	1.212	0.978	1.08
50		1.578	1.378	1.09	0.94	1.012
100		1.604	1.532	1.848	1.568	0.916

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		4/5	5/5	5/5	4/5	5/5
25		5/5	4/5	5/5	5/5	4/5
50		5/5	5/5	5/5	4/5	5/5
100		5/5	5/5	5/5	5/5	5/5

CETIS Analytical Report

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	15-2979-3215	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 16:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-1610-5753	Code:	VCF0915 129l	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wat)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (17.5 °C)	Station:	ME-CC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	12.1%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		12.5	22.5	16	1	8	0.3937	Asymp	Non-Significant Effect
		25	22.5	16	1	8	0.3937	Asymp	Non-Significant Effect
		50	25	16	1	8	0.6353	Asymp	Non-Significant Effect
		100	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
PMSD	0.1211	NL - 0.25	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05481764	0.01096353	5	1.45	0.2428	Non-Significant Effect
Error	0.1814653	0.007561053	24			
Total	0.2362829		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1.582	4.248	0.2155	Equal Variances
Variances	Levene Equality of Variance	18.13	3.895	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8132	0.9031	0.0001	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.3333	0.1853	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	2.194	2.576	0.0282	Normal Distribution
Distribution	D'Agostino Kurtosis	0.755	2.576	0.4503	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	5.385	9.21	0.0677	Normal Distribution
Distribution	Anderson-Darling A2 Normality	2.716	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	1	0	0.0%	0.0%
6.25		5	1	1	1	1	1	1	0	0.0%	0.0%
12.5		5	0.92	0.784	1	1	0.8	1	0.04899	11.91%	8.0%
25		5	0.92	0.784	1	1	0.8	1	0.04899	11.91%	8.0%
50		5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	4.0%
100		5	1	1	1	1	1	1	0	0.0%	0.0%

Analysis ID: 15-2979-3215 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 10:00 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
6.25		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
12.5		5	1.25	1.088	1.412	1.345	1.107	1.345	0.05833	10.43%	7.06%
25		5	1.25	1.088	1.412	1.345	1.107	1.345	0.05833	10.43%	7.06%
50		5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	3.54%
100		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		0.8	1	1	0.8	1
25		1	0.8	1	1	0.8
50		1	1	1	0.8	1
100		1	1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.345	1.345	1.345	1.345	1.345
6.25		1.345	1.345	1.345	1.345	1.345
12.5		1.107	1.345	1.345	1.107	1.345
25		1.345	1.107	1.345	1.345	1.107
50		1.345	1.345	1.345	1.107	1.345
100		1.345	1.345	1.345	1.345	1.345

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		4/5	5/5	5/5	4/5	5/5
25		5/5	4/5	5/5	5/5	4/5
50		5/5	5/5	5/5	4/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	05-6326-5392	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-1610-5753	Code:	VCF0915.129t	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (17.5 °C)	Station:	ME-CC		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	27.4%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	0.05692	2.362	0.299	8	0.8160	CDF	Non-Significant Effect
		12.5	-0.2214	2.362	0.299	8	0.8904	CDF	Non-Significant Effect
		25	0.3289	2.362	0.299	8	0.7185	CDF	Non-Significant Effect
		50	-0.857	2.362	0.299	8	0.9754	CDF	Non-Significant Effect
		100	-3.181	2.362	0.299	8	1.0000	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1.091	0.85 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2738	NL - 0.5	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.6811303	0.1362261	5	3.406	0.0182	Significant Effect
Error	0.9599392	0.03999747	24			
Total	1.641069		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	11.44	15.09	0.0433	Equal Variances
Variances	Mod Levene Equality of Variance	1.104	4.248	0.3927	Equal Variances
Variances	Levene Equality of Variance	2.175	3.895	0.0907	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9353	0.9031	0.0680	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1422	0.1853	0.1226	Normal Distribution
Distribution	D'Agostino Skewness	1.476	2.576	0.1398	Normal Distribution
Distribution	D'Agostino Kurtosis	2.311	2.576	0.0208	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	7.52	9.21	0.0233	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.6413	3.878	0.0949	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1.091	0.952	1.23	1.038	1.004	1.28	0.05015	10.28%	0.0%
6.25		5	1.084	0.9558	1.212	1.03	1.008	1.254	0.04616	9.52%	0.66%
12.5		5	1.119	0.9793	1.259	1.136	0.992	1.228	0.05038	10.07%	-2.57%
25		5	1.05	0.9133	1.186	1.054	0.924	1.212	0.0491	10.46%	3.81%
50		5	1.2	0.8655	1.534	1.09	0.94	1.578	0.1203	22.43%	-9.93%
100		5	1.494	1.064	1.923	1.568	0.916	1.848	0.1547	23.15%	-36.88%

Analysis ID: 05-6326-5392 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 10:00 Analysis: Parametric-Control vs Treatments Official Results: Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.028	1.106	1.004	1.28	1.038
6.25		1.03	1.018	1.11	1.254	1.008
12.5		1.136	1.228	1.014	0.992	1.226
25		1.054	0.924	1.212	0.978	1.08
50		1.578	1.378	1.09	0.94	1.012
100		1.604	1.532	1.648	1.568	0.916

CETIS Analytical Report

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	06-2792-4710	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	08-1610-5753	Code:	VCF0915.1291	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	35h (17.5 °C)	Station:	ME-CC		

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
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	1	1	1	0	0	0.0%	0.0%	25	25
6.25		5	1	1	1	0	0	0.0%	0.0%	25	25
12.5		5	0.92	0.8	1	0.04899	0.1095	11.91%	8.0%	23	25
25		5	0.92	0.8	1	0.04899	0.1095	11.91%	8.0%	23	25
50		5	0.96	0.8	1	0.04	0.08944	9.32%	4.0%	24	25
100		5	1	1	1	0	0	0.0%	0.0%	25	25

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		0.8	1	1	0.8	1
25		1	0.8	1	1	0.8
50		1	1	1	0.8	1
100		1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	5/5	5/5	5/5	5/5	5/5
6.25		5/5	5/5	5/5	5/5	5/5
12.5		4/5	5/5	5/5	4/5	5/5
25		5/5	4/5	5/5	5/5	4/5
50		5/5	5/5	5/5	4/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Analysis ID:	08-2792-4719	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	15-7559-2422	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-1610-5753	Code:	VCF0915.129I	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (17.5 °C)	Station:	ME-CC		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1967517	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1.091	0.85 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1.091	1.004	1.28	0.05015	0.1121	10.28%	0.0%
6.25		5	1.064	1.008	1.254	0.04616	0.1032	9.52%	0.66%
12.5		5	1.119	0.992	1.228	0.05038	0.1127	10.07%	-2.57%
25		5	1.05	0.924	1.212	0.0491	0.1098	10.46%	3.81%
50		5	1.2	0.94	1.578	0.1203	0.2691	22.43%	-9.93%
100		5	1.494	0.916	1.848	0.1547	0.3458	23.15%	-36.88%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.028	1.106	1.004	1.28	1.038
6.25		1.03	1.018	1.11	1.254	1.008
12.5		1.136	1.228	1.014	0.992	1.226
25		1.054	0.924	1.212	0.978	1.08
50		1.578	1.378	1.09	0.94	1.012
100		1.604	1.532	1.848	1.568	0.916

Analysis ID:	15-7559-2422	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.7
Analyzed:	10 Nov-15 10:00	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

CETIS Measurement Report

Pacific Topsmolt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	02-5089-1252	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:48	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:50	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-1610-5753	Code:	VCI-0915.129t	Client:	VCWPD
Sample Date:	15 Sep-15 05:55	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	36h (17.5 °C)	Station:	ME-CC		

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	6.938	6.701	7.174	6.6	7.4	0.09989	0.2825	4.07%	0
6.25		8	6.475	5.805	7.145	4.8	7.3	0.2833	0.8013	12.38%	0
12.5		8	6.375	5.452	7.298	4	7.3	0.3904	1.104	17.32%	0
25		8	6.188	5.316	7.059	4.2	7.1	0.3686	1.043	16.85%	0
50		8	6.063	5.204	6.921	4.3	6.9	0.363	1.027	16.94%	0
100		8	5.975	5.15	6.8	4.2	6.8	0.3488	0.9867	16.51%	0
Overall		48	6.335			4	7.4				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.478	7.772	7.3	7.9	0.06196	0.1753	2.3%	0
6.25		8	7.825	7.728	7.922	7.6	8	0.04119	0.1165	1.49%	0
12.5		8	7.85	7.75	7.95	7.6	8	0.04226	0.1195	1.52%	0
25		8	7.875	7.801	7.949	7.7	8	0.03134	0.08863	1.13%	0
50		8	7.925	7.851	7.999	7.8	8.1	0.03134	0.08864	1.12%	0
100		8	7.938	7.797	8.078	7.6	8.2	0.05957	0.1685	2.12%	0
Overall		48	7.84			7.3	8.2				0 (0%)

Salinity-ppt

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	25	25	25	25	25	0	0	0.0%	0
6.25		8	25	25	25	25	25	0	0	0.0%	0
12.5		8	25	25	25	25	25	0	0	0.0%	0
25		8	25	25	25	25	25	0	0	0.0%	0
50		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
Overall		48	25			25	25				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	21	21	21	21	21	0	0	0.0%	0
6.25		8	21	21	21	21	21	0	0	0.0%	0
12.5		8	21	21	21	21	21	0	0	0.0%	0
25		8	21	21	21	21	21	0	0	0.0%	0
50		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		48	21			21	21				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	6.8	7.3	6.6	6.8	6.9	7.4	7	6.7
6.25		6.8	7.3	6.6	6.7	6.8	7	5.8	4.8
12.5		6.9	7.3	7.2	6.7	6.7	6.7	5.5	4
25		7.1	6.9	6.7	6.8	6.7	6.1	5	4.2
50		6.9	6.5	6.7	6.8	6.6	6.1	4.6	4.3
100		6.8	5.5	6.5	6.7	6.7	6.5	4.9	4.2

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.3	7.7	7.7	7.7	7.6	7.6
6.25		7.9	7.8	7.8	7.8	7.8	8	7.9	7.6
12.5		7.9	7.9	7.9	7.8	7.8	8	7.9	7.6
25		7.9	7.9	7.9	7.9	7.8	8	7.9	7.7
50		7.9	8	7.9	7.9	7.9	8.1	7.9	7.8
100		7.6	8	7.9	7.9	7.9	8.2	8	8

Salinity-ppt

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25	25	25	25	25	25	25	25
6.25		25	25	25	25	25	25	25	25
12.5		25	25	25	25	25	25	25	25
25		25	25	25	25	25	25	25	25
50		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	21	21	21	21	21	21	21	21
6.25		21	21	21	21	21	21	21	21
12.5		21	21	21	21	21	21	21	21
25		21	21	21	21	21	21	21	21
50		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21

aquatic bioassay & consulting laboratories, inc

November 12, 2015

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 bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receving Waters to West Coast Estuarine Organisms, EPA/821/R-02-014.* Results were as follows:

CLIENT:	Ventura County Flood Control
SAMPLE I.D.:	ME-HUE
DATE RECEIVED:	9/15/2015
ABC LAB. NO.:	VCF0915.123

CHRONIC TOPSMELT SURVIVAL AND GROWTH BIOASSAY

Survival	NOEC	=	100.00
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %
Biomass	NOEC	=	100.00 %
	TUc	=	1.00
	IC25	=	>100.00 %
	IC50	=	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	

Sample ID:	09-9767-1191	Code:	VCF0915.123t	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (18.4 °C)	Station:	MO-HUE		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
07-3335-0006	7d Survival Rate	100	>100	NA	8.2%	1	Steel Many-One Rank Sum Test
16-3795-6146	Mean Dry Biomass-mg	100	>100	NA	26.3%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
04-6321-1602	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
01-0472-2248	Mean Dry Biomass-mg	IC5	92.05	N/A	N/A	1.085	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
04-6321-1602	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
07-3335-0006	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
01-0472-2248	Mean Dry Biomass-mg	Control Resp	0.8252	0.85 - NL	Yes	Below Acceptability Criteria
16-3795-6146	Mean Dry Biomass-mg	Control Resp	0.8252	0.85 - NL	Yes	Below Acceptability Criteria
07-3335-0006	7d Survival Rate	PMSD	0.08202	NL - 0.25	No	Passes Acceptability Criteria
16-3795-6146	Mean Dry Biomass-mg	PMSD	0.2631	NL - 0.5	No	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	0	0	0.0%	0.0%
6.25		5	1	1	1	1	1	0	0	0.0%	0.0%
12.5		5	1	1	1	1	1	0	0	0.0%	0.0%
25		5	0.96	0.8489	1	0.8	1	0.04	0.08944	9.32%	4.0%
50		5	1	1	1	1	1	0	0	0.0%	0.0%
100		5	1	1	1	1	1	0	0	0.0%	0.0%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.8252	0.5696	1.081	0.572	1.124	0.09206	0.2059	24.95%	0.0%
6.25		5	0.9532	0.791	1.115	0.8	1.146	0.05843	0.1306	13.71%	-15.51%
12.5		5	0.9152	0.7677	1.063	0.812	1.086	0.05312	0.1188	12.98%	-10.91%
25		5	0.8876	0.6513	1.124	0.694	1.202	0.08511	0.1903	21.44%	-7.56%
50		5	0.9048	0.8093	1	0.82	1.03	0.03441	0.07696	8.51%	-9.65%
100		5	0.8448	0.714	0.9756	0.73	1.012	0.04712	0.1054	12.47%	-2.38%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6 25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	1	0.8	1
50		1	1	1	1	1
100		1	1	1	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.824	0 572	0.716	0.89	1.124
6.25		0.95	0.876	0.994	1.146	0.8
12.5		0.812	0 988	0.872	1.086	0.818
25		0.848	0 89	1 202	0 804	0.694
50		0.9	0 896	0 878	0 82	1.03
100		0.73	0 864	0.796	1 012	0.822

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	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

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	07-3335-0006	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	09-9767-1191	Code:	VCF0915.123t	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (18.4 °C)	Station:	MO-HUE		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	8.2%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		12.5	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		25	25	16	1	8	0.6353	Asymp	Non-Significant Effect
		50	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect
		100	27.5	16	1	8	0.8333	Asymp	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
PMSD	0.08202	NL - 0.25	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.009451317	0.001890263	5	1	0.4389	Non-Significant Effect
Error	0.04536632	0.001890263	24			
Total	0.05481764		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1	4.248	0.4457	Equal Variances
Variances	Levene Equality of Variance	7.111	3.895	0.0003	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.4063	0.9031	<0.0001	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.4667	0.1853	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	5.58	2.576	<0.0001	Non-normal Distribution
Distribution	D'Agostino Kurtosis	4.912	2.576	<0.0001	Non-normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	55.27	9.21	<0.0001	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	7.95	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1	1	1	1	1	1	0	0.0%	0.0%
6.25		5	1	1	1	1	1	1	0	0.0%	0.0%
12.5		5	1	1	1	1	1	1	0	0.0%	0.0%
25		5	0.96	0.8489	1	1	0.8	1	0.04	9.32%	4.0%
50		5	1	1	1	1	1	1	0	0.0%	0.0%
100		5	1	1	1	1	1	1	0	0.0%	0.0%

Analysis ID: 07-3335-0006 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Nonparametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
6.25		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
12.5		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
25		5	1.298	1.165	1.43	1.345	1.107	1.345	0.04763	8.21%	3.54%
50		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%
100		5	1.345	1.345	1.346	1.345	1.345	1.345	0	0.0%	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6.25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	1	0.8	1
50		1	1	1	1	1
100		1	1	1	1	1

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.345	1.345	1.345	1.345	1.345
6.25		1.345	1.345	1.345	1.345	1.345
12.5		1.345	1.345	1.345	1.345	1.345
25		1.345	1.345	1.345	1.107	1.345
50		1.345	1.345	1.345	1.345	1.345
100		1.345	1.345	1.345	1.345	1.345

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	5/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Analysis ID:	16-3795-6146	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	09-9767-1191	Code:	VCF0915.123t	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (18.4 °C)	Station:	MO-HUE		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	26.3%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-1.392	2.362	0.217	8	0.9947	CDF	Non-Significant Effect
		12.5	-0.9789	2.362	0.217	8	0.9823	CDF	Non-Significant Effect
		25	-0.6787	2.362	0.217	8	0.9610	CDF	Non-Significant Effect
		50	-0.8658	2.362	0.217	8	0.9759	CDF	Non-Significant Effect
		100	-0.2132	2.362	0.217	8	0.8886	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.8252	0.85 - NL	Yes	Below Acceptability Criteria
PMSD	0.2631	NL - 0.5	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.05541028	0.01108206	5	0.5244	0.7554	Non-Significant Effect
Error	0.5072111	0.0211338	24			
Total	0.5626214		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.736	15.09	0.4489	Equal Variances
Variances	Mod Levene Equality of Variance	0.8573	4.248	0.5260	Equal Variances
Variances	Levene Equality of Variance	0.7518	3.895	0.5929	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.951	0.9031	0.1799	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1594	0.1853	0.0500	Normal Distribution
Distribution	D'Agostino Skewness	1.637	2.576	0.1016	Normal Distribution
Distribution	D'Agostino Kurtosis	0.8176	2.576	0.4136	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	3.349	9.21	0.1874	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.6811	3.878	0.0754	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	0.8252	0.5696	1.081	0.824	0.572	1.124	0.09206	24.95%	0.0%
6.25		5	0.9532	0.791	1.115	0.95	0.8	1.146	0.05843	13.71%	-15.51%
12.5		5	0.9152	0.7677	1.063	0.872	0.812	1.086	0.05312	12.98%	-10.91%
25		5	0.8876	0.6513	1.124	0.848	0.694	1.202	0.08511	21.44%	-7.56%
50		5	0.9048	0.8093	1	0.896	0.82	1.03	0.03441	8.51%	-9.65%
100		5	0.8448	0.714	0.9756	0.822	0.73	1.012	0.04712	12.47%	-2.38%

Pacific Topsmolt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	16-3795-6140	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.824	0.572	0.716	0.89	1.124
6.25		0.95	0.876	0.994	1.146	0.8
12.5		0.812	0.988	0.872	1.086	0.818
25		0.848	0.89	1.202	0.804	0.694
50		0.9	0.896	0.878	0.82	1.03
100		0.73	0.864	0.796	1.012	0.822

CETIS Analytical Report

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	04-6321-1602	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1 8 7
Analyzed:	10 Nov-15 9 59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	09-9767-1191	Code:	VCF0915.123t	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10.15	Source:	Bioassay Report		
Sample Age:	37h (18.4 °C)	Station:	MO-HUE		

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
Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	1	1	1	0	0	0.0%	0.0%	25	25
6 25		5	1	1	1	0	0	0 0%	0.0%	25	25
12.5		5	1	1	1	0	0	0 0%	0.0%	25	25
25		5	0.96	0.8	1	0.04	0 08944	9.32%	4.0%	24	25
50		5	1	1	1	0	0	0.0%	0.0%	25	25
100		5	1	1	1	0	0	0.0%	0.0%	25	25

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	1	1
6 25		1	1	1	1	1
12.5		1	1	1	1	1
25		1	1	1	0 8	1
50		1	1	1	1	1
100		1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	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	4/5	5/5
50		5/5	5/5	5/5	5/5	5/5
100		5/5	5/5	5/5	5/5	5/5

Analysis ID: 04-6321-1602 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
Analyzed: 10 Nov-15 9:59 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	01-0472-2248	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISvt.8 7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	09-9767-1191	Code:	VCF0915.1231	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	37h (18.4 °C)	Station:	MO-HUE		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	501056	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.8252	0.85 - NL	Yes	Below Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	92.05	N/A	N/A	1.086	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.8252	0.572	1.124	0.09206	0.2059	24.95%	0.0%
6.25		5	0.9532	0.8	1.146	0.05843	0.1306	13.71%	-15.51%
12.5		5	0.9152	0.812	1.086	0.05312	0.1188	12.98%	-10.91%
25		5	0.8876	0.694	1.202	0.08511	0.1903	21.44%	-7.56%
50		5	0.9048	0.82	1.03	0.03441	0.07695	8.51%	-9.65%
100		5	0.8448	0.73	1.012	0.04712	0.1054	12.47%	-2.38%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.824	0.572	0.716	0.89	1.124
6.25		0.95	0.876	0.994	1.146	0.8
12.5		0.812	0.988	0.872	1.086	0.818
25		0.848	0.89	1.202	0.804	0.694
50		0.9	0.896	0.878	0.82	1.03
100		0.73	0.864	0.796	1.012	0.822

Analysis ID:	01-0472-2248	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	10 Nov-15 9:59	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Pacific Topsmelt 7-d Survival and Growth Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	09-0204-9566	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	16 Sep-15 17:17	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	23 Sep-15 15:35	Species:	Atherinops affinis	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	09-9767-1191	Code:	VCF0915.1231	Client:	VCWPD
Sample Date:	15 Sep-15 04:45	Material:	Sample Water	Project:	2015/16-1(Wet)
Receive Date:	15 Sep-15 10:15	Source:	Bioassay Report		
Sample Age:	3'h (18.4 °C)	Station:	MO-HUE		

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	6.938	6.701	7.174	6.6	7.4	0.09989	0.2825	4.07%	0
6.25		8	6.625	6.112	7.138	5.3	7.5	0.2169	0.6135	9.26%	0
12.5		8	6.463	5.868	7.057	4.8	7.1	0.2514	0.711	11.0%	0
25		8	6.188	5.447	6.928	4.2	7	0.3131	0.8855	14.31%	0
50		8	6.15	5.339	6.961	4	7	0.3428	0.9695	15.76%	0
100		8	5.738	4.596	6.879	4	7.5	0.4829	1.366	23.81%	0
Overall		48	6.35			4	7.5				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.625	7.478	7.772	7.3	7.9	0.06196	0.1753	2.3%	0
6.25		8	7.75	7.661	7.839	7.6	7.9	0.0378	0.1069	1.38%	0
12.5		8	7.788	7.705	7.87	7.6	7.9	0.03504	0.0991	1.27%	0
25		8	7.813	7.759	7.866	7.7	7.9	0.02266	0.06409	0.82%	0
50		8	7.838	7.775	7.9	7.8	8	0.02631	0.07441	0.95%	0
100		8	7.838	7.69	7.985	7.5	8.1	0.0625	0.1768	2.26%	0
Overall		48	7.775			7.3	8.1				0 (0%)

Salinity-ppt

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	25	25	25	25	25	0	0	0.0%	0
6.25		8	25	25	25	25	25	0	0	0.0%	0
12.5		8	25	25	25	25	25	0	0	0.0%	0
25		8	25	25	25	25	25	0	0	0.0%	0
50		8	25	25	25	25	25	0	0	0.0%	0
100		8	25	25	25	25	25	0	0	0.0%	0
Overall		48	25			25	25				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	21	21	21	21	21	0	0	0.0%	0
6.25		8	21	21	21	21	21	0	0	0.0%	0
12.5		8	21	21	21	21	21	0	0	0.0%	0
25		8	21	21	21	21	21	0	0	0.0%	0
50		8	21	21	21	21	21	0	0	0.0%	0
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		48	21			21	21				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	6.8	7.3	6.6	6.8	6.9	7.4	7	6.7
6.25		6.6	7.5	6.8	6.7	6.8	6.8	6.5	5.3
12.5		6.8	7.1	6.8	6.7	6.7	6.5	6.3	4.8
25		7	6	6.6	6.7	6.8	6.2	6	4.2
50		7	6.5	6.7	6.6	6.7	6.1	5.6	4
100		7.5	5.7	6.8	6.6	6.7	4.3	4.3	4

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.5	7.9	7.3	7.7	7.7	7.7	7.6	7.6
6.25		7.7	7.8	7.8	7.8	7.8	7.9	7.6	7.6
12.5		7.9	7.8	7.8	7.8	7.8	7.9	7.7	7.6
25		7.9	7.8	7.8	7.8	7.8	7.9	7.8	7.7
50		7.8	7.8	7.8	7.8	7.8	8	7.9	7.8
100		7.5	7.8	7.8	7.8	7.8	8.1	7.9	8

Salinity-ppt

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	25	25	25	25	25	25	25	25
6.25		25	25	25	25	25	25	25	25
12.5		25	25	25	25	25	25	25	25
25		25	25	25	25	25	25	25	25
50		25	25	25	25	25	25	25	25
100		25	25	25	25	25	25	25	25

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	21	21	21	21	21	21	21	21
6.25		21	21	21	21	21	21	21	21
12.5		21	21	21	21	21	21	21	21
25		21	21	21	21	21	21	21	21
50		21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21

Chain of Custody Record

Ventura County Watershed Protection District

NPDES Stormwater Monitoring Program

Project: NPDES Stormwater Wet Season

Sampling Date: 9/15/15 Project Number: 2015/16-1 (Wet)

Sampling Team: KH, LM; AA, ND; TL, SG

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (*Atherinops affinis*)	Chronic toxicity - inland silverside (*Menidia beryllina*)	Chronic toxicity - giant kelp (*Macrocystis pyrifera*)	Chronic toxicity - purple sea urchin (*Strongylocentrotus purpuratus*)	Chronic toxicity - fathead minnow (*Pimephales promelas*)	Chronic toxicity - daphnid (*Ceriodaphnia dubia*)	Chronic toxicity - green alga (*Raphidocelis subcapitata*)	Number of 5-Gallon Buckets	NOTES
ME-CC	9/15/15 0555	X							2	Note 1, Note 2, Note 3 TL, SG
~~ME-SCR~~					X				1	Note 1, Note 2, Note 3
ME-VR2	9/15/15 0510	X							2	Note 1, Note 2, Note 3 KH, LM
MO-CAM	↓ 0345					X			2	Note 1, Note 2, Note 3 TL, SG
~~MO-OJA~~						X			2	~~Note 1, Note 2~~, Note 3
~~MO-MH~~						X			2	~~Note 1, Note 2, Note 3~~
MO-VEN	9/15/15 0310						X		2	Note 1, Note 2, Note 3 KH, LM

Relinquished Printed Name _____

Signature _____

Affiliation _____ Date/Tim _____

Received Printed Name _____

Signature _____

Affiliation _____ Date/Tim _____

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.

Chain of Custody Record
Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season
Toxicity - ABC Laboratories

Sampling Date: 9/15/15 Project Number: 2015/16-1 (Wet)

Sampling Team: KH, LM; AA, ND; TL, SG

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (*Atherinops affinis*)	Chronic toxicity - inland silverside (*Menidia beryllina*)	Chronic toxicity - giant kelp (*Macrocystis pyrifera*)	Chronic toxicity - purple sea urchin (*Strongylocentrotus purpuratus*)	Chronic toxicity - fathead minnow (*Pimephales promelas*)	Chronic toxicity - daphnid (*Ceriodaphnia dubia*)	Chronic toxicity - green alga (*Raphidocelis subcapitata*)	Number of 5-Gallon Buckets	NOTES
MO-OXN	9/15/15 0300					X			2	Note 1, Note 2, Note 3 TL, SG
MO-HUE	↓ 0445	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	X		3	Note 1, Note 2, Note 3, Note 4 TL, SG
MO-THO	9-15-15 06:18						X		2	Note 1, Note 2, Note 3 AA, ND
MO-MPK	9-15-15 07:43							X	2	Note 1, Note 2, Note 3 AA, ND
MO-SIM	9-15-15 05:30						X		2	Note 1, Note 2, Note 3 AA, ND
MO-FIL	9-15-15 03:45						X		2	Note 1, Note 2, Note 3 AA, ND
MO-SPA	9-15-15 03:10					X			2	Note 1, Note 2, Note 3 AA, ND

Relinquished
Printed Name: [illegible]
Signature: [illegible]
Affiliation: VCWPD Date/Time: [illegible]

Received
Printed Name: F. MA[illegible]
Signature: [illegible]
Affiliation: Aquatic Bioassay Labs Date/Time: 9-15-15 / [illegible]

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*

aquatic bioassay & consulting laboratories, inc

February 2, 2016

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 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:	1/5/2016
ABC LAB. NO.:	VCF0116.018

CHRONIC FATHEAD MINNOW SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC =	50.00 %
	TUc =	2.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
BIOMASS	NOEC =	50.00 %
	TUc =	2.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

29 north olive st. ventura, ca 93001 (805) 643 5621 www.aquabio.org

CETIS Summary Report

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

Batch ID:	11-7494-0190	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	06 Jan-16 14:13	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	13 Jan-16 12:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	03-4073-3791	Code:	VCF0116.018	Client:	VCWPD
Sample Date:	05 Jan-16 09:35	Material:	Sample Water	Project:	NPDES Stormwater Wet Season
Receive Date:	05 Jan-16 12:22	Source:	Bioassay Report		
Sample Age:	29h (10.5 °C)	Station:	MO-OJA		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-8236-6353	7d Survival Rate	50	100	70.71	8.03%	2	Dunnett Multiple Comparison Test
01-9873-5666	Mean Dry Biomass-mg	50	100	70.71	13.4%	2	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
18-0368-9243	7d Survival Rate	EC5	11.25	6.583	57.25	8.889	Linear Interpolation (ICPIN)
		EC10	64.29	48.39	121.4	1.556	
		EC15	85.71	57.14	N/A	1.167	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
01-5088-6171	Mean Dry Biomass-mg	IC5	58.74	N/A	77.25	1.703	Linear Interpolation (ICPIN)
		IC10	72.8	47.31	103.6	1.374	
		IC15	86.86	61.34	N/A	1.151	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-8236-6353	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
18-0368-9243	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
01-5088-6171	Mean Dry Biomass-mg	Control Resp	0.3132	0.25 - NL	Yes	Passes Acceptability Criteria
01-9873-5666	Mean Dry Biomass-mg	Control Resp	0.3132	0.25 - NL	Yes	Passes Acceptability Criteria
01-9873-5666	Mean Dry Biomass-mg	PMSD	0.1343	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
6.25		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	1.67%
12.5		4	0.9167	0.7832	1	0.8	1	0.04194	0.08389	9.15%	8.33%
25		4	0.9667	0.9054	1	0.9333	1	0.01925	0.03849	3.98%	3.33%
50		4	0.9333	0.9333	0.9333	0.9333	0.9333	0	0	0.0%	6.67%
100		4	0.8167	0.6355	0.9978	0.6667	0.9333	0.05693	0.1139	13.94%	18.33%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.3132	0.2572	0.3692	0.274	0.3353	0.01446	0.02891	9.23%	0.0%
6.25		4	0.3205	0.2849	0.3561	0.2973	0.344	0.01118	0.02236	6.98%	-2.34%
12.5		4	0.2812	0.2306	0.3318	0.2533	0.3193	0.0159	0.03179	11.31%	10.22%
25		4	0.3355	0.3015	0.3695	0.3233	0.3673	0.01087	0.02134	6.36%	-7.13%
50		4	0.3158	0.307	0.3246	0.3113	0.3233	0.002767	0.005534	1.75%	-0.85%
100		4	0.2545	0.2087	0.3003	0.216	0.2853	0.0144	0.02881	11.32%	18.73%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		1	0.9333	1	1
12.5		0.8	0.9333	1	0.9333
25		0.9333	1	1	0.9333
50		0.9333	0.9333	0.9333	0.9333
100		0.8	0.6667	0.9333	0.8667

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.344	0.3347	0.306	0.2973
12.5		0.2533	0.2953	0.2567	0.3193
25		0.328	0.3233	0.3673	0.3233
50		0.3113	0.3167	0.3233	0.312
100		0.2547	0.216	0.2853	0.262

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		12/15	14/15	15/15	14/15
25		14/15	15/15	15/15	14/15
50		14/15	14/15	14/15	14/15
100		12/15	10/15	14/15	10/15

CETIS Analytical Report

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

Analysis ID: 14-8236-6353 | Endpoint: 7d Survival Rate | CETIS Version: CETISv1.8.7
Analyzed: 22 Jan-16 12:18 | Analysis: Parametric-Control vs Treatments | Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	8.03%	50	100	70.71	2

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	0.5024	2.407	0.158	6	0.8465	CDF	Non-Significant Effect
		12.5	2.279	2.407	0.158	6	0.0635	CDF	Non-Significant Effect
		25	1.005	2.407	0.158	6	0.4198	CDF	Non-Significant Effect
		50	2.009	2.407	0.158	6	0.1026	CDF	Non-Significant Effect
		100*	4.563	2.407	0.158	6	0.0006	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.2307848	0.04615695	5	5.373	0.0034	Significant Effect
Error	0.1546386	0.008591034	18			
Total	0.3854234		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	2.425	4.248	0.0757	Equal Variances
Variances	Levene Equality of Variance	3.502	4.248	0.0219	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.91	0.884	0.0353	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.25	0.2056	0.0004	Non-normal Distribution
Distribution	D'Agostino Skewness	1.051	2.576	0.2932	Normal Distribution
Distribution	D'Agostino Kurtosis	1.441	2.576	0.1497	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	3.18	9.21	0.2039	Normal Distribution
Distribution	Anderson-Darling A2 Normality	1.15	3.878	0.0053	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	1	0	0.0%	0.0%
6.25		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	1.67%
12.5		4	0.9167	0.7832	1	0.9333	0.8	1	0.04194	9.15%	8.33%
25		4	0.9667	0.9054	1	0.9667	0.9333	1	0.01924	3.98%	3.33%
50		4	0.9333	0.9331	0.9336	0.9333	0.9333	0.9333	0	0.0%	6.67%
100		4	0.8167	0.6355	0.9978	0.8333	0.6667	0.9333	0.05693	13.94%	18.33%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	0.0%
6.25		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	2.28%
12.5		4	1.292	1.072	1.511	1.31	1.107	1.441	0.06898	10.68%	10.37%
25		4	1.375	1.254	1.496	1.375	1.31	1.441	0.03802	5.53%	4.57%
50		4	1.31	1.31	1.31	1.31	1.31	1.31	0	0.0%	9.14%
100		4	1.142	0.9041	1.38	1.152	0.9553	1.31	0.07463	13.1%	20.75%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		1	0.9333	1	1
12.5		0.8	0.9333	1	0.9333
25		0.9333	1	1	0.9333
50		0.9333	0.9333	0.9333	0.9333
100		0.8	0.6667	0.9333	0.6667

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

Analysis ID:	14-8236-6353	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:16	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

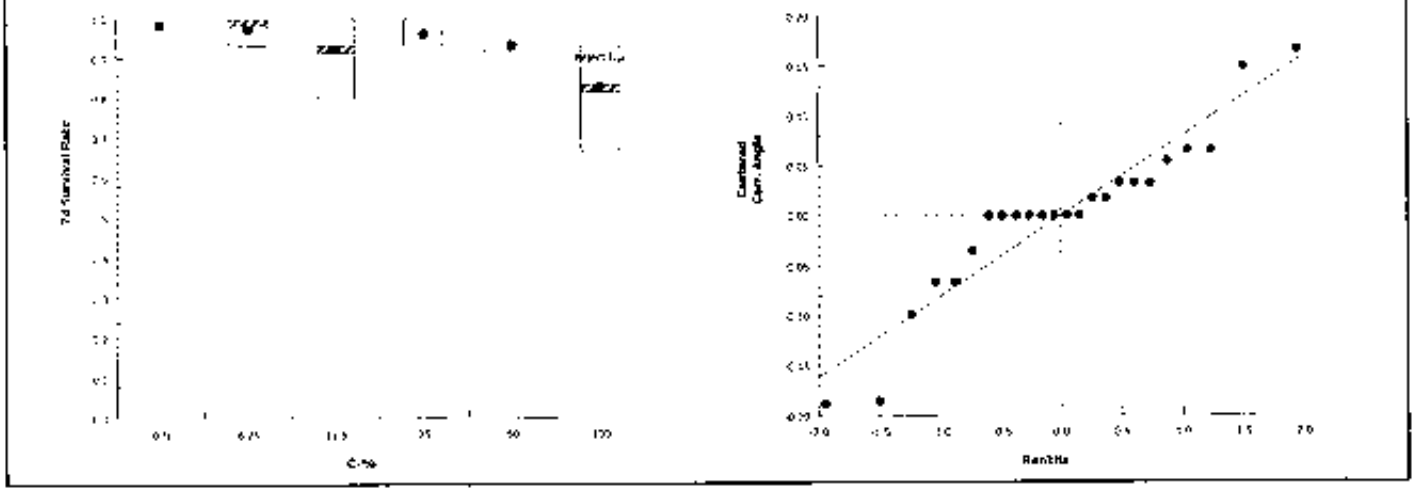
Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.441	1.441	1.441	1.441
6.25		1.441	1.31	1.441	1.441
12.5		1.107	1.31	1.441	1.31
25		1.31	1.441	1.441	1.31
50		1.31	1.31	1.31	1.31
100		1.107	0.9553	1.31	1.107

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		12/15	14/15	15/15	14/15
25		14/15	15/15	15/15	14/15
50		14/15	14/15	14/15	14/15
100		12/15	10/15	14/15	13/15

Graphics



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

Analysis ID: 01-9873-5666 Endpoint: Mean Dry Biomass-mg CETIS Version: CETISv1.8.7
Analyzed: 22 Jan-16 12:18 Analysis: Parametric-Control vs Treatments Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	13.4%	50	100	70.71	2

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	-0.4198	2.407	0.042	6	0.9277	CDF	Non-Significant Effect
		12.5	1.832	2.407	0.042	6	0.1379	CDF	Non-Significant Effect
		25	-1.278	2.407	0.042	6	0.9921	CDF	Non-Significant Effect
		50	-0.1526	2.407	0.042	6	0.6743	CDF	Non-Significant Effect
		100	3.358	2.407	0.042	6	0.0073	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01783326	0.003566652	5	5.843	0.0022	Significant Effect
Error	0.01098689	0.0006103827	18			
Total	0.02882015		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	6.265	15.09	0.2813	Equal Variances
Variances	Mod Levene Equality of Variance	1.2	4.248	0.3466	Equal Variances
Variances	Levene Equality of Variance	1.703	4.248	0.1850	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9733	0.884	0.7488	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.08737	0.2056	1.0000	Normal Distribution
Distribution	D'Agostino Skewness	0.16	2.576	0.8729	Normal Distribution
Distribution	D'Agostino Kurtosis	0.9257	2.576	0.3546	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	0.8825	9.21	0.6432	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.2073	3.878	0.9077	Normal Distribution

Mean Dry Biomass-mg Summary

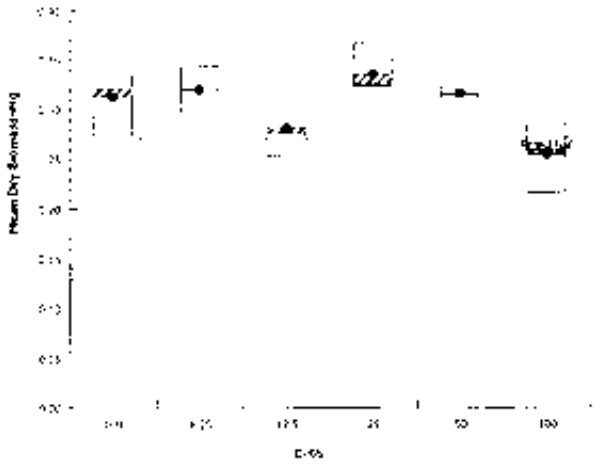
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.3132	0.2672	0.3592	0.3217	0.274	0.3353	0.01446	9.23%	0.0%
6.25		4	0.3205	0.2849	0.3561	0.3203	0.2973	0.344	0.01118	6.98%	-2.34%
12.5		4	0.2812	0.2306	0.3318	0.276	0.2533	0.3193	0.0159	11.31%	10.22%
25		4	0.3355	0.3015	0.3695	0.3257	0.3233	0.3673	0.01067	6.35%	-7.13%
50		4	0.3158	0.307	0.3246	0.3143	0.3113	0.3233	0.002767	1.75%	-0.85%
100		4	0.2545	0.2087	0.3003	0.2583	0.216	0.2853	0.0144	11.32%	18.73%

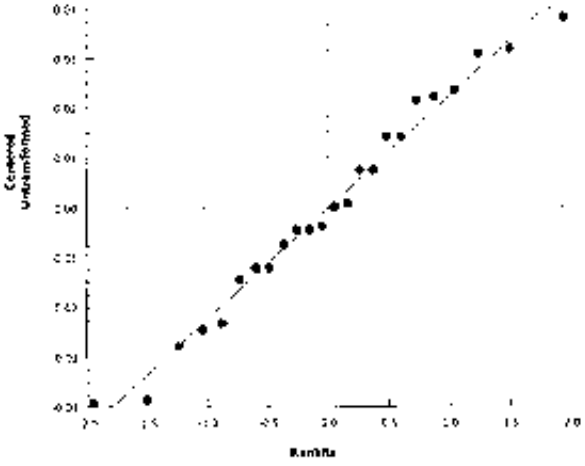
Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.344	0.3347	0.308	0.2973
12.5		0.2533	0.2953	0.2587	0.3193
25		0.328	0.3233	0.3673	0.3233
50		0.3113	0.3167	0.3233	0.312
100		0.2547	0.216	0.2853	0.262

Fathead Minnow 7-d Larval Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID:	01-9873-5666	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:18	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID:	18-0368-9243	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:18	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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	TU	95% LCL	95% UCL
EC5	11.25	6.583	57.25	8.889	1.747	15.19
EC10	64.29	48.39	121.4	1.556	0.8235	2.067
EC15	85.71	57.14	N/A	1.167	NA	1.75
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
LC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary

						Calculated Variate(A/B)					
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	60	60
6.25		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	1.67%	59	60
12.5		4	0.9167	0.8	1	0.04184	0.08369	9.15%	8.33%	55	60
25		4	0.9667	0.9333	1	0.01924	0.03849	3.98%	3.33%	58	60
50		4	0.9333	0.9333	0.9333	0	0	0.0%	6.67%	56	60
100		4	0.8167	0.6667	0.9333	0.05693	0.1139	13.94%	18.33%	49	60

7d Survival Rate Detail

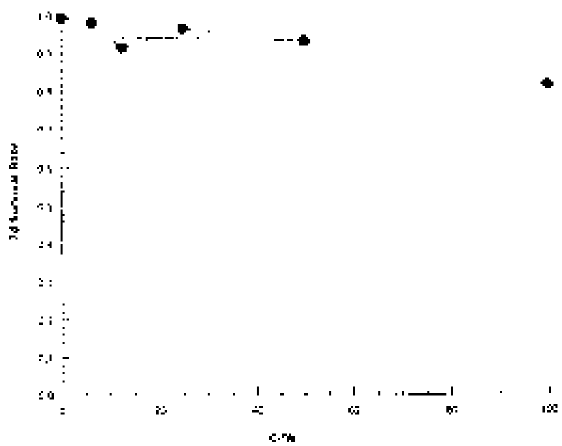
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		1	0.9333	1	1
12.5		0.8	0.9333	1	0.9333
25		0.9333	1	1	0.9333
50		0.9333	0.9333	0.9333	0.9333
100		0.8	0.6667	0.9333	0.8667

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		15/15	14/15	15/15	15/15
12.5		12/15	14/15	15/15	14/15
25		14/15	15/15	15/15	14/15
50		14/15	14/15	14/15	14/15
100		12/15	10/15	14/15	13/15

Fathead Minnow 7-d Larval Survival and Growth Test			Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 18-0368-9243	**Endpoint:** 7d Survival Rate		**CETIS Version:**	CETISv1.8.7
Analyzed: 22 Jan-16 12:18	**Analysis:** Linear Interpolation (ICPIN)		**Official Results:**	Yes

Graphics



Fathead Minnow 7-d Larval Survival and Growth Test					Aquatic Bioassay & Consulting Labs, Inc.
Analysis ID:	01-5088-6171	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:18	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1553785	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	58.74	N/A	77.25	1.703	1.295	NA
IC10	72.8	47.31	103.5	1.374	0.9658	2.114
IC15	86.86	61.34	N/A	1.151	NA	1.63
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

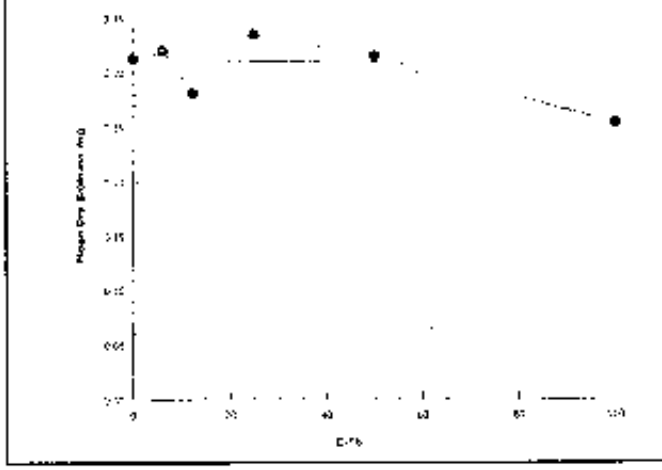
Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.3132	0.274	0.3353	0.01446	0.02891	9.23%	0.0%
6.25		4	0.3205	0.2973	0.344	0.01118	0.02236	6.98%	-2.34%
12.5		4	0.2812	0.2533	0.3193	0.0159	0.03179	11.31%	10.22%
25		4	0.3355	0.3233	0.3673	0.01067	0.02134	6.36%	-7.13%
50		4	0.3158	0.3113	0.3233	0.002767	0.005534	1.75%	-0.85%
100		4	0.2545	0.216	0.2853	0.0144	0.02881	11.32%	18.73%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.344	0.3347	0.306	0.2973
12.5		0.2533	0.2953	0.2567	0.3193
25		0.328	0.3233	0.3673	0.3233
50		0.3113	0.3167	0.3233	0.312
100		0.2547	0.216	0.2853	0.262

Graphics



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

Batch ID:	11-7494-0190	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	06 Jan-16 14:13	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	13 Jan-16 12:15	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems CO	Age:	
Sample ID:	03-4073-3791	Code:	VCF0116.018	Client:	VCWPD
Sample Date:	05 Jan-16 09:35	Material:	Sample Water	Project:	NPDES Stormwater Wet Season
Receive Date:	05 Jan-16 12:22	Source:	Bioassay Report		
Sample Age:	29h (10.5 °C)	Station:	MO-OJA		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	64.13	61.25	67	60	68	1.217	3.441	5.37%	0
100		8	44	44	44	44	44	0	0	0.0%	0
Overall		16	54.06			44	68				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	701.3	-181.3	1584	323	3314	373.3	1056	150.5%	0
6.25		8	317	309	325	307	337	3.402	9.621	3.04%	0
12.5		8	297.6	293.7	301.5	288	304	1.679	4.749	1.6%	0
25		8	269.4	261.2	277.6	260	292	3.474	9.826	3.65%	0
50		8	208.6	189.8	227.5	195	263	7.98	22.57	10.82%	0
100		8	68.38	58.71	78.04	54	87	4.088	11.56	16.91%	0
Overall		48	310.4			54	3314				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.1	7.686	8.514	7.7	9.2	0.1753	0.4957	6.12%	0
6.25		8	7.825	7.471	8.179	7.3	8.7	0.1497	0.4234	5.41%	0
12.5		8	7.675	7.535	7.815	7.5	7.9	0.05901	0.1669	2.18%	0
25		8	7.638	7.459	7.816	7.3	7.9	0.07544	0.2134	2.79%	0
50		8	7.288	6.934	7.641	6.7	7.8	0.1493	0.4224	5.8%	0
100		8	6.938	6.533	7.342	6.3	7.6	0.1711	0.4838	6.97%	0
Overall		48	7.577			6.3	9.2				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	92.13	88.68	95.57	88	97	1.457	4.121	4.47%	0
100		8	41	41	41	41	41	0	0	0.0%	0
Overall		16	66.56			41	97				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.025	7.803	8.247	7.6	8.3	0.09402	0.2659	3.31%	0
6.25		8	7.9	7.759	8.041	7.6	8.1	0.05976	0.169	2.14%	0
12.5		8	7.875	7.751	7.999	7.6	8.1	0.05261	0.1488	1.89%	0
25		8	7.775	7.716	7.834	7.6	7.8	0.025	0.07072	0.91%	0
50		8	7.75	7.661	7.839	7.6	7.9	0.0378	0.1069	1.38%	0
100		8	7.725	7.526	7.924	7.3	8	0.08399	0.2375	3.08%	0
Overall		48	7.842			7.3	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
6.25		8	24.04	23.99	24.08	24	24.1	0.01827	0.05167	0.22%	0
12.5		8	24.05	23.99	24.11	24	24.2	0.0267	0.07553	0.31%	0
25		8	24.1	23.97	24.23	24	24.4	0.0567	0.1604	0.67%	0
50		8	24.11	23.93	24.3	24	24.5	0.07892	0.2232	0.93%	0
100		8	24.13	23.91	24.34	24	24.7	0.09014	0.255	1.06%	0
Overall		48	24.07			24	24.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	68	68	68	64	64	64	60	60
100		44	44	44	44	44	44	44	44

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	328	332	323	328	330	326	329	3314
6.25		307	323	310	312	315	312	320	337
12.5		288	296	295	300	300	299	299	304
25		260	265	262	268	269	269	270	292
50		195	202	199	195	199	206	210	263
100		54	67	60	61	63	72	83	87

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.8	8.4	7.7	7.8	7.9	7.9	8.1	9.2
6.25		8	8.7	7.4	7.8	7.8	7.8	7.8	7.3
12.5		7.9	7.7	7.5	7.7	7.7	7.9	7.5	7.5
25		7.9	7.7	7.4	7.6	7.7	7.9	7.3	7.6
50		7.5	6.7	7.3	7.5	7.7	7.8	6.7	7.1
100		6.6	6.7	7	7.4	7.6	7.4	6.3	6.5

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	97	97	97	90	90	90	88	88
100		41	41	41	41	41	41	41	41

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.1	7.9	7.7	8.3	8.1	8.2	7.5	8.3
6.25		7.6	8	7.7	7.9	8	7.9	8	8.1
12.5		7.6	8	7.8	7.8	7.9	7.9	7.9	8.1
25		7.6	7.8	7.8	7.8	7.8	7.8	7.8	7.8
50		7.6	7.7	7.9	7.8	7.8	7.8	7.6	7.8
100		7.6	7.5	8	7.9	7.8	7.9	7.3	7.8

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	24	24	24	24	24.1	24
6.25		24	24	24.1	24	24	24.1	24.1	24
12.5		24	24	24.2	24	24	24.1	24.1	24
25		24	24	24.4	24	24	24.3	24.1	24
50		24	24	24.6	24	24	24.3	24	24
100		24	24	24.7	24	24	24.3	24	24

aquatic bioassay & consulting laboratories, inc

February 2, 2016

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 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:	1/5/16
ABC LAB. NO.:	VCF0116.019

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

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

Batch ID:	01-3695-6013	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	08 Jan-16 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	13 Jan-16 12:30	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	04-8531-7309	Code:	VCF0116 019	Client:	VCWPD
Sample Date:	05 Jan-16 10:40	Material:	Sample Water	Project:	NPDES Stormwater Wet Season
Receive Date:	05 Jan-16 12:22	Source:	Bioassay Report		
Sample Age:	28h (9.8 °C)	Station:	MO-MEI		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
06-0073-7390	7d Survival Rate	100	>100	NA	4.29%	1	Steel Many-One Rank Sum Test
10-9117-2100	Mean Dry Biomass-mg	100	>100	NA	14.3%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
10-4086-9444	7d Survival Rate	EC5	100	8	N/A	1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	
17-0531-4074	Mean Dry Biomass-mg	IC5	69.8	40.92	N/A	1.433	Linear Interpolation (ICPIN)
		IC10	89.6	55.77	N/A	1.116	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
06-0073-7390	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
10-4086-9444	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
10-9117-2100	Mean Dry Biomass-mg	Control Resp	0.3132	0.25 - NL	Yes	Passes Acceptability Criteria
17-0531-4074	Mean Dry Biomass-mg	Control Resp	0.3132	0.25 - NL	Yes	Passes Acceptability Criteria
10-9117-2100	Mean Dry Biomass-mg	PMSD	0.1425	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	0	0	0.0%	0.0%
6.25		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	1.67%
12.5		4	1	1	1	1	1	0	0	0.0%	0.0%
25		4	1	1	1	1	1	0	0	0.0%	0.0%
50		4	0.95	0.897	1	0.9333	1	0.01667	0.03333	3.51%	5.0%
100		4	0.95	0.897	1	0.9333	1	0.01667	0.03333	3.51%	5.0%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.3132	0.2672	0.3592	0.274	0.3353	0.01446	0.02891	9.23%	0.0%
6.25		4	0.3083	0.2743	0.3423	0.2833	0.3307	0.01068	0.02136	6.93%	1.54%
12.5		4	0.3352	0.2776	0.3928	0.2873	0.3753	0.0181	0.03621	10.8%	-7.03%
25		4	0.3283	0.3036	0.3531	0.3133	0.3493	0.007786	0.01557	4.74%	-4.84%
50		4	0.324	0.3029	0.3451	0.3093	0.34	0.006639	0.01328	4.1%	-3.46%
100		4	0.2812	0.2283	0.334	0.2547	0.326	0.01661	0.03322	11.81%	10.22%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		0.9333	1	1	1
12.5		1	1	1	1
25		1	1	1	1
50		0.9333	1	0.9333	0.9333
100		0.9333	0.9333	1	0.9333

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.2967	0.2833	0.3207	0.3307
12.5		0.34	0.338	0.3753	0.2873
25		0.3207	0.3493	0.33	0.3133
50		0.3287	0.34	0.318	0.3093
100		0.2547	0.2867	0.326	0.2573

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		14/15	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		14/15	15/15	14/15	14/15
100		14/15	14/15	15/15	14/15

CETIS Analytical Report

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

Analysis ID: 06-0073-7390 | Endpoint: 7d Survival Rate | CETIS Version: CETISv1.8.7
Analyzed: 22 Jan-16 12:22 | Analysis: Nonparametric-Control vs Treatments | Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	4.29%	100	>100	NA	1

Steel Many-One Rank Sum Test

Control	vs	C-%	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	16	10	1	6	0.6105	Asymp	Non-Significant Effect
		12.5	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		25	18	10	1	6	0.8333	Asymp	Non-Significant Effect
		50	12	10	1	6	0.1424	Asymp	Non-Significant Effect
		100	12	10	1	6	0.1424	Asymp	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.04697335	0.009394669	5	4.333	0.0092	Significant Effect
Error	0.03902401	0.002168001	18			
Total	0.08599736		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	0.6	4.248	0.7006	Equal Variances
Variances	Levene Equality of Variance	5.4	4.248	0.0033	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.8441	0.884	0.0017	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.2917	0.2056	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	1.268	2.576	0.2050	Normal Distribution
Distribution	D'Agostino Kurtosis	1.995	2.576	0.0460	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	5.588	9.21	0.0612	Normal Distribution
Distribution	Anderson-Darling A2 Normality	1.962	3.878	<0.0001	Non-normal Distribution

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1	1	1	1	1	1	0	0.0%	0.0%
6.25		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	1.67%
12.5		4	1	1	1	1	1	1	0	0.0%	0.0%
25		4	1	1	1	1	1	1	0	0.0%	0.0%
50		4	0.95	0.897	1	0.9333	0.9333	1	0.01667	3.51%	5.0%
100		4	0.95	0.897	1	0.9333	0.9333	1	0.01667	3.51%	5.0%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	0.0%
6.25		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	2.26%
12.5		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	0.0%
25		4	1.441	1.441	1.442	1.441	1.441	1.441	0	0.0%	0.0%
50		4	1.343	1.238	1.447	1.31	1.31	1.441	0.03292	4.91%	6.85%
100		4	1.343	1.238	1.447	1.31	1.31	1.441	0.03292	4.91%	6.85%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		0.9333	1	1	1
12.5		1	1	1	1
25		1	1	1	1
50		0.9333	1	0.9333	0.9333
100		0.9333	0.9333	1	0.9333

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

Analysis ID:	06-0073-7390	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:22	Analysis:	Nonparametric-Control vs Treatments	Official Results:	Yes

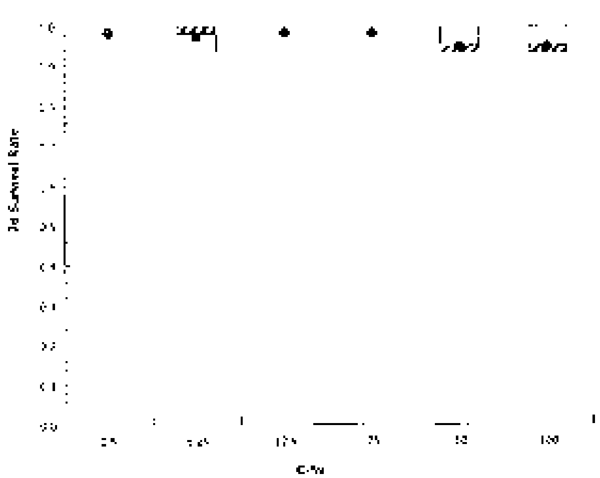
Angular (Corrected) Transformed Detail

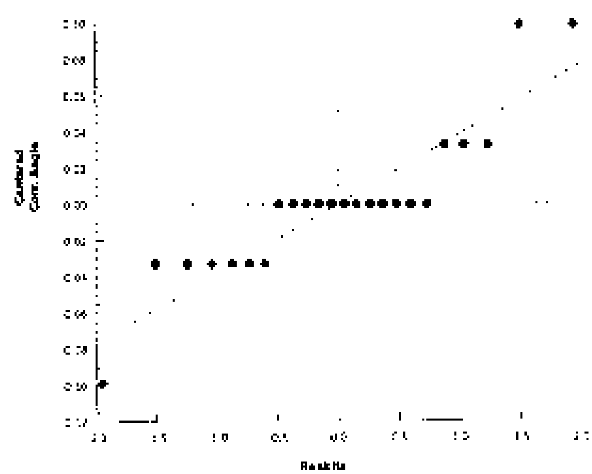
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.441	1.441	1.441	1.441
6.25		1.31	1.441	1.441	1.441
12.5		1.441	1.441	1.441	1.441
25		1.441	1.441	1.441	1.441
50		1.31	1.441	1.31	1.31
100		1.31	1.31	1.441	1.31

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		14/15	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		14/15	15/15	14/15	14/15
100		14/15	14/15	15/15	14/15

Graphics





CETIS Analytical Report

Report Date: 22 Jan-16 12:26 (p 3 of 4)
Test Code: VCF0116.019 | 01-1443-0841

Fathead Minnow 7-d Larval Survival and Growth Test		Aquatic Bioassay & Consulting Labs, Inc.
Analysis ID: 10-9117-2100	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.7
Analyzed: 22 Jan-16 12:22	Analysis: Parametric-Control vs Treatments	Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	14.3%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		6.25	0.2807	2.407	0.045	6	0.7453	CDF	Non-Significant Effect
		12.5	-1.186	2.407	0.045	6	0.9897	CDF	Non-Significant Effect
		25	-0.818	2.407	0.045	6	0.9721	CDF	Non-Significant Effect
		50	-0.5843	2.407	0.045	6	0.9504	CDF	Non-Significant Effect
		100	1.726	2.407	0.045	6	0.1631	CDF	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.007431868	0.001486374	5	2.162	0.1043	Non-Significant Effect
Error	0.012377	0.0006876111	18			
Total	0.01980887		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	3.982	15.09	0.5520	Equal Variances
Variances	Mod Levene Equality of Variance	0.6081	4.248	0.6949	Equal Variances
Variances	Levene Equality of Variance	0.8383	4.248	0.5398	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9848	0.884	0.9650	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.08451	0.2056	1.0000	Normal Distribution
Distribution	D'Agostino Skewness	0.1962	2.576	0.8444	Normal Distribution
Distribution	D'Agostino Kurtosis	0.03101	2.576	0.9753	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	0.03948	9.21	0.9805	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.1824	3.878	0.9678	Normal Distribution

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.3132	0.2672	0.3592	0.3217	0.274	0.3353	0.01446	9.23%	0.0%
6.25		4	0.3083	0.2743	0.3423	0.3097	0.2833	0.3307	0.01068	6.93%	1.54%
12.5		4	0.3352	0.2776	0.3928	0.339	0.2873	0.3753	0.0181	10.8%	-7.03%
25		4	0.3283	0.3036	0.3531	0.3253	0.3133	0.3493	0.007787	4.74%	-4.84%
50		4	0.324	0.3029	0.3451	0.3233	0.3093	0.34	0.006639	4.1%	-3.46%
100		4	0.2812	0.2283	0.334	0.272	0.2547	0.326	0.01661	11.81%	10.22%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.2987	0.2833	0.3207	0.3307
12.5		0.34	0.338	0.3753	0.2873
25		0.3207	0.3493	0.33	0.3133
50		0.3287	0.34	0.318	0.3093
100		0.2547	0.2867	0.326	0.2573

CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test				Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID:	10-4086-9444	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:22	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

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	TU	95% LCL	95% UCL
EC5	100	6	N/A	1	NA	12.5
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary — Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	1	1	1	0	0	0.0%	0.0%	60	60
6.25		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	1.67%	59	60
12.5		4	1	1	1	0	0	0.0%	0.0%	60	60
25		4	1	1	1	0	0	0.0%	0.0%	60	60
50		4	0.95	0.9333	1	0.01667	0.03333	3.51%	5.0%	57	60
100		4	0.95	0.9333	1	0.01667	0.03333	3.51%	5.0%	57	60

7d Survival Rate Detail

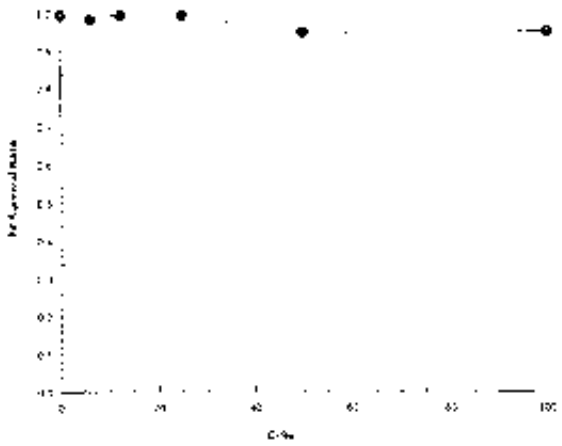
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	1	1
6.25		0.9333	1	1	1
12.5		1	1	1	1
25		1	1	1	1
50		0.9333	1	0.9333	0.9333
100		0.9333	0.9333	1	0.9333

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	15/15	15/15
6.25		14/15	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		14/15	15/15	14/15	14/15
100		14/15	14/15	15/15	14/15

Fathead Minnow 7-d Larval Survival and Growth Test					Aquatic Bioassay & Consulting Labs, Inc.
Analysis ID:	10-4086-9444	Endpoint:	7d Survival Rate	CETIS Version:	CETISv1.8.7
Analyzed:	22 Jan-16 12:22	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes

Graphics



CETIS Analytical Report

Report Date: 22 Jan-16 12:26 (p 3 of 3)
Test Code: VCF0116.019 | 01-1443-0841

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

Analysis ID:	17-0631-4074	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.8.7
Analyzed:	22 Jan-16 12:22	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1904804	280	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	69.8	40.92	N/A	1.433	NA	2.444
IC10	89.6	55.77	N/A	1.116	NA	1.793
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

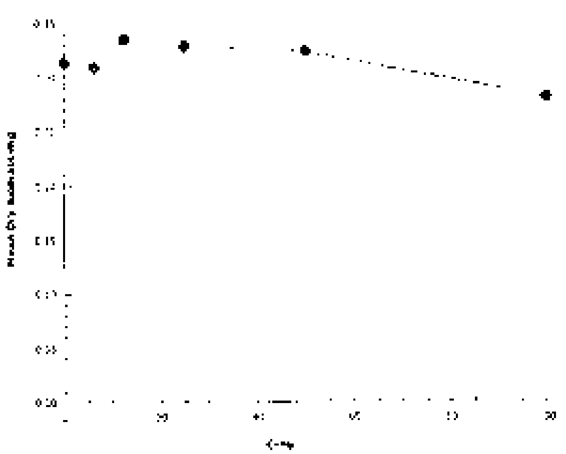
Mean Dry Biomass-mg Summary — Calculated Variate

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.3132	0.274	0.3353	0.01446	0.02891	9.23%	0.0%
6.25		4	0.3083	0.2833	0.3307	0.01068	0.02136	6.93%	1.54%
12.5		4	0.3352	0.2873	0.3753	0.0181	0.03621	10.8%	-7.03%
25		4	0.3283	0.3133	0.3493	0.007787	0.01557	4.74%	-4.84%
50		4	0.324	0.3093	0.34	0.006639	0.01328	4.1%	-3.46%
100		4	0.2812	0.2547	0.326	0.01661	0.03322	11.81%	10.22%

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.3347	0.3087	0.274	0.3353
6.25		0.2987	0.2833	0.3207	0.3307
12.5		0.34	0.338	0.3753	0.2873
25		0.3207	0.3493	0.33	0.3133
50		0.3287	0.34	0.318	0.3093
100		0.2547	0.2667	0.326	0.2573

Graphics



CETIS Measurement Report

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	01-3595-6013	Test Type:	Growth-Survival (7d)	Analyst:	
Start Date:	05 Jan-16 14:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	13 Jan-16 12:30	Species:	Pimephales promelas	Brine:	Not Applicable
Duration:	6d 22h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	04-8531-7309	Code:	VCF0116.019	Client:	VCWPD
Sample Date:	05 Jan-16 10:40	Material:	Sample Water	Project:	NPDES Stormwater Wet Season
Receive Date:	05 Jan-16 12:22	Source:	Bioassay Report		
Sample Age:	28h (9.8 °C)	Station:	MO-ME1		

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	64.13	61.25	67	60	68	1.217	3.441	5.37%	0
100		8	53	53	53	53	53	0	0	0.0%	0
Overall		16	58.56			53	68				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	328.4	326	330.8	323	332	1.017	2.875	0.88%	0
6.25		8	312.4	310.1	314.7	308	316	0.9808	2.774	0.89%	0
12.5		8	303	299.7	306.3	299	310	1.414	4	1.32%	0
25		8	280.1	275.2	285	272	288	2.074	5.866	2.09%	0
50		8	228	220.3	235.7	217	240	3.257	9.212	4.04%	0
100		8	128.3	120	136.5	117	143	3.499	9.896	7.72%	0
Overall		48	263.4			117	332				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.1	7.686	8.514	7.7	9.2	0.1753	0.4957	6.12%	0
6.25		8	7.7	7.354	8.046	6.8	8.1	0.1464	0.414	5.38%	0
12.5		8	7.55	7.25	7.85	6.8	7.9	0.1268	0.3586	4.75%	0
25		8	7.488	7.094	7.881	6.5	8	0.1663	0.4704	6.28%	0
50		8	7.475	7.066	7.884	6.4	8	0.1729	0.4892	6.54%	0
100		8	6.8	6.247	7.353	5.7	7.6	0.2338	0.6612	9.72%	0
Overall		48	7.519			5.7	9.2				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	92.13	88.68	95.57	86	97	1.457	4.121	4.47%	0
100		8	72	72	72	72	72	0	0	0.0%	0
Overall		16	82.06			72	97				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.025	7.803	8.247	7.6	8.3	0.09402	0.2659	3.31%	0
6.25		8	7.488	7.253	7.722	7	7.9	0.09899	0.28	3.74%	0
12.5		8	7.55	7.389	7.711	7.2	7.8	0.06814	0.1927	2.55%	0
25		8	7.586	7.443	7.732	7.3	7.8	0.06105	0.1727	2.28%	0
50		8	7.563	7.429	7.696	7.3	7.7	0.0565	0.1598	2.11%	0
100		8	7.5	7.359	7.641	7.3	7.7	0.05976	0.169	2.25%	0
Overall		48	7.619			7	8.3				0 (0%)

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

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
6.25		8	24.11	23.91	24.31	24	24.7	0.08543	0.2416	1.0%	0
12.5		8	24.06	23.96	24.16	24	24.3	0.04199	0.1188	0.49%	0
25		8	24.1	23.95	24.25	24	24.4	0.06547	0.1852	0.77%	0
50		8	24.13	23.93	24.32	24	24.5	0.08183	0.2315	0.96%	0
100		8	24.14	23.92	24.35	24	24.6	0.09051	0.256	1.06%	0
Overall		48	24.09			24	24.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	68	68	68	63	63	63	60	60
100		53	53	53	53	53	53	53	53

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	328	332	323	328	330	326	329	331
6.25		308	311	310	312	315	312	315	316
12.5		299	303	300	300	300	305	307	310
25		275	278	272	275	285	283	285	288
50		224	230	217	219	220	236	238	240
100		117	123	121	122	125	133	142	143

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.8	8.4	7.7	7.8	7.9	7.9	8.1	9.2
6.25		8	8.1	7.5	7.7	7.8	8	7.7	6.8
12.5		7.9	7.7	7.5	7.6	7.8	7.8	7.3	6.8
25		7.9	7.5	7.6	7.5	7.7	8	7.2	6.5
50		7.7	7.8	7.4	7.5	7.7	8	7.3	6.4
100		7.3	6.3	6.7	7.1	7.6	7.4	6.3	5.7

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	97	97	97	90	90	90	88	88
100		72	72	72	72	72	72	72	72

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.1	7.9	7.7	8.3	8.1	8.2	7.6	8.3
6.25		7.3	7.3	7.6	7.7	7.9	7.6	7	7.5
12.5		7.5	7.4	7.7	7.7	7.8	7.6	7.2	7.5
25		7.6	7.5	7.8	7.7	7.7	7.7	7.3	7.4
50		7.5	7.5	7.7	7.7	7.7	7.7	7.3	7.4
100		7.4	7.3	7.6	7.7	7.7	7.6	7.3	7.4

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	24	24	24	24	24.1	24
6.25		24	24	24.1	24	24	24.1	24.7	24
12.5		24	24	24.2	24	24	24.3	24	24
25		24	24	24.4	24	24	24.4	24	24
50		24	24	24.5	24	24	24.5	24	24
100		24	24	24.6	24	24	24.5	24	24

Chain of Custody Record

Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season
Toxicity - ABC Laboratories

Sampling Date: [illegible] Project Number: 2015/16-2 (Wet)

Sampling Team: [illegible]

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (*Atherinops affinis*)	Chronic toxicity - inland silverside (*Menidia beryllina*)	Chronic toxicity - giant kelp (*Macrocystis pyrifera*)	Chronic toxicity - purple sea urchin (*Strongylocentrotus purpuratus*)	Chronic toxicity - fathead minnow (*Pimephales promelas*)	Chronic toxicity - daphnid (*Ceriodaphnia dubia*)	Chronic toxicity - green alga (*Raphidocelis subcapitata*)	Number of 5-Gallon Buckets	NOTES
~~ABE-SCR~~					X				1	~~Note 1, Note 2, Note 3~~
MO-OJA	[illegible]					X			2	Note 1, Note 2, Note 3
MO-MEI	[illegible]					X			2	Note 1, Note 2, Note 3
										[illegible]
										[illegible]
										[illegible]
										[illegible]

Relinquished Printed Name [illegible]

Signature [illegible]

Affiliation [illegible] Date/Time [illegible]

Received Printed Name [illegible]

Signature [illegible]

Affiliation [illegible] Date/Time [illegible]

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.

aquatic bioassay & consulting laboratories, inc

February 11, 2016

Mr. Arnie 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:	County of Ventura
SAMPLE I.D.:	ME-SCR
DATE RECEIVED:	1/6/2016
ABC LAB. NO.:	VCF0116.036

CHRONIC SEA URCHIN FERTILIZATION BIOASSAY

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

Yours very truly,

C. Scott Johnson
Laboratory Director

29 north olive st ventura, ca 93001 (805) 643 5621 www.aquabio.org

CETIS Summary Report

Purple Sea Urchin Sperm Cell Fertilization Test — Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	09-8764-3343	Test Type:	Fertilization	Analyst:	Joe Freas
Start Date:	06 Jan-16 14:11	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	06 Jan-16 14:51	Species:	Strongylocentrotus purpuratus	Brine:	Not Applicable
Duration:	40m	Source:	David Gutoff	Age:	
Sample ID:	11-1640-3425	Code:	VCF0116.036uf	Client:	VCWPD
Sample Date:	06 Jan-16 08:45	Material:	Sample Water	Project:	2015/16-2 (Wet)
Receive Date:	06 Jan-16 10:35	Source:	Bioassay Report		
Sample Age:	5h (8.4 °C)	Station:	ME-SCR		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
01-9970-4601	Fertilization Rate	100	>100	NA	4.96%	1	Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
01-0517-6341	Fertilization Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-0517-6341	Fertilization Rate	Control Resp	0.9375	0.7 - NL	Yes	Passes Acceptability Criteria
01-9970-4601	Fertilization Rate	Control Resp	0.9375	0.7 - NL	Yes	Passes Acceptability Criteria
01-9970-4601	Fertilization Rate	PMSD	0.04958	NL - 0.25	No	Passes Acceptability Criteria

Fertilization Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.9375	0.875	0.999	0.9	0.98	0.01931	0.03862	4.12%	0.0%
6.25		4	0.9575	0.9303	0.9847	0.94	0.98	0.008539	0.01708	1.78%	-2.13%
12.5		4	0.9475	0.9077	0.9873	0.92	0.98	0.0125	0.025	2.64%	-1.07%
25		4	0.955	0.9219	0.9881	0.93	0.98	0.01041	0.02082	2.18%	-1.87%
50		4	0.9425	0.9273	0.9577	0.93	0.95	0.004787	0.009574	1.02%	-0.53%
100		4	0.9625	0.9353	0.9897	0.94	0.98	0.008539	0.01708	1.77%	-2.67%

Fertilization Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.9	0.98	0.96	0.91
6.25		0.98	0.95	0.96	0.94
12.5		0.98	0.95	0.92	0.94
25		0.95	0.93	0.96	0.98
50		0.94	0.95	0.93	0.95
100		0.96	0.94	0.97	0.98

Fertilization Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	90/100	98/100	96/100	91/100
6.25		98/100	95/100	96/100	94/100
12.5		98/100	95/100	92/100	94/100
25		95/100	93/100	96/100	98/100
50		94/100	95/100	93/100	95/100
100		96/100	94/100	97/100	98/100

CETIS Analytical Report

Purple Sea Urchin Sperm Cell Fertilization Test — Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	01-9970-4601	**Endpoint:**	Fertilization Rate	**CETIS Version:**	CETISv1.8.7
Analyzed:	11 Feb-16 12:33	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	09-8764-3343	**Test Type:**	Fertilization	**Analyst:**	Joe Freas
Start Date:	06 Jan-16 14:11	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Laboratory Seawater
Ending Date:	06 Jan-16 14:51	**Species:**	Strongylocentrotus purpuratus	**Brine:**	Not Applicable
Duration:	40m	**Source:**	David Gutoff	**Age:**	
Sample ID:	11-1840-3425	**Code:**	VCF0116.036uf	**Client:**	VCWPD
Sample Date:	06 Jan-16 08:45	**Material:**	Sample Water	**Project:**	2015/16-2 (Wet)
Receive Date:	06 Jan-16 10:35	**Source:**	Bioassay Report		
Sample Age:	5h (8.4 °C)	**Station:**	ME-SCR		

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	4.96%	100	>100	NA	1

Dunnett Multiple Comparison Test

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control	6.25	-0.9823	2.407	0.094	6	0.9819	CDF	Non-Significant Effect
	12.5	-0.4357	2.407	0.094	6	0.9302	CDF	Non-Significant Effect
	25	-0.8524	2.407	0.094	6	0.9745	CDF	Non-Significant Effect
	50	-0.02202	2.407	0.094	6	0.8397	CDF	Non-Significant Effect
	100	-1.311	2.407	0.094	6	0.9928	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.9375	0.7 - NL	Yes	Passes Acceptability Criteria
PMSD	0.04958	NL - 0.25	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.008769146	0.001753829	5	0.5748	0.7186	Non-Significant Effect
Error	0.0549189	0.00305105	18			
Total	0.06368805		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	4.867	15.09	0.4324	Equal Variances
Variances	Mod Levene Equality of Variance	1.651	4.248	0.1975	Equal Variances
Variances	Levene Equality of Variance	1.852	4.248	0.1532	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9671	0.884	0.5972	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.113	0.2056	0.6062	Normal Distribution
Distribution	D'Agostino Skewness	0.7648	2.576	0.4326	Normal Distribution
Distribution	D'Agostino Kurtosis	0.5545	2.576	0.5792	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	0.9234	9.21	0.6302	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.2939	3.878	0.6305	Normal Distribution

Fertilization Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.9375	0.876	0.999	0.935	0.9	0.98	0.01931	4.12%	0.0%
6.25		4	0.9575	0.9303	0.9847	0.955	0.94	0.98	0.008539	1.78%	-2.13%
12.5		4	0.9475	0.9077	0.9873	0.945	0.92	0.98	0.0125	2.64%	-1.07%
25		4	0.955	0.9219	0.9881	0.955	0.93	0.98	0.01041	2.18%	-1.87%
50		4	0.9425	0.9273	0.9577	0.945	0.93	0.95	0.004787	1.02%	-0.53%
100		4	0.9625	0.9353	0.9897	0.965	0.94	0.98	0.008539	1.77%	-2.67%

Analysis ID: 01-9970-4601 Endpoint: Fertilization Rate CETIS Version: CETISv1.8.7
Analyzed: 11 Feb-16 12:33 Analysis: Parametric-Control vs Treatments Official Results: Yes

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contro	4	1.328	1.192	1.465	1.318	1.249	1.429	0.04278	6.44%	0.0%
6.25		4	1.367	1.294	1.439	1.357	1.323	1.429	0.02276	3.33%	-2.89%
12.5		4	1.345	1.248	1.443	1.334	1.284	1.429	0.03058	4.55%	-1.28%
25		4	1.362	1.278	1.445	1.357	1.303	1.429	0.02628	3.86%	-2.51%
50		4	1.329	1.297	1.362	1.334	1.303	1.345	0.01015	1.53%	-0.06%
100		4	1.38	1.308	1.451	1.383	1.323	1.429	0.02235	3.24%	-3.86%

Fertilization Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.9	0.98	0.96	0.91
6.25		0.98	0.95	0.96	0.94
12.5		0.98	0.95	0.92	0.94
25		0.95	0.93	0.96	0.98
50		0.94	0.95	0.93	0.95
100		0.96	0.94	0.97	0.98

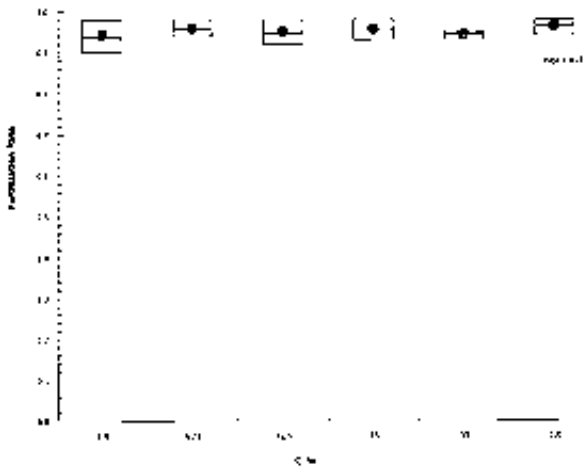
Angular (Corrected) Transformed Detail

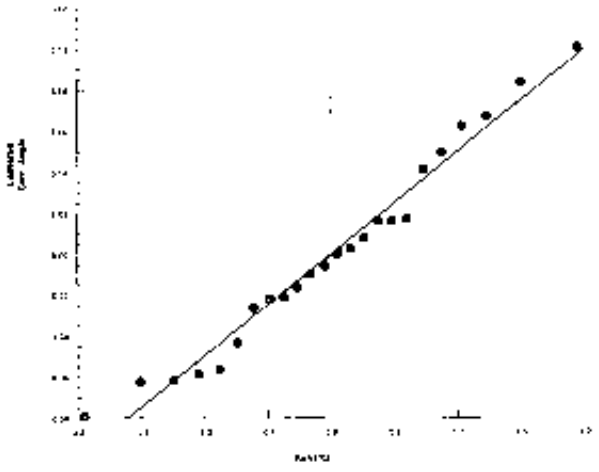
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.249	1.429	1.369	1.266
6.25		1.429	1.345	1.369	1.323
12.5		1.429	1.345	1.284	1.323
25		1.345	1.303	1.369	1.429
50		1.323	1.345	1.303	1.345
100		1.369	1.323	1.397	1.429

Fertilization Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	90/100	98/100	96/100	91/100
6.25		98/100	95/100	96/100	94/100
12.5		98/100	95/100	92/100	94/100
25		95/100	93/100	96/100	98/100
50		94/100	95/100	93/100	95/100
100		96/100	94/100	97/100	98/100

Graphics





CETIS Analytical Report

Purple Sea Urchin Sperm Cell Fertilization Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID:	01-0517-6341	Endpoint:	Fertilization Rate	CETIS Version:	CETISv1.8.7
Analyzed:	11 Feb-16 12:34	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes
Batch ID:	09-8764-3343	Test Type:	Fertilization	Analyst:	Joe Freas
Start Date:	06 Jan-16 14:11	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	06 Jan-16 14:51	Species:	Strongylocentrotus purpuratus	Brine:	Not Applicable
Duration:	40m	Source:	David Gutoff	Age:	
Sample ID:	11-1840-3425	Code:	VCF0116.036uf	Client:	VCWPD
Sample Date:	06 Jan-16 08:45	Material:	Sample Water	Project:	2015/16-2 (Wet)
Receive Date:	06 Jan-16 10:35	Source:	Bioassay Report		
Sample Age:	5h (8.4 °C)	Station:	ME-SCR		

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
Control Resp	0.9375	0.7 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

Fertilization Rate Summary Calculated Variate(A/B)

C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	4	0.9375	0.9	0.98	0.01931	0.03862	4.12%	0.0%	375	400
6.25		4	0.9575	0.94	0.98	0.008539	0.01708	1.78%	-2.13%	383	400
12.5		4	0.9475	0.92	0.98	0.0125	0.025	2.64%	-1.07%	379	400
25		4	0.955	0.93	0.98	0.01041	0.02082	2.18%	-1.87%	382	400
50		4	0.9425	0.93	0.95	0.004787	0.009574	1.02%	-0.53%	377	400
100		4	0.9625	0.94	0.98	0.008539	0.01708	1.77%	-2.67%	385	400

Fertilization Rate Detail

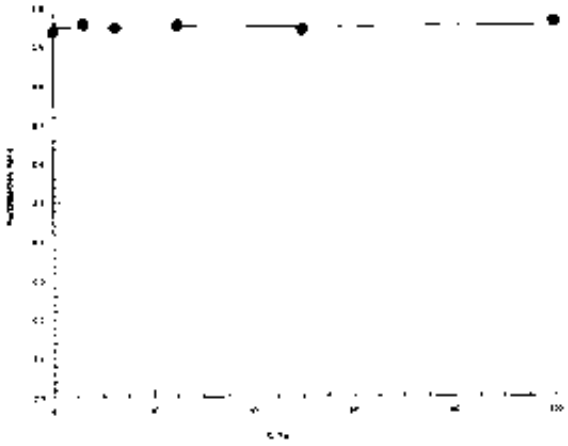
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.9	0.98	0.96	0.91
6.25		0.98	0.95	0.96	0.94
12.5		0.98	0.95	0.92	0.94
25		0.95	0.93	0.96	0.98
50		0.94	0.95	0.93	0.95
100		0.96	0.94	0.97	0.98

Fertilization Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	90/100	98/100	96/100	91/100
6.25		98/100	95/100	96/100	94/100
12.5		98/100	95/100	92/100	94/100
25		95/100	93/100	96/100	98/100
50		94/100	95/100	93/100	95/100
100		96/100	94/100	97/100	98/100

Analysis ID: 01-0517-6341 Endpoint: Fertilization Rate CETIS Version: CETISv1.8.7
Analyzed: 11 Feb-16 12:34 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Graphics



CETIS Measurement Report

Purple Sea Urchin Sperm Cell Fertilization Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	09-8764-3343	Test Type:	Fertilization	Analyst:	Joe Freas
Start Date:	06 Jan-16 14:11	Protocol:	EPA/600/R-95/136 (1995)	Diluent:	Laboratory Seawater
Ending Date:	08 Jan-16 14:51	Species:	Strongylocentrotus purpuratus	Brine:	Not Applicable
Duration:	48m	Source:	David Outoff	Age:	
Sample ID:	11-1840-3425	Code:	VCF0116.036uf	Client:	VCWPD
Sample Date:	06 Jan-16 08:45	Material:	Sample Water	Project:	2015/16-2 (Wet)
Receive Date:	06 Jan-16 10:35	Source:	Bioassay Report		
Sample Age:	5h (8.4 °C)	Station:	ME-SCR		

Parameter Acceptability Criteria

Parameter	Min	Max	Acceptability Limits	Overlap	Decision
Salinity-ppt	34	34	32 - 36	Yes	Results Within Limits
Temperature-°C	14.8	14.9	11 - 13	Yes	Results Above Limit

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
6.25		2	6.5	2.688	10.31	6.2	6.8	0.3	0.4243	6.53%	0
12.5		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
25		2	6.7	4.159	9.241	6.5	6.9	0.2	0.2828	4.22%	0
50		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
100		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
Overall		12	6.45			6.1	6.9				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
6.25		2	7.85	7.215	8.485	7.8	7.9	0.05	0.07071	0.9%	0
12.5		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0
25		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
50		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
100		2	7.65	7.015	8.285	7.6	7.7	0.05	0.07071	0.92%	0
Overall		12	7.767			7.6	7.9				0 (0%)

Salinity-ppt

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	34	34	34	34	34	0	0	0.0%	0
6.25		2	34	34	34	34	34	0	0	0.0%	0
12.5		2	34	34	34	34	34	0	0	0.0%	0
25		2	34	34	34	34	34	0	0	0.0%	0
50		2	34	34	34	34	34	0	0	0.0%	0
100		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34			34	34				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
6.25		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
12.5		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
25		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
50		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
Overall		12	14.85			14.8	14.9				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	1	2
0	Negative Contr	6.6	6.2
6.25		6.6	6.2
12.5		6.6	6.1
25		6.9	6.5
50		6.6	6.1
100		6.6	6.2

pH-Units

C-%	Control Type	1	2
0	Negative Contr	7.9	7.9
6.25		7.9	7.8
12.5		7.8	7.8
25		7.7	7.7
50		7.7	7.7
100		7.7	7.6

Salinity-ppt

C-%	Control Type	1	2
0	Negative Contr	34	34
6.25		34	34
12.5		34	34
25		34	34
50		34	34
100		34	34

Temperature-°C

C-%	Control Type	1	2
0	Negative Contr	14.8	14.9
6.25		14.8	14.9
12.5		14.8	14.9
25		14.8	14.9
50		14.8	14.9
100		14.8	14.9

Chain of Custody Record

Ventura County Watershed Protection District
NPDES Stormwater Monitoring Program
Project: NPDES Stormwater Wet Season
Toxicity - ABC Laboratories

Sampling Date: 1/6/16 Project Number: 2015/16-2 (Wet)

Sampling Team: K. H, L. M

SAMPLE ID	DATE/TIME COLLECTED	Chronic toxicity - topsmelt (*Atherinops affinis*)	Chronic toxicity - inland silverside (*Menidia beryllina*)	Chronic toxicity - giant kelp (*Macrocystis pyrifera*)	Chronic toxicity - purple sea urchin (*Strongylocentrotus purpuratus*)	Chronic toxicity - fathead minnow (*Pimephales promelas*)	Chronic toxicity - daphnid (*Ceriodaphnia dubia*)	Chronic toxicity - green alga (*Raphidocelis subcapitata*)	Number of 5-Gallon Buckets	NOTES
MF SCR	1/6/16 0845				X				2	Note 1, Note 2, Note 3

Relinquished Printed Name: Kelly Hahn

Signature:

Affiliation: VCWPD Date/Tim: 1/6/16 / 1035

Received Printed Name:

Signature:

Affiliation: Date/Tim:

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.

Appendix J. Dry-Weather Analytical Monitoring Results

	Site ID	Port Hueneme-3	Unincorporated-4	Camarillo-4	Fillmore-1
		DRY-HUE3	DRY-UNI4	DRY-CAM4	MO-FIL
	At Major Outfall?	No	No	No	Yes
	Location	Bubbling Springs @ RR xing	Arroyo Santa Rosa at Box Canyon confluence	West Tributary Somis Drain	North Fillmore Drain
	Date	08/18/16	08/17/16	08/17/16	08/16/16
	Time	930	1250	1150	1200
Site Description	Conveyence Type	Natural channel	Box culvert	Trapezoidal channel	Box culvert
	Dimensions	N/A	N/A	N/A	N/A
	Dominant Land Use	Commercial & residential	Residential & rural	Residential, industrial & commercial	Residential
	Site Elevation	10	250	150	430
Weather	Weather	Clear	Clear	Clear	Clear
	Wind Condtion	Calm	Moderate breeze	Slight breeze	Calm
	Air Temp. (^{0}C)	17.3	26.4	28.5	32.4
Trash	Trash (general area)	Light	None	None	Light
	Trash (stream banks)	Light	Light	Light	Light
Observations	Water Clarity	Clear	Clear	Clear	Clear
	Water Color	Clear	Clear	Clear	Clear
	Odors	Other	None	None	None
	Floatables	None	None	None	None
	Foam	None	None	None	None
	Stains/ deposits	None	None	None	None
	Structural condition	Natural channel	Concrete channel	Concrete channel	Rip rap with concrete bottom to natural bottom
	Vegetation Condition	Maintained grass/park	Live herbaceous growth downstream in natural bottom channel	Some grasses	Herbaceous plants
	Biology	Ducks in vicinity	NA	Snails	Aquatic snails
	Algae (suspended)	None	None	None	Green 80%
	Algae (substrate)	None	None	Green 40%	Green 50%
Water Chemistry (Field)	Dissolved Oxygen (%)	22.0	64.3	234.4	129.8
	Dissolved Oxygen (mg/L)	2.07	5.62	16.24	11.17
	Conductivity (µS)	11410	1405	3482	1421
	Specific Conductance (µS)	12280	1487	2966	1496
	Salinity (ppt)	7.0	0.7	1.5	0.8
	Water Temp. (^{0}C)	21.4	22.1	34.2	22.3
	Water Temp. (^{0}F)	70.5	71.8	93.6	72.1
	pH	7.7	8.5	8.55	8.12
	Turbidity (NTU)	7.90	9.30	12.70	0.70
Water Chemistry (Lab)	Total Organic Carbon (mg/L)	7.0	14	50	1.4
	Total Hardness as $CaCO_3$ (mg/L)	1,930	578	724	660
	Total Calcium (mg/L)	279	86.7	180	170
	Total Magnesium (mg/L)	300	87.8	66.8	57.1
	Dissolved Copper (µg/L)	DNQ (0.48)	7.5	6.1	1.1
	Dissolved Lead (µg/L)	DNQ (0.053)	DNQ (0.067)	DNQ (0.19)	ND (<0.031)
	Dissolved Zinc (µg/L)	DNQ (1.5)	DNQ (4.2)	DNQ (4.5)	DNQ (1.6)
	Total Coliform (MPN/100 mL)	68,670	>2419600	193,500	3,654
	E. coli (MPN/100 mL)	8,164	24,196	20	309
Estimated Flow	Flow Status	Ponded	Flowing	Flowing	Flowing
	Water Width (ft.)	20.0	3.0	8.0	12.0
	Water Depth (ft.)	1-3	0.01	0.02	0.20
	Flow Velocity (ft/s)	0.00	0.50	0.01	0.05
	Flow Rate (ft^3/s)	0.00	<0.01	<0.01	0.10
	Comments	Odor: saltwater?			

	Site ID	Moorpark-2	Ojai-6	Oxnard-2	Santa Paula-4
		DRY-MPK2	DRY-OJA6	DRY-OXN2	DRY-SPA4
	At Major Outfall?	No	No	No	No
	Location	Gabbert Drain	Tributary to Fox Barranca	Stroube Drain	Richmond Rd Drain
	Date	08/16/16	08/16/16	08/17/16	08/16/16
	Time	1325	930	1030	1120
Site Description	Conveyence Type	Box culvert	Natural channel	Natural channel	Epoxy coated metal pipe
	Dimensions	5' x 12'	N/A	N/A	1'6"
	Dominant Land Use	Commercial & residential	Residential	Commercial & residential	Residential
	Site Elevation	460	730	70	240
Weather	Weather	Clear	Clear	Clear	Clear
	Wind Condtion	Slight breeze	Calm	Slight breeze	Calm
	Air Temp. (^{0}C)	30.7	18.1	20.6	28.5
Trash	Trash (general area)	Light	Light	Light	None
	Trash (stream banks)	Moderate	Light	Moderate	None
Observations	Water Clarity	Clear	Clear	Clear	Clear
	Water Color	Clear	Clear	Clear	Clear
	Odors	None	None	None	None
	Floatables	None	Other	None	None
	Foam	None	None	2% sparse, thin, white, scum-like	None
	Stains/ deposits	None	None	None	None
	Structural condition	Concrete channel	Engineered channel	Concrete channel to rip rap	Pipe to concreted rip rap
	Vegetation Condition	None	Some vines including blackberry	Dead and alive aquatic plants in natural channel	Some grasses
	Biology	NA	NA	Some BMI	NA
	Algae (suspended)	None	None	None	None
	Algae (substrate)	None	Green 20%	Green 80%	Green 90%
Water Chemistry (Field)	Dissolved Oxygen (%)	136.6	54.3	112.7	106.0
	Dissolved Oxygen (mg/L)	10.64	5.07	9.89	9.07
	Conductivity (µS)	1096	1318	1356	1251
	Specific Conductance (µS)	1039	1512	1430	1376
	Salinity (ppt)	0.5	0.8	0.7	0.7
	Water Temp. (^{0}C)	28.0	18.4	22.2	20.2
	Water Temp. (^{0}F)	82.4	65.1	72.0	68.4
	pH	10.24	7.47	8.35	7.63
	Turbidity (NTU)	11.30	25.00	5.00	0.70
Water Chemistry (Lab)	Total Organic Carbon (mg/L)	38	4.6	8.3	0.51
	Total Hardness as $CaCO_3$ (mg/L)	135	726	488	544
	Total Calcium (mg/L)	50.8	194	129	145
	Total Magnesium (mg/L)	1.95	58.7	40.3	44.1
	Dissolved Copper (µg/L)	18	DNQ (0.36)	3.2	DNQ (0.24)
	Dissolved Lead (µg/L)	DNQ (0.19)	ND (<0.031)	ND (<0.031)	ND (<0.031)
	Dissolved Zinc (µg/L)	DNQ (4.9)	DNQ (1.5)	5.2	DNQ (1.7)
	Total Coliform (MPN/100 mL)	30,760	2,247	61,310	1,616
	E. coli (MPN/100 mL)	20	301	1,529	<10
Estimated Flow	Flow Status	Flowing	Flowing	Flowing	Flowing
	Water Width (ft.)	2.0	4.0	8.0	1.3
	Water Depth (ft.)	0.02	0.15	0.15	0.20
	Flow Velocity (ft/s)	0.20	<0.01	<0.01	1.40
	Flow Rate (ft^3/s)	<0.01	<0.01	<0.01	0.35
	Comments		Floatables: pollen?		

	Site ID	Simi Valley-1	Thousand Oaks-1	Ventura-5
		MO-SIM	MO-THO	DRY-VEN5
	At Major Outfall?	Yes	Yes	No
	Location	Bus Canyon Drain	North Fork Arroyo Conejo at Hill Canyon WWTP	Dent Drain
	Date	08/16/16	08/17/16	08/17/16
	Time	1410	1340	855
Site Description	Conveyence Type	Box culvert	Natural channel	Natural channel
	Dimensions	7' x 16'	N/A	7.5' x 20'(toe) x 35'(top)
	Dominant Land Use	Commercial & residential	Commercial, residential & rural	Residential & rural
	Site Elevation	760	280	60
Weather	Weather	Clear	Clear	Clear
	Wind Condtion	Slight breeze	Slight breeze	Slight breeze
	Air Temp. (^{0}C)	31.3	26.7	17.8
Trash	Trash (general area)	None	None	Light
	Trash (stream banks)	Moderate	None	Light
Observations	Water Clarity	Clear	Clear	Clear
	Water Color	Clear	Clear	Clear
	Odors	None	None	None
	Floatables	None	None	None
	Foam	None	None	None
	Stains/ deposits	None	None	None
	Structural condition	Concrete channel	Rip-rap with natural bottom	Flap gate RCP to natural channel
	Vegetation Condition	None	Cattails, willows, grasses	Abundant aquatic plants, some duckweed.
	Biology	NA	NA	Frog
	Algae (suspended)	None	Green 10%	None
	Algae (substrate)	Green 80%	Green 40%	None
Water Chemistry (Field)	Dissolved Oxygen (%)	156.1	132.5	1.8
	Dissolved Oxygen (mg/L)	12.49	11.09	0.15
	Conductivity (µS)	2701	1995	769
	Specific Conductance (µS)	2638	2034	873
	Salinity (ppt)	1.4	1.0	0.4
	Water Temp. (^{0}C)	26.2	24.0	18.7
	Water Temp. (^{0}F)	79.2	75.2	65.7
	pH	8.1	8.3	6.76
	Turbidity (NTU)	2.30	1.20	28.20
Water Chemistry (Lab)	Total Organic Carbon (mg/L)	2.3	2.9	11
	Total Hardness as $CaCO_3$ (mg/L)	1,020	720	352
	Total Calcium (mg/L)	254	96.5	87.5
	Total Magnesium (mg/L)	94.1	116	32.5
	Dissolved Copper (µg/L)	0.62	0.61	0.54
	Dissolved Lead (µg/L)	ND (<0.031)	DNQ (0.041)	DNQ (0.044)
	Dissolved Zinc (µg/L)	DNQ (1.3)	DNQ (1.0)	DNQ (4.0)
	Total Coliform (MPN/100 mL)	54,750	48,840	11,199
	E. coli (MPN/100 mL)	75	228	408
Estimated Flow	Flow Status	Flowing	Flowing	Ponded
	Water Width (ft.)	4.0	6.0	12.0
	Water Depth (ft.)	0.05	0.15	1-2
	Flow Velocity (ft/s)	1.00	<0.2	0.00
	Flow Rate (ft^3/s)	0.20	0.20	0.00
	Comments		Sampled at first upstream bridge to avoid backflow from WWTP outfall	Ventura drains very dry. Collected from pond below flapgate

Appendix K. Formulas for WQO determination

BASIN PLAN and CALIFORNIA TOXICS RULE OBJECTIVES: FORMULAS

AMMONIA (BASIN PLAN)

Basin Plan Ammonia Objective formula selection is based on wet or dry event, COLD/MIGR designation status, early life stages (ELS) status, and salinity.
See the flow charts below to determine which formula to use:

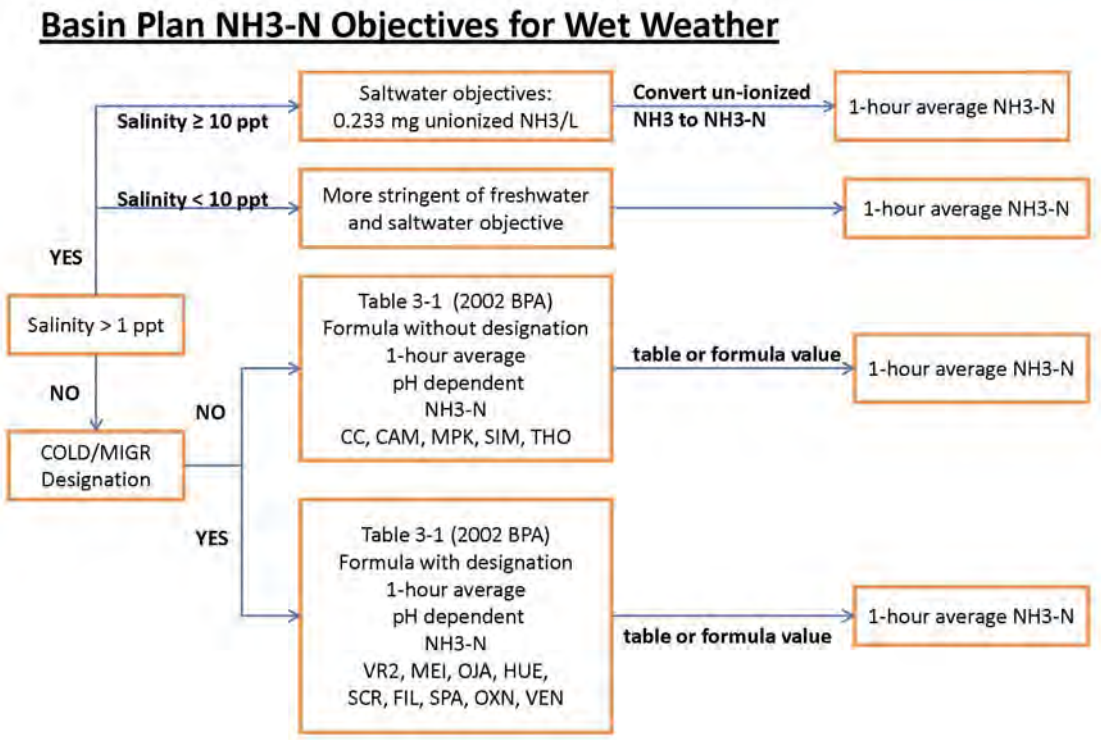


Table 3-1: One hour Average Objective for Ammonia-N for Freshwaters (mg N/L)

COLD and/or MIGR:

$$= \frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$$

NOT COLD and/or MIGR:

$$= \frac{0.411}{1 + 10^{7.204-pH}} + \frac{58.4}{1 + 10^{pH-7.204}}$$

Saltwater 1-hour objective for Ammonia-N

$$= 0.233 * (1 + 10^{\left[\left(9.245+0.116*\frac{19.9273*S}{1000-1.005109*S}\right)+0.0324(298-T)+\frac{(0.0415)P}{T}-pH\right]})$$

Where T= temperature expressed in °K (Note: Kelvin = Celsius + 273)
S = salinity (ppt)
P = pressure (assumed to be 1 atm)

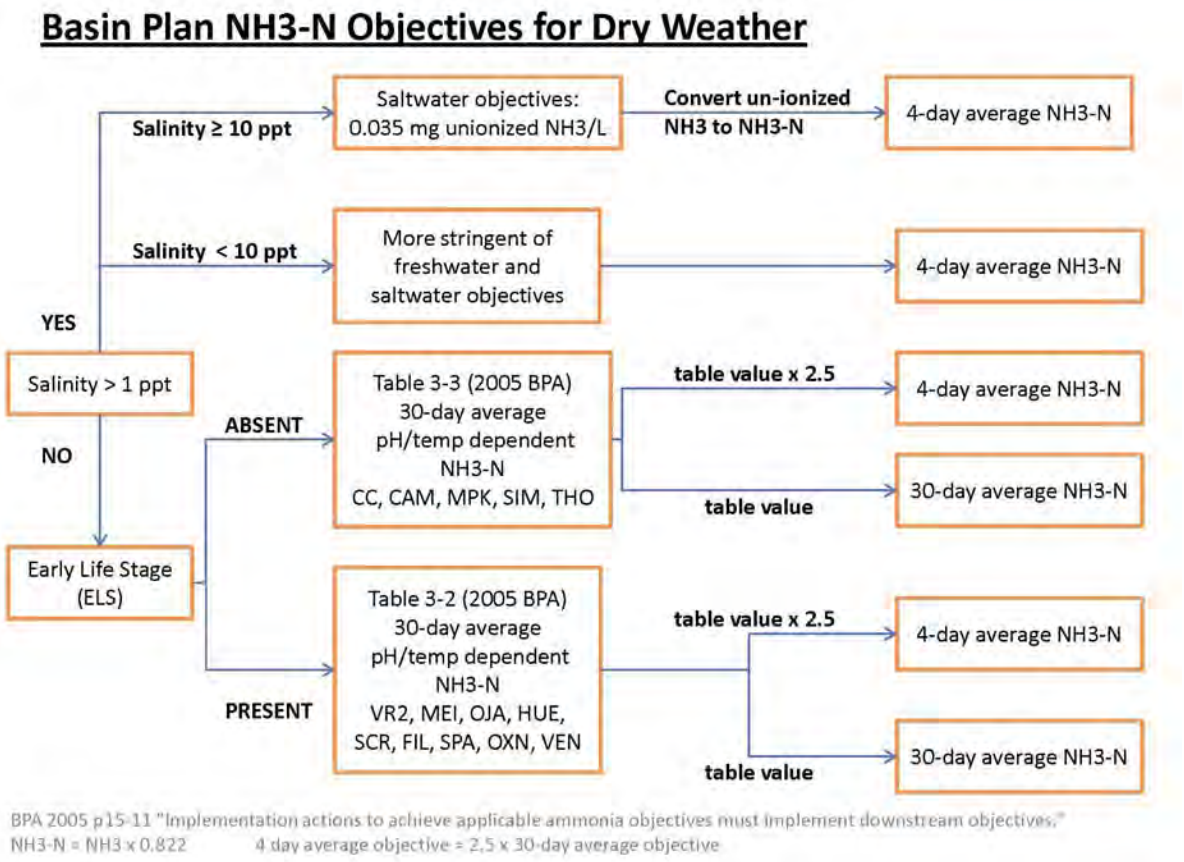


Table 3-2: 30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the "Early Life Stage Present" Condition (mg N/L)

$$= \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85, 1.45 * 10^{0.028*(25-T)}\right)$$

Where T= temperature expressed in °C.
Highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

Table 3-3: 30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the "Early Life Stage Absent" Condition (mg N/L)

$$= \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45 * 10^{0.028*(25-MAX(T,7))}$$

Where T= temperature expressed in °C.
Highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

Saltwater 4-day objective for Ammonia-N

$$= 0.035 * (1 + 10^{\left[\left(9.245+0.116*\frac{19.9273*S}{1000-1.005109*S}\right)+0.0324(298-T)+\frac{(0.0415)P}{T}-pH\right]})$$

Where T= temperature expressed in °K (Note: Kelvin = Celsius + 273)
S = salinity (ppt)
P = pressure (assumed to be 1 atm)

PENTACHLOROPHENOL (CTR)

$$CMC = \exp(1.005(pH) - 4.869)$$
$$CCC = \exp(1.005(pH) - 5.134)$$

METALS (CTR)

[cadmium, chromium, copper, lead, nickel, silver, zinc]

$$CMC = WER * (Acute\ Conversion\ Factor) * (\exp\{m_A[1n(hardness)] + b_A\})$$
$$CCC = WER * (Chronic\ Conversion\ Factor) * (\exp\{m_C[1n(hardness)] + b_C\})$$

Note1: CCC formula contains error in CTR (says “Acute” not “Chronic” for Conversion Factor).
Note2: see note to Table 2 of Paragraph (b)(2) in the CTR, “The term conversion factor represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.”
Note3: Conversion factors (CF) are provided as values in a table for chromium, copper, nickel, silver, and zinc. CF for cadmium and lead are calculated based on hardness, i.e.

$$Cadmium\ Acute\ CF = 1.136672 - [(\ln\{hardness\})\ (0.041838)]$$
$$Cadmium\ Chronic\ CF = 1.101672 - [(\ln\{hardness\})\ (0.041838)]$$
$$Lead\ Acute\ and\ Chronic\ CF = 1.46203 - [(\ln\{hardness\})\ (0.145712)]$$

Note4: Only two WER in Ventura County and no stations discharge within the applicable reaches - Lower Calleguas Creek (Reach 2 which is Portrero Rd south to Mugu Lagoon) has a WER for copper of 3.69 and Mugu Lagoon copper WER is 1.51.