

# Chronic Toxicity Testing Results for Wyckoff Eagle Harbor Groundwater Treatment Plant

Monitoring Period: September 2021

Prepared for:

Jacobs 1100 112<sup>th</sup> Ave NE Suite 500 Bellevue, WA, 98004

Prepared by:

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Date Submitted: October 22, 2021

### Data Quality Assurance:

- Enthalpy Analytical is accredited in accordance with NELAP by the State of Oregon Environmental Laboratory Accreditation Program (ORELAP ID 4053). It is also certified by the State of California Water Resources Control Board Environmental Laboratory Accreditation Program (Certificate No. 1802) and the State of Washington Department of Ecology (Lab ID C552). Specific fields of testing applicable to each accreditation are available upon request.
- All data have been reviewed and verified.
- All test results have met minimum test acceptability criteria under their respective US EPA protocols, unless otherwise noted in this report.
- All tests have met internal Quality Assurance Program requirements.

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# Introduction

A toxicity test was performed using a groundwater composite sample collected from the Wyckoff Eagle Harbor Groundwater Treatment Plant on Bainbridge Island in Washington. This test was performed to satisfy quarterly monitoring requirements according to the project Quality Assurance Project Plan (QAPP 2013). The chronic bioassay was conducted using the bivalve *Mytilus galloprovincialis* (Mediterranean mussel). Testing was performed at Enthalpy Analytical located in San Diego, California.

#### **Materials and Methods**

The groundwater sample was collected into a low-density polyethylene cubitainer by Jacobs personnel, packed in a cooler containing ice, and shipped overnight to Enthalpy. Appropriate chain-of-custody (COC) procedures were employed during collection and transport. Upon arrival at the laboratory, the cooler was opened, the sample inspected, and the contents verified against information on the COC form. Standard water quality parameters were measured and recorded on a sample check-in form and are summarized in Table 1. The sample was stored at 4°C in the dark until used for testing.

Sample ID	092821			
Enthalpy Log-in Number	21-0991			
Collection Date; Time	9/28/2021; 0928h			
Receipt Date; Time	9/29/2021; 0940h			
Receipt Temperature (°C)	4.0			
Dissolved Oxygen (mg/L)	7.9			
рН	7.56			
Conductivity (µS/cm)	NM			
Salinity (ppt)	10.6			
Alkalinity (mg/L CaCO₃)	409			
Total Chlorine (mg/L)	< 0.02			
Total Ammonia (mg/L as N)	2.3			

Table 1. Sample Information

NM = not measured

### **Test Methods**

Chronic toxicity testing was conducted according to the method set forth in USEPA (1995). This method is summarized in Table 2.

Test Period	9/29/2021, 1545h to 10/1/2021, 1440h
Test Organism	Mytilus galloprovincialis
Test Organism Source	M-Rep (Carlsbad, CA)
Test Organism Age	4 hours post fertilization
Test Duration	48 ± 2 hours
Test Type	Static
Test Chamber, Test Solution Volume	30 mL glass vial, 10 mL
Test Temperature	15 ± 1°C
Dilution Water	Laboratory Seawater (Source: Scripps Institution of Oceanography [SIO] intake) diluted with de-ionized water
Additional Control	Brine Control (de-ionized water and hypersaline brine)
Test Salinity	30 ± 2 ppt
Source of Salinity	Hypersaline brine made by freezing seawater to a salinity of 94.9 ppt
Test Concentrations (% sample)	76.1 <sup>a</sup> , 35, 18, 9, 4, and 2%, lab and brine controls
Number of Replicates	5
Photoperiod	16 hours light/8 hours dark
Test Protocol	EPA/600/R-95/136
Test Acceptability Criteria for Controls	$\geq$ 50% mean survival, $\geq$ 90% mean development rate
Reference Toxicant	Copper chloride <sup>b</sup>
Statistical Software	CETIS™ 1.8.7.20

#### Table 2. Summary of Methods for the Bivalve Larval Development Test

<sup>a</sup> Highest concentration tested due to the addition of hypersaline brine

<sup>b</sup> A deviation to the QAPP was approved by USEPA and Washington Department of Ecology to conduct reference toxicant testing with copper chloride. See QA section.

### Results

There were no statistically significant effects detected in any effluent concentration tested for the survival or development endpoint of the bivalve test. This results in a no observed effect concentration (NOEC) of 76.1 (the highest concentration tested) and a chronic toxic unit ( $TU_c$ ) of less than 1.3 for both endpoints.

Results for the chronic toxicity test are summarized in Tables 3 and 4. Individual statistical summaries for the test and copies of the laboratory bench sheets are provided in Appendix A. The sample check-in sheet and COC form are provided in Appendices B and C, respectively.

Table 3. Summary	y of Statistical Results for the Chron	ic Toxicity Tests
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Species	Endpoint NOEC LOEC (% effluent) (% effluer		LOEC (% effluent)	Toxic Unit (TU <sub>c</sub> )	EC <sub>25</sub> (% effluent)
Piyohyo	Normal Development	76.1	> 76.1	< 1.3	> 76.1
Bivalve	Survival	76.1	> 76.1	< 1.3	> 76.1

NOEC = No Observed Effect Concentration

LOEC = Lowest Observed Effect Concentration

Chronic Toxic Unit (TU<sub>c</sub>) = 100/NOEC. NOTE: Since 100% sample was not tested, the TU<sub>c</sub> value can only be calculated up to the highest concentration tested. If no toxicity is observed at this concentration, the TU<sub>c</sub> is reported as less than the calculated value. Effect Concentration 25 (EC<sub>25</sub>) = Concentration expected to cause an effect to 25% of the organisms

Concentration (% Effluent)	Mean Survival (%)	Mean Normal Development (%)
0 (Brine Control)	89.2	99.3
0 (Lab Control)	91.8	99.5
2	96.9	99.6
4	94.9	99.6
9	87.5	99.5
18	92.2	99.3
35	90.8	99.4
76.1ª	95.3	99.6

#### Table 4. Detailed Results for the Bivalve Development Chronic Toxicity Test

<sup>a</sup> Highest concentration tested due to the addition of hypersaline brine

# **Quality Assurance**

The sample was received within the required 36-hour holding time, in good condition, and within the appropriate temperature range of 0-6°C. All control acceptability criteria were met and water quality parameters remained within the appropriate ranges throughout the test. Statistical analyses followed standard USEPA flowchart selections. Dose-response relationships were reviewed to ensure the reliability of the results. Based on the dose response observed, the calculated effects concentrations were deemed reliable. Minor QA/QC issues that were unlikely to have any bearing on the final test results, such as slight temperature deviations, are noted on the data sheets and a list of qualifier codes used on bench data sheets is presented in Appendix D.

### **Reference Toxicant**

Results for the reference toxicant tests used to monitor laboratory performance and test organism sensitivity are summarized in Table 5. A deviation to the QAPP was approved by USEPA and Washington Department of Ecology to conduct reference toxicant testing with copper chloride rather than copper sulfate. The results for the concurrent reference toxicant test were within the acceptable range of the mean historical test results plus or minus two standard deviations for development and survival. Reference toxicant statistical summaries and laboratory bench sheets are provided in Appendix E.

#### Table 5. Reference Toxicant Test Results

Species and Endpoint	NOEC (%)	<b>EC₅₀</b> (μg/L copper)	<b>Historical Mean ± 2 SD</b> (μg/L copper)	<b>CV</b> (%)
Bivalve Survival Rate	10	28.5	28.3 ± 10.2	18.0
Bivalve Normal Development	5	9.72	8.85 ± 5.21	29.4

NOEC = No Observed Effect Concentration

Effect Concentration 50 (EC<sub>50</sub>) = Concentration expected to cause an effect to 50% of the organisms

Historical Mean  $\pm 2$  SD = The mean EC<sub>50</sub> from the previous 20 tests performed by the laboratory, plus or minus two standard deviations (SD)

CV = Coefficient of Variation

#### References

- CH2MHill. 2013. Quality Assurance Project Plan Groundwater Treatment Plant Operations, Maintenance, Bainbridge, Washington. Prepared for USEPA Region 10 June 5, 2013.
- Standard Guide for Conducting Static Acute Toxicity Tests with Embryos of Four Species of Saltwater Bivalve Molluscs. 1989. ASTM Standard E 724-89.
- Tidepool Scientific Software. 2000-2013. CETIS Comprehensive Environmental Toxicity Information System Software, Version 1.8.7.20.
- USEPA. 1995. Short-Term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to the West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. pp. 209-258 and 389-465.
- Washington State Department of Ecology. 2016. Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria. Publication No. WQ-R-95-80. Revised June 2016

Appendix A Statistical Summaries and Raw Bench Sheets

# **CETIS Summary Report**

Report Date: Test Code:

19 Oct-21 11:52 (p 1 of 4) 2109-S088 | 20-8006-6372

Bivalve Larval	Survival and Developm	nent Test						Nautilus Environmental (CA)
Batch ID: Start Date: Ending Date: Duration:	29 Sep-21 15:45         P           01 Oct-21 14:40         S	est Type: Protocol: Species: Source:	Development- EPA/600/R-95 Mytilus gallopr M-Rep, Carlsb	5/136 (1995) rovincialis		Dil	ne: F	Diluted Natural Seawater Frozen Seawater
•	28 Sep-21 09:28         N           29 Sep-21 09:40         S	Code: flaterial: Source: Station:	21-0991 Effluent Samp Jacobs Wyckoff	le			ent: J oject:	acobs
Comparison S	ummary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	τu	Metho	d
15-6404-9811 16-5680-0379 09-6800-5518	Combined Development Development Rate Survival Rate	t Ra 76.1 76.1 76.1	>76.1 >76.1 >76.1	NA NA NA	20.4% 1.13% 20.1%	<ul> <li><i>4</i>1.314</li> <li><i>4</i>1.314</li> <li><i>4</i>1.314</li> </ul>	Steel N	tt Multiple Comparison Test /any-One Rank Sum Test tt Multiple Comparison Test
Point Estimate	e Summary							
Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	τυ	Metho	d
01-3694-7731	Combined Development	Ra EC25 EC50	>76.1 >76.1	N/A N/A	N/A N/A	<1.314 <1.314	Linear	Interpolation (ICPIN)
13-0826-8706	Development Rate	EC25 EC50	>76.1 >76.1	N/A N/A	N/A N/A	<1.314 <1.314	Linear	Interpolation (ICPIN)
04-3330-6583	Survival Rate	EC25 EC50	>76.1 >76.1	N/A N/A	N/A N/A	<1.314 <1.314	Linear	Interpolation (ICPIN)
Test Acceptab	ility							
Analysis ID	Endpoint	Attrib	ute	Test Stat	TAC Lim	its	Overla	p Decision
13-0826-8706 16-5680-0379 04-3330-6583 09-6800-5518	Development Rate Development Rate Survival Rate Survival Rate	Contro Contro	ol Resp ol Resp ol Resp ol Resp	0.9932 0.9932 0.8922 0.8922	0.9 - NL 0.9 - NL 0.5 - NL 0.5 - NL		Yes Yes Yes Yes	Passes Acceptability Criteria Passes Acceptability Criteria Passes Acceptability Criteria Passes Acceptability Criteria
15-6404-9811	Combined Development	Ra PMSD		0.2038	NL - 0.25		No	Passes Acceptability Criteria

### **CETIS Summary Report**

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#### 19 Oct-21 11:52 (p 2 of 4) 2109-S088 | 20-8006-6372

Report Date:

Test Code:

Bivalve Larval Survival and Development Test Nautilus Environmental (CA)									nental (CA)		
Combined	Combined Development Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.8863	0.7647	1	0.7451	0.9902	0.0438	0.09794	11.05%	0.0%
0	Lab Control	5	0.9137	0.8044	1	0.7941	1	0.03939	0.08807	9.64%	-3.1%
2		5	0.9651	0.9048	1	0.8824	1	0.02172	0.04856	5.03%	-8.89%
4		5	0.9453	0.8588	1	0.8431	1	0.03117	0.06969	7.37%	-6.66%
9		5	0.8706	0.7199	1	0.7059	1	0.05427	0.1213	13.94%	1.77%
18		5	0.9157	0.809	1	0.8235	1	0.03842	0.08592	9.38%	-3.32%
35		5	0.902	0.7824	1	0.7549	1	0.04307	0.09631	10.68%	-1.77%
76.1		5	0.949	0.8783	1	0.8627	1	0.02546	0.05693	6.0%	-7.08%
Developme	Development Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.9932	0.9811	1	0.9789	1	0.00436	0.009749	0.98%	0.0%
0	Lab Control	5	0.9954	0.9876	1	0.9878	1	0.00282	0.006305	0.63%	-0.22%
2		5	0.9964	0.9903	1	0.9907	1	0.002192	0.004902	0.49%	-0.33%
4		5	0.9961	0.9894	1	0.9892	1	0.00242	0.00541	0.54%	-0.29%
9		5	0.995	0.9863	1	0.9863	1	0.003105	0.006943	0.7%	-0.18%
18		5	0.993	0.9801	1	0.9767	1	0.004651	0.0104	1.05%	0.02%
35		5	0.9936	0.9864	1	0.9888	1	0.002599	0.005812	0.58%	-0.05%
76.1		5	0.9961	0.9894	1	0.99	1	0.002414	0.005398	0.54%	-0.29%
Survival Ra	ate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.8922	0.7729	1	0.7549	0.9902	0.04296	0.09606	10.77%	0.0%
0	Lab Control	5	0.9176	0.8127	1	0.8039	1	0.03779	0.08451	9.21%	-2.86%
2		5	0.9686	0.9051	1	0.8824	1	0.02287	0.05113	5.28%	-8.57%
4		5	0.949	0.8623	1	0.8431	1	0.03122	0.06981	7.36%	-6.37%
9		5	0.8745	0.7286	1	0.7157	1	0.05256	0.1175	13.44%	1.98%
18		5	0.9216	0.8242	1	0.8431	1	0.03508	0.07843	8.51%	-3.3%
35		5	0.9078	0.7865	1	0.7549	1	0.04369	0.0977	10.76%	-1.76%
76.1		5	0.9529	0.8787	1	0.8627	1	0.02674	0.0598	6.28%	-6.81%

#### CETIS

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0.9706

1

1

1

1

1

1

0.9118

0.9804

0.9608

0.8431

0.8235

0.9216

0.7549

0.9216

1

0.9902

0.8529

0.8431

0.9412

1

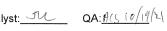
CETIS	Summary Repo	ort					Report Date: Test Code:	19 Oct-21 11:52 (p 3 of 4) 2109-S088   20-8006-6372
Bivalve L	_arval Survival and I	Developme	ent Test					Nautilus Environmental (CA)
Combine	d Development Rate	e Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Brine Control	0.7451	0.8333	0.9902	0.951	0.9118		
0	Lab Control	0.7941	0.902	1	1	0.8725		
2		0.9907	0.8824	1	0.9608	0.9914		
4		0.9912	1	0.902	0.8431	0.9902		
9		0.7059	0.9804	1	0.8235	0.8431		
18		1	0.8235	1	0.9216	0.8333		
35		0.8627	0.9608	1	0.7549	0.9314		
76.1		0.8627	1	0.9706	0.9216	0.9903		
Developn	nent Rate Detail							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
D	Brine Control	0.987	1	1	1	0.9789		
D	Lab Control	0.9878	0.9892	1	1	1		
2		0.9907	1	1	1	0.9914		
4		0.9912	1	0.9892	1	1		
9		0.9863	1	1	1	0.9885		
18		1	0.9767	1	1	0.9884		
35		0.9888	0.9899	1	1	0.9896		
76.1		1	1	0.99	1	0.9903		
Survival	Rate Detail							
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Brine Control	0.7549	0.8333	0.9902	0.951	0.9314		
0	Lab Control	0.8039	0.9118	1	1	0.8725		
~								

Analyst: \_\_\_\_\_ QA:A(5 10/19/2)

### **CETIS Summary Report**

CETIS	™ v1	.8.7.20
0 - 110		.0.1

Analyst:	N

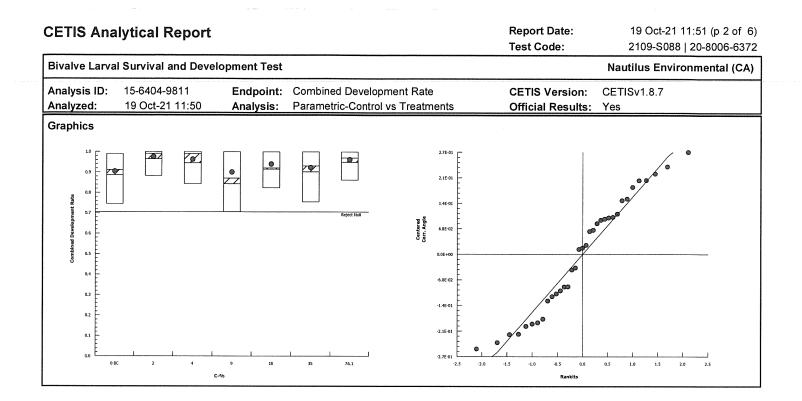


arval Survival and D	Developmer	nt Test					Nautilus Environmental (CA)
Development Rate	Binomials	;		********			
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
Brine Control	76/102	85/102	101/102	97/102	93/102		
Lab Control	81/102	92/102	117/117	111/111	89/102		
	107/108	90/102	102/102	98/102	115/116		
	112/113	102/102	92/102	86/102	101/102		
	72/102	100/102	114/114	84/102	86/102		
	104/104	84/102	102/102	94/102	85/102		
	88/102	98/102	113/113	77/102	95/102		
	88/102	109/109	99/102	94/102	102/103		
ent Rate Binomials	;						
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
Brine Control	76/77	85/85	101/101	97/97	93/95		
Lab Control	81/82	92/93	117/117	111/111	89/89		
	107/108	90/90	102/102	98/98	115/116		
	112/113	102/102	92/93	86/86	101/101		
	72/73	100/100	114/114	84/84	86/87		
	104/104	84/86	102/102	94/94	85/86		
	88/89	98/99	113/113	77/77	95/96		
	88/88	109/109	99/100	94/94	102/103		
ate Binomials			****				
Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
Brine Control	77/102	85/102	101/102	97/102	95/102		
Lab Control	82/102	93/102	102/102	102/102	89/102		
	102/102	90/102	102/102	98/102	102/102		
	102/102	102/102	93/102	86/102	101/102		
	73/102	100/102	102/102	84/102	87/102		
	102/102	86/102	102/102	94/102	86/102		
	89/102	99/102	102/102	77/102	96/102		
	88/102	102/102	100/102	94/102	102/102		
	d Development Rate Control Type Brine Control Lab Control ent Rate Binomials Control Type Brine Control Lab Control Lab Control State Binomials Control Type Brine Control	Control Type         Rep 1           Brine Control         76/102           Lab Control         81/102           107/108         112/113           72/102         104/104           88/102         88/102           ent Rate Binomials         88/102           Control Type         Rep 1           Brine Control         76/70           Lab Control         81/82           102         107/108           Brine Control         76/77           Lab Control         81/82           107/108         112/113           72/73         104/104           88/89         88/88           Brine Control         81/82           107/108         112/113           72/73         104/104           88/89         88/88           Brine Control         82/102           Brine Control         77/102           Lab Control         82/102           102/102         102/102           102/102         73/102           102/102         73/102           102/102         89/102	Brine Control Lab Control         76/102 81/102         85/102 92/102           107/108         90/102         107/108         90/102           112/113         102/102         72/102         100/102           104/104         84/102         88/102         98/102           88/102         98/102         88/102         109/109           ent Rate Binomials           Control Type         Rep 1         Rep 2           Brine Control         76/77         85/85           Lab Control         81/82         92/93           107/108         90/90         112/113         102/102           72/73         100/100         104/104         84/86           88/89         98/99         88/88         109/109           Eate Binomials         Control Type         Rep 1         Rep 2           Brine Control         77/102         85/102         88/88         109/109           Eate Binomials         Control         77/102         85/102         102/102         90/102           Lab Control         72/102         102/102         102/102         102/102         102/102           Lab Control         82/102         93/102         102/102         102/102	Control Type         Rep 1         Rep 2         Rep 3           Brine Control         76/102         85/102         101/102           Lab Control         81/102         92/102         117/117           107/108         90/102         102/102           112/113         102/102         92/102           72/102         100/102         114/114           104/104         84/102         102/102           88/102         98/102         113/113           88/102         98/102         113/113           88/102         109/109         99/102           ent Rate Binomials           Control Type         Rep 1         Rep 2         Rep 3           Brine Control         76/77         85/85         101/101           Lab Control         81/82         92/93         117/117           107/108         90/90         102/102         12/102           112/113         102/102         92/93         72/73         100/100         114/114           104/104         84/86         102/102         88/89         98/99         113/113           88/89         98/99         113/113         88/88         109/109         99/100	Control Type         Rep 1         Rep 2         Rep 3         Rep 4           Brine Control         76/102         85/102         101/102         97/102           Lab Control         81/102         92/102         117/117         111/111           107/108         90/102         102/102         98/102           112/113         102/102         92/102         86/102           72/102         100/102         114/114         84/102           104/104         84/102         102/102         94/102           88/102         98/102         113/113         77/102           88/102         98/102         113/113         77/102           88/102         98/102         113/113         77/97           88/102         109/109         99/102         94/102           ent Rate Binomials         E         Control Type         Rep 1         Rep 2         Rep 3         Rep 4           Brine Control         76/77         85/85         101/101         97/97           Lab Control         81/82         92/93         117/117         111/111           107/108         90/90         102/102         98/98           112/113         102/102         94/94 <td>Development Rate         Binomials           Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/102         85/102         101/102         97/102         93/102           Lab Control         81/102         92/102         117/117         111/111         89/102           107/108         90/102         102/102         98/102         115/116           112/113         102/102         92/102         86/102         101/102           72/102         100/102         114/114         84/102         86/102           104/104         84/102         102/102         94/102         85/102           88/102         98/102         113/113         77/102         95/102           88/102         109/109         99/102         94/102         102/103           Brine Control         76/77         85/85         101/101         97/97         93/95           Lab Control         76/77         85/85         101/101         97/97         93/95           Lab Control         76/77         85/85         101/101         97/97         93/95           Lab Control         77/13         100/100         114/1</td> <td>Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/102         85/102         101/102         97/102         93/102           Lab Control         81/102         92/102         117/117         111/111         89/102         115/116           107/108         90/102         102/102         98/102         115/116         112/113         102/102         98/102         101/102           72/102         100/102         114/114         84/102         86/102         101/102           72/102         100/102         114/114         84/102         86/102         102/102           88/102         98/102         113/113         77/102         95/102         86/102           88/102         109/109         99/102         94/102         102/103         102/103           ent Rate Binomials           Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/77         8/8/8         101/101         97/97         93/95         115/116           112/113         102/102         98/98         115/116         112/113         102/102         93/96<!--</td--></td>	Development Rate         Binomials           Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/102         85/102         101/102         97/102         93/102           Lab Control         81/102         92/102         117/117         111/111         89/102           107/108         90/102         102/102         98/102         115/116           112/113         102/102         92/102         86/102         101/102           72/102         100/102         114/114         84/102         86/102           104/104         84/102         102/102         94/102         85/102           88/102         98/102         113/113         77/102         95/102           88/102         109/109         99/102         94/102         102/103           Brine Control         76/77         85/85         101/101         97/97         93/95           Lab Control         76/77         85/85         101/101         97/97         93/95           Lab Control         76/77         85/85         101/101         97/97         93/95           Lab Control         77/13         100/100         114/1	Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/102         85/102         101/102         97/102         93/102           Lab Control         81/102         92/102         117/117         111/111         89/102         115/116           107/108         90/102         102/102         98/102         115/116         112/113         102/102         98/102         101/102           72/102         100/102         114/114         84/102         86/102         101/102           72/102         100/102         114/114         84/102         86/102         102/102           88/102         98/102         113/113         77/102         95/102         86/102           88/102         109/109         99/102         94/102         102/103         102/103           ent Rate Binomials           Control Type         Rep 1         Rep 2         Rep 3         Rep 4         Rep 5           Brine Control         76/77         8/8/8         101/101         97/97         93/95         115/116           112/113         102/102         98/98         115/116         112/113         102/102         93/96 </td

Report Date: Test Code:

19 Oct-21 11:52 (p 4 of 4) 2109-S088 | 20-8006-6372

CETIS An	alytical Rep	ort						ort Date: Code:		Oct-21 11: 9-S088   2	0-8006-637
Bivalve Larv	al Survival and I	Developme	ent Test						Nautilus	s Environr	nental (CA)
Analysis ID: Analyzed:	15-6404-9811 19 Oct-21 11:5		•	mbined Devo rametric-Cor	•			IS Version: cial Results		.8.7	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr	rected)	NA	C > T	NA	NA	an a	20.4%	76.1	>76.1	NA	1.314
Dunnett Mul	tiple Compariso	n Test									
Control	vs C-%		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	(α:5%)		
Brine Control	2		-1.462	2.407	0.259 8	0.9972	CDF	Non-Sign	ificant Effect		
	4		-1.127	2.407	0.259 8	0.9916	CDF	Non-Sign	ificant Effect		
	9		0.05118	2.407	0.259 8	0.8428	CDF	Non-Sign	ificant Effect		
	18		-0.6278	2.407	0.259 8	0.9653	CDF	Non-Sign	ificant Effect		
	35		-0.3069	2.407	0.259 8	0.9244	CDF	Non-Sign	ificant Effect		
	76.1		-1.101	2.407	0.259 8	0.9909	CDF	Non-Sign	ificant Effect		
ANOVA Table	е		ч на								
Source	Sum Squ	ares	Mean Squ	uare	DF	F Stat	P-Value	Decision	(α:5%)		
Between	0.122497	1	0.020416	19	6	0.7074	0.6463	Non-Signi	ificant Effect		
Error	0.808133	8	0.0288619	92	28						
Total	0.930630	9			34						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances		Equality of V	/ariance	Test Stat 1.717	Critical 16.81	<b>P-Value</b> 0.9438	Decision Equal Var		1989-1999-1999-1999-1999-1999-1999-1999		
	Bartlett E	Equality of ∖ Wilk W Nor						iances			
Variances Distribution	Bartlett E	Wilk W Nor	mality	1.717	16.81	0.9438	Equal Var	iances			
Variances Distribution	Bartlett E Shapiro-	Wilk W Nor	mality	1.717	16.81	0.9438	Equal Var	iances	Std Err	CV%	%Effect
Variances Distribution Combined D	Bartlett E Shapiro- evelopment Rate	Wilk W Nor	mality	1.717 0.9498	16.81 0.9146	0.9438 0.1115	Equal Var Normal D	iances istribution	<b>Std Err</b> 0.0438	<b>CV%</b> 11.05%	0.0%
Variances Distribution Combined D C-% 0 2	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5	mality Mean 0.8863 0.9651	1.717 0.9498 95% LCL 0.7647 0.9048	16.81 0.9146 <b>95% UCL</b>	0.9438 0.1115 <b>Median</b>	Equal Var Normal D Min	iances istribution Max			
Variances Distribution Combined D C-% 0 2 4	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5 5 5	mality Mean 0.8863 0.9651 0.9453	1.717 0.9498 95% LCL 0.7647 0.9048 0.8588	16.81 0.9146 <b>95% UCL</b> 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902	Equal Var Normal D Min 0.7451 0.8824 0.8431	iances istribution Max 0.9902	0.0438	11.05%	0.0% -8.89% -6.66%
Variances Distribution Combined D C-% 0 2 4 9	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5	Mean 0.8863 0.9651 0.9453 0.8706	1.717 0.9498 95% LCL 0.7647 0.9048 0.8588 0.7199	16.81 0.9146 <b>95% UCL</b> 1 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431	Equal Var Normal D Min 0.7451 0.8824	Max 0.9902	0.0438 0.02172	11.05% 5.03% 7.37% 13.94%	0.0% -8.89% -6.66% 1.77%
Variances Distribution Combined D C-% 0 2 4 9 18	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5	Mean 0.8863 0.9651 0.9453 0.8706 0.9157	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1	0.9438 0.1115 <b>Median</b> 0.9118 0.9907 0.9902 0.8431 0.9216	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235	Max 0.9902 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842	11.05% 5.03% 7.37% 13.94% 9.38%	0.0% -8.89% -6.66% 1.77% -3.32%
Variances Distribution Combined Da C-% 0 2 4 9 18 35	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1 1 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549	Max 0.9902 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307	11.05% 5.03% 7.37% 13.94% 9.38% 10.68%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77%
Variances Distribution Combined D C-% 0 2 4 9 18	Bartlett E Shapiro-' evelopment Rate Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5	Mean 0.8863 0.9651 0.9453 0.8706 0.9157	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1	0.9438 0.1115 <b>Median</b> 0.9118 0.9907 0.9902 0.8431 0.9216	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235	Max 0.9902 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842	11.05% 5.03% 7.37% 13.94% 9.38%	0.0% -8.89% -6.66% 1.77% -3.32%
Variances Distribution Combined Da C-% 0 2 4 9 18 35 76.1 Angular (Cor	Bartlett E Shapiro- evelopment Rate Control Type Brine Control	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1 1 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549	Max 0.9902 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307	11.05% 5.03% 7.37% 13.94% 9.38% 10.68%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-%	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949 mary Mean	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1 1 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549	Max 0.9902 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307	11.05% 5.03% 7.37% 13.94% 9.38% 10.68%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77%
Variances Distribution Combined Do C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0	Bartlett E Shapiro- evelopment Rate Control Type Brine Control	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	Mean           0.8863           0.9651           0.9453           0.8706           0.9157           0.902           0.949	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784	16.81 0.9146 <b>95% UCL</b> 1 1 1 1 1 1 1 1	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9216 0.9314 0.9706 Median 1.269	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627	Max 0.9902 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08% <b>%Effect</b> 0.0%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	Mean           0.8863           0.9651           0.9453           0.8706           0.9157           0.902           0.949           mary           Mean           1.256           1.413	1.717 0.9498 95% LCL 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784 95% LCL 1.048 1.263	16.81 0.9146 95% UCL 1 1 1 1 1 1 1 1 1 95% UCL 1.464 1.563	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9706 Median 1.269 1.474	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627 Min 1.042 1.221	Max           0.9902           1.472           1.521	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546 Std Err	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor Summary Count 5 5 5 5 5 5 5 5 5 5 5 5 5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949 mary Mean 1.256 1.413 1.377	1.717 0.9498 95% LCL 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784 95% LCL 1.048	16.81 0.9146 95% UCL 1 1 1 1 1 1 1 1 95% UCL 1.464	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9216 0.9314 0.9706 Median 1.269	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627 Min 1.042	Max 0.9902 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546 Std Err 0.0749	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0% <b>CV%</b> 13.33%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08% %Effect 0.0%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4 9 2 4 9 9	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor           Summary           Count           5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949 mary Mean 1.256 1.413 1.377 1.251	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784 <b>95% LCL</b> 1.048 1.263 1.18 0.9789	16.81 0.9146 95% UCL 1 1 1 1 1 1 1 1 1 95% UCL 1.464 1.563	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9706 Median 1.269 1.474 1.472 1.164	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627 Min 1.042 1.221	Max           0.9902           1.472           1.521	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546 <b>Std Err</b> 0.0749 0.05404	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0% <b>CV%</b> 13.33% 8.55%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08% %Effect 0.0% -12.51%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4 9 2 4 9 18	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor           Summary           Count           5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949 mary Mean 1.256 1.413 1.377 1.251 1.323	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784 <b>95% LCL</b> 1.048 1.263 1.18 0.9789 1.088	16.81 0.9146 95% UCL 1 1 1 1 1 1 1 1 1 1 95% UCL 1.464 1.563 1.574 1.522 1.559	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9706 Median 1.269 1.474 1.472 1.164 1.287	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627 Min 1.042 1.221 1.164 0.9976 1.137	Max 0.9902 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546 <b>Std Err</b> 0.0749 0.05404 0.07098	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0% <b>CV%</b> 13.33% 8.55% 11.53%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08% <b>%Effect</b> 0.0% -12.51% -9.64%
Variances Distribution Combined D C-% 0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4 9 2 4 9 9	Bartlett E Shapiro- evelopment Rate Control Type Brine Control Prrected) Transfor Control Type	Wilk W Nor           Summary           Count           5	mality Mean 0.8863 0.9651 0.9453 0.8706 0.9157 0.902 0.949 mary Mean 1.256 1.413 1.377 1.251	1.717 0.9498 <b>95% LCL</b> 0.7647 0.9048 0.8588 0.7199 0.809 0.7824 0.8784 <b>95% LCL</b> 1.048 1.263 1.18 0.9789	16.81 0.9146 95% UCL 1 1 1 1 1 1 1 1 1 95% UCL 1.464 1.563 1.574 1.522	0.9438 0.1115 Median 0.9118 0.9907 0.9902 0.8431 0.9216 0.9314 0.9706 Median 1.269 1.474 1.472 1.164	Equal Var Normal D 0.7451 0.8824 0.8431 0.7059 0.8235 0.7549 0.8627 Min 1.042 1.221 1.164 0.9976	Max           0.9902           1           1           1           1           1           1           1           1           1           1           1           1           1           1           1           1           1.521           1.524	0.0438 0.02172 0.03117 0.05427 0.03842 0.04307 0.02546 <b>Std Err</b> 0.0749 0.05404 0.07098 0.09784	11.05% 5.03% 7.37% 13.94% 9.38% 10.68% 6.0% <b>CV%</b> 13.33% 8.55% 11.53% 17.49%	0.0% -8.89% -6.66% 1.77% -3.32% -1.77% -7.08% <b>%Effect</b> 0.0% -12.51% -9.64% 0.44%

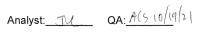


Analyst: JU QA: ACS 10/19/21

CETIS An	alytical Rep	ort							ort Date: Code:			51 (p 3 of 6) 0-8006-6372
Bivalve Larv	al Survival and	Developm	ent Test	- · ·						Nautilus	s Environ	mental (CA)
Analysis ID: Analyzed:	16-5680-0379 19 Oct-21 11:		•	velopment R nparametric-		/s T	reatments		IS Version: ial Results	CETISv1. : Yes	.8.7	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	τυ
Angular (Corr	ected)	NA	C > T	NA	NA			1.13%	76.1	>76.1	NA	1.314
Steel Many-C	One Rank Sum 1	ſest						*****				
Control	vs C-%		Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(	(α:5%)		
Brine Control	2		29.5	16	1	8	0.9424	Asymp	Non-Signi	ficant Effect		
	4		29.5	16	1	8	0.9424	Asymp	Non-Signi	ficant Effect		
	9		28.5	16	1	8	0.9067	Asymp	Non-Signi	ficant Effect		
	18		27.5	16	1	8	0.8571	Asymp	Non-Signi	ficant Effect		
	35		28	16	1	8	0.8838	Asymp	Non-Signi	ficant Effect		
	76.1		29.5	16	1	8	0.9424	Asymp	Non-Signi	ficant Effect		
ANOVA Table	e											
Source	Sum Squ	Jares	Mean Squ	Jare	DF		F Stat	P-Value	Decision(	α:5%)		
Between	0.001270	)365	0.0002117	7274	6		0.1825	0.9793	Non-Signi	ficant Effect		
Error	0.032486	519	0.0011602	221	28							
Total	0.033756	55			34		-					
Distributiona	al Tests					i desenti o tine						
Attribute	Test			Test Stat	Critica	I	P-Value	Decision	α:1%)			
Variances	Bartlett I	Equality of	Variance	3.252	16.81		0.7766	Equal Var	iances			· · · · · · · · · · · · · · · · · · ·
Distribution	Shapiro-	-Wilk W No	rmality	0.8603	0.9146		0.0004	Non-norm	al Distributio	on		
Developmen	t Rate Summary	,										
C-%	Control Type	Count	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
<b>C-%</b>	Control Type Brine Control	Count 5	<b>Mean</b> 0.9932	<b>95% LCL</b> 0.9811	<b>95% U</b>	CL	Median 1	<b>Min</b> 0.9789	Max 1	<b>Std Err</b> 0.00436	<b>CV%</b>	%Effect 0.0%
						CL	·····			· · · · · · · · · · · · · · · · · · ·		
0		5	0.9932	0.9811	1	CL	·····	0.9789	1	0.00436	0.98%	0.0%
0 2		5 5	0.9932 0.9964	0.9811 0.9903	1 1	CL	·····	0.9789 0.9907	1 1	0.00436 0.002192	0.98% 0.49%	0.0% -0.33%
0 2 4		5 5 5	0.9932 0.9964 0.9961	0.9811 0.9903 0.9894	1 1 1	CL	·····	0.9789 0.9907 0.9892	1 1 1	0.00436 0.002192 0.00242	0.98% 0.49% 0.54%	0.0% -0.33% -0.29%
0 2 4 9		5 5 5 5	0.9932 0.9964 0.9961 0.995	0.9811 0.9903 0.9894 0.9863	1 1 1 1	CL	1 1 1 1	0.9789 0.9907 0.9892 0.9863	1 1 1 1	0.00436 0.002192 0.00242 0.003105	0.98% 0.49% 0.54% 0.7%	0.0% -0.33% -0.29% -0.18%
0 2 4 9 18		5 5 5 5 5	0.9932 0.9964 0.9961 0.995 0.993	0.9811 0.9903 0.9894 0.9863 0.9801	1 1 1 1 1	CL	1 1 1 1 1	0.9789 0.9907 0.9892 0.9863 0.9767	1 1 1 1	0.00436 0.002192 0.00242 0.003105 0.004651	0.98% 0.49% 0.54% 0.7% 1.05%	0.0% -0.33% -0.29% -0.18% 0.02%
0 2 4 9 18 35 76.1		5 5 5 5 5 5 5 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864	1 1 1 1 1 1	CL	1 1 1 1 1 0.9899	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888	1 1 1 1 1 1	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599	0.98% 0.49% 0.54% 0.7% 1.05% 0.58%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05%
0 2 4 9 18 35 76.1	Brine Control	5 5 5 5 5 5 5 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864	1 1 1 1 1 1		1 1 1 1 1 0.9899	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888	1 1 1 1 1 1	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599	0.98% 0.49% 0.54% 0.7% 1.05% 0.58%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05%
0 2 4 9 18 35 76.1 Angular (Cor	Brine Control	5 5 5 5 5 5 5 <b>rmed Sum</b>	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894	1 1 1 1 1 1		1 1 1 1 1 0.9899 1	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99	1 1 1 1 1 1	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29%
0 2 4 9 18 35 76.1 Angular (Cor C-%	Brine Control rrected) Transfo Control Type	5 5 5 5 5 5 7 7 med Sum Count	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary Mean	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894 95% LCL	1 1 1 1 1 1 95% U(		1 1 1 1 1 0.9899 1 <b>Median</b>	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99 Min	1 1 1 1 1 1 1 1 Max	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414 Std Err	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29%
0 2 4 9 18 35 76.1 <b>Angular (Cor</b> <b>C-%</b> 0	Brine Control rrected) Transfo Control Type	5 5 5 5 5 5 <b>rmed Sum</b> 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary <u>Mean</u> 1.488	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894 <b>95% LCL</b> 1.433	1 1 1 1 1 1 1 <b>95% U(</b> 1.543		1 1 1 1 0.9899 1 <b>Median</b> 1.517	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99 <b>Min</b> 1.425	1 1 1 1 1 1 1 1 <b>Max</b> 1.521	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414 Std Err 0.01983	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54% CV% 2.98%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29% %Effect 0.0% -0.97%
0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2	Brine Control rrected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sum</b> 5 5 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary Mean 1.488 1.502	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894 <b>95% LCL</b> 1.433 1.473	1 1 1 1 1 1 1 <b>95% U(</b> 1.543 1.532		1 1 1 1 0.9899 1 <b>Median</b> 1.517 1.518	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99 <b>Min</b> 1.425 1.474	1 1 1 1 1 1 1 1 <b>Max</b> 1.521 1.521	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414 <b>Std Err</b> 0.01983 0.01074	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54% <b>CV%</b> 2.98% 1.6%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29% %Effect 0.0%
0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4	Brine Control rrected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sum</b> 5 5 5 5 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary Mean 1.488 1.502 1.501	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894 <b>95% LCL</b> 1.433 1.473 1.468	1 1 1 1 1 1 1 <b>95% U(</b> 1.543 1.532 1.533		1 1 1 1 0.9899 1 Median 1.517 1.518 1.517	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99 <b>Min</b> 1.425 1.474 1.467	1 1 1 1 1 1 1 <b>Max</b> 1.521 1.521 1.521	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414 <b>Std Err</b> 0.01983 0.01074 0.01187	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54% <b>CV%</b> 2.98% 1.6% 1.6% 1.77%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29% <b>%Effect</b> 0.0% -0.97% -0.85%
0 2 4 9 18 35 76.1 Angular (Cor C-% 0 2 4 9	Brine Control rrected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sum</b> 5 5 5 5 5 5	0.9932 0.9964 0.9961 0.995 0.993 0.9936 0.9961 mary Mean 1.488 1.502 1.501 1.496	0.9811 0.9903 0.9894 0.9863 0.9801 0.9864 0.9894 <b>95% LCL</b> 1.433 1.473 1.468 1.453	1 1 1 1 1 1 1 <b>95% U(</b> 1.543 1.532 1.533 1.538		1 1 1 1 0.9899 1 Median 1.517 1.518 1.517 1.516	0.9789 0.9907 0.9892 0.9863 0.9767 0.9888 0.99 <b>Min</b> 1.425 1.474 1.467 1.453	1 1 1 1 1 1 1 1 <b>Max</b> 1.521 1.521 1.524	0.00436 0.002192 0.00242 0.003105 0.004651 0.002599 0.002414 <b>Std Err</b> 0.01983 0.01074 0.01187 0.01529	0.98% 0.49% 0.54% 0.7% 1.05% 0.58% 0.54% <b>CV%</b> 2.98% 1.6% 1.77% 2.29%	0.0% -0.33% -0.29% -0.18% 0.02% -0.05% -0.29% <b>%Effect</b> 0.0% -0.97% -0.85% -0.52%

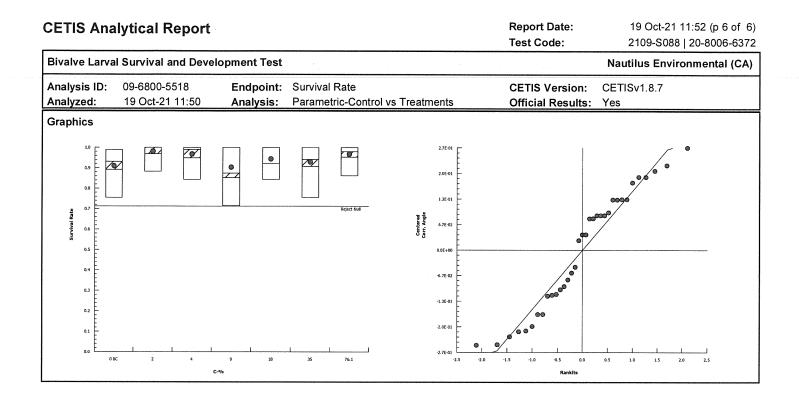
Analyst: Je QA: A(Sio/19/21

CETIS Ana	lytical Repor	t			Report Date: Test Code:	19 Oct-21 11:51 (p 4 of 6) 2109-S088   20-8006-6372
Bivalve Larva	I Survival and De	velopment Test				Nautilus Environmental (CA)
Analysis ID: Analyzed:	16-5680-0379 19 Oct-21 11:50	Endpoint: Analysis:	Development Rate Nonparametric-Contro	ol vs Treatments	CETIS Version: Official Results:	CETISv1.8.7 Yes
Graphics	g <b></b>			5.3E-02 2.5E-32 2.5E-32 00+30.0 00+	8 9 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
0 Bo	£ 2 4	9 18 C-%	35 76.1	-2.5 -2.0	-1.5 -1.0 -0.5 0.0 Rankits	0.5 1.0 1.5 2.0 2.5



CETIS Ana	alytical Rep	ort					-	ort Date: Code:	210		51 (p 5 of 6 0-8006-637
Bivalve Larv	al Survival and	Developn	nent Test		-				Nautilus	Environr	nental (CA)
Analysis ID: Analyzed:	09-6800-5518 19 Oct-21 11:		•	irvival Rate irametric-Cor	ntrol vs Trea	tments		IS Version: al Results:	CETISv1. Yes	8.7	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr	ected)	NA	C > T	NA	NA		20.1%	76.1	>76.1	NA	1.314
Dunnett Mult	tiple Compariso	on Test									
Control	vs C-%		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision(	α:5%)		
Brine Control	2		-1.533	2.407	0.26 8	0.9977	CDF	Non-Signi	ficant Effect		
	4		-1.146	2.407	0.26 8	0.9921	CDF	-	ficant Effect		
	9		0.09918	2.407	0.26 8	0.8286	CDF	-	ficant Effect		
	18		-0.6084	2.407	0.26 8	0.9635	CDF	-	ficant Effect		
	35		-0.3261	2.407	0.26 8	0.9276	CDF		ficant Effect		
	76.1		-1.154	2.407	0.26 8	0.9923	CDF		ficant Effect		
ANOVA Table	e										
Source	Sum Sq	uares	Mean Sq	uare	DF	F Stat	P-Value	Decision(	α:5%)		
Between	0.138117	71	0.023019	52	6	0.7892	0.5860	Non-Signit	ficant Effect		
Error	0.816757	7	0.029169	89	28						
Total	0.954874	1			34						
Distributiona	I Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision(	α:1%)			
Variances	Bartlett	Equality of	f Variance	1.001	16.81	0.9856	Equal Var	iances			
Distribution	Shapiro	-Wilk W N	ormality	0.9351	0.9146	0.0399	Normal Di	stribution			
Survival Rate	Summary										
C-%	Control Type	Count									
		Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Brine Control	5	Mean 0.8922	<b>95% LCL</b> 0.7729	<b>95% UCL</b> 1	<b>Median</b> 0.9314	Min 0.7549	Max 0.9902	<b>Std Err</b> 0.04296	<b>CV%</b> 10.77%	%Effect 0.0%
2											
2		5	0.8922	0.7729	1	0.9314	0.7549	0.9902	0.04296	10.77%	0.0%
2 4 9		5 5	0.8922 0.9686	0.7729 0.9051	1 1	0.9314 1	0.7549 0.8824	0.9902 1	0.04296 0.02287	10.77% 5.28%	0.0% -8.57%
2 4 9 18		5 5 5	0.8922 0.9686 0.949	0.7729 0.9051 0.8623	1 1 1	0.9314 1 0.9902	0.7549 0.8824 0.8431	0.9902 1 1	0.04296 0.02287 0.03122	10.77% 5.28% 7.36%	0.0% -8.57% -6.37%
2 4 9 18 35		5 5 5 5	0.8922 0.9686 0.949 0.8745	0.7729 0.9051 0.8623 0.7286	1 1 1 1	0.9314 1 0.9902 0.8529	0.7549 0.8824 0.8431 0.7157	0.9902 1 1 1	0.04296 0.02287 0.03122 0.05256	10.77% 5.28% 7.36% 13.44%	0.0% -8.57% -6.37% 1.98%
2 4 9 18 35		5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216	0.7729 0.9051 0.8623 0.7286 0.8242	1 1 1 1 1	0.9314 1 0.9902 0.8529 0.9216	0.7549 0.8824 0.8431 0.7157 0.8431	0.9902 1 1 1 1	0.04296 0.02287 0.03122 0.05256 0.03508	10.77% 5.28% 7.36% 13.44% 8.51%	0.0% -8.57% -6.37% 1.98% -3.3%
2 4 9 18 35 76.1		5 5 5 5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865	1 1 1 1 1 1	0.9314 1 0.9902 0.8529 0.9216 0.9412	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549	0.9902 1 1 1 1 1 1	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369	10.77% 5.28% 7.36% 13.44% 8.51% 10.76%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76%
2 4 9 18 35 76.1 Angular (Cor	Brine Control	5 5 5 5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865	1 1 1 1 1 1	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549	0.9902 1 1 1 1 1 1	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369	10.77% 5.28% 7.36% 13.44% 8.51% 10.76%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76%
2 4 9 18 35 76.1 Angular (Cor C-%	Brine Control	5 5 5 5 5 5 rmed Sun Count	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787	1 1 1 1 1 1	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 Min	0.9902 1 1 1 1 1 1 1 1 <b>Max</b>	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81%
2 4 9 18 35 76.1 <b>Angular (Cor</b> <b>C-%</b> 0	Brine Control rected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sun</b>	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529 mmary <u>Mean</u> 1.266	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787 95% LCL	1 1 1 1 1 1 1 95% UCL 1.471	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median 1.306	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 <b>Min</b> 1.053	0.9902 1 1 1 1 1 1 1 <b>Max</b> 1.472	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674 <b>Std Err</b> 0.07393	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28% <b>CV%</b> 13.06%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81% %Effect 0.0%
2 4 9 18 35 76.1 <b>Angular (Cor</b> <b>C-%</b> 0 2	Brine Control rected) Transfo Control Type	5 5 5 5 5 5 rmed Sun Count 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529 mmary <u>Mean</u> 1.266 1.431	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787 95% LCL 1.06 1.264	1 1 1 1 1 1 1 1 <b>95% UCL</b> 1.471 1.598	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median 1.306 1.521	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 <b>Min</b> 1.053 1.221	0.9902 1 1 1 1 1 1 1 <b>Max</b> 1.472 1.521	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674 <b>Std Err</b> 0.07393 0.06009	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28% <b>CV%</b> 13.06% 9.39%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81% %Effect 0.0% -13.08%
2 4 9 18 35 76.1 <b>Angular (Cor</b> <b>C-%</b> 0 2 4	Brine Control rected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sun</b> 5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529 mmary Mean 1.266 1.431 1.389	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787 95% LCL 1.06 1.264 1.186	1 1 1 1 1 1 1 1 <b>95% UCL</b> 1.471 1.598 1.592	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median 1.306 1.521 1.472	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 <b>Min</b> 1.053 1.221 1.164	0.9902 1 1 1 1 1 1 1 <b>Max</b> 1.472 1.521 1.521	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674 <b>Std Err</b> 0.07393 0.06009 0.07314	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28% <b>CV%</b> 13.06% 9.39% 11.77%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81% %Effect 0.0% -13.08% -9.78%
2 4 9 18 35 76.1 <b>Angular (Cor</b> <b>C-%</b> 0 2 4 9	Brine Control rected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sun</b> 5 5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529 mmary Mean 1.266 1.431 1.389 1.255	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787 <b>95% LCL</b> 1.06 1.264 1.186 0.9898	1 1 1 1 1 1 1 1 <b>95% UCL</b> 1.471 1.598 1.592 1.52	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median 1.306 1.521 1.472 1.177	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 <b>Min</b> 1.053 1.221 1.164 1.008	0.9902 1 1 1 1 1 1 1 1 1 Max 1.472 1.521 1.521	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674 <b>Std Err</b> 0.07393 0.06009 0.07314 0.09549	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28% 6.28% 10.76% 9.39% 11.77% 17.01%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81% %Effect 0.0% -13.08% -9.78% 0.85%
2 4 9 18 35 76.1	Brine Control rected) Transfo Control Type	5 5 5 5 5 5 5 <b>rmed Sun</b> 5 5 5 5 5	0.8922 0.9686 0.949 0.8745 0.9216 0.9078 0.9529 mmary Mean 1.266 1.431 1.389	0.7729 0.9051 0.8623 0.7286 0.8242 0.7865 0.8787 95% LCL 1.06 1.264 1.186	1 1 1 1 1 1 1 1 <b>95% UCL</b> 1.471 1.598 1.592	0.9314 1 0.9902 0.8529 0.9216 0.9412 0.9804 Median 1.306 1.521 1.472	0.7549 0.8824 0.8431 0.7157 0.8431 0.7549 0.8627 <b>Min</b> 1.053 1.221 1.164	0.9902 1 1 1 1 1 1 1 <b>Max</b> 1.472 1.521 1.521	0.04296 0.02287 0.03122 0.05256 0.03508 0.04369 0.02674 <b>Std Err</b> 0.07393 0.06009 0.07314	10.77% 5.28% 7.36% 13.44% 8.51% 10.76% 6.28% <b>CV%</b> 13.06% 9.39% 11.77%	0.0% -8.57% -6.37% 1.98% -3.3% -1.76% -6.81% %Effect 0.0% -13.08% -9.78%

Analyst: <u>\_\_\_\_\_</u> QA:<u>A(sio/19/</u>21



CETIS	Analytical Repo	ort					-	ort Date: Code:			:52 (p 1 of 3) 20-8006-6372
Bivalve L	arval Survival and D	evelopmen	t Test				-		Nautilu	s Environ	mental (CA)
Analysis Analyzed				ombined Deve near Interpola				S Version: al Results:	CETISv1 Yes	.8.7	
Linear In	terpolation Options										······································
X Transfo	orm Y Transform	See	d R	esamples	Exp 95%	CL Meth	nod				
Linear	Linear	1409	208 10	000	Yes	Two	Point Interp	olation			
Point Est	timates										
Level <sup>4</sup>	% 95% LCL	95% UCL	τu	95% LCL	95% UCL						
	>76.1 N/A	N/A	<1.314	NA	NA						
EC50 :	>76.1 N/A	N/A	<1.314	NA	NA						
Combine	d Development Rate	Summary			Calcı	ulated Varia	te(A/B)				
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	в
0	Brine Control	5	0.8863	0.7451	0.9902	0.0438	0.09794	11.05%	0.0%	452	510
2		5	0.9651	0.8824	1	0.02172	0.04856	5.03%	-8.89%	512	530
4		5	0.9453	0.8431	1	0.03117	0.06969	7.37%	-6.66%	493	521
9		5	0.8706	0.7059	1	0.05427	0.1213	13.94%	1.77%	456	522
18		5	0.9157	0.8235	1	0.03842	0.08592	9.38%	-3.32%	469	512
35		5	0.902	0.7549	1	0.04307	0.09631	10.68%	-1.77%	471	521
76.1		5	0.949	0.8627	1	0.02546	0.05693	6.0%	-7.08%	492	518
Combined Development Rate 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		•••••• ••••• ••• ••• •••		 73 5							



CETIS A	nalytical Repo	rt					-	ort Date: Code:			52 (p 2 of 3 0-8006-637:
Bivalve La	arval Survival and De	evelopmen	t Test						Nautilu	s Environr	nental (CA)
Analysis I Analyzed:		-		evelopment R lear Interpola				S Version: ial Results:	CETISv1 Yes	.8.7	
Linear Inte	erpolation Options										**********
X Transfo	rm Y Transform	Seed	l Re	samples	Exp 95%	CL Meth	od				
Linear	Linear	3091	00 100	00	Yes	Two-l	Point Interpo	olation			
Point Esti	mates										
Level %	6 95% LCL	95% UCL	τU	95% LCL	95% UCL						
	76.1 N/A	N/A	<1.314	NA	NA						
EC50 >	76.1 N/A	N/A	<1.314	NA	NA						
Developm	ent Rate Summary				Calcu	lated Variat	e(A/B)				Banangi dinana karangi dinangi dinangi din
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	в
0	Brine Control	5	0.9932	0.9789	1	0.00436	0.009749	0.98%	0.0%	452	455
2		5	0.9964	0.9907	1	0.002192	0.004902	0.49%	-0.33%	512	514
4		5	0.9961	0.9892	1	0.00242	0.005411	0.54%	-0.29%	493	495
9		5	0.995	0.9863	1	0.003105	0.006943	0.7%	-0.18%	456	458
18		5	0.993	0.9767	1	0.004651	0.0104	1.05%	0.02%	469	472
35		5	0.9936	0.9888	1	0.002599	0.005812	0.58%	-0.05%	471	474
76.1		5	0.9961	0.99	1	0.002414	0.005398	0.54%	-0.29%	492	494
Graphics											
1.0, 99 0.8 0.7 0.6 0.9 0.6 0.9 0.5 0.4 0.3 0.2 0.1 0.1			50 60	70 60							

Analyst: The QA: A(510/19/21

CETIS	S Ana	lytical Repo	ort						ort Date: Code:			1:52 (p 3 of 3 20-8006-637
Bivalv	e Larval	Survival and D	evelopmen	t Test						Nautilu	s Enviror	nmental (CA
Analys Analyz		04-3330-6583 19 Oct-21 11:50		•	Survival Rate Linear Interpola	tion (ICPIN)			IS Version: ial Results:	CETISv1 Yes	.8.7	
Linear	Interpo	lation Options										
X Tran	sform	Y Transform	See	d	Resamples	Exp 95%	CL Meth	nod				
Linear		Linear	1369	266	1000	Yes		Point Interp	olation			
Point I	Estimate	es s										
Level	%	95% LCL	95% UCL	τυ	95% LCL	95% UCL						
EC25	>76.1		N/A	<1.314		NA						
EC50	>76.1	N/A	N/A	<1.314		NA						
Surviv	al Rate	Summary				Calcu	lated Varia	te(A/B)				
C-%	С	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	в
0	В	rine Control	5	0.8922	0.7549	0.9902	0.04296	0.09606	10.77%	0.0%	455	510
2			5	0.9686	0.8824	1	0.02287	0.05113	5.28%	-8.57%	494	510
4			5	0.949	0.8431	1	0.03122	0.06981	7.36%	-6.37%	484	510
9			5	0.8745	0.7157	1	0.05256	0.1175	13.44%	1.98%	446	510
18			5	0.9216	0.8431	1	0.03508	0.07843	8.51%	-3.3%	470	510
35			5	0.9078	0.7549	1	0.04369	0.0977	10.76%	-1.76%	463	510
76.1			5	0.9529	0.8627	1	0.02674	0.0598	6.28%	-6.81%	486	510
Graphi	1.0 09 <b>6</b> 0.8	•										

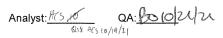
Analyst: The QA:Ars 10/19/21

#### **Bivalve Larval Survival and Development Test**

Nautilus	Environmenta	I (CA)

itart Date: Ind Date: ample Da	29 22 5 01 24 4 te <sup>25</sup> 21 5	Sep-2 Sep-2 Sep-2	1 1 1	Species: Protocol: Material:	Mytilus galloprovi EPA/600/R-95/13 Effluent Sample			Sample Code: Sample Source: Sample Station:	
C-%	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal		Notes
			1			94	94	ACS 10/19/21	
			2			95	93	1	
			3			102	102		
			4			96	95		
			5			117	117		
			6			27	76		
			7			98	98		
			8			116	115		
			9			89	88		
			10			103	102		
			11			113	112		
			12			99	98		
			13			93	92		
			14			109	109		
			15			89'	89		
			16			85	85		
			17			86	84		
			18			100	100		
			19			1/1	111		
			20			100	99		
			21			86	85		
			22			90	90		
			23			104	104		
			24			101	101		
			25			88	58		
			26			101	10(		
			27			77	101		
			28			82	8)		
			29			114	114		
			30			108	107		
			31			102	102		
			32			113	113		
			33			102	j02		
			34			93	92		
			35			94	94		
			36			97	97		
			37			86	86		
			38			73	72		
			39			84	84		
			40			87	86	U	

# @Q86010/21/21



#### **Bivalve Larval Survival and Development Test**

ind Date: @ <del>24 Sep-21 \- 3</del> - 건 Protoco ample Date: <del>21</del> Sep-21 Materia				I-21 Protocol:	EPA/600/R-95/13			Sample Code: Sample Source: Sample Station:	
C-%	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	-	Notes
0	BC	1	6						
0	BC	2	16						
0	BC	3	24			98	98	1012121	
0	BC	4	36					1010.01	
0	BC	5	2						
0	LC	1	28						
0	LC	2	13			113	(13		
0	LC	3	5			11-			
0	LC	4	19						
0	LC	5	15						
2		1	30						
2		2	22						
2		3	31			92	92		
2	-	4	7			16			
2		5	8						
4		1	11	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	*****				
4		2	33		· · · · · · · · · · · · · · · · · · ·				
4		3	34			31	80		
4		4	37				00		
4		5	26						
9		1	38						
9		2	18						
9		3	29			104	104		
9		4	39			( (	101		
9		5	40						
18		1	23						
18		2	17						
18	-	3	3			91	91		
18		4	1				<u> </u>		
18		5	21						
35		1	9						
35		2	12						
35		3	32			105	104		
35		4	27			10	10		
35		5	4						
72/4		1	25						
72.4		2	14						
7/2.4		3	20			34	83		
72.4		4	35			0.	~~		
72.4		5	10						

QC=45

QQ18B-9/25/21

76.1

Analyst: 9() QA: BO 10/21/21

# Marine Chronic Bioassay DM-014

Client: JACOBS

Sample ID: Wyckoff

Sample Log No.: 21- 0991

Test No.: 2109-S088

# Water Quality Measurements

Test Species: <u>*M. galloprovincialis*</u> Start Date/Time: <del>9/22/2021</del> ค/24/2/2/ End Date/Time: <u>9/24/2021</u> (อ) | 21 1440

Concentration (% sample)		Salinity (ppt)		Т	emperatu (°C)	ire	Dise	solved Ox (mg/L)	ygen		pH (pH units	;)
、 · <i>,</i>	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	30.0	30.1	30-1	15.1	15.4	15.2	8.6	8.7	8.5	8.04	7.87	7.98
Brine Control	29.8	30.1	30.1	15.0	15.2	15.0	8.6	8.7	85	8.09	7.91	7.99
2	30.0	30.4	30.4	15.1	15.3	15.2	8.6	8.7	8.4	8.06	7.92	7.99
4	30.0	30.3	30.4	15.0	15.3	15.1	8.6	8.7	8.5	8-01	7.93	8.04
9	30.1	30.5	30.6	14.8	15.1	14.9	8.7	8.7	85	7.97	7.95	8.07
18	29.9	30.3	30.3	14.9	15.3	15.2	8.7	8.7	8.4	7.89	7.95	8.13
35	29.5	29.9	29.9	14.6	15.4	15.3	3.8	8.7	8.4	7.79	7.98	8.19
76.1 0	\$29.5	29.9	30.0	14.2	15.2	15.0	8.9	8.7	<del>8</del> .5	7.71	8.04	8.28
Technician Initials:		Readings: made by:		24 RT	48 RT	]	Enviro	nmental (	Chamber:		<u>)</u>	
Comments:	0 hrs: 24 hrs: 48 hrs:		BU 9/25/	21 300	2.4 2591	75/2						

QC Check:

JU 10/1/21

Final Review: ACS 10/19/21

Marine Chro					Brine Dilutio	on Worksheet		
Project:	JACOBS			Analyst:	KS			
Sample ID:	Wyckoff			Test Date:	e: <u>9/29/2021</u>			
Test No:	2109- 50 RB			Test Type:	Mussel Developm	nent		
Salinity of Efflu	uent	10.6						
Salinity of Brin	10	91.8	Date	of Brine used:	9/28/2021	-		
Target Salinity		30	Alkalinity of	Brine Control:	116	_ mg/L as CaCO3		
Test Dilution V	/olume	250						
		<u>Effluent</u>	Brine Control					
Salinity Adjust (TS - SE)/(SB - TS = target SE = salinit	TS) =	0.31	0.49					

SB = salinity of brine

Concentration %	Effluent Volume (ml)	Salinity Adjustment Factor	Brine Volume (ml)	Dilute to: (ml)
Control	NA	NA	NA	250
2	5.0	0.31	1.6	250
4	10.0	0.31	3.1	250
9	22.5	0.31	7.1	250
18	45.0	0.31	14.1	250
35	87.5	0.31	27.5	250
76.1	190.3	0.31	59.7	250

	DI Volume			
Brine Control	123.0	0.49	59.7	250

Total Brine Volume Required (ml): 172.8

QC Check: JU IDIMIZI

Final Review: <u>M(5 (0/(1/2)</u>

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120

#### Marine Chronic Bioassay DM-013

#### Larval Development Worksheet

Client/Sample:	JACOBS/WYCKOft	
Test No.:	2109-5088	
Test Species:	Mytilus galloprovincialis	
Animal Source/Bat	tch Tank: M-REP SB	
Date Received:	9/14/21	
Test Chambers:	30 mL glass shell vials	
Sample Volume:	10 mL	

11:05

Start Date/Time:	9/29/2021	1545
End Date/Time:	10/1/2021	1440
Technician Initials:	145	

#### Spawn Information

First Gamete Release Time:

#### Gamete Selection

Sex	Number Spawning
Male	2
Female	2

Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape, etc.)
Male	1,2	excellent motility and density
Female 1	1	excellent density, pake orange mostly round
Female 2	2	excellent density, pale or more, some rund
Female 3	-	

Egg Fertilization Time: 12:00

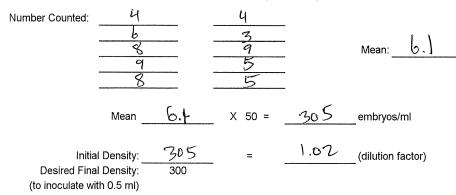
Stock(s) chosen for testing:

#### **Embryo Stock Selection**

Stock Number	% of embryos at 2-cell division stage
Female 1	100
Female 2	100
Female 3	

#### **Embryo Inoculum Preparation**

Target count on Sedgwick-Rafter slide for desired density is 6 embryos



Prepare the embryo inoculum according to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (1 part) and 125 ml of dilution water (1.25 parts).

#### **Time Zero Control Counts**

TØ Vial No.	No. Dividing	Total	% Dividing	Mean % Dividing	
TØ A	113	113	100.0		1
TØ B	99	99	100.0		
TØ C	108	108	100.0	100.0	
TØ D	94	94	0.001		
TØ E	98	98	100.0		
TØ F	101	101	100.0		
<u>X</u> =	102				-

48-h QC: 103/103 100%

Comments:

QC Check:

JU 10/11/2

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120.

Final Review: A/S 10/19/21

Appendix B Sample Check-In Information

Enthalpy Analytical 4340 Vandever Aven	ue	Client:	J	ALOBS			NOF Sample C	RTHWEST heck-In Int	
San Diego, CA 92120	0	Sample ID:	WY	ckoff	Eagle Harbor GWTP				DC-005
		Test ID No(s).:	Sig	9-2082	3 (092821)	Sample Description:			
						At: no colori c	llar, r	10 octor,	no delons
					1				
	Sample (A, B, C):		10-00-07-10-00-						
	Log-in No. (21-xxxx):		*****						
S	ample Collection Date & Time:	1000000				Subsamples for Addit	ional Chemi	stry Require	d:
	Sample Receipt Date & Time:	9/29/21 0940				NH3 (always	required)		
Number of	Containers & Container Type:	HULLIA				Other			
Appro	ox. Total Volume Received (L):	NI				Tech Initials A	<u>НМ в</u>	c	
	Check-in Temperature (°C)	M.O							
	Temperature OK? <sup>1</sup>	(Y) N	Y N	YN	Y N	COC Complete (Y/N)?			
	DO (mg/L)	7.9				A . B C			
	pH (units)	7.50							
	Conductivity (µS/cm)	(1955)				Filtration? Y N	Initials:		
	Salinity (ppt)	10.0				Pore Size:			
	Alkalinity (mg/L) <sup>2</sup>	MDA				Organisms	or	Debris	
	Hardness (mg/L) <sup>2, 3</sup>								
	Total Chlorine (mg/L)	40.02				Salinity Adjustment?	N N		
	Technician Initials	ИИ				Test: MUSSEL	1	AL . Targe	t not: 20
	. ^			I		Test:	Source:	Targe	
	Mussel,						Source:	Targe	
Test Performed:	Development	Control/Dilution Water:	8:2 ( Lab	SW Lab ART	Other:	1001.		ruige	e ppc
	Ú	Alkalinity: 102	Hardness or	Salinity: 3000	<u>it</u>	pH Adjustment? Y	N		
	Additional Control? (Y) N	= Brine Alkal	inity: <u>  6</u>	Hardness or 8	Salinity: <u>30pp</u> t		Α	В	C
	<u> </u>			5	Construction Mail Television	Initial pH:			
Test Performed:		Control/Dilution Water:	8:2 / Lab	SW / Lab ART	Other:	Amount of HCI added:			
		Alkalinity:	Hardness or	Salinity:		Final pH:			-
	Additional Control? Y N	=Alkal	inity:	Hardness or S	Salinity:	Cl <sub>2</sub> Adjustment? Y	N		
							Α	В	C
Test Performed:		Control/Dilution Water:	8:2 / Lab	SW / Lab ART	Other:	Initial Free CI <sub>2</sub> :			
		Alkalinity:	Hardness or	Salinity:		STS added:			1
	Additional Control? Y N	=Alkal	inity:	Hardness or S	Salinity:	Final Free Cl <sub>2</sub> :			
							<u> </u>		
Notes:	<sup>1</sup> Temperature of sample should	be 0-6°C at receipt.				Sample Aeration? Y	N)		
	<sup>2</sup> mg/L as CaCO3, <sup>3</sup> Measured f	for freshwater samples on	ly, NA = Not A	pplicable			A	В	С
						Initial D.O.			-
Additional Comments:						Duration & Rate			:
						Final D.O.			

QC Check: JU 1014124 Final Review: <u>Ars 10/19/21</u>

#### **Overlying Water**

#### **Total Ammonia Analysis** Marine

DC-001							
	: <u>JACOBS</u> : Wyckoff	****					
-	: Mussel Development						
DI Blank	0.0	_ Tes	st Start Date:	ghat	21	Analyst:	KB
SW Blank	0.0			,	Α	nalysis Date:	20/21/21
						N x 1.22	
	Sample ID	Enthalpy ID	Sub-Sample Date	Test Day	NH3-N (mg/L)	Ammonia (mg/L)	
	Blank Spike (10 mg/L NH3)		NA	NA	8.8	10.7	
	Wyckoff	21-0921	- <del>9/22/2021</del> -C 9/29/21		2.3	2.8	
			112 1121				
				****			
	Spike Check (10 mg/L NH3)		NA	NA	8.8	10.7	
	Spike Check (10 mg/L NH3)		NA		0,0	10.7	
			· · · · ·				
	Wyckoff	21-0991	9/29/21	đ	2.3	78	2
	Sample Duplicate <sup>a</sup>	19.011	NA	NA NA	2.5	2 2 3	3,1
	Sample Duplicate + Spike <sup>a</sup>		NA	NA	11.3	13.8	•
	Spike Check (10 mg/L NH <sub>3</sub> )		NA	NA	8.8	10.7	
Relative Perce	nt Difference (RPD) = [sample] (mg/L) [average ammonia] (m		te] (mg/L) x 100		Acceptable Ra	ange: 0-20%	
Perce	ent Recovery = [spiked sample] (mg/L)		) x 100		Acceptable Ra	ange: 80-120% <sup>b</sup>	
	nominal [spike] (mg/				•	<b>g</b>	
QC Sample ID	[NH <sub>3</sub> ]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery	
Blank	0.0	NA	10,7	10	NA	107	
21-0991	2.8	03-0-	13.8	10	@ <sup>2</sup> -6-9-	110	
		3.1	_		10.2		
Standard Lot Number	Reagent 1 A L o S 3		Reage	3 3		Tubes	
u			A 110			) ?	
Comments:BC	9/25/21 @208 BD 1	10/21/21					
Notes: <sup>a</sup> Unless otherwise note	d, the last sample listed on the datashe	eet is used for dur	plicate and duplica	ite + spike QC	check.		
	or % recovery applies only to the blank			s may vary bas	ed on sample ma	atrix and are for info	ormation only.
	formed due to one or both values below						
HACH Ammonia Niti	rogen Test Kit, Test 'N Tube™ Vials. M	lethod 10031. Me	ethod Detection Lir	mit = 0.5 mg/L			
QC Check: QC Check:	12+ RT 10/21/21			Final Review:		BO 10/2	2/21
Enthalpy Analytical. 4340 Vandever	•						

Appendix C Chain-of-Custody Form

#### Page 1 of 1

#### Enthalpy Analytical (REGION COPY)

DateShipped: 9/28/2021 CarrierName: FedEx AirbillNo:

#### Jacobs, Wyckoff-Wyckoff Eagle Harbor GWTP 2020/WA Project Code: WEH-031D Cooler #: 1 of 1

#### No: 10-092821-103857-0557

2021T10P000DD210W2LA00 Contact Name: Daniel Baca Contact Phone: 206-780-1711

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
092821		Ground Water/ D. Baca	Composite	CHRTOX(8 Weeks)	N (< 6 C) (1)	SP-11	09/28/2021 09:28	Field Sample

	Shipment for Case Complete? N
Special Instructions: 2021-Week40 Tox2	Samples Transferred From Chain of Custody #
Analysis Key: CHRTOX=Chronic Toxicity	

Items/Reason	Relinquished by (Signate	ure and Organization)	Date/Time	Received by (Signature and Or	ganization)	Date/Time	Sample Condition Upon Receipt
	Dolla	JACOBS	9128/21 @ 1102	Hayive Heinemann	GA SP	aha/21 0940	
						0.10	

Decemptotemp. 4.0°C

Appendix D List of Qualifier Codes

# **Glossary of Qualifier Codes**

- Q1 Temperature out of recommended range; corrective action taken and recorded in Test Temperature Correction Log
- Q2 Temperature out of recommended range; no action taken, test terminated same day
- Q3 Sample pH adjusted to within range of 6-9 with reagent grade NaOH or HCl, as needed
- Q4 Test aerated; D.O. levels dropped below 4.0 mg/L
- Q5 Test initiated with continuous aeration due to an anticipated drop in D.O.
- Q6 Airline obstructed or fell out of replicate and replaced; drop in D.O. occurred
- Q7 Salinity out of recommended range
- Q8 Spilled test chamber/ Unable to recover test organism(s)
- Q9 Inadequate sample volume remaining, partial renewal performed
- Q10 Inadequate sample volume remaining, no renewal performed
- Q11 Sample out of holding time; refer to QA section of report
- Q12 Replicate(s) not initiated; excluded from data analysis
- Q13 Survival counts not recorded due to poor visibility or heavy debris
- Q14 D.O. percent saturation was checked and was ≤ 110%
- Q15 Did not meet minimum test acceptability criteria. Refer to QA section of report.
- Q16 Percent minimum significant difference (PMSD) was <u>below</u> the lower bound limit for acceptability. This indicates that statistics may be over-sensitive in detecting a difference from the control due to low variability in the data set. Test results were reviewed and reported in accordance with guidance found in EPA-833-R-00-003, 2000 unless otherwise specified.
- Q17 Percent minimum significant difference (PMSD) was <u>above</u> the upper bound limit for acceptability. This indicates that statistics may be under-sensitive in detecting a difference from the control due to high variability in the data set. Test results were reviewed and reported in accordance with EPA-833-R-00-003, 2000 guidance unless otherwise specified.
- Q18 Incorrect or illegible Entry
- Q19 Miscalculation
- Q20 PMSD criteria do not apply to the test of significant toxicity (TST) analysis
- Q21 Other (provide reason in comments section)
- Q22 Greater than 10% batch <u>mortality</u> observed upon receipt and/or in holding prior to test initiation. Organisms acclimated to test conditions at Enthalpy and ultimately deemed fit to use for testing.
- Q23 Test organisms experienced a <u>temperature</u> shift greater than 3°C within 1 day or were received at a temperature greater than 3°C outside the recommended test temperature range and had minimal time to acclimate prior to test initiation. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate test(s). Organisms were ultimately deemed fit to use for testing.
- Q24 Test organisms experienced a <u>salinity</u> shift greater than 3 ppt within 1 day or were received at a salinity greater than 3 ppt outside the recommended test salinity range and had minimal time to acclimate prior to test initiation. However, due to age-specific protocol requirements and/or sample holding time constraints, the organisms were used to initiate test(s). Organisms were ultimately deemed fit to use for testing.



Appendix E Reference Toxicant Test Results

# **CETIS Summary Report**

Report Date:	
Test Code:	

19 Oct-21 14:29 (p 1 of 3) 210929msdv | 12-3450-8829

Bivalve Larval	Survival and Developm	ent Test						Nautilus Environmental (CA)
Batch ID: Start Date: Ending Date: Duration:	29 Sep-21 15:45P01 Oct-21 14:40S	est Type: rotocol: pecies: ource:	Development- EPA/600/R-95 Mytilus gallopi M-Rep, Carlst	5/136 (1995) rovincialis				Diluted Natural Seawater Not Applicable
Sample ID: Sample Date: Receive Date: Sample Age:	29 Sep-21 <b>W</b> 29 Sep-21 <b>S</b>	ode: laterial: ource: tation:	210929msdv Copper chloric Reference Tox Copper Chloric	kicant			Client: Project:	Internal
Comparison S	ummary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Meth	bd
13-4465-0530 03-7320-3141 15-1856-8764	Combined Development Development Rate Survival Rate	Ra 5 5 10	10 10 20	7.071 7.071 14.14	7.19% 2.13% 7.23%		Dunne	ett Multiple Comparison Test ett Multiple Comparison Test ett Multiple Comparison Test
Point Estimate	e Summary				and en dilacement 2010			
Analysis ID	Endpoint	Level	μg/L	95% LCL	95% UCL	τU	Metho	od
18-2247-7613	Combined Development	Ra EC25 EC50	7.261 9.809	6.428 8.858	7.863 11.27		Linea	r Interpolation (ICPIN)
04-7958-3381	Development Rate	EC25 EC50	7.359 9.718	6.946 8.899	7.806 10.99		Linea	r Interpolation (ICPIN)
17-8563-2416	Survival Rate	EC25 EC50	22.73 28.5	18.51 25.72	25.31 30.22		Linea	r Interpolation (ICPIN)
Test Acceptab	ility		****					
Analysis ID	Endpoint	Attrib	ute	Test Stat	TAC Limi	ts	Overl	ap Decision
03-7320-3141 04-7958-3381 15-1856-8764 17-8563-2416	Development Rate Development Rate Survival Rate Survival Rate	Contro Contro	ol Resp ol Resp ol Resp ol Resp	0.9857 0.9857 0.9804 0.9804	0.9 - NL 0.9 - NL 0.5 - NL 0.5 - NL		Yes Yes Yes Yes	Passes Acceptability Criteria Passes Acceptability Criteria Passes Acceptability Criteria
13-4465-0530	Combined Development		•	0.9804	0.5 - NL NL - 0.25		Yes No	Passes Acceptability Criteria Passes Acceptability Criteria

# **CETIS Summary Report**

# Report Date:

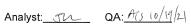
19 Oct-21 14:29 (p 2 of 3) 
 Test Code:
 210929msdv | 12-3450-8829

Bivalve Lar	val Survival and D	Develonme	nt Test		- · · · · · · · · · · · · · · · · · · ·	*****	lest			Environm	ental (CA)
	Development Rate	•		wine 12 19 19 19 19 19 19 19 19 19 19 19 19 19					Naumus		
Combined C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.967	0.8945	1	0.8627	1	0.02612	0.0584	6.04%	0.0%
2.5	Lub Control	5	0.9392	0.8476	1	0.8333	1	0.03301	0.07382	7.86%	2.87%
5		5	0.9392	0.8574	1	0.8431	1	0.02948	0.06591	7.02%	2.87%
10		5	0.4663	0.3686	0.5641	0.3545	0.5463	0.03521	0.07874	16.88%	51.77%
20		5	0.001961	0	0.007405	0	0.009804	0.001961	0.004384	223.6%	99.8%
40		5	0	0	0	0	0	0	0	220.070	100.0%
Developme	nt Rate Summary										
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9857	0.9648	1	0.9565	1	0.007521	0.01682	1.71%	0.0%
2.5		5	0.9916	0.9744	1	0.9681	1	0.006193	0.01385	1.4%	-0.6%
5		5	0.9956	0.988	1	0.9885	1	0.002714	0.006069	0.61%	-1.0%
10		5	0.4663	0.3686	0.5641	0.3545	0.5463	0.03521	0.07874	16.88%	52.69%
20		5	0.002564	0	0.009683	0	0.01282	0.002564	0.005734	223.6%	99.74%
40		5	0	0	0	0	0	0	0		100.0%
Survival Ra	ite Summary										
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	0.9804	0.926	1	0.902	1	0.01961	0.04384	4.47%	0.0%
2.5		5	0.9471	0.8586	1	0.8333	1	0.03186	0.07124	7.52%	3.4%
5		5	0.9431	0.8669	1	0.8529	1	0.02745	0.06138	6.51%	3.8%
10		5	1	1	1	1	1	0	0	0.0%	-2.0%
20		5	0.851	0.6905	1	0.6765	1	0.05778	0.1292	15.18%	13.2%
40		5	0.001961	0	0.007405	0	0.009804	0.001961	0.004384	223.6%	99.8%
Combined	Development Rate	e Detail									
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Lab Control	0.8627	0.9906	0.9904	1	0.9912					
				4							
2.5		0.8333	0.9706	1	1	0.8922					
		0.8333 1	0.9706 0.9118	0.9412		0.8922 1					
5		1	0.9118	0.9412	0.8431	1					
5 10		1 0.5463	0.9118 0.5357	0.9412 0.3545	0.8431 0.4336	1 0.4615					
5 10 20		1 0.5463 0	0.9118 0.5357 0	0.9412 0.3545 0	0.8431 0.4336 0.009804	1 0.4615 0					
5 10 20 40	nt Boto Dotoil	1 0.5463	0.9118 0.5357	0.9412 0.3545	0.8431 0.4336	1 0.4615					
5 10 20 40 <b>Developme</b>	nt Rate Detail	1 0.5463 0 0	0.9118 0.5357 0 0	0.9412 0.3545 0 0	0.8431 0.4336 0.009804 0	1 0.4615 0 0					
5 10 20 40 Developme C-µg/L	Control Type	1 0.5463 0 0 <b>Rep 1</b>	0.9118 0.5357 0 0 <b>Rep 2</b>	0.9412 0.3545 0 0 <b>Rep 3</b>	0.8431 0.4336 0.009804 0 <b>Rep 4</b>	1 0.4615 0 0 <b>Rep 5</b>					
5 10 20 40 <b>Developme</b> <b>C-µg/L</b> 0		1 0.5463 0 0 <b>Rep 1</b> 0.9565	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5	Control Type	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1	1 0.4615 0 0 <b>Rep 5</b> 0.9912 0.9681					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5	Control Type	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1	0.9118 0.5357 0 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5 10	Control Type	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463	0.9118 0.5357 0 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5 10 20	Control Type	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1	0.9118 0.5357 0 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5 10 20	Control Type	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463	0.9118 0.5357 0 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615					
5 10 20 40 <b>Developme</b> <b>C-µg/L</b> 0 2.5 5 10 20 40	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0	0.9118 0.5357 0 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282	1 0.4615 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5 10 20 40 <b>Survival Ra</b> <b>C-μg/L</b>	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0 <b>Rep 1</b>	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0 8 <b>Rep 2</b>	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0 0 <b>Rep 3</b>	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0 <b>Rep 4</b>	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0 0 <b>Rep 5</b>					
5 10 20 40 <b>Developme</b> <b>C-µg/L</b> 0 2.5 5 10 20 40 <b>Survival Ra</b> <b>C-µg/L</b> 0	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0 0	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0				· · · · · · · · · · · · · · · · · · ·	
5 10 20 40 <b>Developme</b> <b>C-µg/L</b> 0 2.5 5 10 20 40 <b>Survival Ra</b> <b>C-µg/L</b> 0	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0 <b>Rep 1</b>	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0 8 <b>Rep 2</b>	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0 0 <b>Rep 3</b>	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0 <b>Rep 4</b>	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0 0 <b>Rep 5</b>				· · · · · · · · · · · · · · · · · · ·	
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 2.5 5 10 20 40 <b>Survival Ra</b> <b>C-μg/L</b>	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0 0 <b>Rep 1</b> 0.902	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0 0 <b>Rep 2</b> 1	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0 0 0 <b>Rep 3</b> 1	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0 <b>Rep 4</b> 1	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0 0 <b>Rep 5</b> 1					
5 10 20 40 <b>Developme</b> <b>C-µg/L</b> 0 20 40 <b>Survival Ra</b> <b>C-µg/L</b> 0 2.5	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0 0 <b>Rep 1</b> 0.902 0.8333	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0 0 <b>Rep 2</b> 1 0.9804	0.9412 0.3545 0 0 0 <del>Rep 3</del> 0.9904 1 1 0.3545 0 0 0 <b>Rep 3</b> 1 1	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0 <b>Rep 4</b> 1 1	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0 0 <b>Rep 5</b> 1 0.9216					
5 10 20 40 <b>Developme</b> <b>C-μg/L</b> 0 20 40 <b>Survival Ra</b> <b>C-μg/L</b> 0 2.5 5 5 5 10 20 40	Control Type Lab Control	1 0.5463 0 0 <b>Rep 1</b> 0.9565 1 1 0.5463 0 0 0 <b>Rep 1</b> 0.902 0.8333 1	0.9118 0.5357 0 0 <b>Rep 2</b> 0.9906 0.99 0.9894 0.5357 0 0 0 <b>Rep 2</b> 1 0.9804 0.9216	0.9412 0.3545 0 0 <b>Rep 3</b> 0.9904 1 1 0.3545 0 0 0 <b>Rep 3</b> 1 1 0.9412	0.8431 0.4336 0.009804 0 <b>Rep 4</b> 1 1 0.9885 0.4336 0.01282 0 <b>Rep 4</b> 1 1 1 0.8529	1 0.4615 0 0 0 <b>Rep 5</b> 0.9912 0.9681 1 0.4615 0 0 0 <b>Rep 5</b> 1 0.9216 1					

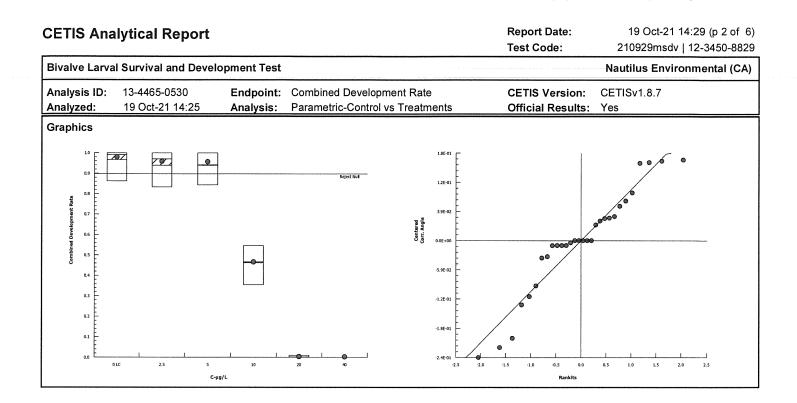
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CETIS S	ummary Repo	ort					Report Date: Test Code:	19 Oct-21 14:29 (p 3 of 3) 210929msdv   12-3450-8829
Bivalve La	rval Survival and I	Developme	nt Test					Nautilus Environmental (CA)
Combined	Development Rate	e Binomials	;					
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Lab Control	88/102	105/106	103/104	117/117	112/113		
2.5		85/102	99/102	118/118	111/111	91/102		
5		106/106	93/102	96/102	86/102	117/117		
10		59/108	60/112	39/110	49/113	48/104		
20		0/102	0/102	0/103	1/102	0/102		
40		0/102	0/102	0/102	0/102	0/102		
Developme	ent Rate Binomials	;			#~ • • ###==============================		49	
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Lab Control	88/92	105/106	103/104	117/117	112/113		
2.5		85/85	99/100	118/118	111/111	91/94		
5		106/106	93/94	96/96	86/87	117/117		
10		59/108	60/112	39/110	49/113	48/104		
20		0/91	0/69	0/103	1/78	0/94		
40		0/1	0/1	0/1	0/1	0/1		
Survival Ra	ate Binomials							
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5		
0	Lab Control	92/102	102/102	102/102	102/102	102/102		
2.5		85/102	100/102	102/102	102/102	94/102		
5		102/102	94/102	96/102	87/102	102/102		
10		102/102	102/102	102/102	102/102	102/102		
20		91/102	69/102	102/102	78/102	94/102		
40		0/102	1/102	0/102	0/102	0/102		



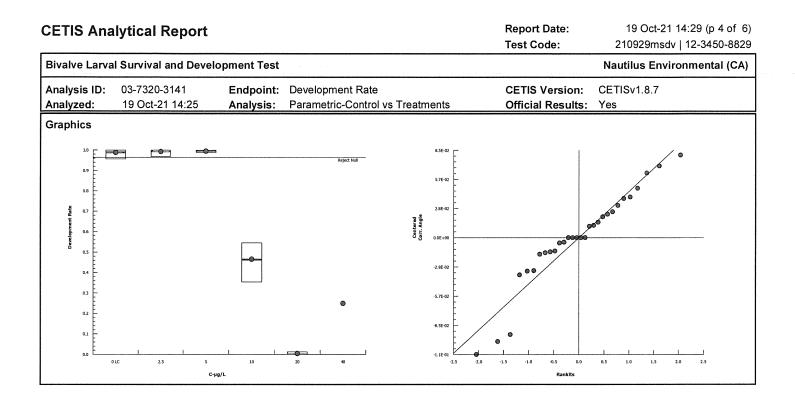
CETIS Analytical Report								-	ort Date: Code:	19 Oct-21 14:29 (p 1 of 6) 210929msdv   12-3450-8829		
Bivalve Larv	al Surviv	al and De	velopm	ent Test						Nautilus	Environn	nental (CA)
Analysis ID: Analyzed:		5-0530 -21 14:25		-	nbined Deve ametric-Cor	-			S Version: ial Results:	CETISv1. Yes	8.7	
Data Transfo	orm		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	τυ
Angular (Cor	rected)		NA	C > T	NA	NA		7.19%	5	10	7.071	
Dunnett Mul	tiple Com	parison T	ſest							a da		
Control	vs C	C-µg/L		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision(	α:5%)		
Lab Control		2.5		0.7701	2.305	0.183 8	0.4819	CDF		icant Effect		
	5			0.8397	2.305	0.183 8	0.4506	CDF	-	icant Effect		
		0*		8.524	2.305	0.183 8	< 0.0001	CDF	Significant			
	2	:0*		17.24	2.305	0.183 8	<0.0001	CDF	Significant			
ANOVA Tabl	e											
Source	Si	um Squar	es	Mean Squ	are	DF	F Stat	P-Value	Decision(	α:5%)		
Between	6.	970155		1.742539		4	110.7	<0.0001	Significant	Effect		
Error	0.	3148416		0.0157420	8	20						
Total	7.	284997				24						
Distribution	al Tests											
Attribute	т	est			Test Stat	Critical	P-Value	Decision(	α:1%)			
Variances	B	Bartlett Equ	ality of	Variance	11.52	13.28	0.0213	Equal Var	iances			
Distribution	S	Shapiro-Wi	lk W No	rmality	0.9402	0.8877	0.1500	Normal Di	stribution			
Combined D	ovelopm		umme-									
	eveloping	ent Rate S	unnar	ע								
C-µg/L	Control		Count	у Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
<b>С-µg/L</b> 0		Туре		-	<b>95% LCL</b> 0.8945	<b>95% UCL</b>	<b>Median</b> 0.9906	<b>Min</b> 0.8627	<b>Max</b> 1	<b>Std Err</b> 0.02612	<b>CV%</b>	%Effect 0.0%
0	Control	Type	Count	Mean								
0	Control	Type	Count	<b>Mean</b> 0.967	0.8945	1	0.9906	0.8627	1	0.02612	6.04%	0.0%
0 2.5	Control	Type	Count 5 5	<b>Mean</b> 0.967 0.9392	0.8945 0.8476	1 1	0.9906 0.9706	0.8627 0.8333	1 1	0.02612 0.03301	6.04% 7.86%	0.0% 2.87%
0 2.5 5 10 20	Control	Type	Count 5 5 5	Mean 0.967 0.9392 0.9392	0.8945 0.8476 0.8574	1 1 1	0.9906 0.9706 0.9412	0.8627 0.8333 0.8431	1 1 1	0.02612 0.03301 0.02948	6.04% 7.86% 7.02%	0.0% 2.87% 2.87%
0 2.5 5 10	Control	ntrol	<b>Count</b> 5 5 5 5 5	Mean 0.967 0.9392 0.9392 0.4663	0.8945 0.8476 0.8574 0.3686	1 1 1 0.5641	0.9906 0.9706 0.9412 0.4615	0.8627 0.8333 0.8431 0.3545	1 1 1 0.5463	0.02612 0.03301 0.02948 0.03521	6.04% 7.86% 7.02% 16.88%	0.0% 2.87% 2.87% 51.77%
0 2.5 5 10 20	Control Lab Cor	Type	Count 5 5 5 5 5 5 5 5	Mean 0.967 0.9392 0.9392 0.4663 0.001961 0	0.8945 0.8476 0.8574 0.3686 0	1 1 1. 0.5641 0.007405	0.9906 0.9706 0.9412 0.4615 0	0.8627 0.8333 0.8431 0.3545 0	1 1 1 0.5463 0.009804	0.02612 0.03301 0.02948 0.03521 0.001961	6.04% 7.86% 7.02% 16.88%	0.0% 2.87% 2.87% 51.77% 99.8%
0 2.5 5 10 20 40 Аngular (Со С-µg/L	Control Lab Cor rrected) T Control	Type	Count 5 5 5 5 5 5 5 5	Mean 0.967 0.9392 0.9392 0.4663 0.001961 0	0.8945 0.8476 0.8574 0.3686 0 0	1 1 1. 0.5641 0.007405	0.9906 0.9706 0.9412 0.4615 0 0	0.8627 0.8333 0.8431 0.3545 0	1 1 1 0.5463 0.009804	0.02612 0.03301 0.02948 0.03521 0.001961	6.04% 7.86% 7.02% 16.88%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0%
0 2.5 5 10 20 40 Аngular (Со С-µg/L 0	Control Lab Cor	Type	Count 5 5 5 5 5 5 ed Sum Count 5	Mean           0.967           0.9392           0.9392           0.4663           0.001961           0           mary           Mean           1.428	0.8945 0.8476 0.8574 0.3686 0 0 <b>95% LCL</b> 1.261	1 1 0.5641 0.007405 0 <b>95% UCL</b> 1.594	0.9906 0.9706 0.9412 0.4615 0 0 0 <b>Median</b> 1.474	0.8627 0.8333 0.8431 0.3545 0 0	1 1 0.5463 0.009804 0 <b>Max</b> 1.525	0.02612 0.03301 0.02948 0.03521 0.001961 0	6.04% 7.86% 7.02% 16.88% 223.6%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0%
0 2.5 5 10 20 40 <b>Angular (Со</b> <b>С-µg/L</b> 0 2.5	Control Lab Cor rrected) T Control	Type	Count 5 5 5 5 5 5 5 <b>ed Sum</b> 5 5 5 5 5 5	Mean           0.967           0.9392           0.9392           0.4663           0.001961           0           mary           Mean           1.428           1.367	0.8945 0.8476 0.8574 0.3686 0 0 <b>95% LCL</b> 1.261 1.157	1 1 0.5641 0.007405 0 <b>95% UCL</b> 1.594 1.577	0.9906 0.9706 0.9412 0.4615 0 0 0 <b>Median</b> 1.474 1.398	0.8627 0.8333 0.8431 0.3545 0 0 0 <b>Min</b> 1.191 1.191 1.15	1 1 0.5463 0.009804 0 Max 1.525 1.525	0.02612 0.03301 0.02948 0.03521 0.001961 0 <b>Std Err</b> 0.05991 0.07563	6.04% 7.86% 7.02% 16.88% 223.6%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0% <b>%Effect</b> 0.0% 4.28%
0 2.5 5 10 20 40 <b>Angular (Co</b> <b>C-μg/L</b> 0 2.5 5	Control Lab Cor rrected) T Control	Type	Count 5 5 5 5 5 5 5 6 d Sum 5 5 5 5 5	Mean           0.967           0.9392           0.9392           0.4663           0.001961           0           mmary           Mean           1.428           1.367           1.361	0.8945 0.8476 0.8574 0.3686 0 0 <b>95% LCL</b> 1.261 1.157 1.163	1 1 0.5641 0.007405 0 95% UCL 1.594 1.577 1.559	0.9906 0.9706 0.9412 0.4615 0 0 0 <b>Median</b> 1.474 1.398 1.326	0.8627 0.8333 0.8431 0.3545 0 0 0 <b>Min</b> 1.191 1.15 1.164	1 1 0.5463 0.009804 0 Max 1.525 1.525 1.525	0.02612 0.03301 0.02948 0.03521 0.001961 0 <b>Std Err</b> 0.05991 0.07563 0.0712	6.04% 7.86% 7.02% 16.88% 223.6% 223.6% 9.38% 12.37% 11.7%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0% <b>%Effect</b> 0.0% 4.28% 4.67%
0 2.5 5 10 20 40 <b>Angular (Co</b> <b>C-μg/L</b> 0 2.5 5 10	Control Lab Cor rrected) T Control	Type ( htrol ( fransformed) Type ( htrol ( ) ( ) ) ) ) ) ) ) ) ) ) ) ) )	Count 5 5 5 5 5 5 5 ed Sum 6 5 5 5 5 5 5 5	Mean           0.967           0.9392           0.9392           0.4663           0.001961           0           mmary           Mean           1.428           1.367           1.361           0.7513	0.8945 0.8476 0.8574 0.3686 0 0 <b>95% LCL</b> 1.261 1.157 1.163 0.6525	1 1 0.5641 0.007405 0 95% UCL 1.594 1.577 1.559 0.85	0.9906 0.9706 0.9412 0.4615 0 0 0 <b>Median</b> 1.474 1.398 1.326 0.7469	0.8627 0.8333 0.8431 0.3545 0 0 0 <b>Min</b> 1.191 1.15 1.164 0.6378	1 1 0.5463 0.009804 0 Max 1.525 1.525 1.525 0.8318	0.02612 0.03301 0.02948 0.03521 0.001961 0 <b>Std Err</b> 0.05991 0.07563 0.0712 0.03557	6.04% 7.86% 7.02% 16.88% 223.6% 223.6% 9.38% 12.37% 11.7% 10.59%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0% <b>%Effect</b> 0.0% 4.28% 4.67% 47.38%
0 2.5 5 10 20 40 <b>Angular (Со</b> <b>С-µg/L</b> 0 2.5 5	Control Lab Cor rrected) T Control	Type ( htrol ( fransformed) Type ( htrol ( ) ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ) ( ) ( ) ) ( ) ( ) ( ) ) ( ) ) ( ) ) ( ) ) ( ) ) ) ( ) ) ( ) ) ) )	Count 5 5 5 5 5 5 5 6 d Sum 5 5 5 5 5	Mean           0.967           0.9392           0.9392           0.4663           0.001961           0           mmary           Mean           1.428           1.367           1.361	0.8945 0.8476 0.8574 0.3686 0 0 <b>95% LCL</b> 1.261 1.157 1.163	1 1 0.5641 0.007405 0 95% UCL 1.594 1.577 1.559	0.9906 0.9706 0.9412 0.4615 0 0 0 <b>Median</b> 1.474 1.398 1.326	0.8627 0.8333 0.8431 0.3545 0 0 0 <b>Min</b> 1.191 1.15 1.164	1 1 0.5463 0.009804 0 Max 1.525 1.525 1.525	0.02612 0.03301 0.02948 0.03521 0.001961 0 <b>Std Err</b> 0.05991 0.07563 0.0712	6.04% 7.86% 7.02% 16.88% 223.6% 223.6% 9.38% 12.37% 11.7%	0.0% 2.87% 2.87% 51.77% 99.8% 100.0% <b>%Effect</b> 0.0% 4.28% 4.67%



Analyst: JU QA: A(5 10/19/24

CETIS An	alytic	al Repo	ort					-	ort Date: Code:		Oct-21 14:2 9msdv   12	2-3450-882
Bivalve Larv	al Surv	ival and D	evelopn	nent Test			-			Nautilus	Environn	nental (CA)
Analysis ID: Analyzed:		320-3141 ct-21 14:2		•	/elopment R ametric-Con		Itments		S Version: al Results:	CETISv1. Yes	8.7	
Data Transfo	orm		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Cori	rected)	*****	NA	C > T	NA	NA		2.13%	5	10	7.071	
Dunnett Mul	tiple Co	mparison	Test									
Control	vs	C-µg/L		Test Stat	Critical	MSD DI	P-Value	P-Type	Decision(	α:5%)		
Lab Control		2.5		-0.6849	2.305	0.08 8	0.9482	CDF	Non-Signif	icant Effect		·······
		5		-1.095	2.305	0.08 8	0.9812	CDF	0	icant Effect		
		10*		20.54	2.305	0.08 8	< 0.0001	CDF	Significant			
		20*		40.37	2.305	0.08 8	<0.0001	CDF	Significant			
ANOVA Tabl	e											
Source		Sum Squa	ares	Mean Squ	iare	DF	F Stat	P-Value	Decision(	α:5%)		
Between		8.097662		2.024415		4	676.8	<0.0001	Significant	Effect		
Error		0.0598192	2	0.0029909	61	20						
					•••							
Total		8.157481				24						
Total Distributiona		8.157481				24			biene beerer meter oo			
Distributiona		8.157481			Test Stat		P-Value	Decision(	ά:1%)			
		8.157481 Test		f Variance			<b>P-Value</b> 0.2482	Decision( Equal Var				
Distributiona Attribute Variances		8.157481 Test	quality o	f Variance	Test Stat	Critical			iances			
Distributiona Attribute Variances Distribution	al Tests	8.157481 <b>Test</b> Bartlett E Shapiro-V	quality o	f Variance	Test Stat 5.405	Critical 13.28	0.2482	Equal Var	iances			
Distributiona Attribute Variances Distribution	al Tests It Rate S	8.157481 <b>Test</b> Bartlett E Shapiro-V	quality o	f Variance lormality	Test Stat 5.405	Critical 13.28	0.2482 0.1519	Equal Var	iances	Std Err	CV%	%Effect
Distributiona Attribute Variances Distribution Developmen	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V	quality o Vilk W N	f Variance lormality	<b>Test Stat</b> 5.405 0.9405	<b>Critical</b> 13.28 0.8877	0.2482 0.1519	Equal Var Normal Di	iances stribution	<b>Std Err</b> 0.007521	<b>CV%</b> 1.71%	%Effect 0.0%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V Summary col Type	quality o Vilk W N Count	f Variance Iormality Mean	Test Stat 5.405 0.9405 95% LCL	Critical 13.28 0.8877 95% UCL	0.2482 0.1519 Median	Equal Var Normal Di Min	iances stribution Max			
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V Summary col Type	quality o Vilk W N Count 5	f Variance Iormality <b>Mean</b> 0.9857	Test Stat 5.405 0.9405 95% LCL 0.9648	<b>Critical</b> 13.28 0.8877 <b>95% UCL</b> 1	0.2482 0.1519 Median 0.9906	Equal Var Normal Di <b>Min</b> 0.9565	iances stribution Max 1	0.007521	1.71%	0.0%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V Summary col Type	quality o Vilk W N <u>Count</u> 5 5 5 5	f Variance lormality <b>Mean</b> 0.9857 0.9916	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744	Critical 13.28 0.8877 95% UCL 1 1	0.2482 0.1519 <b>Median</b> 0.9906 1	Equal Var Normal Di Min 0.9565 0.9681	iances stribution Max 1 1	0.007521 0.006194	1.71% 1.4%	0.0% -0.6%
Distributiona Attribute Variances Distribution Developmen C-µg/L	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V Summary col Type	quality o Vilk W N <b>Count</b> 5 5 5 5	f Variance lormality Mean 0.9857 0.9916 0.9956	Test Stat 5.405 0.9405 95% LCL 0.9648 0.9744 0.988	Critical 13.28 0.8877 95% UCL 1 1 1	0.2482 0.1519 Median 0.9906 1 1	Equal Var Normal Di Min 0.9565 0.9681 0.9885	iances stribution Max 1 1 1	0.007521 0.006194 0.002714	1.71% 1.4% 0.61%	0.0% -0.6% -1.0%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20	al Tests t Rate \$ Contr	8.157481 Test Bartlett E Shapiro-V Summary col Type	quality o Vilk W N <u>Count</u> 5 5 5 5	f Variance lormality <u>Mean</u> 0.9857 0.9916 0.9956 0.4663	<b>Test Stat</b> 5.405 0.9405 <b>95% LCL</b> 0.9648 0.9744 0.988 0.3686	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641	0.2482 0.1519 Median 0.9906 1 1 0.4615	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545	Max 1 1 1 0.5463	0.007521 0.006194 0.002714 0.03521	1.71% 1.4% 0.61% 16.88%	0.0% -0.6% -1.0% 52.69%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40	al Tests It Rate & Contr Lab C	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol	quality o Vilk W N 5 5 5 5 5 5 5 5 5	f Variance lormality 0.9857 0.9916 0.9956 0.4663 0.002564 0	<b>Test Stat</b> 5.405 0.9405 <b>95% LCL</b> 0.9648 0.9744 0.988 0.3686 0	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683	0.2482 0.1519 Median 0.9906 1 1 0.4615 0	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0	iances stribution Max 1 1 1 0.5463 0.01282	0.007521 0.006194 0.002714 0.03521 0.002564	1.71% 1.4% 0.61% 16.88%	0.0% -0.6% -1.0% 52.69% 99.74%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40 Angular (Con	al Tests at Rate S Contr Lab C	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality 0.9857 0.9916 0.9956 0.4663 0.002564 0 mmary	<b>Test Stat</b> 5.405 0.9405 <b>95% LCL</b> 0.9648 0.9744 0.988 0.3686 0	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0	iances stribution Max 1 1 1 0.5463 0.01282 0 Max	0.007521 0.006194 0.002714 0.03521 0.002564	1.71% 1.4% 0.61% 16.88%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40 Angular (Con C-µg/L 0	al Tests at Rate S Contr Lab C	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol Transforr	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality 0.9857 0.9916 0.9956 0.4663 0.002564 0 mmary <u>Mean</u> 1.462	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744           0.988           0.3686           0           95% LCL           1.387	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL 1.537	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median 1.474	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0 0 0 <b>Min</b> 1.361	iances stribution Max 1 1 1 0.5463 0.01282 0 Max 1.525	0.007521 0.006194 0.002714 0.03521 0.002564 0 <b>Std Err</b> 0.02704	1.71% 1.4% 0.61% 16.88% 223.6% <b>CV%</b> 4.14%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0% %Effect 0.0%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40 Angular (Con C-µg/L 0 2.5	al Tests tt Rate \$ Contr Lab C rrected) Contr	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol Transforr	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality 0.9857 0.9916 0.9956 0.4663 0.002564 0 mmary <u>Mean</u> 1.462 1.485	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744           0.988           0.3686           0           95% LCL	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median 1.474 1.517	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0 0 0	iances stribution Max 1 1 1 0.5463 0.01282 0 Max 1.525 1.525	0.007521 0.006194 0.002714 0.03521 0.002564 0 Std Err	1.71% 1.4% 0.61% 16.88% 223.6%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0% -1.62%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40 Angular (Con C-µg/L 0 2.5	al Tests tt Rate \$ Contr Lab C rrected) Contr	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol Transforr	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality 0.9857 0.9916 0.9956 0.4663 0.002564 0 mmary <u>Mean</u> 1.462	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744           0.988           0.3686           0           95% LCL           1.387           1.414           1.461	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL 1.537	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median 1.474	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0 0 0 <b>Min</b> 1.361 1.391 1.463	iances stribution Max 1 1 1 0.5463 0.01282 0 Max 1.525	0.007521 0.006194 0.002714 0.03521 0.002564 0 <b>Std Err</b> 0.02704	1.71% 1.4% 0.61% 16.88% 223.6% <b>CV%</b> 4.14%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0% -0.0% -1.62% -2.59%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 20 40 Angular (Con C-µg/L 0 2.5 5 10 20 40 C-µg/L 0 2.5 5 10 20 40	al Tests tt Rate \$ Contr Lab C rrected) Contr	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol Transforr	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744           0.988           0.3686           0           95% LCL           1.387           1.414           1.461           0.6525	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL 1.537 1.556 1.538 0.85	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median 1.474 1.517 1.52 0.7469	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0 0 0 <b>Min</b> 1.361 1.391 1.463 0.6378	iances stribution Max 1 1 1 0.5463 0.01282 0 Max 1.525 1.525	0.007521 0.006194 0.002714 0.03521 0.002564 0 <b>Std Err</b> 0.02704 0.02554 0.01394 0.03557	1.71% 1.4% 0.61% 16.88% 223.6% 223.6% 4.14% 3.85% 2.08% 10.59%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0% -0.0% -1.62% -2.59% 48.6%
Distributiona Attribute Variances Distribution Developmen C-µg/L 0 20 40 Angular (Con C-µg/L 0 2.5 5 5 10 20 40 Angular (Con S-µg/L 0 2.5 5 5	al Tests tt Rate \$ Contr Lab C rrected) Contr	8.157481 Test Bartlett E Shapiro-V Summary ol Type ontrol Transforr	quality o Vilk W N 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	f Variance lormality	Test Stat           5.405           0.9405           95% LCL           0.9648           0.9744           0.988           0.3686           0           95% LCL           1.387           1.414           1.461	Critical 13.28 0.8877 95% UCL 1 1 1 0.5641 0.009683 0 95% UCL 1.537 1.556 1.538	0.2482 0.1519 Median 0.9906 1 1 0.4615 0 0 0 Median 1.474 1.517 1.52	Equal Var Normal Di 0.9565 0.9681 0.9885 0.3545 0 0 0 <b>Min</b> 1.361 1.391 1.463	iances stribution Max 1 1 1 0.5463 0.01282 0 Max 1.525 1.525 1.525	0.007521 0.006194 0.002714 0.03521 0.002564 0 <b>Std Err</b> 0.02704 0.02554 0.01394	1.71% 1.4% 0.61% 16.88% 223.6% <b>CV%</b> 4.14% 3.85% 2.08%	0.0% -0.6% -1.0% 52.69% 99.74% 100.0% -1.62% -2.59%

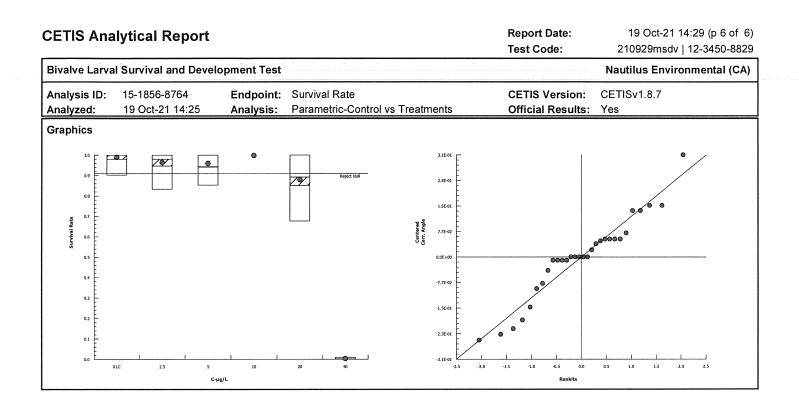
Analyst: JU QA: ACS 10/19/21



Analyst: JU QA: A(510/19/2)

CETIS An	alytical Repo	ort					•	ort Date: Code:			29 (p 5 of 6) 2-3450-8829
Bivalve Larv	al Survival and E	)evelopme	ent Test			· · · · · · · · · · · · · · · · · · ·	Nautilus	s Environn	nental (CA)		
Analysis ID: Analyzed:	15-1856-8764 19 Oct-21 14:2			vival Rate ametric-Con	trol vs Trea	tments		IS Version: al Results:	CETISv1. Yes	.8.7	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr	rected)	NA	C > T	NA	NA		7.23%	10	20	14.14	
Dunnett Mul	tiple Comparisor	n Test				*******					
Control	vs C-µg/L		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision(	α:5%)		
Lab Control	2.5		0.9985	2.362	0.202 8	0.4206	CDF	Non-Signi	icant Effect		
	5		1.18	2.362	0.202 8	0.3427	CDF	-	icant Effect		
	10		-0.6284	2.362	0.202 8	0.9558	CDF	Non-Signi	icant Effect		
	20*		2.951	2.362	0.202 8	0.0143	CDF	Significant	Effect		
	40*		16.45	2.362	0.202 8	<0.0001	CDF	Significant	Effect		
ANOVA Tabl	е										
Source	Sum Squ	ares	Mean Squ	are	DF	F Stat	P-Value	Decision(	α:5%)		
Between	7.653782		1.530756		5	83.56	<0.0001	Significant	Effect		
Error	0.4396555	5	0.0183189	8	24						
Total	8.093437				29						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Mod Leve	ene Equalit	y of Variance	3.52	4.248	0.0215	Equal Var	iances			
Variances	Levene E	quality of	Variance	4.565	3.895	0.0046	Unequal \	/ariances			
Distribution	Shapiro-\	Wilk W Noi	rmality	0.9432	0.9031	0.1106	Normal Di	istribution			
Survival Rate	e Summary										
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9804	0.926	1	1	0.902	1	0.01961	4.47%	0.0%
2.5		5	0.9471	0.8586	1	0.9804	0.8333	1	0.03186	7.52%	3.4%
5		5	0.9431	0.8669	1	0.9412	0.8529	1	0.02745	6.51%	3.8%
10		5	1	1	1	1	1	1	0	0.0%	-2.0%
20		5	0.851	0.6905	1	0.8922	0.6765	1	0.05778	15.18%	13.2%
40		5	0.001961	0	0.007405	0	0	0.009804	0.001961	223.6%	99.8%
	rrected) Transfor	med Sumi	mary								
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	1.467	1.318	1.617	1.521	1.252	1.521	0.05379	8.2%	0.0%
2.5		5	1.382	1.182	1.582	1.43	1.15	1.521	0.07206	11.66%	5.82%
5		5	1.367	1.178	1.555	1.326	1.177	1.521	0.06772	11.08%	6.88%
10		5	1.521	1.521	1.522	1.521	1.521	1.521	0	0.0%	-3.67%
20		5	1.215	0.9484	1.481	1.236	0.9658	1.521	0.09598	17.67%	17.21%
40		5	0.05946	0.03189	0.08703	0.04953	0.04953	0.09918	0.00993	37.34%	95.95%

Analyst: Ju QA: A(s 10/19/11



Analyst: JL QA: ACJ 10/19/24

E IIS Alla	lytical Repo	ort					•	ort Date: Code:			:29 (p 1 of 3 12-3450-882
Bivalve Larva	l Survival and D	evelopmen	t Test						Nautilu	s Environ	mental (CA
Analysis ID: Analyzed:	18-2247-7613 19 Oct-21 14:2				elopment Ra ation (ICPIN)			S Version: ial Results		.8.7	
_inear Interp	lation Options										***************************************
K Transform	Y Transform	Seed	d Re	samples	Exp 95%	CL Meth	od				
_inear	Linear	5987	15 100	00	Yes	Two-l	Point Interpo	olation			
Point Estimat	es										
_evel µg/L	95% LCL	95% UCL									
EC25 7.26		7.863						· · · · · · · · · · · · · · · · · · ·			
EC50 9.809		11.27									
Combined De	velopment Rate	Summary			Calcu	lated Variat	e(A/B)				
C-µg/L (	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	в
) [	ab Control	5	0.967	0.8627	1	0.02612	0.0584	6.04%	0.0%	525	542
2.5		5	0.9392	0.8333	1	0.03301	0.07382	7.86%	2.87%	504	535
5		5	0.9392	0.8431	1	0.02948	0.06591	7.02%	2.87%	498	529
10		5	0.4663	0.3545	0.5463	0.03521	0.07874	16.88%	51.77%	255	547
20		5	0.001961	0	0.009804	0.001961	0.004384	223.6%	99.8%	1	511
10		5	0	0	0	0	0		100.0%	0	510
<b>Graphics</b> <sup>10</sup> <sup>03</sup> <sup>04</sup> <sup>05</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>03</sup> <sup>04</sup> <sup>04</sup> <sup>05</sup> <sup>05</sup> <sup>04</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup> <sup>05</sup>											

C-µg/L

Analyst: JU QA:Ars 10/19/21

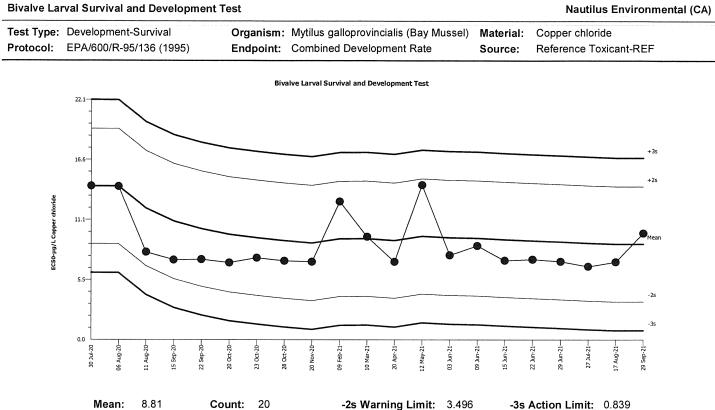
CETIS	Anal	ytical Repo	ort					-	rt Date: Code:			:29 (p 2 of 3) 12-3450-8829
Bivalve	Larval	Survival and D	evelopme	ent Test						Nautilu	s Environ	mental (CA)
Analysi Analyze		04-7958-3381 19 Oct-21 14:2		•	evelopment I inear Interpol	Rate ation (ICPIN)			S Version: ial Results		.8.7	1979)
Linear I	nterpol	ation Options								,		
X Trans	form	Y Transform	Se	ed R	esamples	Exp 95% (	CL Meth	od				
Linear		Linear	29	5463 10	000	Yes		Point Interpo	olation			
Point E	stimate	S							<u>.</u>			
Level	µg/L	95% LCL	95% UCI	L								
EC25	7.359	6.946	7.806									
EC50	9.718	8.899	10.99									
Develop	oment F	Rate Summary				Calcul	ated Variat	e(A/B)				
C-µg/L	Co	ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	в
0	La	b Control	5	0.9857	0.9565	1	0.007521	0.01682	1.71%	0.0%	525	532
2.5			5	0.9916	0.9681	1	0.006194	0.01385	1.4%	-0.6%	504	508
5			5	0.9956	0.9885	1	0.002714	0.00607	0.61%	-1.0%	498	500
10			5	0.4663	0.3545	0.5463	0.03521	0.07874	16.88%	52.69%	255	547
20			5	0.00256		0.01282	0.002564	0.005734	223.6%	99.74%	1	435
40			5	0	0	0	0	0		100.0%	0	5
Graphic												

Analyst: JU QA: A(5 10/19/2)

CETIS	S Anal	ytical Repo	ort					-	ort Date: Code:			29 (p 3 of 3) 2-3450-8829
Bivalv	e Larval	Survival and D	evelopmen	t Test					· ··· · · ·····.	Nautilu	s Environi	mental (CA)
Analys Analyz		17-8563-2416 19 Oct-21 14:2		<b>point</b> : Su I <b>ysis:</b> Lin		ation (ICPIN)	)		S Version: ial Results:	CETISv1 Yes	.8.7	
Linear X Tran	-	ation Options Y Transform	See	d Re	samples	Exp 95%	CL Meth	od				
Linear		Linear	4204	27 10	00	Yes	Two-	Point Interpo	olation			_
Point E Level EC25 EC50	Estimates <u> µg/L</u> 22.73 28.5	s 95% LCL 18.51 25.72	<b>95% UCL</b> 25.31 30.22									
			30.22									
		ummary					lated Variat					
C-µg/L		ontrol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	В
0	La	b Control	5	0.9804	0.902	1	0.01961	0.04384	4.47%	0.0%	500	510
2.5 5			5 5	0.9471	0.8333	1	0.03186	0.07124	7.52%	3.4%	483	510
5 10			5 5	0.9431 1	0.8529 1	1 1	0.02745 0	0.06138 0	6.51% 0.0%	3.8% -2.0%	481 510	510 510
20			5	0.851	0.6765	1	0.05778	0.1292	0.0 <i>%</i> 15.18%	-2.0% 13.2%	434	510
40			5	0.001961		0.009804	0.001961	0.004384	223.6%	99.8%	1	510
Graphi	1.0 0.9 0.9 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	<b>9</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b> <b>1</b>	5 20 C+19/L	- 1	35 40							

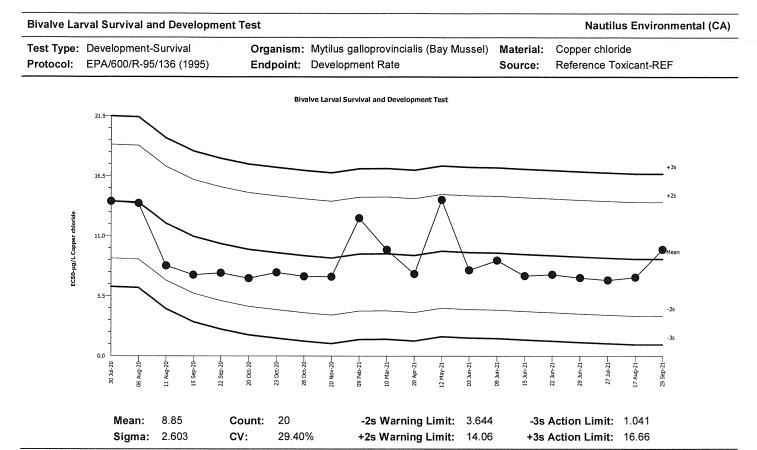


**Quality Control Data** 



Mean:	8.81	Count:	20	-2s Warning Limit:	3.496	-3s Action Limit:	0.839
Sigma:	2.657	CV:	30.20%	+2s Warning Limit:	14.12	+3s Action Limit:	16.78

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Jul	30	15:35	14.17	5.355	2.015	(+)		00-9901-5729	19-4020-2576
2		Aug	6	15:40	14.13	5.315	2.001	(+)		01-4440-0014	02-9592-9535
3			11	14:30	8.085	-0.7246	-0.2727			21-4043-5119	05-6052-3343
4		Sep	15	0:00	7.365	-1.445	-0.5438			19-9833-0655	18-5101-1090
5			22	14:40	7.405	-1.405	-0.5288			04-0347-9113	09-6026-9613
6		Oct	20	14:25	7.1	-1.71	-0.6434			08-8652-5764	17-2783-6415
7			23	13:45	7.548	-1.262	-0.4748			09-8413-3498	19-3049-9702
8			28	15:50	7.269	-1.541	-0.58			09-4043-4676	02-6542-7057
9		Nov	20	16:00	7.187	-1.623	-0.6108			13-7696-8009	10-4367-1427
10	2021	Feb	9	15:15	12.74	3.929	1.479			12-5648-6062	18-1503-3303
11		Mar	10	14:15	9.481	0.6707	0.2524			13-7922-5399	10-0885-9755
12		Apr	20	16:15	7.185	-1.625	-0.6116			06-7450-9711	18-3353-6875
13		May	12	15:00	14.27	5.458	2.054	(+)		15-4594-3065	00-9727-8504
14		Jun	3	15:50	7.791	-1.019	-0.3834			07-9391-2508	21-2212-7050
15			9	14:00	8.654	-0.1565	-0.05889			18-5736-8495	04-4549-3405
16			15	15:40	7.302	-1.508	-0.5677			00-2993-6780	17-7654-7354
17			22	13:45	7.404	-1.406	-0.5292			16-6840-3553	15-2803-6917
18			29	14:55	7.211	-1.599	-0.6017			07-2040-2693	08-8247-6801
19		Jul	27	16:30	6.748	-2.062	-0.7759			16-6019-6958	06-5859-7928
20		Aug	17	14:25	7.168	-1.642	-0.6182			07-7298-7649	09-6648-5411
21		Sep	29	15:45	9.809	0.9992	0.376			12-3450-8829	18-2247-7613



Quali	ty Con	trol Data	a								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Jul	30	15:35	14.14	5.287	2.031	(+)		00-9901-5729	02-7058-2757
2		Aug	6	15:40	13.95	5.1	1.959			01-4440-0014	13-7910-6508
3			11	14:30	8.237	-0.613	-0.2355			21-4043-5119	01-1240-7098
4		Sep	15	0:00	7.397	-1.453	-0.5581			19-9833-0655	03-7616-5506
5			22	14:40	7.576	-1.274	-0.4893			04-0347-9113	01-0437-7711
6		Oct	20	14:25	7.089	-1.761	-0.6763			08-8652-5764	06-9681-8469
7			23	13:45	7.616	-1.234	-0.4741			09-8413-3498	17-5257-3346
8			28	15:50	7.257	-1.593	-0.612			09-4043-4676	12-0840-2779
9		Nov	20	16:00	7.23	-1.62	-0.6225			13-7696-8009	11-4264-3018
10	2021	Feb	9	15:15	12.58	3.733	1.434			12-5648-6062	01-5747-2564
11		Mar	10	14:15	9.694	0.8437	0.3241			13-7922-5399	08-4869-7631
12		Apr	20	16:15	7.482	-1.368	-0.5256			06-7450-9711	17-9210-1733
13		May	12	15:00	14.27	5.418	2.081	(+)		15-4594-3065	12-3891-6641
14		Jun	3	15:50	7.832	-1.018	-0.391			07-9391-2508	11-7075-1183
15			9	14:00	8.715	-0.1346	-0.05172			18-5736-8495	18-6125-5477
16			15	15:40	7.302	-1.548	-0.5948			00-2993-6780	13-6998-5313
17			22	13:45	7.427	-1.423	-0.5468			16-6840-3553	07-3347-2243
18			29	14:55	7.132	-1.718	-0.6601			07-2040-2693	17-0989-5973
19		Jul	27	16:30	6.912	-1.938	-0.7447			16-6019-6958	03-0913-6262
20		Aug	17	14:25	7.168	-1.682	-0.6464			07-7298-7649	11-4901-9823
21		Sep	29	15:45	9.718	0.8679	0.3334			12-3450-8829	04-7958-3381

# **CETIS QC Plot**

Quality Control Data

Bivalve La	rval Survival and	Developm	ent Test							r	lautilu	ıs Envi	ronmental (0
Test Type: Protocol:	Development-Su EPA/600/R-95/1			ganism: dpoint:			incialis	(Bay Musse	l) Material Source:			de xicant-l	REF
				Biv	alve Larval	Survival and I	evelopme	nt Test					
	47.3												+3s
	35.5							$\wedge$					+25
													Mean
er chloride	23.7						-	-					7
EC50-µg/L Copper chloride											+		-25
EC50	11.8-												-3s
	-												
	0.0	20		- <sup>20</sup>	2 22	20	51	21	21	21	51	21	7
	23-bC 30-bC 30-bC	06 Aug-20- 11 Aug-20-	15 Sep-20- 22 Sep-20-	20 Oct-20	23 Oct-20-	20 Nov-20- 09 Feb-21-	20 Apr-21	12 May-21- 03 Jun-21-	09 Jun-21 15 Jun-21	22 Jun-21- 29 Jun-21-	27 Jul-21-	17 Aug-21	29 Sep-;
	Maan	28.20	Count	20		0.14		limit. 10	~ ~			40.00	

Mean:	28.29	Count:	20	-2s Warning Limit:	18.08	-3s Action Limit:	12.98
Sigma:	5.101	CV:	18.00%	+2s Warning Limit:	38.49	+3s Action Limit:	43.59

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Jul	23	15:00	28.98	0.6898	0.1352			06-0741-6264	11-2012-0880
2			30	15:35	35.02	6.728	1.319			00-9901-5729	18-8992-7280
3		Aug	6	15:40	29.92	1.633	0.3202			01-4440-0014	05-9348-7696
4			11	14:30	27.06	-1.231	-0.2414			21-4043-5119	16-7506-8565
5		Sep	15	0:00	28.73	0.4357	0.08541			19-9833-0655	01-9900-7404
6			22	14:40	28.86	0.5736	0.1125			04-0347-9113	03-4439-9784
7		Oct	20	14:25	27.4	-0.8939	-0.1752			08-8652-5764	01-6350-7777
8			23	13:45	27.94	-0.3483	-0.06829			09-8413-3498	02-1232-2390
9			28	15:50	29.82	1.529	0.2998			09-4043-4676	15-7574-6891
10		Nov	20	16:00	28.24	-0.04627	-0.009071			13-7696-8009	21-0824-4197
11	2021	Feb	9	15:15	29.8	1.515	0.2969			12-5648-6062	08-9593-0094
12		Apr	20	16:15	27.97	-0.3192	-0.06259			06-7450-9711	02-2099-4435
13		May	12	15:00	39.23	10.94	2.145	(+)		15-4594-3065	18-1677-8776
14		Jun	3	15:50	29.62	1.328	0.2603			07-9391-2508	05-7225-1680
15			9	14:00	28.97	0.6764	0.1326			18-5736-8495	17-4075-5383
16			15	15:40	29.61	1.321	0.2591			00-2993-6780	11-7676-4213
17			22	13:45	27.27	-1.023	-0.2006			16-6840-3553	00-7652-1305
18			29	14:55	29.58	1.295	0.2538			07-2040-2693	20-9452-4039
19		Jul	27	16:30	16.82	-11.47	-2.249	(-)		16-6019-6958	09-3317-6652
20		Aug	17	14:25	14.86	-13.43	-2.632	(-)		07-7298-7649	12-6822-1646
21		Sep	29	15:45	28.5	0.2089	0.04094			12-3450-8829	17-8563-2416

Analyst: JM QA: A(5 10/19/24

## **CETIS Test Data Worksheet**

Nautilus Environmental (CA)

#### **Bivalve Larval Survival and Development Test**

tart Date: nd Date: <sup>(</sup> ample Dat	29 22 01 24 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Sep-21 Sep-21 Sep-21	 	Protocol:	Mytilus galloprovi EPA/600/R-95/13 Copper chloride			Sample Code: (デ 240922msdv こ)  0여2억 M&ん Sample Source: Reference Toxicant Sample Station: Copper Chloride
C-µg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
			41			78	1	ACS 10/19/21
			42			106	105	
			43			103	0	
			44			1	0	Cells in lysis
			45			0	0	Cells in lysis Cells in lysis
			46			94	91	
			47			106	106	i.
			48			118	118	
			49			10 8	59	
			50			112	60	
			51			104	48	
			52			0	0	Cells in lysis
			53			94	93	
			54			69	D	
			55			117	117	
			56			91	0	
			57			104	103	
			58			113	112	
			59			87	86	
			60			D	0	Cells in lysis
			61			117	117	Cells in lysis Cells in lysis
			62			0	ð	Cells in lysis
			63			110	39	· · · · · · · · · · · · · · · · · · ·
			64			92	88	
			65			94	0	
			66				ill	
			67			85	85	
			68			100	99	
			69			96	96	
			70			11.3	49	

@Quipt 10/19/21

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## **CETIS Test Data Worksheet**

Report Date: Test Code:

### **Bivalve Larval Survival and Development Test**

Bivalve Larv	al Sur	vival a	and D	evelopment Test				Nautilus Environmental (CA)
Start Date: 2 End Date: Sample Date	@ <u>-24 (</u> 2.9 <sub>22 (</sub>	Sep-2 Sep-2	11-00	+-21Protocol: E	Mytilus galloprovi EPA/600/R-95/13 Copper chloride			Sample Code: @ 210922msdv Z to 2 2 msdv Sample Source: Reference Toxicant Sample Station: Copper Chloride
C-µg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	LC	1	64					
0	LC	2	42					
0	LC	3	57			95	94	KT 1072/21
0	LC	4	55					
0	LC	5	58					
2.5		1	67					
2.5		2	68					
2.5		3	48			110	109	
2.5		4	66					
2.5		5	46					
5		1	47					
5		2	53					
5		3	69			86	86	· · · · · · · · · · · · · · · · · · ·
5		4	59					
5		5	61					-
10		1	49					
10		2	50					
10		3	63			109	18	
10		4	70					
10		5	51					
20		1	56					
20		2	54					
20		3	43			85	0	
20		4	41			~~~		
20		5	65			1		
40		1	62					
40		2	44					
40		3	52			0	0	
40		4	45					
40	-	5	60					

QC= 45

(3) QUE ACS10/19/21

# Marine Chronic Bioassay

## Water Quality Measurements

Client: Internal

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120.

Sample ID: CuCl<sub>2</sub>

Test No.: 210922msdv-210929msdv C 
 Test Species:
 M. galloprovincialis

 Start Date/Time:
 9/22/2021
 9/29/21
 1545

 End Date/Time:
 9/24/2021
 10/1/21
 1440

Concentration (µg/L)	Salinity (ppt)			Temperature (°C)		Dissolved Oxygen (mg/L)			pH (pH units)			
(+-9, -)	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	31.8	32.1	32.0	15.8	15.4	14.7	8.6	8.6	8.6	7.99	7.89	7.99
2.5	32.1	32.4	32.5	15.7	15.2	14.5	8.7	8.7	8.6	8.00	7,89	8.01
5	32.0	32.5	32.6	15.4	15.0	14.5	8.7	8.8	8.6	801	7.90	8.01
10	32.0	32.5	32.5	15.5	15.6	14.7	8.6	8.7	8.6	8.01	7.91	801
20	32.0	32.5	32.5	15.4	(5.7	14.6	8.7	8.7	8.6	8.02	7.92	8.01
40	31.9	32.3	32.4	15.Z	15.4	14.6	8.7	8.7	8.6	8.02	7.92	8.01
			0	24	48		High (	conc. mad	le (μg/L):	4	0	]
Technician Initials:	WQ F	Readings:	P	RT	RT	Vol. Cu stock added (mL): 2.0						
	Dilutions	made by:	YS						me (mL):		500	
Environmental Chambe	ər:	Ď				Cı	ı stock co	ncentratio	on (µg/L):	10,0	00	
Comments: 0 hrs: @128 bo 9/25/21 24 hrs:						West						
	48 hrs:											
QC Check: <u>34 10/11/2</u>								Fina	Review:	ACS 10/1	9 (2)	

#### Marine Chronic Bioassay DM-013

Client/Sample:	Internal/Cucl2	
Test No.:	ZTOOTMISDU D ZIO929msd	V
Test Species:	Mytilus galloprovincialis	
Animal Source/Batc	hTank: M-REP SB	
Date Received:	9/14/21	
Test Chambers:	30 mL glass shell vials	
Sample Volume:	10 mL	

11:05

#### Larval Development Worksheet

Start Date/Time:	9/29/2021	1545	
End Date/Time:	10/1/2021	1440	
Technician Initials:	145		

### Spawn Information

First Gamete Release Time:

## **Gamete Selection**

Sev

Sex	Number Spawning
Male	2
Female	2

Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape etc.)					
Male	1,2	excellent motility and density					
Female 1	1	excellent density, pake orange mostly round					
Female 2	2	excellent density, pale or more, some num					
Female 3	-						

Egg Fertilization Time: 12:00

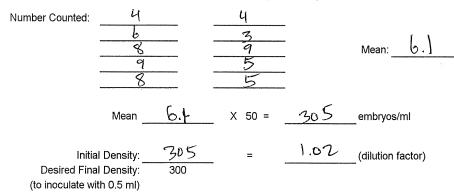
Stock(s) chosen for testing:

#### **Embryo Stock Selection**

Stock Number	% of embryos at 2-cell division stage		
Female 1	100		
Female 2	100		
Female 3			

#### **Embryo Inoculum Preparation**

Target count on Sedgwick-Rafter slide for desired density is 6 embryos



Prepare the embryo inoculum according to the calculated dilution factor. For example, if the dilution factor is 2.25, use 100 ml of existing stock (1 part) and 125 ml of dilution water (1.25 parts).

#### **Time Zero Control Counts**

TØ Vial No.	No. Dividing	Total	% Dividing	Mean % Dividing	
TØ A	113	113	100.0		]
TØ B	99	99	100-0		
тøс	108	108	100.0	0.001	
TØ D	94	94	100.0		
TØ E	98	98	100.0		
TØ F	101	101	100.0		
<u>X</u> =	102				•
(A) (A)	5 JUL 10/11/	2 1			

48-h QC: 103/103 100%

Comments:

QC Check:

JU 10/11/2

Enthalpy Analytical. 4340 Vandever Avenue. San Diego, CA 92120.

Final Review: ACS 10/19/21