

Chronic Toxicity Testing Results for Wyckoff Eagle Harbor Groundwater Treatment Plant

Monitoring Period: February 2022

Prepared for: Jacobs

1100 112th Ave NE Suite 500

Bellevue, WA, 98004

Prepared by: Enthalpy Analytical

4340 Vandever Avenue San Diego, CA 92120

(858) 587-7333

Date Submitted: March 3, 2022

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.

Results verified by:

Barbara Orelo, Project Manager

California

4340 Vandever Avenue San Diego, California 92120 858.587.7333 fax: 619.279.5919

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.

Table 1. Sample Information

Sample ID	020822
Enthalpy Log-in Number	22-0142
Collection Date; Time	2/8/22; 0935h
Receipt Date; Time	2/9/22; 1057h
Receipt Temperature (°C)	2.7
Dissolved Oxygen (mg/L)	7.7
рН	7.41
Conductivity (µS/cm)	7,740
Salinity (ppt)	4.6
Alkalinity (mg/L CaCO ₃)	472
Total Chlorine (mg/L)	0.02
Total Ammonia (mg/L as N)	1.2

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.

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

ie Bivaive Laivai Bevelopinent Test
2/9/22, 1625h to 2/11/22, 1625h
Mytilus galloprovincialis
M-Rep (Carlsbad, CA)
4 hours post fertilization
48 ± 2 hours
Static
30 mL glass vial, 10 mL
15 ± 1°C
Laboratory Seawater (Source: Scripps Institution of Oceanography [SIO] intake) diluted with de-ionized water
Brine Control (de-ionized water and hypersaline brine)
30 ± 2 ppt
Hypersaline brine made by freezing seawater to a salinity of 99.6 ppt
73.3a, 35, 18, 9, 4, and 2%, lab and brine controls
5
16 hours light/8 hours dark
EPA/600/R-95/136
\geq 50% mean survival, \geq 90% mean development rate
Copper chloride ^b

^a Highest concentration tested due to the addition of hypersaline brine

CETIS™ 1.8.7.20

Statistical Methods

Statistical Software

Statistical analyses were conducted using EPA flowchart specifications as outlined in the test guidance manual (USEPA 1995). Organism performance in the sample was compared to that observed in the brine control. Results were used to calculate the No Observed Effect Concentration (NOEC) and the concentrations expected to cause an adverse effect to 50 percent of test organisms (EC₅₀). The chronic toxic unit (TUc) value was calculated as 100/NOEC, as specified in the permit. The statistical analyses were performed using the Comprehensive Environmental Toxicity Information System (CETIS), version 1.8.7.20 by Tidepool Scientific Software.

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 73.3 (the highest concentration tested) and a chronic toxic unit (TU_c) of less than 1.4 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.

^b 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.

Table 3. Summary of Statistical Results for the Chronic Toxicity Tests

Species	Endpoint NOEC (% effluent) (LOEC (% effluent)	Toxic Unit (TU _c)	EC ₅₀ (% effluent)
Bivalve	Normal Development	73.3	> 73.3	< 1.4	> 73.3
Divalve	Survival	73.3	> 73.3	< 1.4	> 73.3

NOEC = No Observed Effect Concentration

LOEC = Lowest Observed Effect Concentration

Chronic Toxic Unit (TU_c) = 100/NOEC. NOTE: Since 100% sample was not tested, the TU_c value can only be calculated up to the highest concentration tested. If no toxicity is observed at this concentration, the TU_c is reported as less than the calculated value.

Effect Concentration 50 (EC₅₀) = Concentration expected to cause an effect to 50% of the organisms

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

	Tor and Britaire Bereicpine	it our our roundity root
Concentration (% Effluent)	Mean Survival (%)	Mean Normal Development (%)
0 (Brine Control)	97.7	95.0
0 (Lab Control)	96.7	96.5
2	98.5	96.2
4	97.7	96.9
9	99.2	97.2
18	98.8	97.2
35	99.8	97.3
73.3ª	99.5	96.8

^a 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 (%)	EC ₅₀ (μg/L copper)	Historical Mean ± 2 SD (µg/L copper)	CV (%)
Bivalve Survival Rate	10	28.9	27.3 ± 10.8	19.8
Bivalve Normal Development	5	8.10	8.55 ± 3.98	23.3

NOEC = No Observed Effect Concentration

Effect Concentration 50 (EC $_{50}$) = Concentration expected to cause an effect to 50% of the organisms

Historical Mean \pm 2 SD = The mean EC₅₀ 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:

02 Mar-22 08:54 (p 1 of 4) 2202-S067 | 07-8877-2263

Bivalve Larval	Survival and Develop	nent Test	- 1 15- E					Nautilus Environmental (CA
Batch ID: Start Date: Ending Date: Duration:	09 Feb-22 16:25 F 11 Feb-22 16:25 S	Test Type: Protocol: Species: Source:	Development-S EPA/600/R-95/ Mytilus gallopro M-Rep, Carlsba	/136 (1995) ovincialis			e: Fro	ited Natural Seawater zen Seawater
	08 Feb-22 09:35 M 09 Feb-22 10:57 S	Code: Material: Source: Station:	22-0142 Effluent Sampl Jacobs Wyckoff	е		Clie Proj	nt: Jac ject:	obs
Comparison S	ummary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method	
12-8886-6790	Combined Development	t Ra 73.3	>73.3	NA	5.49%	² 1.364	Dunnett N	Multiple Comparison Test
02-2892-3513	Development Rate	73.3	>73.3	NA	2.91%	4 1.364	Dunnett N	Multiple Comparison Test
18-5342-4762	Survival Rate	73.3	>73.3	NA	3.64%	۵ 1.364	Steel Mar	ny-One Rank Sum Test
Point Estimate	Summary							
Analysis ID		11	0/	95% LCL		TH	Method	
	Endpoint	Level	%	95% LCL	95% UCL	. 10	Mediod	
06-3515-8270	Combined Development		>73.3	N/A N/A	95% UCL N/A N/A	<1.364 <1.364		erpolation (ICPIN)
06-3515-8270 00-9187-5556	Combined Development	Ra EC25	>73.3 >73.3	N/A	N/A	<1.364	Linear Int	erpolation (ICPIN) erpolation (ICPIN)
		t Ra EC25 EC50	>73.3 >73.3 >73.3	N/A N/A	N/A N/A	<1.364 <1.364	Linear Int	
	Combined Development Development Rate	t Ra EC25 EC50 EC25	>73.3 >73.3 >73.3 >73.3	N/A N/A N/A	N/A N/A N/A	<1.364 <1.364 <1.364	Linear Int	
00-9187-5556	Combined Development Development Rate	t Ra EC25 EC50 EC25 EC50	>73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A	N/A N/A N/A N/A	<1.364 <1.364 <1.364 <1.364	Linear Int	erpolation (ICPIN)
00-9187-5556	Combined Development Development Rate Survival Rate	EC25 EC50 EC25 EC50 EC25	>73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A	<1.364 <1.364 <1.364 <1.364 <1.364	Linear Int	erpolation (ICPIN)
00-9187-5556 12-0974-5156	Combined Development Development Rate Survival Rate	EC25 EC50 EC25 EC50 EC25	>73.3 >73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A	<1.364 <1.364 <1.364 <1.364 <1.364 <1.364	Linear Int	erpolation (ICPIN)
00-9187-5556 12-0974-5156 Test Acceptab Analysis ID	Combined Development Development Rate Survival Rate ility	t Ra EC25 EC50 EC25 EC50 EC25 EC50	>73.3 >73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A N/A	<1.364 <1.364 <1.364 <1.364 <1.364 <1.364	Linear Int	erpolation (ICPIN) erpolation (ICPIN)
00-9187-5556 12-0974-5156 Test Acceptab Analysis ID 00-9187-5556	Combined Development Development Rate Survival Rate ility Endpoint Development Rate	EC25 EC50 EC25 EC50 EC25 EC50 Attrib	>73.3 >73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A N/A	<1.364 <1.364 <1.364 <1.364 <1.364 <1.364	Linear Int Linear Int Linear Int Overlap	erpolation (ICPIN) erpolation (ICPIN) Decision
00-9187-5556 12-0974-5156 Test Acceptab Analysis ID 00-9187-5556	Combined Development Development Rate Survival Rate ility Endpoint	EC25 EC50 EC25 EC50 EC25 EC50 Attrib Contro	>73.3 >73.3 >73.3 >73.3 >73.3 >73.3	N/A N/A N/A N/A N/A N/A Test Stat 0.9496	N/A N/A N/A N/A N/A N/A TAC Lim	<1.364 <1.364 <1.364 <1.364 <1.364 <1.364	Linear Int Linear Int Linear Int Overlap Yes	erpolation (ICPIN) erpolation (ICPIN) Decision Passes Acceptability Criteria
00-9187-5556 12-0974-5156 Test Acceptab Analysis ID 00-9187-5556 02-2892-3513	Combined Development Development Rate Survival Rate ility Endpoint Development Rate Development Rate	EC25 EC50 EC25 EC50 EC25 EC50 Attrib Contro	>73.3 >73.3 >73.3 >73.3 >73.3 >73.3 >100 Resp	N/A N/A N/A N/A N/A N/A Test Stat 0.9496 0.9496	N/A N/A N/A N/A N/A N/A TAC Lim 0.9 - NL 0.9 - NL	<1.364 <1.364 <1.364 <1.364 <1.364 <1.364	Linear Int Linear Int Linear Int Overlap Yes Yes	erpolation (ICPIN) erpolation (ICPIN) Decision Passes Acceptability Criteria Passes Acceptability Criteria

02 Mar-22 08:54 (p 2 of 4) 2202-S067 | 07-8877-2263

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Bivalve La	rval Survival and I	Developme	nt Test	n = =					Nautilus	Environn	nental (CA)
Combined	Development Rate	e Summary						·	-		
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.9282	0.8763	0.9801	0.8762	0.9778	0.01871	0.04183	4.51%	0.0%
0	Lab Control	5	0.933	0.873	0.993	0.8515	0.9667	0.02161	0.04833	5.18%	-0.51%
2		5	0.9476	0.9194	0.9758	0.9208	0.9741	0.01016	0.02271	2.4%	-2.09%
4		5	0.9468	0.8941	0.9994	0.8713	0.9703	0.01898	0.04244	4.48%	-2.0%
9		5	0.9645	0.9355	0.9935	0.9307	0.9865	0.01045	0.02336	2.42%	-3.92%
18		5	0.9603	0.9375	0.9831	0.9356	0.9755	0.008226	0.01839	1.92%	-3.46%
35		5	0.9712	0.9522	0.9903	0.9517	0.9853	0.006868	0.01536	1.58%	-4.64%
73.3		5	0.9636	0.935	0.9922	0.9257	0.9863	0.0103	0.02303	2.39%	-3.81%
Developm	ent Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.9496	0.9277	0.9715	0.9352	0.9778	0.007887	0.01764	1.86%	0.0%
0	Lab Control	5	0.9646	0.9598	0.9694	0.96	0.9689	0.001732	0.003874	0.4%	-1.58%
2		5	0.9619	0.9476	0.9762	0.9459	0.9741	0.005141	0.01149	1.2%	-1.3%
4		5	0.9688	0.9533	0.9842	0.9581	0.9899	0.005554	0.01242	1.28%	-2.02%
9		5	0.9721	0.9569	0.9874	0.9592	0.9865	0.005482	0.01226	1.26%	-2.37%
18		5	0.9718	0.9662	0.9774	0.9643	0.9755	0.002009	0.004492	0.46%	-2.34%
35		5	0.9732	0.9517	0.9947	0.9517	0.99	0.007732	0.01729	1.78%	-2.49%
73.3		5	0.9683	0.9509	0.9857	0.9492	0.9863	0.006268	0.01402	1.45%	-1.97%
Survival R	ate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Brine Control	5	0.9772	0.937	1	0.9307	1	0.01448	0.03239	3.31%	0.0%
0	Lab Control	5	0.9673	0.9029	1	0.8812	1	0.0232	0.05187	5.36%	1.01%
2		5	0.9851	0.9577	1	0.9505	1	0.009901	0.02214	2.25%	-0.81%
4		5	0.9772	0.9266	1	0.9059	1	0.01823	0.04076	4.17%	0.0%
9		5	0.9921	0.9761	1	0.9703	1	0.005773	0.01291	1.3%	-1.52%
18		5	0.9881	0.9679	1	0.9703	1	0.007276	0.01627	1.65%	-1.11%
35		5	0.998	0.9925	1	0.9901	1	0.00198	0.004428	0.44%	-2.13%
73.3		5	0.995	0.9813	1	0.9752	1	0.00495	0.01107	1.11%	-1.82%

02 Mar-22 08:54 (p 3 of 4) 2202-S067 | 07-8877-2263

Bivalve L	arval Survival and [Developme	nt 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	0.9778	0.896	0.9558	0.8762	0.9352	
0	Lab Control	0.96	0.9667	0.961	0.9257	0.8515	
2		0.9459	0.9741	0.9208	0.9307	0.9663	
4		0.968	0.9703	0.966	0.9581	0.8713	
9		0.9809	0.9865	0.9741	0.9307	0.9505	
18		0.9755	0.9736	0.9713	0.9455	0.9356	
35		0.9802	0.9813	0.9517	0.9577	0.9853	
73.3		0.9735	0.9606	0.9718	0.9863	0.9257	
Developm	nent Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Brine Control	0.9778	0.9378	0.9558	0.9415	0.9352	
0	Lab Control	0.96	0.9667	0.961	0.9689	0.9663	
2		0.9459	0.9741	0.9688	0.9543	0.9663	
4		0.968	0.9899	0.966	0.9581	0.9617	
9		0.9809	0.9865	0.9741	0.9592	0.96	
18		0.9755	0.9736	0.9713	0.9745	0.9643	
35		0.99	0.9813	0.9517	0.9577	0.9853	
73.3		0.9735	0.9606	0.9718	0.9863	0.9492	
Survival F	Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Brine Control	1	0.9554	1	0.9307	1	
0	Lab Control	1	1	1	0.9554	0.8812	
2		1	1	0.9505	0.9752	1	
4		1	0.9802	1	1	0.9059	
9		1	1	1	0.9703	0.9901	
18		1	1	1	0.9703	0.9703	
35		0.9901	1	1	1	1	
73.3		1	1	1	1	0.9752	

02 Mar-22 08:54 (p 4 of 4) 2202-S067 | 07-8877-2263

Bivalve La	rval Survival and D	Developmer	nt Test				Nautilus Environmental (CA)
Combined	Development Rate	Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Brine Control	220/225	181/202	216/226	177/202	202/216	
0	Lab Control	216/225	203/210	197/205	187/202	172/202	
2		210/222	226/232	186/202	188/202	201/208	
4		212/219	196/202	199/206	206/215	176/202	
9		205/209	219/222	226/232	188/202	192/202	
18		199/204	221/227	203/209	191/202	189/202	
35		198/202	210/214	197/207	204/213	201/204	
73.3		220/226	195/203	207/213	216/219	187/202	
Developme	ent Rate Binomials	3					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Brine Control	220/225	181/193	216/226	177/188	202/216	
0	Lab Control	216/225	203/210	197/205	187/193	172/178	
2		210/222	226/232	186/192	188/197	201/208	
4		212/219	196/198	199/206	206/215	176/183	
9		205/209	219/222	226/232	188/196	192/200	
18		199/204	221/227	203/209	191/196	189/196	
35		198/200	210/214	197/207	204/213	201/204	
73.3		220/226	195/203	207/213	216/219	187/197	
Survival R	ate Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Brine Control	202/202	193/202	202/202	188/202	202/202	
0	Lab Control	202/202	202/202	202/202	193/202	178/202	
2		202/202	202/202	192/202	197/202	202/202	
4		202/202	198/202	202/202	202/202	183/202	
9		202/202	202/202	202/202	196/202	200/202	
18		202/202	202/202	202/202	196/202	196/202	
35		200/202	202/202	202/202	202/202	202/202	
73.3		202/202	202/202	202/202	202/202	197/202	

02 Mar-22 08:53 (p 1 of 6) 2202-S067 | 07-8877-2263

	•						Test	Code:	220	2-5067 0	7-8877-22
Bivalve Larva	al Survival and [Developme	nt Test						Nautilus	Environ	mental (CA
Analysis ID: Analyzed:	12-8886-6790 02 Mar-22 8:52		•	Combined Deve Parametric-Con	-	opment Rate CET of vs Treatments Office			CETISv1. Yes	8.7	
Data Transfo		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr		NA	C > T	NA	NA		5.49%	73.3	>73.3	NA	1.364
Dunnett Mult	tiple Comparisor	n Test									
Control	vs C-%		Test St	at Critical	MSD DF	P-Value	P-Type	Decision(α:5%)		
Brine Control			-0.8687	2.407	0.097 8	0.9820	CDF	Non-Signif	ficant Effect		
	4		-0.9733	2.407	0.097 8	0.9867	CDF	Non-Signif	ficant Effect		
	9		-1.988	2.407	0.097 8	0.9995	CDF	Non-Signif	ficant Effect		
	18		-1.614	2.407	0.097 8	0.9983	CDF	Non-Signif	ficant Effect		
	35		-2.382	2.407	0.097 8	0.9999	CDF	Non-Signif	ficant Effect		
	73.3		-1.899	2.407	0.097 8	0.9994	CDF	Non-Signif	ficant Effect		
ANOVA Table	e									——————————————————————————————————————	
Source	Sum Squ	ares	Mean S	quare	DF	F Stat	P-Value	Decision(
Between	0.032479	05	0.00541	3175	6	1.343	0.2718	Non-Signi	ficant Effect		
Error	0.112875	6	0.00403	31271	28						
Total	0.145354	6			34						····
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett E	quality of V	'ariance	2.903	16.81	0.8209	Equal Var	iances			
Distribution	Shapiro-	Wilk W Nor	mality	0.9468	0.9146	0.0901	Normal D	istribution			
Combined D	evelopment Rate	Summary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Brine Control	5	0.9282	0.8763	0.9801	0.9352	0.8762	0.9778	0.01871	4.51%	0.0%
2		5	0.9476	0.9194	0.9758	0.9459	0.9208	0.9741	0.01016	2.4%	-2.09%
4		5	0.9468	0.8941	0.9994	0.966	0.8713	0.9703	0.01898	4.48%	-2.0%
9		5	0.9645	0.9355	0.9935	0.9741	0.9307	0.9865	0.01045	2.42%	-3.92%
18		5	0.9603	0.9375	0.9831	0.9713	0.9356	0.9755	0.008226	1.92%	-3.46%
35		5	0.9712	0.9522	0.9903	0.9802	0.9517	0.9853	0.006868	1.58%	-4.64%
73.3		5	0.9636	0.935	0.9922	0.9718	0.9257	0.9863	0.0103	2.39%	-3.81%
Angular (Cor	rected) Transfor	med Sumn	nary								
								Man	04-1 5	CV/9/	0/ = 00
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec
	Control Type		Mean 1.309	95% LCL 1.204	95% UCL 1.415	Median 1.313	Min 1.211	1.421	0.03811	6.51%	%Effec
0	•	5	1.309								
0 2	Control Type	5 5	1.309 1.344	1.204 1.279	1.415	1.313	1.211	1.421	0.03811	6.51%	0.0%
0 2 4	Control Type	5 5 5	1.309 1.344 1.349	1.204 1.279 1.247	1.415 1.41	1.313 1.336	1.211 1.286	1.421 1.409	0.03811 0.02356	6.51% 3.92%	0.0% -2.66%
0 2 4 9	Control Type	5 5 5 5	1.309 1.344 1.349 1.389	1.204 1.279 1.247 1.312	1.415 1.41 1.45 1.467	1.313 1.336 1.385	1.211 1.286 1.204	1.421 1.409 1.398	0.03811 0.02356 0.03658	6.51% 3.92% 6.07%	0.0% -2.66% -2.99%
0 2 4	Control Type	5 5 5	1.309 1.344 1.349	1.204 1.279 1.247	1.415 1.41 1.45	1.313 1.336 1.385 1.409	1.211 1.286 1.204 1.304	1.421 1.409 1.398 1.454	0.03811 0.02356 0.03658 0.02783	6.51% 3.92% 6.07% 4.48%	0.0% -2.66% -2.99% -6.1%

Report Date: Test Code: 02 Mar-22 08:53 (p 2 of 6) 2202-S067 | 07-8877-2263

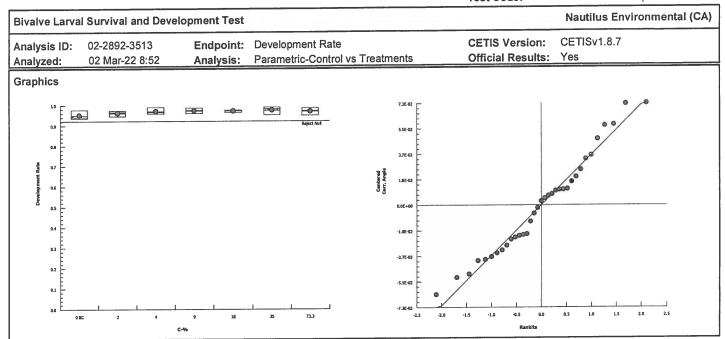
Nautilus Environmental (CA) **Bivalve Larval Survival and Development Test** CETISv1.8.7 Endpoint: Combined Development Rate **CETIS Version:** Analysis ID: 12-8886-6790 Parametric-Control vs Treatments Official Results: Yes Analyzed: Analysis: 02 Mar-22 8:52 Graphics -32 • 0.0E+00 -1.1E-01

Report Date: Test Code: 02 Mar-22 08:54 (p 3 of 6) 2202-S067 | 07-8877-2263

Rivalva Lami	al Survival and D)evelonme	nt Test						Nautilus	Environ	mental (CA)
							CET	C Versian:	CETISv1.		
Analysis ID:	02-2892-3513			elopment R		tmonts		S Version: ial Results:		0.1	
Analyzed:	02 Mar-22 8:52	z An		ametric-Con		unents				TOF:	TII
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corre	rected)	NA	C > T	NA	NA		2.91%	73.3	>73.3	NA	1.364
Dunnett Mult	tiple Comparisor	n Test									
Control	vs C-%		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision(
Brine Control	2		-1.135	2.407	0.060 8	0.9918	CDF	_	ficant Effect		
	4		-1.978	2.407	0.060 8	0.9995	CDF	-	ficant Effect		
	9		-2.356	2.407	0.060 8	0.9999	CDF	_	ficant Effect		
	18		-2.198	2.407	0.060 8	0.9998	CDF	_	ficant Effect		
	35		-2.629	2.407	0.060 8	1.0000	CDF		ficant Effect		
	73.3		-1.914	2.407	0.060 8	0.9994	CDF	Non-Signif	ficant Effect		
ANOVA Table	e										
Source	Sum Squ	ares	Mean Squ	are	DF	F Stat	P-Value	Decision(
Between	0.0151064	45	0.0025177	41	6	1.62	0.1788	Non-Signi	ficant Effect		
Error	0.0435298	38	0.0015546	38	28	_					
Total	0.0586363	33			34						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Bartlett E	quality of \	/ariance	6.327	16.81	0.3876	Equal Var	iances			
Dietribution	Shapiro-\	A/III. VA/ NIor									
Distribution	Silapilo-t	VALIK AA MOI	maiity	0.9681	0.9146	0.3941	Normal Di	stribution			
	t Rate Summary	VVIIK VV INOI	maiity	0.9681	0.9146	0.3941	Normal Di	stribution		· · · · · · · · · · · · · · · · · · ·	
		Count	Mean	0.9681 95% LCL	0.9146 95% UCL	0.3941 Median	Normal Di	stribution Max	Std Err	CV%	%Effect
Development	t Rate Summary								Std Err 0.007887	CV% 1.86%	%Effect
Development C-%	t Rate Summary	Count	Mean	95% LCL	95% UCL	Median	Min	Max			
Development C-% 0 2	t Rate Summary	Count 5	Mean 0.9496	95% LCL 0.9277	95% UCL 0.9715	Median 0.9415	Min 0.9352	Max 0.9778	0.007887	1.86%	0.0%
Development C-% 0 2 4	t Rate Summary	Count 5 5	Mean 0.9496 0.9619	95% LCL 0.9277 0.9476	95% UCL 0.9715 0.9762	Median 0.9415 0.9663	Min 0.9352 0.9459	Max 0.9778 0.9741	0.007887 0.00514	1.86% 1.2%	0.0% -1.3%
Development C-% 0 2 4 9	t Rate Summary	Count 5 5 5	Mean 0.9496 0.9619 0.9688	95% LCL 0.9277 0.9476 0.9533	95% UCL 0.9715 0.9762 0.9842	Median 0.9415 0.9663 0.966	Min 0.9352 0.9459 0.9581	Max 0.9778 0.9741 0.9899	0.007887 0.00514 0.005554	1.86% 1.2% 1.28%	0.0% -1.3% -2.02%
Development C-% 0 2 4 9 18	t Rate Summary	Count 5 5 5 5 5	Mean 0.9496 0.9619 0.9688 0.9721	95% LCL 0.9277 0.9476 0.9533 0.9569	95% UCL 0.9715 0.9762 0.9842 0.9874	Median 0.9415 0.9663 0.966 0.9741	Min 0.9352 0.9459 0.9581 0.9592	Max 0.9778 0.9741 0.9899 0.9865	0.007887 0.00514 0.005554 0.005482	1.86% 1.2% 1.28% 1.26%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49%
Development C-% 0 2 4 9	t Rate Summary	Count 5 5 5 5 5 5 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774	Median 0.9415 0.9663 0.966 0.9741 0.9736	Min 0.9352 0.9459 0.9581 0.9592 0.9643	Max 0.9778 0.9741 0.9899 0.9865 0.9755	0.007887 0.00514 0.005554 0.005482 0.002008	1.86% 1.2% 1.28% 1.26% 0.46%	0.0% -1.3% -2.02% -2.37% -2.34%
Development C-% 0 2 4 9 18 35 73.3	t Rate Summary	Count 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732	1.86% 1.2% 1.28% 1.26% 0.46% 1.78%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49%
Development C-% 0 2 4 9 18 35 73.3	t Rate Summary Control Type Brine Control	Count 5 5 5 5 5 5 5 med Sumr	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732	1.86% 1.2% 1.28% 1.26% 0.46% 1.78%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor	t Rate Summary Control Type Brine Control rrected) Transfor	Count 5 5 5 5 5 5 5 med Sumr	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor C-%	t Rate Summary Control Type Brine Control	Count 5 5 5 5 5 5 med Sumr	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683 mary Mean	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268 Std Err	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2	t Rate Summary Control Type Brine Control rrected) Transfor	Count 5 5 5 5 5 5 med Sumr Count 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683 mary Mean 1.348 1.376	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509 95% LCL 1.292	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857 95% UCL 1.403	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718 Median 1.326	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492 Min 1.313	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863 Max 1.421	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268 Std Err 0.01998	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45% CV%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97% %Effect 0.0%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2 4	t Rate Summary Control Type Brine Control rrected) Transfor	Count 5 5 5 5 5 5 med Sumr Count 5 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683 mary Mean 1.348 1.376 1.397	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509 95% LCL 1.292 1.339	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857 95% UCL 1.403 1.413	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718 Median 1.326 1.386	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492 Min 1.313 1.336	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863 Max 1.421 1.409	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268 Std Err 0.01998 0.01326	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45% CV% 3.32% 2.16%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97% %Effect 0.0% -2.1%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2 4 9	t Rate Summary Control Type Brine Control rrected) Transfor	Count 5 5 5 5 5 5 med Sumr Count 5 5 5 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683 mary Mean 1.348 1.376 1.397 1.406	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509 95% LCL 1.292 1.339 1.345	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857 95% UCL 1.403 1.413 1.449	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718 Median 1.326 1.386 1.385	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492 Min 1.313 1.336 1.365	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863 Max 1.421 1.409 1.47	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268 Std Err 0.01998 0.01326 0.01883	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45% CV% 3.32% 2.16% 3.01%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97% %Effect 0.0% -2.1% -3.66%
Development C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2 4	t Rate Summary Control Type Brine Control rrected) Transfor	Count 5 5 5 5 5 5 Count Count 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Mean 0.9496 0.9619 0.9688 0.9721 0.9718 0.9732 0.9683 mary Mean 1.348 1.376 1.397	95% LCL 0.9277 0.9476 0.9533 0.9569 0.9662 0.9517 0.9509 95% LCL 1.292 1.339 1.345 1.359	95% UCL 0.9715 0.9762 0.9842 0.9874 0.9774 0.9947 0.9857 95% UCL 1.403 1.413 1.449 1.454	Median 0.9415 0.9663 0.966 0.9741 0.9736 0.9813 0.9718 Median 1.326 1.386 1.385 1.409	Min 0.9352 0.9459 0.9581 0.9592 0.9643 0.9517 0.9492 Min 1.313 1.336 1.365 1.367	Max 0.9778 0.9741 0.9899 0.9865 0.9755 0.99 0.9863 Max 1.421 1.409 1.47 1.454	0.007887 0.00514 0.005554 0.005482 0.002008 0.007732 0.006268 Std Err 0.01998 0.01326 0.01883 0.0171	1.86% 1.2% 1.28% 1.26% 0.46% 1.78% 1.45% CV% 3.32% 2.16% 3.01% 2.72%	0.0% -1.3% -2.02% -2.37% -2.34% -2.49% -1.97% %Effect 0.0% -2.1% -3.66% -4.36%

Analyst: OA: ACS 3/422

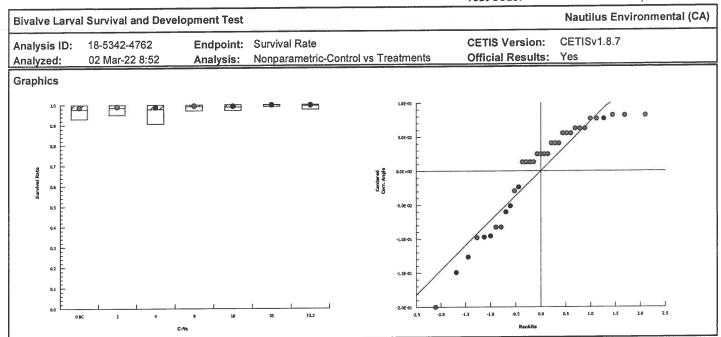
Report Date: Test Code: 02 Mar-22 08:54 (p 4 of 6) 2202-S067 | 07-8877-2263



Report Date: Test Code: 02 Mar-22 08:54 (p 5 of 6) 2202-S067 | 07-8877-2263

							lest				
Bivalve Larv	al Survival and D	Develop	nent Test						Nautilus	Environ	mental (CA
Analysis ID:			•	ırvival Rate	0	Tuestasente		S Version:	CETISv1.	.8.7	
Analyzed:	02 Mar-22 8:52			nparametric-		realments				TOFI	TU
Data Transfo		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	
Angular (Corr	rected)	NA	C > T	NA	NA		3.64%	73.3	>73.3	NA	1.364
Steel Many-C	One Rank Sum To	est									
Control	vs C-%		Test Sta	Critical	Ties D	P-Value	P-Type	Decision(
Brine Control	2		28.5	16	1 8	0.9067	Asymp		ficant Effect		
	4		27.5	16	1 8	0.8571	Asymp	-	ficant Effect		
	9		29.5	16	1 8	0.9424	Asymp	•	ficant Effect		
	18		29.5	16	1 8	0.9424	Asymp	-	ficant Effect		
	35		31	16	1 8	0.9749	Asymp	_	ficant Effect		
	73.3		31	16	1 8	0.9749	Asymp	Non-Signi	ficant Effect		
ANOVA Tabl	е										
Source	Sum Squ	ares	Mean So		DF	F Stat	P-Value	Decision(
Between	0.0200147	72	0.003335	787	6	0.4798	0.8176	Non-Signi	ficant Effect		
Error	0.1946549		0.006951	959	28	_					
Total	0.2146696	6			34						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett E	quality o	f Variance	8.362	16.81	0.2127	Equal Variances				
Distribution	Shapiro-\	Wilk W N	lormality	0.883	0.9146	0.0014	Non-norm	al Distribution	on		
0 : 10:1	0										
Survival Rate	e Summary										
	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
C-%	_	Count 5	Mean 0.9772	95% LCL 0.937	95% UCL	Median	Min 0.9307	Max 1	Std Err 0.01448	3.31%	0.0%
C-%	Control Type								0.01448 0.009901	3.31% 2.25%	0.0% -0.81%
C-% 0 2	Control Type	5	0.9772	0.937	1		0.9307 0.9505 0.9059	1 1 1	0.01448 0.009901 0.01823	3.31% 2.25% 4.17%	0.0% -0.81% 0.0%
C-% 0 2 4	Control Type	5 5	0.9772 0.9851	0.937 0.9577	1		0.9307 0.9505 0.9059 0.9703	1	0.01448 0.009901 0.01823 0.005773	3.31% 2.25% 4.17% 1.3%	0.0% -0.81% 0.0% -1.52%
C-% 0 2 4 9	Control Type	5 5 5	0.9772 0.9851 0.9772	0.937 0.9577 0.9266	1 1 1		0.9307 0.9505 0.9059 0.9703 0.9703	1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276	3.31% 2.25% 4.17% 1.3% 1.65%	0.0% -0.81% 0.0% -1.52% -1.11%
C-% 0 2 4 9	Control Type	5 5 5 5	0.9772 0.9851 0.9772 0.9921	0.937 0.9577 0.9266 0.976 0.9679 0.9925	1 1 1 1	1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901	1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198	3.31% 2.25% 4.17% 1.3% 1.65% 0.44%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13%
C-% 0 2 4 9 18 35	Control Type	5 5 5 5 5	0.9772 0.9851 0.9772 0.9921 0.9881	0.937 0.9577 0.9266 0.976 0.9679	1 1 1 1	1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703	1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276	3.31% 2.25% 4.17% 1.3% 1.65%	0.0% -0.81% 0.0% -1.52% -1.11%
C-% 0 2 4 9 18 35 73.3	Control Type	5 5 5 5 5 5 5	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995	0.937 0.9577 0.9266 0.976 0.9679 0.9925	1 1 1 1 1	1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901	1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82%
C-% 0 2 4 9 18 35 73.3 Angular (Cor	Control Type Brine Control	5 5 5 5 5 5 5	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995	0.937 0.9577 0.9266 0.976 0.9679 0.9925	1 1 1 1 1	1 1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901	1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198	3.31% 2.25% 4.17% 1.3% 1.65% 0.44%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82%
C-% 0 2 4 9 18 35 73.3 Angular (Cor	Control Type Brine Control	5 5 5 5 5 5 5 med Sur	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813	1 1 1 1 1 1 1	1 1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752	1 1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82%
C-% 0 2 4 9 18 35 73.3 Angular (Cor	Control Type Brine Control rrected) Transfor Control Type	5 5 5 5 5 5 5 med Sur	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995 mmary	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752	1 1 1 1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82%
C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2	Control Type Brine Control rrected) Transfor Control Type	5 5 5 5 5 5 5 5 med Sur Count	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995 mmary Mean 1.454	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813 95% LCL	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752 Min 1.304	1 1 1 1 1 1 1 1 1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495 Std Err 0.05077	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11% CV% 7.81%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82% %Effect 0.0%
C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2	Control Type Brine Control rrected) Transfor Control Type	5 5 5 5 5 5 5 5 med Sur Count 5	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995 mmary Mean 1.454 1.473	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813 95% LCL 1.313 1.363	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752 Min 1.304 1.346	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495 Std Err 0.05077 0.03963	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11% CV% 7.81% 6.01%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82% %Effect 0.0% -1.33%
C-% 0 2 4 9 18 35 73.3 Angular (Cor C-% 0 2 4 9	Control Type Brine Control rrected) Transfor Control Type	5 5 5 5 5 5 5 med Sur Count 5 5	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995 mmary Mean 1.454 1.473 1.459	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813 95% LCL 1.313 1.363 1.309	1 1 1 1 1 1 1 1 1 1 1.595 1.583 1.609	1 1 1 1 1 1 1 1 1 1 1 1 1.536 1.536	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752 Min 1.304 1.346 1.259	1 1 1 1 1 1 1 1 1 1 1 1 1 1.536 1.536	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495 Std Err 0.05077 0.03963 0.05405	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11% CV% 7.81% 6.01% 8.28% 4.1% 5.11%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82% %Effect 0.0% -1.33% -0.36%
C-% 0 2 4 9 18 35 73.3	Control Type Brine Control rrected) Transfor Control Type	5 5 5 5 5 5 5 med Sur Count 5 5	0.9772 0.9851 0.9772 0.9921 0.9881 0.998 0.995 mmary Mean 1.454 1.473 1.459 1.495	0.937 0.9577 0.9266 0.976 0.9679 0.9925 0.9813 95% LCL 1.313 1.363 1.309 1.419	1 1 1 1 1 1 1 1 1 1 1.595 1.583 1.609 1.571	1 1 1 1 1 1 1 1 1 1 1 1.536 1.536 1.536 1.536	0.9307 0.9505 0.9059 0.9703 0.9703 0.9901 0.9752 Min 1.304 1.346 1.259 1.398	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.01448 0.009901 0.01823 0.005773 0.007276 0.00198 0.00495 Std Err 0.05077 0.03963 0.05405 0.02739	3.31% 2.25% 4.17% 1.3% 1.65% 0.44% 1.11% CV% 7.81% 6.01% 8.28% 4.1%	0.0% -0.81% 0.0% -1.52% -1.11% -2.13% -1.82% %Effect 0.0% -1.33% -0.36% -2.84%

Report Date: Test Code: 02 Mar-22 08:54 (p 6 of 6) 2202-S067 | 07-8877-2263



Bivalve Larval Survival and Development Test

Report Date: Test Code:

02 Mar-22 08:54 (p 1 of 3) 2202-S067 | 07-8877-2263

Nautilus Environmental (CA)

CETISv1.8.7 Endpoint: Combined Development Rate **CETIS Version:** 06-3515-8270 Analysis ID: Yes Analysis: Linear Interpolation (ICPIN) Official Results: 02 Mar-22 8:52 Analyzed:

Linear Interpol	ation Options				
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1449849	1000	Yes	Two-Point Interpolation

Point Estimates 95% LCL 95% UCL 95% LCL 95% UCL TU Level % NA N/A <1.364 NA EC25 >73.3 N/A EC50 N/A N/A <1.364 NA NA >73.3

Combined Development Rate Summary			Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
0	Brine Control	5	0.9282	0.8762	0.9778	0.01871	0.04183	4.51%	0.0%	996	1071
2		5	0.9476	0.9208	0.9741	0.01016	0.02271	2.4%	-2.09%	1011	1066
4		5	0.9468	0.8713	0.9703	0.01898	0.04244	4.48%	-2.0%	989	1044
9		5	0.9645	0.9307	0.9865	0.01045	0.02336	2.42%	-3.92%	1030	1067
18		5	0.9603	0.9356	0.9755	0.008226	0.01839	1.92%	-3.46%	1003	1044
35		5	0.9712	0.9517	0.9853	0.006868	0.01536	1.58%	-4.64%	1010	1040
73.3		5	0.9636	0.9257	0.9863	0.0103	0.02303	2.39%	-3.81%	1025	1063

Graphics

Bivalve Larval Survival and Development Test

Report Date: **Test Code:**

02 Mar-22 08:54 (p 2 of 3) 2202-S067 | 07-8877-2263

Nautilus Environmental (CA)

CETISv1.8.7 Endpoint: Development Rate **CETIS Version:** 00-9187-5556 Analysis ID:

Linear Interpolation (ICPIN) Official Results: Yes Analysis: Analyzed: 02 Mar-22 8:52

Linear Interpolation Options Method Resamples Exp 95% CL X Transform Y Transform Seed

Two-Point Interpolation 1000 Yes Linear 990245 Linear

Point Estimates

Graphics

95% LCL 95% UCL TU 95% LCL 95% UCL Level <1.364 NA NA EC25 >73.3 N/A N/A <1.364 NA NA EC50 >73.3 N/A N/A

Develop	ment Rate Summary		Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
0	Brine Control	5	0.9496	0.9352	0.9778	0.007887	0.01764	1.86%	0.0%	996	1048
2		5	0.9619	0.9459	0.9741	0.00514	0.01149	1.2%	-1.3%	1011	1051
4		5	0.9688	0.9581	0.9899	0.005554	0.01242	1.28%	-2.02%	989	1021
9		5	0.9721	0.9592	0.9865	0.005482	0.01226	1.26%	-2.37%	1030	1059
18		5	0.9718	0.9643	0.9755	0.002008	0.004491	0.46%	-2.34%	1003	1032
35		5	0.9732	0.9517	0.99	0.007732	0.01729	1.78%	-2.49%	1010	1038
73.3		5	0.9683	0.9492	0.9863	0.006268	0.01402	1.45%	-1.97%	1025	1058

Bivalve Larval Survival and Development Test

Linear

Report Date: Test Code:

Two-Point Interpolation

02 Mar-22 08:54 (p 3 of 3) 2202-S067 | 07-8877-2263

est Oode: Lest Oot | 0.

Nautilus Environmental (CA)

Analysis ID: 12-0974-5156 Endpoint: Survival Rate CETIS Version: CETISv1.8.7

Analyzed: 02 Mar-22 8:52 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

1000

1404582

Linear Interpolation Options
X Transform Y Transform Seed Resamples Exp 95% CL Method

Yes

Point Estimates

Linear

95% UCL % 95% LCL 95% UCL TU 95% LCL Level NA N/A N/A <1.364 NA EC25 >73.3 EC50 N/A N/A <1.364 NA NA >73.3

Survival	Rate Summary		Calculated Variate(A/B)								
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
0	Brine Control	5	0.9772	0.9307	1	0.01448	0.03239	3.31%	0.0%	987	1010
2		5	0.9851	0.9505	1	0.009901	0.02214	2.25%	-0.81%	995	1010
4		5	0.9772	0.9059	1	0.01823	0.04076	4.17%	0.0%	987	1010
9		5	0.9921	0.9703	1	0.005773	0.01291	1.3%	-1.52%	1002	1010
18		5	0.9881	0.9703	1	0.007276	0.01627	1.65%	-1.11%	998	1010
35		5	0.998	0.9901	1	0.00198	0.004428	0.44%	-2.13%	1008	1010
73.3		5	0.995	0.9752	1	0.00495	0.01107	1.11%	-1.82%	1005	1010

Report Date:

05 Feb-22 14:37 (p 1 of 1)

Test Code: 2202-S064 07-8877-2263/2F03B5A7

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Start Date:	09 Feb-22	Species:	Mytilus galloprovincialis	Sample Code:	22-0142
End Date:	11 Feb-22	Protocol:	EPA/600/R-95/136 (1995)	Sample Source:	Jacobs
Sample Date:	08 Feb-22	Material:	Effluent Sample	Sample Station:	Wyckoff

C-%	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
			31			232	226	RT 2/27/22
			32			207	197	
			33			222	219	
			34			215	206	
			35			197	188	
			36			209	203	
			37			210	203	
			38			232	226	
			39			196	188	
			40			219	216	
			41			213	204	
			42			206	199	
			43			188	177	
			44			214	210	
			45			216	202	
			46			227	221	
			47			209	205	
			48			208	201	
			49			198	196	
			50			203	195	V
			51			200	192	6-m 2/28/22
			52			213	207	
			53	<u> </u>		225	220	
			54			104	199	
			55			219	212	
			56			200	198	
			57			192	186	
			58			196	189	
			59			143	181	
			60			196	191	
			61			222	210	
			62			226	220	
			63			205	197	
			64			178	172	
			65			193	187	
			66			197	18)	
			67			204 225 226	201	
			68			225	216	
			69				216	QC: 191 normal/202 total ACS 3
			70			183	176	,

Report Date:

05 Feb-22 14:37 (p 1 of 1)

Test Code: 2202 - 5067 07-8877-2263/2F03B5A7

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Start Date:	09 Feb-22	Species:	Mytilus galloprovincialis	Sample Code:	22-0142
End Date:	11 Feb-22	Protocol:	EPA/600/R-95/136 (1995)	Sample Source:	Jacobs
Sample Date:	08 Feb-22	Material:	Effluent Sample	Sample Station:	Wyckoff

Sample Date	, 00 1	ED-22		Material.	Emident Sample			Sample Station. Wyckon
C-%	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	ВС	1	53			1		
0	ВС	2	59					
0	ВС	3	69			191	170	WF 2/15/72
0	ВС	4	43					
0	ВС	5	45					
0	LC	1	68					¥.
0	LC	2	37			206	198	Q18WF 2/15/22
0	LC	3	63			206	198	
0	LC	4	65					
0	LC	5	64					
2		1	61					
2		2	31					
2		3	57			214	205	
2		4	35					
2		5	48					
4		1	55					
4		2	49					
4		3	42			197	190	
4		4	34					
4		5	70					
9		1	47					
9		2	33					
9		3	38			217	209	
9		4	39					
9		5	51					
18		1	54					
18		2	46					
18		3	36			209	202	
18		4	60					
18		5	58					
35		1	56					
35		2	44				_	
35		3	32			1200	16220	•
35		4	41					
35		5	67					
75.3		1	62					
75.3		2	50					
75.3		3	52			216	209	
75.8		4	40				-	
75.3		5	66					

24 19/22 CLEY

@Q18 WF 3/1/22 Total: 217 Normal: 207

Analyst: WF BO QA: A(S 3/1)

Marine Chronic Bioassay

DM-014

Water Quality Measurements

Client: JACOBS	_

Sample ID: Wyckoff
Sample Log No.: 72-0142

Test No.: 2202-5067

Lest Species:	М.	gallop	rovincialis
Start Date/Time:	2/9	9/2022	1625

End Date/Time: 2/11/2022 1625

Concentration (% sample)		Salinity (ppt)		T	emperatu (°C)	re	Diss	olved Ox (mg/L)	ygen		pH (pH units	١
(70 Sample)	0	24	48	0	24	48	0	24	48	0	24	48
Lab Control	79.8	29.5	301	14.8	14,6	14.4	8.7	8.8	8.5	7.98	7.97	7.90
Brine Control	30.2	30.1	30.3	14.4	14.6	14.4	8.8	8.7	8.4	8.10	8,06	
2	30.0	29.9	30.3	14.8	14,4	14.4	8.7	8.7	8.5	7.99	7.96	791
4	36.0	30,4	30.8	14.8	14.0	14.4	8.7	8.8	8.5	7.97	7,98	7.93
9	30.1	30.2	30.6	14.7	14.4	14.3	8.6	8.6	8.5	7.93	8,00	7.98
18	30.2	30,3	30.7	14.6	14,3	14.4	8.6	8.6	8.5	7.87	8.02	8.05
35	30.2	30,3	30,8	14.7	14.2	14.4	8.6	8.7	8.5	7,77	8.05	8.70
73.3	30.5	30,9	30.8	14.6	14,0	14.5	8.5	8.7	8.5	7.65	8.11	8:12

Technician Initials:	WQ Readings: ₽0 Dilutions made by: ←5	24	48 RT	Environmental Chamber:	
Comments:	0 hrs: 24 hrs: 48 hrs:				
QC Check:	JU 3/1/n			Final Review: A(5 3/1/2-2	

Marine Chronic Bioassay

Brine Dilution Worksheet

DC-010

Project:

JACOBS

Analyst: KS

Sample ID:

Wyckoff

Test Date: 2/9/2022

1625

Test No:

2202-S067

Test Type: Mussel Development

Salinity of Effluent

4.7

Salinity of Brine

99.6

Date of Brine used: 9/28/2021

Target Salinity

30

Alkalinity of Brine Control: \\0

mg/L as CaCO3

Test Dilution Volume

250

Brine Control

Salinity Adjustment Factor:

(TS - SE)/(SB - TS) =

Effluent

0.36

0.43

TS = target salinity SE = salinity of effluent 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	0.36	1.8	250
4	10.0	0.36	3.6	250
9	22.5	0.36	8.2	250
18	45.0	0.36	16.4	250
35	87.5	0.36	31.9	250
73.3	183.3	0.36	66.7	250

DI Volume 66.7 250 **Brine Control** 154.8 0.43

> Total Brine Volume Required (ml): 195.4

QC Check: Ju 3/1/2

Final Review: #(5 3/1/22

310	JUL	5/1	12

		1 . "
Client/Sample:	Jacobs 1	/ wyckoff
Test No.:	2202-SO	67

Mytilus galloprovincialis

Start Date/Time: 2/9/2022 2/11/2022 End Date/Time: Technician Initials:

Date Received:

Test Species:

Animal Source/Batch Tank: M - PEP 11/17/21

Test Chambers:

30 mL glass shell vials

Sample Volume:

10 mL

Spawn Information

First Gamete Release Time:

1300

6A/B

Sex	Number Spawning
Male	3+
Female	3+

Cameta Salaction

Gamete Selection		
Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape, etc.)
Male	1,2,3	expead motility of density
Female 1		good dansity, pate orange, mostly round
Female 2	2	good density, pale orange mostly round
Female 3	-	

Egg Fertilization Time: 1400

Embryo Stock Selection

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

Stock(s) chosen for testing:

Embryo Inoculum Preparation

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

Number Counted:

8	8
7	9
10	8
10	8
8	14

9.0 X 50 =

Initial Density:

(dilution factor)

Desired Final Density:

(to inoculate with 0.5 ml)

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

Time Ze	ro Control Cot	ints		-
TØ Vial No.	No. Dividing	Total	% Dividing	Mean % Dividing
TØ A	172	172	100	
TØ B	238	238	100	
TØ C	188	(88	100	100
TØ D	201	201	100	100
TØ E	201	201	100	
TØ F	212	212	100	
	702			

48-h QC: 235/241= 97.5%

Comments:

QC Check:

Final Review: A(5 3/1/22

Appendix B
Sample Check-In Information

Enthalpy Analytical 4340 Vandever Avenue San Diego, CA 92120

San Diego, CA 92120		Sample ID:	U	Nycko Cf		
		Test ID No(s).:	220	2-5067	-	
	Sample (A, B, C):					
	Log-in No. (21-xxxx):	C/ 1				
	ple Collection Date & Time:					
S	ample Receipt Date & Time:	2/9/22 1057				
Number of Co	ontainers & Container Type:	1 x4L ivbi				
Approx.	. Total Volume Received (L):	~41				
(Check-in Temperature (°C)	2.7				
	Temperature OK? 1	Ø N	Y N	Y N	Y N	
	DO (mg/L)	7.7				
	pH (units)	7,41				
	Conductivity (µS/cm)	7740				
	Salinity (ppt)	4,6				
	Alkalinity (mg/L) 2	477_				
	Hardness (mg/L) 2, 3					
	Total Chlorine (mg/L)	0.02				
	Technician Initials	D.8				
b.	Mussel	<i>y</i> .				
,)evelopment	Control/Dilution 18/	ntor: 9:2 / lak	SIAU / Lob ART /	Othorn	
rest renormed.	scoeroprocor-	Alkalinih: 9/A	dier. 6:2 / Lai	r Salinity: 3000	other:	
٨٨	Iditional Control? (Y) N					_
Au	Iditional Control? (1) N	- 131 (100	Alkalinity	Hardness of 5	allfilty.	
Test Performed:		Control/Dilution Wa	ator: 8·2 / lah	SW / Lab ART (Other:	
TOSET SHOTHICA:		Alkalinity:			Julei	_
Ad	Iditional Control? Y N				– alinitv [.]	
Test Performed:		Control/Dilution Wa	ater: 8:2 / Lab	SW / Lab ART (Other:	
			Hardness or			
Ad	ditional Control? Y N				– alinitv:	
Notes: 17	Temperature of sample should	be 0-6°C at receipt.				
	ng/L as CaCO3, ³ Measured f		es only, NA = Not A	pplicable		
	· · · · · · · · · · · · · · · · · · ·			• • • • • • • • • • • • • • • • • • • •		
Additional Comments:						
_						

Client: _

JAWOS

NORTHWEST CLIENTS Sample Check-In Information

Sample Description:			
A: no color,	dear, n	o odor, i	no Lebris
	,		
Subsamples for Additi	onal Chemis	try Required	:
NH3 (always	required)		
Other			
Tech Initials A	RT B_	_C	
COC Complete (Y/N)?			
ABC			
Filtration? Y N) Initials		
Pore Size:		_	
Organisms	or	Debris	
Salinity Adjustment?	N (
Test: Mulsel	Source: P	rice Targe	et ppt: 30
Test:	Source:		et ppt:
Test:	Source:	Targe	et ppt:
	<u> </u>		
pH Adjustment? Y	0	_	
	A	В	С
Initial pH:			
Amount of HCI added:			
Final pH:	<u> </u>	1	
Cl ₂ Adjustment? Y			
Initial Eros Cl .	A	B	С
Initial Free Cl ₂ :			
STS added:			
Final Free Cl ₂ :			
Sample Aeration? Y	ű \		
Sample Actations 1		В	С
Initial D.O.			
Duration & Rate			
Final D.O.			

QC Check: TU 3/1/h Final Review: 4(5 3/1/22

Total Ammonia Analysis Marine

DC-001

Client: JACOBS		
Project: Wyckoff		
Test Type: Mussel Development		
DI Blank:	Test Start Date: 2/9/2022	Analyst: セイルテ Analysis Date: 21272
SW Blank: 53 ()		Analysis Date: 212/22

/n					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 NH ₃)		NA	NA	9.6	11.7
020822 wyeroct	22-0142	2 9 22	0	1.2	1.5
			2		
Spike Check (10 mg/L NH ₃)		NA	NA		
			7		
Sample Duplicate ^a		NA	NA	1.1.	1.3
Sample Duplicate + Spike ^a		NA	NA	10.2	12.4
Spike Check (10 mg/L NH ₃)		NA	NA	9.6	11.7

Relative Percent Difference (RPD) = [sample] (mg/L) - [sample duplicate] (mg/L) \times 100 [average ammonia] (mg/L)

Acceptable Range: 0-20%

Percent Recovery = [spiked sample] (mg/L) - [sample] (mg/L) x 100 nominal [spike] (mg/L)

Acceptable Range: 80-120%b

QC Sample ID	[NH ₃]	[Sample Dup]	Measured [Spike]	Nominal [Spike]	RPD	% Recovery
Blank	0.0	NA	11.7	10	NA	117
020822 Wyckoff	1.5	1.3	12.4	10	14.3	109

	Reagent 1	Reagent 2	Test Tubes	
Standard Lot Number	A1210	A1228	A1301	
	•			
Comments:				
Notes: a Unless otherwise noted,	the last sample listed on the datasheet is used t	for duplicate and duplicate + spike QC che	ck	
^b Acceptable range for	% recovery applies only to the blank spike. Spi	ke recoveries in samples may vary based o	on sample matrix and are for informa	ation only.
^c Calculation not perfor	med due to one or both values below the metho	od detection limit.		
HACH Ammonia Nitrog	jen Test Kit, Test 'N Tube™ Vials. Method 1003	1. Method Detection Limit = 0.5 mg/L		
QC Check: JU 7/m	m	Final Review:	AS 3/122	

Appendix C
Chain-of-Custody Form

Enthalpy Analytical (LAB COPY)

DateShipped: 2/8/2022

CarrierName: JACOBS (hand delivery)

AirbillNo:

Jacobs, Wyckoff-

Project Code: WEH-031I Cooler #: Enthalpy No: 10-020822-111624-0595

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	For Lab Use Only
020822		Ground Water/ D. Baca	Composite	CHRTOX(8 Weeks)	A (< 6 C) (1)	SP-11	02/08/2022 09:35	

	Shipment for Case Complete? N
Special Instructions: 2022 Week 07-Q1	Samples Transferred From Chain of Custody #
Analysis Key: CHRTOX=Chronic Toxicity	

Relinquished by (Signature and Organization)			Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt		
m	JACOBS	e-8.22 @1/30	7-7-	EA-SD	2/9/22	Temp: Z.7°C		
	W/	DACBS						

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.

Version: 6/1/2021



Appendix E
Reference Toxicant Test Results

CETIS Summary Report

Report Date: Test Code: 02 Mar-22 09:05 (p 1 of 3)

220209msdv | 20-6883-0287

Bivalve Larval	Survival and Developm	nent Test							Nautilus Environmental (CA)	
Batch ID: Start Date: Ending Date: Duration:	09 Feb-22 16:25 P 11 Feb-22 16:25 S	Test Type: Protocol: Species: Source:	Development- EPA/600/R-95 Mytilus gallopr M-Rep, Carlsb	/136 (1995) ovincialis			Analyst: Diluent: Brine: Age:		ed Natural Seawater Applicable	
Sample ID: Sample Date: Receive Date: Sample Age:	09 Feb-22 N 09 Feb-22 S	Code: //aterial: Source: Station:	220209msdv Copper chlorid Reference Tox Copper Chlorid	dcant			Client: Project:	Inter	nal	
Comparison S	ummary									
Analys is ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Meth	nod		
19-0549-9771		ombined Development Ra 5		7.071	2.98%		Duni	nett M	ultiple Comparison Test	
18 - 258 6-1415	Development Rate	5	10	7.071	3.04%		Duni	Dunnett Multiple Comparison Test		
09-5309-5366	Survival Rate	10	20	14.14	1.3%		Duni	Dunnett Multiple Comparison Test		
Point Estimate	Summary									
Analys is ID	Endpoint	Level	μg/L	95% LCL	95% UCL	TU	Meth	nod		
13-728 2-5479	Combined Development	t Ra EC25 EC50	6.494 8.083	6.291 7.83	6.697 8.443		Linea	Linear Interpolation (ICPIN)		
03-6791-7638	Development Rate	EC25	6.507	6.314	6.709		Linea	ar Inte	rpolation (ICPIN)	
	,	EC50	8.097	7.848	8.461		100			
05-7427-9529	Survival Rate	EC25	23.23	22.25	24.32		Linea	ar Inte	rpolation (ICPIN)	
		EC50	28.86	28.19	29.56					
Test Acceptab	ility							idal sicara irana d		
Analysis ID	Endpoint	Attrib	ute	Test Stat	TAC Limit	ts	Ove	rlap	Decision	
03-6791-7638	Development Rate	Contro	ol Resp	0.9698	0.9 - NL		Yes		Passes Acceptability Criteria	
13-2586-1415	Development Rate	Contro	ol Resp	0.9698	0.9 - NL		Yes		Passes Acceptability Criteria	
04.7427-95 29	Survival Rate	Contro	ol Resp	1	0.5 - NL		Yes		Passes Acceptability Criteria	
09-5309-53 66	Survival Rate	Contro	ol Resp	1	0.5 - NL		Yes		Passes Acceptability Criteria	
19- 0549-97 71	Combined Development	t Ra PMSD)	0.02985	NL - 0.25		No		Passes Acceptability Criteria	

02 Mar-22 09:05 (p 2 of 3) 220209msdv | 20-6883-0287

Bivalve Lar	val Survival and [Developmer	nt Test						Nautilus	Environm	ental (CA)
Combined [Development 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	0.9698	0.9561	0.9834	0.9595	0.9835	0.004921	0.011	1.14%	0.0%
2.5		5	0.9622	0.9406	0.9838	0.9409	0.9833	0.007779	0.01739	1.81%	0.78%
5		5	0.9561	0.9297	0.9825	0.9206	0.9716	0.009506	0.02126	2.22%	1.41%
10		5	0.1901	0.1144	0.2658	0.1535	0.2949	0.02725	0.06094	32.05%	80.4%
20		5	0.00297	0	0.01122	0	0.01485	0.00297	0.006642	223.6%	99.69%
40		5	0	0	0	0	0	0	0		100.0%
Developm e	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	0.9698	0.9561	0.9834	0.9595	0.9835	0.004921	0.011	1.14%	0.0%
2.5		5	0.9641	0.9439	0.9843	0.9409	0.9833	0.007281	0.01628	1.69%	0.59%
5		5	0.958	0.9298	0.9862	0.9206	0.975	0.01015	0.0227	2.37%	1.21%
10		5	0.1924	0.1177	0.267	0.1535	0.2949	0.02689	0.06012	31.26%	80.16%
20		5	0.00355	0	0.01341	0	0.01775	0.00355	0.007939	223.6%	99.63%
4(1)		5	0	0	0	0	0	0	0		100.0%
Servival Ra	te Summary				-						
(/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Control	5	1	1	1	1	1	0	0	0.0%	0.0%
2.5		5	0.998	0.9925	1	0.9901	1	0.00198	0.004428	0.44%	0.2%
5		5	0.998	0.9925	1	0.9901	1	0.00198	0.004428	0.44%	0.2%
10		5	0.9871	0.9643	1	0.9604	1	0.008224	0.01839	1.86%	1.29%
20		5	0.8931	0.8348	0.9513	0.8366	0.9604	0.02098	0.04691	5.25%	10.69%
40		5	0.005941	0	0.01604	0	0.0198	0.003638	0.008134	136.9%	99.41%
Combined I	Development Rate	Detail									
Capp/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Ú	Lab Control	0.9798	0.9633	0.9835	0.9628	0.9595					
2.5		0.9505	0.9833	0.9754	0.9409	0.9609					
5											
				0.9206	0.9704	0.9653					
		0.9524	0.9716	0.9206 0.1931		0.9653 0.1535					
10		0.9524 0.2949	0.9716 0.1557	0.1931	0.1535	0.1535					
10 20		0.9524 0.2949 0.01485	0.9716 0.1557 0	0.1931 0	0.1535 0	0.1535 0					
10 20 40	nt Pata Datail	0.9524 0.2949	0.9716 0.1557	0.1931	0.1535	0.1535					
10 20 40 Developmen	nt Rate Detail	0.9524 0.2949 0.01485 0	0.9716 0.1557 0	0.1931 0 0	0.1535 0 0	0.1535 0 0					
10 20 40	Control Type	0.9524 0.2949 0.01485 0	0.9716 0.1557 0 0	0.1931 0 0 Rep 3	0.1535 0 0 Rep 4	0.1535 0 0 Rep 5					
10 20 40 Developmen		0.9524 0.2949 0.01485 0 Rep 1 0.9798	0.9716 0.1557 0 0 Rep 2 0.9633	0.1931 0 0 Rep 3	0.1535 0 0 Rep 4 0.9628	0.1535 0 0 Rep 5					
10 20 40 (Sevelopmen C ₁₁ G/L 3 1.5	Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833	0.1931 0 0 Rep 3 0.9835 0.9754	0.1535 0 0 Rep 4 0.9628 0.9409	0.1535 0 0 Rep 5 0.9595 0.9609					
10 20 40 Cevelopmen Capp/L 2.5 5	Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206	0.1535 0 0 Rep 4 0.9628 0.9409 0.9704	0.1535 0 0 Rep 5 0.9595 0.9609 0.975					
10 20 40 Gevelopmen C _{3/3} /L 16 5 10	Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598					
10 20 40 Cevelopmen CapplL 1.5 5 10 20	Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0					
10 20 40 Developmen C.5 5 10 20 40	Control Type Lab Control	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598					
10 20 40 [Avelopmen Capple 1.5 5 10 20 40	Control Type Lab Control te Detail	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0	0.1931 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0	0.1535 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0					
10 20 40 Developmen C.5 5 10 20 40	Control Type Lab Control te Detail Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0					
10 20 40 Gevelopmen V ₃₆ //L 5 5 10 20 40	Control Type Lab Control te Detail	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0	0.1931 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0	0.1535 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0 0					
10 20 40 Developmen C , G/L 7.5 5 10 20 40	Control Type Lab Control te Detail Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0 0					
10 20 40 Developmen Cast/L 1.5 5 10 20 40 Furvival Ra	Control Type Lab Control te Detail Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0 0	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0 0					
10 20 40 Development Cass/L 1.5 5 10 20 40 Survival Ra	Control Type Lab Control te Detail Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0 Rep 1 1 0.9901	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0 0	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0 0	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0 0					
10 20 40 Levelopmen C _{3/3} /L 1.5 5 10 20 40 Survival Ra 5/4/L	Control Type Lab Control te Detail Control Type	0.9524 0.2949 0.01485 0 Rep 1 0.9798 0.96 0.9524 0.2949 0.01775 0 Rep 1 1 0.9901	0.9716 0.1557 0 0 Rep 2 0.9633 0.9833 0.9716 0.1557 0 0	0.1931 0 0 0 Rep 3 0.9835 0.9754 0.9206 0.198 0 0	0.1535 0 0 0 Rep 4 0.9628 0.9409 0.9704 0.1535 0 0	0.1535 0 0 0 Rep 5 0.9595 0.9609 0.975 0.1598 0 0					

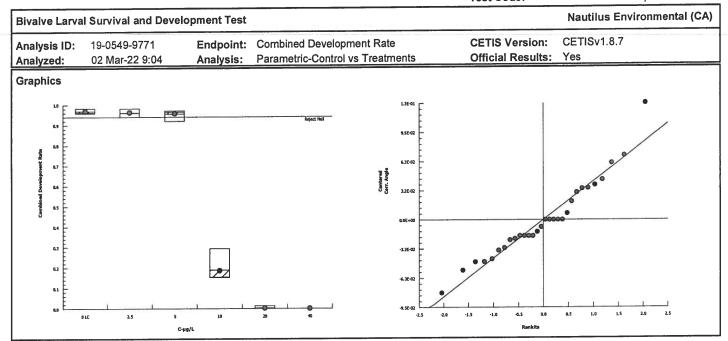
02 Mar-22 09:05 (p 3 of 3) 220209msdv | 20-6883-0287

Bivalve La	rval Survival and [Developme	nt Test				Nautilus Environmental (CA)
Cambined	Development Rate	e Binomials	3				
C µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
C.	Lab Control	242/247	210/218	238/242	207/215	213/222	
2.5		192/202	235/239	198/203	191/203	221/230	
E.		200/210	205/211	197/214	197/203	195/202	
10		69/234	33/212	39/202	33/215	31/202	
30		3/202	0/202	0/202	0/202	0/202	
		0/202	0/202	0/202	0/202	0/202	
velopm	ent Rate Binomials	3					
19/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
.:	Lab Control	242/247	210/218	238/242	207/215	213/222	
,		192/200	235/239	198/203	191/203	221/230	
E.		200/210	205/211	197/214	197/203	195/200	
		69/234	33/212	39/197	33/215	31/194	
		3/169	0/185	0/177	0/194	0/177	
		0/1	0/4	0/1	0/1	0/1	
rrival R	ate Binomials						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	Lab Control	202/202	202/202	202/202	202/202	202/202	
2.5		200/202	202/202	202/202	202/202	202/202	
5		202/202	202/202	202/202	202/202	200/202	
· A		202/202	202/202	197/202	202/202	194/202	
		169/202	185/202	177/202	194/202	177/202	
		0/202	4/202	1/202	1/202	0/202	

02 Mar-22 09:05 (p 1 of 6) 220209msdv | 20-6883-0287

Bivalve Larv	al Survival and I	Developme	nt Test					<u> </u>	Nautilus	Environn	nental (CA)
Analysis ID: Analyzed:			nbined Development Rate ametric-Control vs Treatments				IS Version: ial Results:	CETISv1.8.7 Yes			
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr		NA	C > T	NA	NA		2.98%	5	10	7.071	
Dunnett Mul	tiple Compariso	n Test									
Control	vs C-μg/L		Test Stat	Critical	MSD D	F P-Value	P-Type	Decision(α:5%)		
Lab Control	2.5		0.5966	2.305	0.074 8	0.5604	CDF	Non-Signif	icant Effect		
	5		1.09	2.305	0.074 8	0.3433	CDF	Non-Signif	ficant Effect		
	10*		29.81	2.305	0.074 8	<0.0001	CDF	Significant	Effect		
	20*		42.2	2.305	0.074 8	<0.0001	CDF	Significant	Effect		
ANOVA Tabl	е										
Source	Sum Squ	ares	Mean Squ	ıare	DF	F Stat	P-Value	Decision(α:5%)		
Between	8.059924		2.014981		4	792.4	<0.0001	Significant	Effect		
Error	0.050859	71	0.0025429	986	20						
Total	8.110784				24						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett B	quality of V	ariance	2.755	13.28	0.5996	Equal Val	riances			
Distribution	Shapiro-	Wilk W Norr	mality	0.9446	0.8877	0.1885	Normal D	istribution			
Combined D	evelopment Rate	Summary									
C-µg/L	Control Type	Count	Mean	95% LCL	95% UC	. Median	Min	Max	Std Err	CV%	%Effect
0	Lab Control	5	0.9698	0.9561	0.9834	0.9633	0.9595	0.9835	0.004921	1.14%	0.0%
2.5		5	0.9622	0.9406	0.9838	0.9609	0.9409	0.9833	0.007779	1.81%	0.78%
5		5	0.9561	0.9297	0.9825	0.9653	0.9206	0.9716	0.009506	2.22%	1.41%
10		5	0.1901	0.1144	0.2658	0.1557	0.1535	0.2949	0.02725	32.05%	80.4%
20		5	0.00297	0	0.01122	0	0	0.01485	0.00297	223.6%	99.69%
40		5	0	0	0	0	0	0	0		100.0%
Angular (Co	rrected) Transfo	med Summ	ary								
ا ما			Maan	95% LCL	95% UCI	. Median	Min	Max	Std Err	CV%	%Effect
C-µg/L	Control Type	Count	Mean	0070 202							
C-μg/L 0	Control Type Lab Control	Count 5	1.399	1.357	1.441	1.378	1.368	1.442	0.01512	2.42%	0.0%
					1.441 1.439	1.378 1.372	1.368 1.325	1.442 1.441	0.01512 0.02125	3.44%	1.36%
0		5	1.399	1.357					0.02125 0.02161	3.44% 3.54%	1.36% 2.49%
0 2.5		5 5	1.399 1.38	1.357 1.321	1.439	1.372	1.325	1.441 1.401 0.574	0.02125 0.02161 0.03306	3.44% 3.54% 16.51%	1.36% 2.49% 67.97%
0 2.5 5		5 5 5	1.399 1.38 1.364	1.357 1.321 1.304	1.439 1.424	1.372 1.384	1.325 1.285	1.441 1.401	0.02125 0.02161	3.44% 3.54%	1.36% 2.49%

Report Date: Test Code: 02 Mar-22 09:05 (p 2 of 6) 220209msdv | 20-6883-0287



Report Date: Test Code: 02 Mar-22 09:05 (p 3 of 6) 220209msdv | 20-6883-0287

Bivalve Larv	al Survival and I	Developme	nt Test						Nautilus	Environn	nental (CA)
Analysis ID: Analyzed:	18-2586-1415 02 Mar-22 9:04			velopment R ametric-Cor		tments		IS Version: cial Results:	CETISv1. : Yes	8.7	
Data Transfo		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Angular (Corr		NA	C > T	NA	NA		3.04%	5	10	7.071	
Dunnett Mul	tiple Compariso	n Test									
Control	vs C-µg/L		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision((α:5%)		
Lab Control	2.5		0.4459	2.305	0.075 8	0.6275	CDF	Non-Signi	ficant Effect		
	5		0.8991	2.305	0.075 8	0.4244	CDF	Non-Signi	ficant Effect		
	10*		29.29	2.305	0.075 8	< 0.0001	CDF	Significant	t Effect		
	20*		41.49	2.305	0.075 8	<0.0001	CDF	Significan	t Effect		
ANOVA Table	е										
Source	Sum Squ	iares	Mean Squ	ıare	DF	F Stat	P-Value	Decision((α:5%)		
Between	8.058728		2.014682		4	770.1	<0.0001	Significan	t Effect		
Error	0.052325	69	0.0026162	285	20						
Total	8.111053				24						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Attribute Variances		Equality of V	ariance	Test Stat 2.449	Critical 13.28	P-Value 0.6537	Decision Equal Var				
	Bartlett E	Equality of V Wilk W Nor						iances			
Variances Distribution	Bartlett E	Wilk W Nor		2.449	13.28	0.6537	Equal Var	iances			
Variances Distribution	Bartlett E Shapiro-	Wilk W Nor		2.449	13.28	0.6537	Equal Var	iances	Std Err	CV%	%Effect
Variances Distribution Developmen	Bartlett E Shapiro- t Rate Summary	Wilk W Nor	mality	2.449 0.9462	13.28 0.8877	0.6537 0.2053	Equal Var Normal D	iances istribution	Std Err 0.004921	CV% 1.14%	0.0%
Variances Distribution Development C-µg/L	Bartlett E Shapiro- t Rate Summary Control Type	Wilk W Nor	mality Mean	2.449 0.9462 95% LCL	13.28 0.8877 95% UCL	0.6537 0.2053 Median	Equal Var Normal D	iances istribution Max		1.14% 1.69%	0.0% 0.59%
Variances Distribution Developmen C-µg/L 0	Bartlett E Shapiro- t Rate Summary Control Type	Wilk W Nor Count	Mean 0.9698	2.449 0.9462 95% LCL 0.9561	13.28 0.8877 95% UCL 0.9834	0.6537 0.2053 Median 0.9633	Equal Var Normal D Min 0.9595	Max 0.9835	0.004921 0.007281 0.01015	1.14% 1.69% 2.37%	0.0% 0.59% 1.21%
Variances Distribution Developmen C-µg/L 0 2.5	Bartlett E Shapiro- t Rate Summary Control Type	Count 5 5	Mean 0.9698 0.9641	2.449 0.9462 95% LCL 0.9561 0.9439	13.28 0.8877 95% UCL 0.9834 0.9843	0.6537 0.2053 Median 0.9633 0.9609	Equal Var Normal D Min 0.9595 0.9409	Max 0.9835 0.9833	0.004921 0.007281 0.01015 0.02689	1.14% 1.69% 2.37% 31.26%	0.0% 0.59% 1.21% 80.16%
Variances Distribution Developmen C-µg/L 0 2.5 5	Bartlett E Shapiro- t Rate Summary Control Type	Count 5 5 5	Mean 0.9698 0.9641 0.958	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298	13.28 0.8877 95% UCL 0.9834 0.9843 0.9862	0.6537 0.2053 Median 0.9633 0.9609 0.9704	Equal Var Normal D Min 0.9595 0.9409 0.9206	Max 0.9835 0.9833 0.975	0.004921 0.007281 0.01015	1.14% 1.69% 2.37%	0.0% 0.59% 1.21% 80.16% 99.63%
Variances Distribution Developmen C-µg/L 0 2.5 5 10	Bartlett E Shapiro- t Rate Summary Control Type	Count 5 5 5 5	Mean 0.9698 0.9641 0.958 0.1924	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177	13.28 0.8877 95% UCL 0.9834 0.9843 0.9862 0.267	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598	Min 0.9595 0.9409 0.9206 0.1535	Max 0.9835 0.9833 0.975 0.2949	0.004921 0.007281 0.01015 0.02689	1.14% 1.69% 2.37% 31.26%	0.0% 0.59% 1.21% 80.16%
Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40	Bartlett E Shapiro- t Rate Summary Control Type	Count 5 5 5 5 5 5	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0	Min 0.9595 0.9409 0.9206 0.1535 0	Max 0.9835 0.9833 0.975 0.2949 0.01775	0.004921 0.007281 0.01015 0.02689 0.00355	1.14% 1.69% 2.37% 31.26% 223.6%	0.0% 0.59% 1.21% 80.16% 99.63%
Variances Distribution Developmen C-µg/L 0 2.5 5 10 20 40	Bartlett E Shapiro- it Rate Summary Control Type Lab Control	Count 5 5 5 5 5 5	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0	Min 0.9595 0.9409 0.9206 0.1535 0	Max 0.9835 0.9833 0.975 0.2949 0.01775	0.004921 0.007281 0.01015 0.02689 0.00355 0	1.14% 1.69% 2.37% 31.26% 223.6%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0%
Variances Distribution Development C-µg/L 0 2.5 5 10 20 40 Angular (Cor	Bartlett E Shapiro- It Rate Summary Control Type Lab Control	Count 5 5 5 5 5 5 7 med Summ	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0 mary Mean 1.399	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0 0	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341 0	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0 0	Min 0.9595 0.9409 0.9206 0.1535 0	Max 0.9835 0.9833 0.975 0.2949 0.01775 0	0.004921 0.007281 0.01015 0.02689 0.00355 0 Std Err 0.01512	1.14% 1.69% 2.37% 31.26% 223.6% CV% 2.42%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0% %Effect 0.0%
Variances Distribution Development C-µg/L 0 2.5 5 10 20 40 Angular (Cort C-µg/L	Bartlett E Shapiro- it Rate Summary Control Type Lab Control	Count 5 5 5 5 5 5 7med Sumn	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0 mary Mean	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341 0	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0 0	Min 0.9595 0.9409 0.9206 0.1535 0 0 Min 1.368 1.325	Max 0.9835 0.9833 0.975 0.2949 0.01775 0	0.004921 0.007281 0.01015 0.02689 0.00355 0	1.14% 1.69% 2.37% 31.26% 223.6% CV% 2.42% 3.22%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0% %Effect 0.0% 1.03%
Variances Distribution Development C-µg/L 0 2.5 5 10 20 40 Angular (Cort C-µg/L 0	Bartlett E Shapiro- it Rate Summary Control Type Lab Control	Count 5 5 5 5 5 7 med Sumn Count 5	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0 mary Mean 1.399	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0 0	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341 0 95% UCL 1.441	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0 0	Min 0.9595 0.9409 0.9206 0.1535 0 0	Max 0.9835 0.9833 0.975 0.2949 0.01775 0 Max 1.442 1.441 1.412	0.004921 0.007281 0.01015 0.02689 0.00355 0 Std Err 0.01512	1.14% 1.69% 2.37% 31.26% 223.6% CV% 2.42% 3.22% 3.85%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0% %Effect 0.0% 1.03% 2.08%
Variances Distribution Development C-µg/L 0 2.5 5 10 20 40 Angular (Cortangle) C-µg/L 0 2.5	Bartlett E Shapiro- it Rate Summary Control Type Lab Control	Count 5 5 5 5 7 med Sumn Count 5 5 5	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0 mary Mean 1.399 1.384	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0 0 95% LCL 1.357 1.329	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341 0 95% UCL 1.441 1.439	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0 0 Median 1.378 1.372	Min 0.9595 0.9409 0.9206 0.1535 0 0 Min 1.368 1.325 1.285 0.4026	Max 0.9835 0.9833 0.975 0.2949 0.01775 0 Max 1.442 1.441	0.004921 0.007281 0.01015 0.02689 0.00355 0 Std Err 0.01512 0.01991 0.02357 0.03258	1.14% 1.69% 2.37% 31.26% 223.6% CV% 2.42% 3.22% 3.85% 16.16%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0% %Effect 0.0% 1.03% 2.08% 67.76%
Variances Distribution Development C-µg/L 0 2.5 5 10 20 40 Angular (Cortage)L 0 2.5 5 5	Bartlett E Shapiro- it Rate Summary Control Type Lab Control	Count 5 5 5 5 5 Crmed Summ Count 5 5 5 5	Mean 0.9698 0.9641 0.958 0.1924 0.00355 0 mary Mean 1.399 1.384 1.369	2.449 0.9462 95% LCL 0.9561 0.9439 0.9298 0.1177 0 0 95% LCL 1.357 1.329 1.304	95% UCL 0.9834 0.9843 0.9862 0.267 0.01341 0 95% UCL 1.441 1.439 1.435	0.6537 0.2053 Median 0.9633 0.9609 0.9704 0.1598 0 0 Median 1.378 1.372 1.398	Min 0.9595 0.9409 0.9206 0.1535 0 0 Min 1.368 1.325 1.285	Max 0.9835 0.9833 0.975 0.2949 0.01775 0 Max 1.442 1.441 1.412	0.004921 0.007281 0.01015 0.02689 0.00355 0 Std Err 0.01512 0.01991 0.02357	1.14% 1.69% 2.37% 31.26% 223.6% CV% 2.42% 3.22% 3.85%	0.0% 0.59% 1.21% 80.16% 99.63% 100.0% %Effect 0.0% 1.03% 2.08%

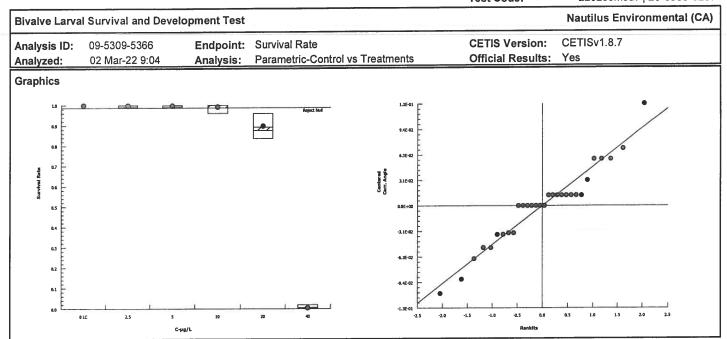
Report Date: Test Code: 02 Mar-22 09:05 (p 4 of 6) 220209msdv | 20-6883-0287

Nautilus Environmental (CA) **Bivalve Larval Survival and Development Test** CETISv1.8.7 **Endpoint:** Development Rate **CETIS Version:** 18-2586-1415 Analysis ID: Official Results: Yes Parametric-Control vs Treatments Analysis: Analyzed: 02 Mar-22 9:04 Graphics 1.6E-01 -1.6E-01 C-µg/L

Report Date: Test Code: 02 Mar-22 09:05 (p 5 of 6) 220209msdv | 20-6883-0287

Analysis ID: 09-5309-5366 Endpoint: Survival Rate CETIS Version: CETIS Version: Analyzed: 02 Mar-22 9:04 Analysis: Parametric-Control vs Treatments Official Results: Yes	us Environn v1.8.7	mental (CA)
Analyzed: 02 Mar-22 9:04 Analysis: Parametric-Control vs Treatments Official Results: Yes	11.8.7	
Data Transform Zeta Alt Hyp Trials Seed PMSD NOEL LOEL	TOEL	TU
Angular (Corrected) NA C > T NA NA 1.3% 10 20	14.14	
Dunnett Multiple Comparison Test		
Control vs C-μg/L Test Stat Critical MSD DF P-Value P-Type Decision(α:5%)		
Lab Control 2.5 0.3857 2.362 0.079 8 0.6955 CDF Non-Significant Effe	ct	
5 0.3857 2.362 0.079 8 0.6955 CDF Non-Significant Effe	ct	
10 1.723 2.362 0.079 8 0.1593 CDF Non-Significant Effe	:ct	
20* 8.697 2.362 0.079 8 <0.0001 CDF Significant Effect		
40* 43.82 2.362 0.079 8 <0.0001 CDF Significant Effect		
ANOVA Table		
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)		
Between 8.354871 1.670974 5 598 <0.0001 Significant Effect		
Error 0.06706765 0.002794486 24		
Total 8.421939 29		
Distributional Tests		
Attribute Test Test Stat Critical P-Value Decision(α:1%)		
Variances Mod Levene Equality of Variance 1.508 4.248 0.2366 Equal Variances		
Variances Levene Equality of Variance 5.721 3.895 0.0013 Unequal Variances		
Distribution Shapiro-Wilk W Normality 0.9501 0.9031 0.1699 Normal Distribution		
Survival Rate Summary		
C-µg/L Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err	CV%	%Effect
0 Lab Control 5 1 1 1 1 1 0	0.0%	0.0%
2.5 5 0.998 0.9925 1 1 0.9901 1 0.00198	0.44%	0.2%
5 0.998 0.9925 1 1 0.9901 1 0.00198	0.44%	0.2%
10 5 0.9871 0.9643 1 1 0.9604 1 0.00822	4 1.86%	1.29%
20 5 0.8931 0.8348 0.9513 0.8762 0.8366 0.9604 0.02098	5.25%	10.69%
40 5 0.005941 0 0.01604 0.00495 0 0.0198 0.00363	8 136.9%	99.41%
Angular (Corrected) Transformed Summary		
C-µg/L Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err	CV%	%Effect
	0.0%	0.0%
0 Lab Control 5 1.536 1.535 1.536 1.536 1.536 0		
	1.89%	0.84%
0 Lab Control 5 1.536 1.535 1.536 1.536 1.536 0	1.89% 1.89%	0.84% 0.84%
0 Lab Control 5 1.536 1.535 1.536 1.536 1.536 1.536 0 2.5 5 1.523 1.487 1.559 1.536 1.471 1.536 0.0129		
0 Lab Control 5 1.536 1.535 1.536 1.536 1.536 0 2.5 5 1.523 1.487 1.559 1.536 1.471 1.536 0.0129 5 1.523 1.487 1.559 1.536 1.471 1.536 0.0129	1.89% 5.43%	0.84%

Report Date: Test Code: 02 Mar-22 09:05 (p 6 of 6) 220209msdv | 20-6883-0287



Report Date:

02 Mar-22 09:05 (p 1 of 3) 220209msdv | 20-6883-0287

Test Code:

Nautilus Environmental (CA)

Bivalve Larval Survival and Development Test

CETISv1.8.7

Analysis ID: 13-7282-5479 02 Mar-22 9:04 Analyzed:

Endpoint: Combined Development Rate Linear Interpolation (ICPIN) Analysis:

CETIS Version: Official Results: Yes

_		
ı	Linear Interpolation	Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method

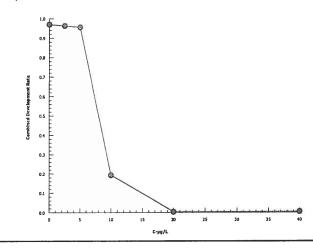
Two-Point Interpolation 1940413 1000 Yes Linear Linear

Point Estimates

Level	μg/L	95% LCL	95% UCL
EC25	6.494	6.291	6.697
EC50	8.083	7.83	8.443

Combine	d Development Rat	e Summary	Calculated Variate(A/B)								
C-µg/L	Control Type	Mean	Mean Min Max Std Err Std Dev C			CV%	%Effect	Α	В		
0	Lab Control	5	0.9698	0.9595	0.9835	0.004921	0.011	1.14%	0.0%	1110	1144
2.5		5	0.9622	0.9409	0.9833	0.007779	0.01739	1.81%	0.78%	1037	1077
5		5	0.9561	0.9206	0.9716	0.009506	0.02126	2.22%	1.41%	994	1040
10		5	0.1901	0.1535	0.2949	0.02725	0.06094	32.05%	80.4%	205	1065
20		5	0.00297	0	0.01485	0.00297	0.006642	223.6%	99.69%	3	1010
40		5	0	0	0	0	0		100.0%	0	1010

Graphics



Bivalve Larval Survival and Development Test

Report Date: Test Code: 02 Mar-22 09:05 (p 2 of 3) 220209msdv | 20-6883-0287

Nautilus Environmental (CA)

Analysis ID: 03-6791-7638 Endpoint: Development Rate CETIS Version: CETISv1.8.7

Analyzed: 02 Mar-22 9:04 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear Interpolation Options

X Transform Y Transform Seed Resamples Exp 95% CL Method

Linear Linear 2038522 1000 Yes Two-Point Interpolation

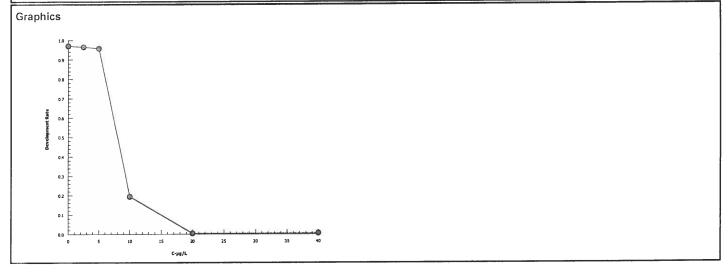
Point Estimates

 Level
 μg/L
 95% LCL
 95% UCL

 EC25
 6.507
 6.314
 6.709

 EC50
 8.097
 7.848
 8.461

Developm	ent Rate Summary	1	Calculated Variate(A/B)							and the second	
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
0	Lab Control	5	0.9698	0.9595	0.9835	0.004921	0.011	1.14%	0.0%	1110	1144
2.5		5	0.9641	0.9409	0.9833	0.007281	0.01628	1.69%	0.59%	1037	1075
5		5	0.958	0.9206	0.975	0.01015	0.0227	2.37%	1.21%	994	1038
10		5	0.1924	0.1535	0.2949	0.02689	0.06012	31.26%	80.16%	204	1052
20		5	0.00355	0	0.01775	0.00355	0.007939	223.6%	99.63%	3	902
40		5	0	0	0	0	0		100.0%	0	8



Report Date: Test Code:

02 Mar-22 09:05 (p 3 of 3)

220209msdv | 20-6883-0287

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Analysis ID: Analyzed:

05-7427-9529 02 Mar-22 9:04 Endpoint: Survival Rate Analysis:

Linear Interpolation (ICPIN)

CETIS Version: Official Results: Yes

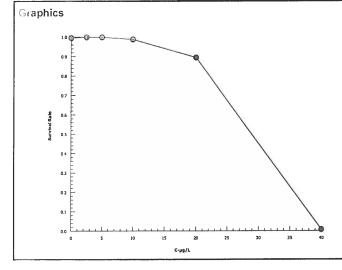
CETISv1.8.7

Linear Interpola	ation Options				
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1915300	1000	Yes	Two-Point Interpolation

Point Estimates

Level	μg/L	95% LCL	95% UCL
EC25	23.23	22.25	24.32
EC50	28.86	28.19	29.56

Survival F	Rate Summary		Calculated Variate(A/B)								
C-µg/L	Control Type	Count	Mean Min		Max Std Err		Std Dev	CV%	%Effect	Α	В
0	Lab Control	5	1	1	1	0	0	0.0%	0.0%	1010	1010
2.5		5	0.998	0.9901	1	0.00198	0.004428	0.44%	0.2%	1008	1010
5		5	0.998	0.9901	1	0.00198	0.004428	0.44%	0.2%	1008	1010
10		5	0.9871	0.9604	1	0.008224	0.01839	1.86%	1.29%	997	1010
20		5	0.8931	0.8366	0.9604	0.02098	0.04691	5.25%	10.69%	902	1010
40		5	0.005941	0	0.0198	0.003638	0.008134	136.9%	99.41%	6	1010



Report Date: 02 Mar-22 09:06 (1 of 1)

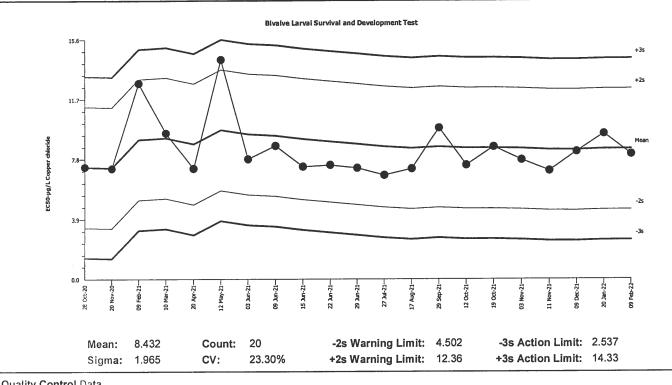
CETIS QC Plot

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Test Type: Development-Survival Organism: Mytilus galloprovincialis (Bay Mussel) Material: Copper chloride

Protocol: EPA/600/R-95/136 (1995) Endpoint: Combined Development Rate Source: Reference Toxicant-REF



Quali	ty Con	trol Data	a								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Oct	28	15:50	7.269	-1.163	-0.5919			09-4043-4676	02-6542-7057
2		Nov	20	16:00	7.187	-1.245	-0.6335			13-7696-8009	10-4367-1427
3	2021	Feb	9	15:15	12.74	4.307	2.192	(+)		12-5648-6062	18-1503-3303
4		Mar	10	14:15	9.481	1.049	0.5337			13-7922-5399	10-0885-9755
5		Apr	20	16:15	7.185	-1.247	-0.6347			06-7450-9711	18-3353-6875
6		May	12	15:00	14.27	5.836	2.97	(+)		15-4594-3065	00-9727-8504
7		Jun	3	15:50	7.791	-0.6408	-0.3261			07-9391-2508	21-2212-7050
8			9	14:00	8.654	0.2215	0.1127			18-5736-8495	04-4549-3405
9			15	15:40	7.302	-1.13	-0.5752			00-2993-6780	17-7654-7354
10			22	13:45	7.404	-1.028	-0.5232			16-6840-3553	15-2803-6917
11			29	14:55	7.211	-1.221	-0.6213			07-2040-2693	08-8247-6801
12		Jul	27	16:30	6.748	-1.684	-0.8568			16-6019-6958	06-5859-7928
13		Aug	17	14:25	7.168	-1.264	-0.6435			07-7298-7649	09-6648-5411
14		Sep	29	15:45	9.809	1.377	0.7008			12-3450-8829	18-2247-7613
15		Oct	12	15:00	7.395	-1.037	-0.5277			14-7239-9185	01-1367-5722
16			19	17:00	8.581	0.1489	0.07576			17-5798-2248	09-1208-0351
17		Nov	3	15:00	7.733	-0.6995	-0.356			14-6395-1490	06-4040-2968
18			11	14:35	7.03	-1.402	-0.7137			00-1546-1531	12-7713-2161
19		Dec	9	15:50	8.264	-0.1677	-0.08537			06-2693-6580	11-5581-5612
20	2022	Jan	20	15:15	9.426	0.9945	0.5061			06-1599-8254	16-9050-7435
21		Feb	9	16:25	8.083	-0.3491	-0.1776			20-6883-0287	13-7282-5479

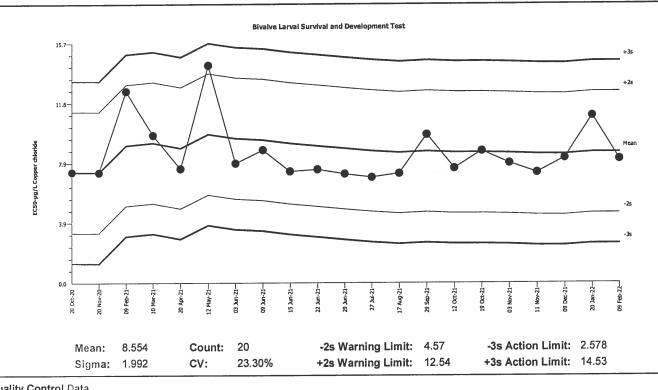
CETIS QC Plot

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Test Type: Development-Survival Organism: Mytilus galloprovincialis (Bay Mussel) Material: Copper chloride

Protocol: EPA/600/R-95/136 (1995) Endpoint: Development Rate Source: Reference Toxicant-REF



Quali	ty Con	trol Data	а								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Oct	28	15:50	7.257	-1.297	-0.6512			09-4043-4676	12-0840-2779
2		Nov	20	16:00	7.23	-1.324	-0.6648			13-7696-8009	11-4264-3018
3	2021	Feb	9	15:15	12.58	4.029	2.023	(+)		12-5648-6062	01-5747-2564
4		Mar	10	14:15	9.694	1.14	0.5721			13-7922-5399	08-4869-7631
5		Apr	20	16:15	7.482	-1.072	-0.5382			06-7450-9711	17-9210-1733
6		May	12	15:00	14.27	5.714	2.868	(+)		15-4594-3065	12-3891-6641
7		Jun	3	15:50	7.832	-0.7219	-0.3624			07-9391-2508	11-7075-1183
8			9	14:00	8.715	0.1614	0.08101			18-5736-8495	18-6125-5477
9			15	15:40	7.302	-1.252	-0.6287			00-2993-6780	13-6998-5313
10			22	13:45	7.427	-1.127	-0.5659			16-6840-3553	07-3347-2243
11			29	14:55	7.132	-1.422	-0.7139			07-2040-2693	17-0989-5973
12		Jul	27	16:30	6.912	-1.642	-0.8245			16-6019-6958	03-0913-6262
13		Aug	17	14:25	7.168	-1.386	-0.696			07-7298-7649	11-4901-9823
14		Sep	29	15:45	9.718	1.164	0.5843			12-3450-8829	04-7958-3381
15		Oct	12	15:00	7.509	-1.045	-0.5244			14-7239-9185	04-3282-5514
16			19	17:00	8.648	0.09356	0.04697			17-5798-2248	05-0981-9303
17		Nov	3	15:00	7.85	-0.7037	-0.3533			14-6395-1490	11-9492-7222
18			11	14:35	7.225	-1.329	-0.6672			00-1546-1531	03-5898-7126
19		Dec	9	15:50	8.177	-0.3769	-0.1892			06-2693-6580	19-9748-5087
20	2022	Jan	20	15:15	10.94	2.39	1.2			06-1599-8254	16-8693-8465
21		Feb	9	16:25	8.097	-0.4568	-0.2293			20-6883-0287	03-6791-7638

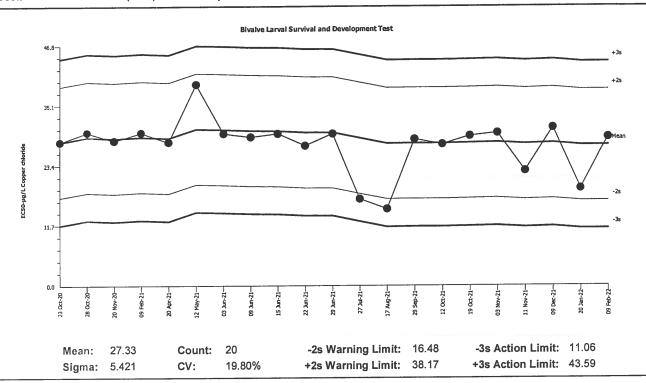
Report Date:

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Organism: Mytilus galloprovincialis (Bay Mussel) Material: Copper chloride Test Type: Development-Survival

Reference Toxicant-REF Endpoint: Survival Rate Source: Protocol: EPA/600/R-95/136 (1995)



Quali	ty Con	trol Data	a .								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2020	Oct	23	13:45	27.94	0.6117	0.1128			09-8413-3498	02-1232-2390
2			28	15:50	29.82	2.489	0.4592			09-4043-4676	15-7574-6891
3		Nov	20	16:00	28.24	0.9137	0.1686			13-7696-8009	21-0824-4197
4	2021	Feb	9	15:15	29.8	2.475	0.4565			12-5648-6062	08-9593-0094
5		Apr	20	16:15	27.97	0.6408	0.1182			06-7450-9711	02-2099-4435
6		May	12	15:00	39.23	11.9	2.195	(+)		15-4594-3065	18-1677-8776
7		Jun	3	15:50	29.62	2.288	0.422			07-9391-2508	05-7225-1680
8			9	14:00	28.97	1.636	0.3019			18-5736-8495	17-4075-5383
9			15	15:40	29.61	2.281	0.4209			00-2993-6780	11-7676-4213
10			22	13:45	27.27	-0.06302	-0.01163			16-6840-3553	00-7652-1305
11			29	14:55	29.58	2.255	0.416			07-2040-2693	20-9452-4039
12		Jul	27	16:30	16.82	-10.51	-1.939			16-6019-6958	09-3317-6652
13		Aug	17	14:25	14.86	-12.47	-2.3	(-)		07-7298-7649	12-6822-1646
14		Sep	29	15:45	28.5	1.169	0.2156			12-3450-8829	17-8563-2416
15		Oct	12	15:00	27.53	0.1971	0.03636			14-7239-9185	11-8743-4626
16			19	17:00	29.13	1.8	0.332			17-5798-2248	01-7668-6950
17		Nov	3	15:00	29.71	2.376	0.4383			14-6395-1490	03-1145-8832
18			11	14:35	22.33	-5.005	-0.9233			00-1546-1531	07-6640-8098
19		Dec	9	15:50	30.73	3.398	0.6268			06-2693-6580	02-3744-1694
20	2022	Jan	20	15:15	18.86	-8.474	-1.563			06-1599-8254	12-6429-5476
21		Feb	9	16:25	28.86	1.532	0.2825			20-6883-0287	05-7427-9529

CETIS Test Data Worksheet

Report Date: Test Code: 05 Feb-22 14:36 (p 1 of 1) 20-6883-0287/220209msdv

Bivalve Larval Survival and Development Test

Nautilus Environmental (CA)

Start Date: 09 Feb-22 Species: Mytilus galloprovincialis Sample Code: 22209msdv 220209msdv 220209msdv 220209msdv 220209msdv 220209msdv 220209msdv 220209msdv 220209msdv

Sample Date: 09 Feb-22 Material: Copper chloride Sample Station: Copper Chloride

C-µg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
			1			214	197	WF 3/1/22
			2			203	191	
			3			1	0	
			4			230	221	
			5			215	33	
			6			218	210	
			7			185	0	
-			8			222	213	
			9			210	200	
			10			210	33	
			11			177	200 33 0	
			12			1	0	
			13			0	0	
			14			1802	192	
			15			194	31	
			16			203	197	
			17			0	197	
			18			177	0	
			19			239	235	
			20			215	207	
			21			169	3	
			22			242	7 7 X	
			23			200	195	
			24			247	195	
			25			194		
			26			197	39 198 205	
			27			203	198	
			28			211	205	
			29			4	0	
			30			0+340	69	QC = 70/232

() (M)

234

Q Q 18 WF 3/1/22 TOTAL: 200

BQ18A(5 3/1/22

Q Q 18 WF 3/182 TOTAL: 234

CETIS Test Data Worksheet

Report Date: Test Code: 05 Feb-22 14:36 (p 1 of 1) 20-6883-0287/220209msdv

Bivalve Larval Survival and Development Test

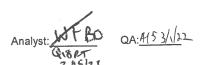
Nautilus Environmental (CA)

Start Date: 09 Feb-22 Species: Mytilus galloprovincialis Sample Code: 11 Feb-22 Protocol: EPA/600/R-95/136 (1995) Sample Source: Reference Toxicant Sample Date: 09 Feb-22 Material: Copper chloride Sample Station: Copper Chloride

-μg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal		Notes
0	LC	1	24						
0	LC	2	6						
0	LC	3	22			209	205	PTOBOWF Z	115/22
0	LC	4	20						
0	LC	5	8						
2.5		1	14						
2.5		2	19						
2.5		3	27			200	196		
2.5		4	2						
2.5		5	4						
5		1	9						
5		2	28						
5		3	1			197	190		
5		4	16						
5		5	23						
10		1	30						
10		2	10						
10		3	26			192	26		
10		4	5						
10		5	15						
20		1	21						
20		2	7						
20		3	11			169	0		
20		4	25			Ì			
20		5	18						
40		1	17						
40		2	29						and the second s
40		3	12			2	0		
40		4	3						
40		5	13	1					

0.00

(A) Q18 ACS 3/1/22



Marine Chronic Bioassay DM-014

Water Quality Measurements

Client: Internal	Test Species: M. galloprovincialis
Sample ID: CuCl ₂	Start Date/Time: 2/9/2022 /625
Test No.: 220209msdv	End Date/Time: 2/11/2022 (675

Concentration		Salinity		Te	emperatu	re	Diss	olved Ox	ygen		pН	
(μg/L)	0	(ppt) 24	48	0	(°C)	48	0	(mg/L) 24	48	0	(pH units	48
Lab Control	31.6	31.8	31.9	14.le	14,6	14.6	8.5	8.6	8.5	8.01	7.96	7.89
2.5	31.9	32.1	32.4	14.5	14.5	14-6	8.6	8.6	g.5	7.98	7.96	7.90
5	32.0	32,2	32.5	14.4	14.5	14.6	8.6	8.6	8.5	8.00	7.96	7-91
10	32.0	32.1	3z.5	14.8	14.5	14.6	8.5	8.7	8.5	8.00	7.96	7.91
20	31.9	32.1	37.5	14.7	144	14.6	8.6	8.7	8.5	8.01	8,00	7.91
40	31.9	32.1	37.4	14.6	145	14.7	8.6	8.7	8.5	8.00	8.00	7.91

		U	24	48	High conc. made (μg/L):	40	
Technician Initials:	WQ Readings:	<u>bo</u>	KD	RT	Vol. Cu stock added (mL):	2.0	1
	Dilutions made by:	15			Final Volume (mL):	500	
	t				Cu stock concentration (μg/L):	10,000	
Environmental Chan	nber: \mathcal{D}_{\cdot}		_				
Comments:	0 hrs:						
	24 hrs:						H
	48 hrs:						
00 0hl	2 212 120				E: 15 :	1/12	
QC Check:	Ju 3/2/2		_		Final Review:	19(5 3/1/22	

Marine	Chronic	Bloassay
DM-013		

	1	
Client/Sample:	Internal/CuClz	
Test No.:	220209msdy	_
Test Species:	Mytilus galloprovincialis	
Animal Source/Ba	ch Tank: M-PEP / 6A/B	
Date Received:	11/17/21	
Test Chambers:	30 mL glass shell vials	
Sample Volume:	10 mL	

2/9/2022

2/11/2022

Spawn Information

Firef	Gamete	Release	Time:
LIIOI	Gantete	I CICUSC	i iii io.

\	3	00

Sex	Number Spawning
Male	3+
Female	3+

Gamete Selection			
Sex	Beaker Number(s)	Condition (sperm motility, egg density, color, shape, etc.)	
Male	1,2,3	exect motility of density	
Female 1	1	good density, pate orange, mostly round	
Female 2	2	good dansity, pake orange, mostly round	
Female 3			

Egg Fertilization Time: 1400

Start Date/Time:

End Date/Time: Technician Initials:

Embryo Stock Selection

Ellibry Colocit Co.		
Stock Number	% of embryos at 2-cell division stage	
Female 1		
Female 2	100	
Female 3		

Stock(s) chosen for testing:

Embryo Inoculum Preparation

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

Number Counted:

B	8
7	9
10	8
10	8
8	14

9.0 450 embryos/ml X 50 =

Initial Density: Desired Final Density: (dilution factor)

(to inoculate with 0.5 ml)

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

i ime Ze	Time Zero Control Counts					
TØ Vial No.	No. Dividing	Total	% Dividing	Mean % Dividing		
TØ A	1172	172	100			
TØB /	238	238	100]		
TØ C	188	188	100	100		
TØ D	201	201	100	(0)		
TØ E	201	201	100			
TØ F	212	212	100			
<u></u>	707					

Comments:

QC Check:

Final Review: $4(5 3/\sqrt{2})$