



July 31, 2012

Ms. Danielle Roberts  
Associated Laboratories  
806 North Batavia  
Orange, CA 92868

Dear Ms. Roberts:

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 Marine and Estuarine Organisms EPA/600/R-95-136, 1995* "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT:	Associated Laboratories
SAMPLE I.D.:	LAB #307120
DATE RECEIVED:	17 July - 12
ABC LAB. NO.:	ASC0712.130

#### CHRONIC TOPSMELT SURVIVAL & GROWTH BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TU <sub>c</sub> =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %

GROWTH	NOEC =	100.00 %
	TU <sub>c</sub> =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,



Scott Johnson  
Laboratory Director

# CETIS Summary Report

Report Date: 30 Jul-12 14:59 (p 1 of 2)  
 Test Code: ASC0712.130 | 00-8393-1396

## Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-3110-0293	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 17 Jul-12 13:25	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 24 Jul-12 11:25	Species: Atherinops affinis	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 12-3395-1134	Code: ASC0712.130	Client: Associated Laboratories
Sample Date: 14 Jul-12 14:10	Material: Sample Water	Project:
Receive Date: 17 Jul-12 10:00	Source: Bioassay Report	
Sample Age: 71h (7 °C)	Station: LAB # 307120	

### Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
20-3254-9952	7d Survival Rate	100	>100	N/A	8.88%	1	Wilcoxon Rank Sum Two-Sample Test
18-7296-2803	Mean Dry Biomass-mg	100	>100	N/A	21.3%	1	Equal Variance t Two-Sample Test

### Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
08-4434-1449	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	
14-7249-9491	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
08-4434-1449	7d Survival Rate	Control Resp	0.96	0.8 - NL	Yes	Passes Acceptability Criteria
20-3254-9952	7d Survival Rate	Control Resp	0.96	0.8 - NL	Yes	Passes Acceptability Criteria
14-7249-9491	Mean Dry Biomass-mg	Control Resp	2.128	0.85 - NL	Yes	Passes Acceptability Criteria
18-7296-2803	Mean Dry Biomass-mg	Control Resp	2.128	0.85 - NL	Yes	Passes Acceptability Criteria
20-3254-9952	7d Survival Rate	PMSD	0.08877	NL - 0.25	No	Passes Acceptability Criteria
18-7296-2803	Mean Dry Biomass-mg	PMSD	0.2134	NL - 0.5	No	Passes Acceptability Criteria

### 7d Survival Rate Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.96	0.9266	0.9934	0.8	1	0.04	0.08944	9.32%	0.0%
100		5	1	1	1	1	1	0	0	0.0%	-4.17%

### Mean Dry Biomass-mg Summary

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	2.128	1.999	2.257	1.79	2.622	0.1545	0.3454	16.23%	0.0%
100		5	2.374	2.216	2.532	1.788	2.756	0.1891	0.4228	17.81%	-11.56%

# CETIS Summary Report

Report Date: 30 Jul-12 14:59 (p 2 of 2)  
Test Code: ASC0712.130 | 00-8393-1396

## Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

### 7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	0.8	1
100		1	1	1	1	1

### Mean Dry Biomass-mg Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	2.622	2.184	2.238	1.806	1.79
100		2.464	1.788	2.106	2.756	2.756

**CETIS Analytical Report**

Report Date: 30 Jul-12 14:59 (p 1 of 4)

Test Code: ASC0712.130 | 00-8393-1396

**Pacific Topsmelt 7-d Survival and Growth Test**

**Aquatic Bioassay & Consulting Labs, Inc.**

<b>Analysis ID:</b> 18-7296-2803	<b>Endpoint:</b> Mean Dry Biomass-mg	<b>CETIS Version:</b> CETISv1.8.1
<b>Analyzed:</b> 30 Jul-12 14:59	<b>Analysis:</b> Parametric-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-3110-0293	<b>Test Type:</b> Growth-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 17 Jul-12 13:25	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Laboratory Seawater
<b>Ending Date:</b> 24 Jul-12 11:25	<b>Species:</b> Atherinops affinis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 22h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 12-3395-1134	<b>Code:</b> ASC0712.130	<b>Client:</b> Associated Laboratories
<b>Sample Date:</b> 14 Jul-12 14:10	<b>Material:</b> Sample Water	<b>Project:</b>
<b>Receive Date:</b> 17 Jul-12 10:00	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 71h (7 °C)	<b>Station:</b> LAB # 307120	

Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD
Untransformed	0	C > T	Not Run	Sample passes mean dry biomass-mg endpoint	1.3%

**Equal Variance t Two-Sample Test**

Control	vs	Conc-%	Test Stat	Critical	DF	MSD	P-Value	Decision(α:5%)
Negative Control		100	-1.007	1.86	8	0.454	0.8284	Non-Significant Effect

**Test Acceptability Criteria**

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	2.128	0.85 - NL	Yes	Passes Acceptability Criteria
PMSD	0.2134	NL - 0.5	No	Passes Acceptability Criteria

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.15129	0.15129	1	1.015	0.3432	Non-Significant Effect
Error	1.192368	0.149046	8			
Total	1.343658	0.300336	9			

**Distributional Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	1.499	23.15	0.7046	Equal Variances
Variances	Mod Levene Equality of Variance	0.4829	13.75	0.5131	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9337	0.7411	0.4855	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1692	0.3025	0.6703	Normal Distribution
Distribution	D'Agostino Skewness	0.2528	2.576	0.8004	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.384	3.878	0.3995	Normal Distribution

**Mean Dry Biomass-mg Summary**

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	2.128	1.997	2.259	1.79	2.622	0.1545	0.3454	16.23%	0.0%
100		5	2.374	2.213	2.535	1.788	2.756	0.1891	0.4228	17.81%	-11.56%



**CETIS Analytical Report**

Report Date: 30 Jul-12 14:59 (p 3 of 4)  
 Test Code: ASC0712.130 | 00-8393-1396

**Pacific Topsmelt 7-d Survival and Growth Test**

**Aquatic Bioassay & Consulting Labs, Inc.**

<b>Analysis ID:</b> 20-3254-9952	<b>Endpoint:</b> 7d Survival Rate	<b>CETIS Version:</b> CETISv1.8.1
<b>Analyzed:</b> 30 Jul-12 14:58	<b>Analysis:</b> Nonparametric-Two Sample	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-3110-0293	<b>Test Type:</b> Growth-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 17 Jul-12 13:25	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Laboratory Seawater
<b>Ending Date:</b> 24 Jul-12 11:25	<b>Species:</b> Atherinops affinis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 22h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 12-3395-1134	<b>Code:</b> ASC0712.130	<b>Client:</b> Associated Laboratories
<b>Sample Date:</b> 14 Jul-12 14:10	<b>Material:</b> Sample Water	<b>Project:</b>
<b>Receive Date:</b> 17 Jul-12 10:00	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 71h (7 °C)	<b>Station:</b> LAB # 307120	

Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD
Angular (Corrected)	0	C > T	Not Run	Sample passes 7d survival rate endpoint	8.88%

**Wilcoxon Rank Sum Two-Sample Test**

Control	vs	Conc-%	Test Stat	Critical	DF	Ties	P-Value	Decision(α:5%)
Negative Control		100	30		8	1	0.6548	Non-Significant Effect

**Test Acceptability Criteria**

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.96	0.8 - NL	Yes	Passes Acceptability Criteria
PMSD	0.08877	NL - 0.25	No	Passes Acceptability Criteria

**ANOVA Table**

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.00567079	0.00567079	1	1	0.3466	Non-Significant Effect
Error	0.04536632	0.00567079	8			
Total	0.05103711	0.01134158	9			

**Distributional Tests**

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1	13.75	0.3559	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.6247	0.7411	0.0001	Non-normal Distribution
Distribution	Kolmogorov-Smirnov D	0.4	0.3025	<0.0001	Non-normal Distribution
Distribution	D'Agostino Skewness	3.335	2.576	0.0009	Non-normal Distribution
Distribution	Anderson-Darling A2 Normality	1.796	3.878	<0.0001	Non-normal Distribution

**7d Survival Rate Summary**

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.96	0.926	0.994	0.8	1	0.04	0.08944	9.32%	0.0%
100		5	1	1	1	1	1	0	0	0.0%	-4.17%

**Angular (Corrected) Transformed Summary**

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Contr	5	1.298	1.257	1.338	1.107	1.345	0.04763	0.1065	8.21%	0.0%
100		5	1.345	1.345	1.345	1.345	1.345	0	0	0.0%	-3.67%





# CETIS Analytical Report

Report Date: 30 Jul-12 14:59 (p 2 of 2)  
 Test Code: ASC0712.130 | 00-8393-1396

## Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

<b>Analysis ID:</b> 08-4434-1449	<b>Endpoint:</b> 7d Survival Rate	<b>CETIS Version:</b> CETISv1.8.1
<b>Analyzed:</b> 30 Jul-12 14:59	<b>Analysis:</b> Linear Interpolation (ICPIN)	<b>Official Results:</b> Yes
<b>Batch ID:</b> 14-3110-0293	<b>Test Type:</b> Growth-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 17 Jul-12 13:25	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Laboratory Seawater
<b>Ending Date:</b> 24 Jul-12 11:25	<b>Species:</b> Atherinops affinis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 22h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 12-3395-1134	<b>Code:</b> ASC0712.130	<b>Client:</b> Associated Laboratories
<b>Sample Date:</b> 14 Jul-12 14:10	<b>Material:</b> Sample Water	<b>Project:</b>
<b>Receive Date:</b> 17 Jul-12 10:00	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 71h (7 °C)	<b>Station:</b> LAB # 307120	

### Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	7747401	280	Yes	Two-Point Interpolation

### Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.96	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	N/A	N/A
EC10	>100	N/A	N/A	<1	N/A	N/A
EC15	>100	N/A	N/A	<1	N/A	N/A
EC20	>100	N/A	N/A	<1	N/A	N/A
EC25	>100	N/A	N/A	<1	N/A	N/A
EC40	>100	N/A	N/A	<1	N/A	N/A
EC50	>100	N/A	N/A	<1	N/A	N/A

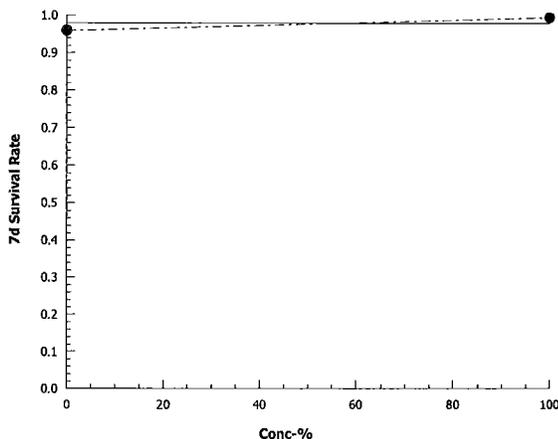
### 7d Survival Rate Summary

Conc-%	Control Type	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	0.96	0.8	1	0.04	0.08944	9.32%	0.0%	24	25
100		5	1	1	1	0	0	0.0%	-4.17%	25	25

### 7d Survival Rate Detail

Conc-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	1	0.8	1
100		1	1	1	1	1

### Graphics



# CETIS Measurement Report

Report Date: 30 Jul-12 14:59 (p 1 of 1)  
 Test Code: ASC0712.130 | 00-8393-1396

## Pacific Topsmelt 7-d Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

<b>Batch ID:</b> 14-3110-0293	<b>Test Type:</b> Growth-Survival (7d)	<b>Analyst:</b>
<b>Start Date:</b> 17 Jul-12 13:25	<b>Protocol:</b> EPA/600/R-95/136 (1995)	<b>Diluent:</b> Laboratory Seawater
<b>Ending Date:</b> 24 Jul-12 11:25	<b>Species:</b> Atherinops affinis	<b>Brine:</b> Not Applicable
<b>Duration:</b> 6d 22h	<b>Source:</b> Aquatic Biosystems, CO	<b>Age:</b>
<b>Sample ID:</b> 12-3395-1134	<b>Code:</b> ASC0712.130	<b>Client:</b> Associated Laboratories
<b>Sample Date:</b> 14 Jul-12 14:10	<b>Material:</b> Sample Water	<b>Project:</b>
<b>Receive Date:</b> 17 Jul-12 10:00	<b>Source:</b> Bioassay Report	
<b>Sample Age:</b> 71h (7 °C)	<b>Station:</b> LAB # 307120	

### Dissolved Oxygen-mg/L

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	6.713	6.433	6.992	5.4	7.7	0.2918	0.8254	12.3%	0
100		8	6.775	6.323	7.227	4.7	8.4	0.472	1.335	19.7%	0
Overall		16	6.744			4.7	8.4				0 (0%)

### pH-Units

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.788	7.766	7.809	7.7	7.9	0.02266	0.06409	0.82%	0
100		8	7.938	7.92	7.955	7.9	8	0.01829	0.05174	0.65%	0
Overall		16	7.863			7.7	8				0 (0%)

### Salinity-ppt

Conc-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	34	34	34	34	34	0	0	0.0%	0
100		8	34	34	34	34	34	0	0	0.0%	0
Overall		16	34			34	34				0 (0%)

### Temperature-°C

Conc-%	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
100		8	21	21	21	21	21	0	0	0.0%	0
Overall		16	21			21	21				0 (0%)

### Dissolved Oxygen-mg/L

Conc-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	6.8	5.4	5.9	7.4	7.6	7.7	6.4	6.5
100		7.4	6.6	5.8	8.4	7.9	7.9	5.5	4.7

### pH-Units

Conc-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.7	7.7	7.8	7.8	7.8	7.8	7.9	7.8
100		7.9	7.9	8	7.9	7.9	7.9	8	8

### Salinity-ppt

Conc-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	34	34	34	34	34	34	34	34
100		34	34	34	34	34	34	34	34

### Temperature-°C

Conc-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	21	21	21	21	21	21	21	21
100		21	21	21	21	21	21	21	21



