

February 21, 2024

Ms. Rikki Larson  
Environmental Advisor  
BP Cherry Point Refinery  
4519 Grandview  
Blaine, WA 98230

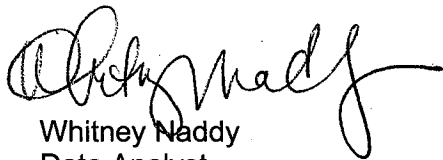
**Subject: Results of chronic *Americamysis bahia* 2024 WET test – Q1**

Ms. Larson:

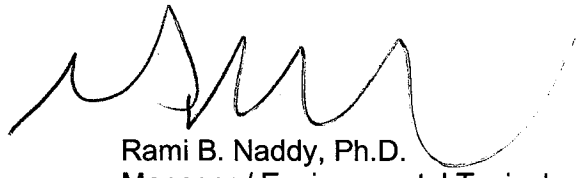
Enclosed is a copy of the report for the chronic *Americamysis bahia* toxicity test conducted in January / February 2024.

We appreciate the opportunity to complete this study for BP Cherry Point. Please do not hesitate to call if you have any questions.

Sincerely,



Whitney Naddy  
Data Analyst  
[naddywm.tre@gmail.com](mailto:naddywm.tre@gmail.com)



Rami B. Naddy, Ph.D.  
Manager / Environmental Toxicologist  
[naddyrb.tre@gmail.com](mailto:naddyrb.tre@gmail.com)

Attachment:

14001-056-254

## Report of Short-term Chronic Toxicity Testing using Mysids (*Americamysis bahia*)

**Project ID: 14001-056-254**  
**January / February 2024**

### Sponsor and Laboratory Information

Sponsor	BP Cherry Point Refinery 4519 Grandview Blaine, WA 98230
Project Officer	Rikki Larson (360) 812-4056
Testing Facility	TRE Environmental Strategies, LLC 100 Racquette Drive, Unit A Fort Collins, CO 80524 Fax: (970) 490-2963 State of Florida NELAP Laboratory ID: E87972 Washington DOE Laboratory ID: C566
Study Director	Rami B. Naddy, Ph.D. (970) 416-0916 email: <a href="mailto:naddyrb.tre@gmail.com">naddyrb.tre@gmail.com</a>
Report Author	Whitney Naddy (970) 416-0916 email: <a href="mailto:naddywm.tre@gmail.com">naddywm.tre@gmail.com</a>

### Test Information

Test Basis	Short-Term Chronic under Static-Renewal Conditions USEPA (2002), method 1007.0 and Washington Department of Ecology (2016)
Test Dates and Time	January 30, 2024 @ 1445 to February 6, 2024 @ 1440
Test Length	7 days
Species	<i>Americamysis bahia</i>
Test Material	Effluent (Grab)
Facility	Cherry Point Refinery
Permit Number	WA-002290-0
Receiving Water	Strait of Georgia
Dilution Water	Synthetic Sea Water (Crystal Sea; target 25‰)
Concurrent Control Water	None
Test Concentrations	0 (control), 0.8, 2.4, 3.6, 7.2, and 10.8% effluent
Permit Compliance	<input checked="" type="checkbox"/> <b>Pass</b> <input type="checkbox"/> <b>Fail</b>

- Results described in this report apply only to the samples submitted to the laboratory and analyzed, as listed in the report
- Test results comply with The NELAC Institute (TNI) standards. Reports are intended to be considered in their entirety; TRE is not responsible for consequences arising from use of a partial report
- This report contains 7 pages plus 2 appendices

## Effluent Collection and Receipt

Sample No.	Field No.	Collection Date & Time	TRE No.	Date of Receipt	Temp. at Arrival (°C)	Qual.
1	NA	01/29/24 @ 1445 – 1447	38891	01/30/24	4.9	
2	NA	01/31/24 @ 0914 – 0915	38903	02/01/24	3.8	
3	NA	02/02/24 @ 0945 – 0947	38909	02/03/24	1.9	

Note: See Appendix A for chain of custody records

## Sample Characterization (as Received)

Sample No.	pH	Hard. (mg/L) <sup>HA</sup>	Alk. (mg/L) <sup>HA</sup>	Salinity (‰)	TRC (mg/L) <sup>G</sup>	NH <sub>3</sub> -N (mg/L)
1	7.5	86	101	6	0.06	<1.0
2	7.9	100	150	5	0.03	<1.0
3	8.1	116	191	5	0.15	<1.0

## Sample Characterization (after Salt Addition)

Sample No.	pH	Hard. (mg/L) <sup>HA</sup>	Alk. (mg/L) <sup>HA</sup>	Salinity (‰)	TRC (mg/L) <sup>G</sup>	NH <sub>3</sub> -N (mg/L)
1	8.6	3,900	196	26	NM	NM
2	8.6	3,700	240	26	NM	NM
3	8.5	3,200	248	26	NM	NM

NM = not measured

## Initial Dilution/Control Water Characterization

Batch No.	pH	Hard. (mg/L) <sup>HA</sup>	Alk. (mg/L) <sup>HA</sup>	Salinity (‰)	TRC (mg/L) <sup>G</sup>	NH <sub>3</sub> -N (mg/L)
ABS25ppt	7.7	4,400	80	25	<0.02	<1.0

Note: The dilution water was prepared by adding Crystal Sea salts to deionized (Milli-Q) water to a target salinity of 25‰

## Test Conditions

Type	Static-Renewal Short-term Chronic
Test Endpoints	Survival and growth
Test Chambers	384-ml plastic cups
Test Solution Volume	200 ml
Replicates per Treatment	8
Organisms per Replicate	5
Test Temperature	26 ± 1°C (≤3°C differential)
Lighting	Fluorescent, 16 hours light:8 hours dark
Chamber Placement	Random according to computer-generated chart
Aeration?	<input checked="" type="checkbox"/> X No <input type="checkbox"/> Yes
Test Solution Renewal	Daily

### Test Organism

Species	<i>Americamysis bahia</i>
Age	7 days
Source	Aquatic BioSystems, Inc. (ABS); Fort Collins, CO (TRE Lot # 24-004)
Acclimation	None
Feeding	Fed 0.1 ml brine shrimp nauplii per test chamber 2x daily AM & noon; Fed 0.2ml brine shrimp nauplii per test chamber 1x daily in PM
Reference Toxicant Testing	Initiated January 30, 2024 using potassium chloride (KCl)

### TEST RESULTS

#### Biological Data – Survival

Treatment (% Effluent)	Percent Survival of <i>Americamysis bahia</i>						
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
0 (Control) <sup>x2</sup>	100	100	100	100	100	100	100
0.8	100	100	100	100	100	97.5	97.5
2.4	100	100	100	100	100	100	100
3.6	100	100	100	100	97.5	95	95
7.2	100	97.5	97.5	97.5	97.5	97.5	95
10.8	97.5	97.5	97.5	97.5	95	95	95

Note: See Appendix B for copies of laboratory data sheets

#### Biological Data – Growth (Dry Weight)

Treatment (% Effluent)	Mean Dry Weight/Original Organism (mg) <sup>w1</sup>	Significant Reduction Relative to the Dilution Water Control?	Mean Dry Weight/ Surviving Organism (mg) <sup>w2</sup>	Signification Reduction Relative to the Dilution Water Control?
0 (Dilution Water Cont.)	0.281	NA	0.288	NA
0.8	0.287	No	0.294	No
2.4	0.298	No	0.298	No
3.6	0.280	No	0.296	No
7.2	0.283	No	0.299	No
10.8	0.293	No	0.311	No
Percent Minimum Significant Difference (PMSD)	14.5	NA	12.1	NA

Note: See Appendix B for copies of laboratory data sheets

### Data Analysis and Test Endpoints

Biological Endpoint	Statistical Endpoint	Value (% Effluent)	Endpoint < CCEC?
Survival	NOEC	10.8	No
	LOEC	>10.8	---
	IC <sub>25</sub>	>10.8	No
Growth (per original organism)	NOEC	10.8	No
	LOEC	>10.8	---
	ChV	>10.8	---
	IC <sub>25</sub>	>10.8	No
Growth (per surviving organism)	NOEC	10.8	No
	LOEC	>10.8	---
	ChV	>10.8	---

NOEC = No Observed Effect Concentration

LOEC = Lowest Observed Effect Concentration

ChV = Chronic Value

IC<sub>25</sub> = 25% Inhibition Concentration

Note: Analyses completed using, where appropriate, CETIS version 1.8.7 (2014).

### Physical and Chemical Data

Treatment (% Effluent)	pH		Dissolved Oxygen (mg/L)		Salinity (‰)		Temperature (°C)		Qual.
	Low	High	Low	High	Low	High	Low	High	
0 (Control)	7.6	8.9	4.8	7.7	24	26	25	26	
10.8	7.7	8.8	3.6	7.5	25	26	24	25	O3
All Treatments	7.5	8.9	≥3.6		NA		24	26	T3, O3
							23	26	T4

### Reference Toxicant Test Results for *A. bahia*

7-day IC <sub>25</sub> (g KCl/L)	TRE Historical 95% Control Limits (g KCl/L)	
	Low	High
0.28	0.108	0.65

### **Power Standards Calculation**

The power standard criterion for the WET test was met for this study (Appendix D).

### **References**

CETIS. 2014. Comprehensive Environmental Toxicity Information System. User Guide (version 1.8.7). Tidepool Scientific, LLC. McKinleyville, CA.

USEPA. 2002. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. Third Edition, EPA-821-R-02-014.

WDOE. 2016. Whole effluent toxicity testing guidance and test review criteria. Washington State Department of Ecology, Publication #WQ-R-95-80. Revised December 2016.

## Explanation of Qualifiers

Note: study-specific narratives within the body of the report are denoted, if necessary, with the superscript letters a - d, and associated footnotes. Other qualifications and definitions are defined below.

S -	Sample temperature upon receipt was outside the range recommended by USEPA (2002), (i.e., 0 to 6°C or ambient if collected and used on the same day).
I -	Ice was present in the sample upon receipt.
N1 -	Sample was not used for testing.
N2 -	Liquid from container with ice was not used for testing.
F -	Sample was filtered to remove indigenous organisms prior to use.
HT -	Sample hold time (normally 36 hours) was exceeded.
HA -	Hardness and alkalinity concentrations are presented as CaCO <sub>3</sub> .
G -	TRC = Total Residual Chlorine
T1 -	Temperatures measured in some of the old test solutions were outside the recommended test temperature range but the allowed 3°C differential was not exceeded.
T2 -	Temperatures measured in some of the old test solutions were outside the recommended test temperature range and the allowed 3°C differential was exceeded.
T3 -	Temperatures measured in test solutions.
T4 -	Continuous temperatures measured in the environmental chamber or water bath.
X1 -	Mean young per original female. If any 4 <sup>th</sup> or higher broods were produced, they were excluded from calculation of mean young per female and statistical analysis of reproduction.
X2 -	One or more organisms in this treatment were lost or not found in the test chamber and were excluded from analysis, as the loss was attributed to technician error. See laboratory data sheets for additional detail, as appropriate.
X3 -	One or more male <i>C. dubia</i> were found in this treatment and were included in analysis of survival but excluded from analysis of reproduction. See laboratory data sheets for additional detail, as appropriate.
X4 -	One or more fish were alive at test termination but were lost during the drying/weighing process. These fish were included in analysis of survival but excluded from analysis of growth. See laboratory data sheets for additional detail, as appropriate.
O1 -	Dissolved oxygen concentrations were ≤ 4.0 mg/L in one or more treatments during the test; aeration was initiated in all test chambers. See laboratory data sheets for additional detail, as appropriate.
O2 -	Dissolved oxygen concentrations ≤ 4.0 mg/L were observed in one or more treatments only at test termination.
O3 -	Dissolved oxygen concentrations were ≤ 4.0 mg/L in one or more treatments during the test but aeration was not possible. See laboratory data sheets for additional detail, as appropriate.
W1 -	Weight per original number of organisms introduced at test initiation.
W2 -	Weight per surviving number of organisms at test termination.
V1 -	Value was statistically ( $\alpha=0.05$ or $0.01$ , as appropriate) reduced relative to the control, but was considered a Type I error (anomalous false positive), and was disregarded. The NOEC was interpreted accordingly.
V2 -	Value was not statistically ( $\alpha=0.05$ or $0.01$ , as appropriate) less than the control, but was considered a Type II error (anomalous false negative). The NOEC was interpreted accordingly.
P1 -	PMSD was below the lower bound indicated by USEPA (2002). A statistically significant reduction for a treatment was disregarded if the RPD for that treatment was less than the lower bound.
P2 -	PMSD was above the upper bound indicated by USEPA (2002), and statistically significant reductions in organism performance were detected.
P3 -	PMSD was above the upper bound indicated by USEPA (2002), and no statistically significant reductions in organism performance were detected.
R -	Monthly reference toxicant test endpoint for this species was outside the 95% control limits for the 20 most recent endpoints.

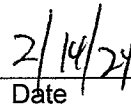
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**Statement of Quality Assurance**

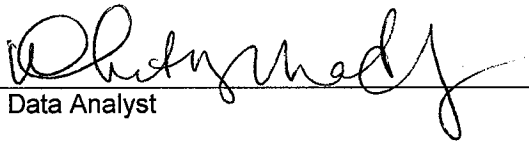
The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol (if applicable) and standard operating procedures, and that the resulting data and report meet the requirements of TNI standards. This report is an accurate reflection of the raw data.



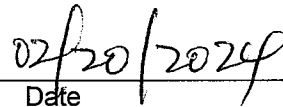
Quality Assurance Unit



Date



Data Analyst



Date



**APPENDIX A**  
**Chain of Custody Records**

## Page \_\_\_\_ of \_\_\_\_

1100 Bacquette Drive. Unit A Fort Collins, CO 80524

Effective Date: 02/13/19

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100 Racquette Drive, Unit A Fort Collins, CO 80524 Phone: (970) 416-0916 Fax: (970) 490-2963

[illegible]

Serial No. 09026

Page 1 of 1

Phone: (970) 416-0916

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Serial No. 09024

**APPENDIX B****Test Data**

QA. AS 2/14/24

### TOXICITY DATA PACKAGE COVER SHEET

Test Type: Chronic Project Number: 14001-056-254  
Test Substance: Effluent Species: Americamysis bahia  
Dilution Water Type: Salt water @ 25 ‰ ± 2 ppt Organism Lot or Batch Number: 24-004  
Concurrent Control Water Type: NA Age: 7d (7 days) Supplier: ABS  
Date and Time Test Began: 1/30/24 @ 1445 Date and Time Test Ended: 4/6/24 @ 1446  
Protocol Number: USEPA 2002, method 1007.0 Investigator(s): M3/JIT/LWT/AIW/HJ/JS

#### Background Information

Type of Test: Static-Renewal pH control?: Yes No  
If yes, give % CO<sub>2</sub>: N/A  
Test Temperature: 26 ± 1 °C Env. Chmbr/Bath #: 1 Test Chmbrs: 384-ml plastic cups  
Photoperiod: 16 h light ; 8 h dark Light Intensity: 50 -- 100 ft.-c  
Test Solution Vol.: 150 ml Number of Replicates per Treatment: 8  
Length of Test: 7 days Number of Organisms per Replicate: 5  
Type of Food and Quantity per Chamber: 0.10 ml B.S. AM+NOON Feeding Frequency: 3 x Daily  
0.20 ml B.S. PM  
Test Substance Characterization Parameters and Frequency:  
Hardness: Sx Receipt Alkalinity: Sx Receipt NH<sub>3</sub>: Sx Receipt TRC: Sx Receipt  
pH: Daily Salinity: Daily  
Test Concentrations (Volume:Volume): Control, 0.8, 2.4 3.6, 7.2, and 10.8% effluent  
Agency Summary Sheet(s?): \_\_\_\_\_

Reference Toxicant Data:	Test Dates: <u>1/30/24</u> to <u>2/6/24</u>	IC <sub>25</sub> : <u>0.28</u>
Hist. 95% Control Limits: <u>0.108</u> to <u>0.65</u> Method for Determining Ref. Tox. Value: <u>Linear Interpolation</u>		

<b>Special Procedures and Considerations:</b>
D.O. maintained ≥ 4.0 mg/L
Study Director Initials: <u>AS for RSW</u> Date: <u>1/30/24</u>

QA-AS 2/14/24

### TEST SUBSTANCE USAGE LOG

Project Number:

14001-056-254

	Sample 1	Sample 2	Sample 3	
Test Substance Number	38891	38903	38909	
Test Substance Collection	From: 1/29/24	From: 1/31/24	From: 2/2/24	
Date and Time	@ 1445	@ 0914	@ 0945	
	To: 1/29/24	To: 1/31/24	To: 2/2/24	
	@ 1447	@ 0915	@ 0947	
Sample Type (Grab or Comp)	Grab	Grab	Grab	
Date Test Substance Received	1/30/24	2/1/24	2/3/24	
Dilution Water Number	ABS / 15232	15232	15232	
RW# or TRE#, circle one				
Concurrent Control Water RW#	NA	NA	NA	
Date(s) Used	1/30/24	2/1/24	2/3/24	
	1/31/24	2/2/24	2/5/24	

### Preparation of Test Solutions

Test Substance Conc. (% Effluent)	Test Substance Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)	Test Substance Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)	Test Substance Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)
Control	0	0	1200						
0.8%	10	1190	1200						
2.4%	29	1171.2	1200						
3.6%	43	1156.8	1200						
7.2%	86	1113.6	1200						
10.8%	130	1070	1200						
Total	298	5702	7200						
Initials / Date	1/30/24 MB Mixed MX								
Initials / Date	WT 1/31/24 "								
Initials / Date	AW 2/1/24 "								
Initials / Date	MB 2/2/24 "								
Initials / Date	AW 2/3/24 "								
Initials / Date	WT 2/4/24 "								
Initials / Date	MB 2/5/24 "								
Initials / Date									

**MYSID (AMERICAMYSIS BAHIA)  
 CHRONIC BIOLOGICAL DATA**

QAS 2/14/24

Project Number: 14001-056-254

*(Handwritten: 100% survival)*

%Conc.	Test Replicate	Number of Surviving Organisms								Remarks
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
Control	A	5	5	5	5	5	5	5	5	
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	5	5	5	
	F	5	5	5	5	5	5	5	4 <sup>A</sup>	100% NF
	G	5	5	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
0.8%	A	5	5	5	5	5	5	5	5	
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	4 <sup>A</sup>	4	100% NF
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	5	5	5	
	F	5	5	5	5	5	5	5	5	
	G	5	5	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
2.4%	A	5	5	5	5	5	5	5	5	
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	5	5	5	
	F	5	5	5	5	5	5	5	5	
	G	5	5	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
Date:		1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2/6/24	
Time:		1445	1455	1500	1430	1400	1325	1600	1440	
Initials:		MB/JH	WT	AIW	MB	AIW	WT	MB	MB	



**MYSID (AMERICAMYSIS BAHIA)  
 CHRONIC BIOLOGICAL DATA**

Project Number: 14001-056-254

%Conc.	Test Replicate	Number of Surviving Organisms								Remarks
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
3.6%	A	5	5	5	5	5	5	4 <sup>A</sup>	4	$\Delta 10\% \text{ NF}$  qb
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	4	4	4	
	F	5	5	5	5	5	5	5	5	
	G	5	6	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
7.2%	A	5	5	5	5	5	5	5	4	$\Delta 10\% \text{ NF}$  qb
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	4 <sup>A</sup>	4	4	4	4	
	F	5	5	5	5	5	5	5	5	
	G	5	5	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
10.8%	A	5	5	5	5	5	5	5	5	$\Delta 10\% \text{ NF}$  qb
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	5	5	5	
	F	5	4	4	4	4	3 <sup>A</sup>	3	3	
	G	5	5	5	5	5	5	5	5	
	H	5	5	5	5	5	5	5	5	
Date:		1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2/6/24	
Time:		1445	1455	1800	1430	1400	1325	1100	1440	
Initials:		MB/JH	WT	AIW	MB	AIW	WT	MB	AIW	

QA-AS 2/16/24

# CHRONIC CHEMICAL DATA (INITIAL)

Project Number:	14001-056-254
Test Species:	<i>Americamysis bahia</i>

%	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Meter #	Remarks
Conc.: Contro									All Conc.	
pH	7.7	8.9	8.8	8.8	8.7	8.6	8.6		19	
D.O. (mg/L)	6.2	6.8	7.8	6.5	6.8	7.7	6.5		17	
Temp. (°C)	26	26	26	26	26	26	26		144	
Salt. (ppt)	25	25	25	25	25	25	25		2	
Hard. (mg/L)	4400		4700		3800				Tit.	
Alk. (mg/L)	80		124		126				Tit.	
TRC (mg/L)	40.02		40.02		40.02				21	
NH <sub>3</sub> (mg/L)	41.0		41.0		41.0				HA1	
Conc.: 0.8%										
pH	7.7	8.9	8.8	8.8	8.7	8.6	8.6			
D.O. (mg/L)	6.2	6.7	7.7	6.5	7.4	7.9	6.7			
Temp. (°C)	*	*	*	*	*	*	*			
Salt. (ppt)	25	25	25	25	25	25	25			
Hard. (mg/L)										
Alk. (mg/L)										
TRC (mg/L)										
NH <sub>3</sub> (mg/L)										
Conc.: 2.4%										
pH	7.7	8.9	8.8	8.8	8.7	8.6	8.6			
D.O. (mg/L)	6.2	6.8	7.7	6.5	7.3	8.0	6.7			
Temp. (°C)	*	*	*	*	*	*	*			
Salt. (ppt)	25	25	25	25	25	25	25			
Conc.: 3.6%										
pH	7.8	8.9	8.8	8.8	8.7	8.6	8.6			
D.O. (mg/L)	6.2	6.8	7.7	6.5	7.2	7.9	6.7			
Temp. (°C)	*	*	*	*	*	*	*			
Salt. (ppt)	25	25	25	25	25	25	25			
Date:	1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2/6/24		
Time:	1440	1440	1445	1420	1345	1320	1050			
Initials:	NB	WT	AW	MD	AW	WT	NB			

Note: Hardness, alkalinity, TRC, and NH<sub>3</sub> data appearing on this page have been transcribed from the wet chemistry log  
QA Form No. 084.

\*Dilution/control water and effluent were brought to 20°C prior to making the dilution series. The temperature of resulting effluent dilution is assumed to also be 20°C.

0 AW 2/1/24 JB 0 NB 4/2/24 E

### CHRONIC CHEMICAL DATA (INITIAL)

Project Number: 14001-056-254										
Test Species: <i>Americamysis bahia</i>										

%	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Meter #	Remarks
Conc.: 7.2%									All Conc.	
pH	7.8	8.8	8.8	8.8	8.7	8.6	8.6			
D.O. (mg/L)	6.1	6.7	6.7	6.4	7.3	7.7	6.7			
Temp. (°C)	*	*	*	*	*	*	*			
Salt. (ppt)	25	25	25	25	25	25	25			
Conc.: 10.8%										
pH	8.7	8.8	8.8	8.8	8.7	8.6	8.6			
D.O. (mg/L)	6.4	6.6	6.5	6.4	7.3	7.5	6.7			
Temp. (°C)	*	*	*	*	*	*	*			
Salt. (ppt)	25	25	25	25	25	25	25			
Conc.: 100%	Salted									
pH	8.6		8.6		8.5					
D.O. (mg/L)										
Temp. (°C)	26	26	26	26	26	26	26			
Salt. (ppt)	25	25	26		NR					
Hard. (mg/L)	3900		3700		3200					
Alk. (mg/L)	196		240		248					
TRC (mg/L)										
NH <sub>3</sub> (mg/L)										
Conc.: 100%	Ambient									
pH	8.6	7.5	7.9		8.1					
D.O. (mg/L)										
Temp. (°C)										
Salt. (ppt)	6		5		5					
Hard. (mg/L)	86		100		116					
Alk. (mg/L)	101		150		191					
TRC (mg/L)	0.06		0.03		0.15					
NH <sub>3</sub> (mg/L)	21.0		21.0		21.0					
Date:	1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2		
Time:	1440	1440	1445	1420	1345	1320	1050			
Initials:	MS	WT	AW	MS	AW	WT	MS			

Note: Hardness, alkalinity, TRC, and NH<sub>3</sub> data appearing on this page have been transcribed from the wet chemistry log QA Form No. 084.

\*Dilution/control water and effluent were brought to 20°C prior to making the dilution series. The temperature of resulting effluent dilution is assumed to also be 20°C.

0AW 2/2/24 JE  
 0AB 2/14/24 E

CHRONIC CHEMICAL DATA (FINAL)

Project Number:	14001-056-254
Test Species:	<i>Americamysis bahia</i>

%	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Meter #	Remarks
Conc.: Control									All Conc.	
pH	7.8	8.0	8.0	7.9	8.1	8.0	7.6		19	
D.O. (mg/L)	5.3	5.3	5.2	4.8	6.9	5.1	5.0		17	
Temp (°C)	25	25	26	25	25	25	25		144	
Salt. (ppt)	25	26	24	25	25	25	25		2	
Conc.: 0.8%										
pH	7.7	8.0	7.9	8.6	8.0	8.0	7.7			
D.O. (mg/L)	4.4	4.9	4.4	4.8	4.8	5.2	4.3			
Temp (°C)	25	25	26	25	25	25	25			
Salt. (ppt)	25	25	24	25	25	25	25			
Conc.: 2.4%										
pH	7.5	8.6	7.8	8.0	8.0	8.1	7.8			
D.O. (mg/L)	4.0	4.7	3.9	4.6	5.1	5.3	4.6			
Temp (°C)	25	25	26	25	25	25	25			
Salt. (ppt)	25	25	24	25	25	25	25			
Conc.: 3.6%										
pH	7.5	8.6	7.9	8.6	8.0	8.1	7.7			
D.O. (mg/L)	4.1	4.7	3.9	4.5	5.1	5.2	4.4			
Temp (°C)	25	25	26	25	25	25	25			
Salt. (ppt)	25	25	24	26	25	25	26			
Conc.: 7.2%										
pH	7.6	8.0	7.9	8.0	8.0	8.1	7.9			
D.O. (mg/L)	4.2	4.6	4.1	4.7	5.1	5.4	4.8			
Temp (°C)	25	25	26	25	25	25	25			
Salt. (ppt)	25	25	24	25	25	25	25			
Conc.: 10.8%										
pH	7.7	8.6	7.9	8.6	8.0	8.2	7.8			
D.O. (mg/L)	4.0	4.5	3.6	4.8	5.2	5.2	4.4			
Temp (°C)	25	25	26	25	25	25	25			
Salt. (ppt)	25	25	24	26	26	25	25			
Date:	1/31/14	2/1/14	2/2/14	2/3/14	2/4/14	2/5/14	2/6/14			
Time:	1445	1445	1420	1345	1320	1050	1440			
Initials:	WT	AIW	MB	AIW	WT	MB	AIW			

and 12/14/14

D checked all reps

# DAILY TOXICITY TEST LOG

Project Number:	14001-056-254
Test Species:	<i>Americamysis bahia</i>

General Comments		Feeding 0.05 ml B.S. 3 X Daily	Initials/Date
	Random Chart: <i>Kappa</i> Thermometer# <i>M32</i>		
Test Day 0	Test Solution Mixed at: <i>1440</i> used <i>ABS</i> water Test Organisms Added at: <i>1445</i> for <i>conc- 0-7.2%</i> <i>used TRE 25 ppt for 108%</i>	Fed @  +1530 MB	MB 1/30/24
Test Day 1	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>24-26</i> °C	Fed @ +0820 JS +1215 JS +1635 WT	WT 1/31/24
Test Day 2	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>25-26</i> °C	Fed @ *0805 AIW +1130 JS +1630 AIW	AIW 2/1/24
Test Day 3	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>24-26</i> °C <i>Film on top 4 conc.</i>	Fed @ *0830 AIW +1140 MB +160 MB	MB 2/2/24
Test Day 4	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>24-26</i> °C <i>Film on top 4 conc.</i>	Fed @ +0825 JS +1145 AIW	AIW 2/3/24
Test Day 5	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>24-26</i> °C <i>Film on top 5 conc.</i>	Fed @ +0815 WT +1125 WT +1440 MB/MB	WT 2/4/24
Test Day 6	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>*-26</i> °C <i>Film on top 5 conc.</i>	Fed @ +0830 AIW +1140 AIW +1620 WT	MB 2/5/24
Test Day 7	Real Time Temp= <i>25</i> °C Range (Min-Max) = <i>23-26</i> °C <i>Film on top 5 conc.</i>	Fed @ +0840 JS	MB/AIW 2/6/24
Test Day 8	Real Time Temp= °C Range (Min-Max) = °C		

① AIW 2/3/24  
 MB 2/5/24 E

\* = meter error

# TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 14001-056-254 Test Substance Effluent Species A. bahia Oven #: 3  
 Balance ID: Sartorius #1 Analyst Tare: MB from Date: 2/6/2024 Time: 1600  
 Date/Time of Tare Wt: 2/6/24 @ 1120 Analyst Gross: sp to Date: 2/8/2024 Time: 825  
 Date/Time of Gross Wt: 2/8/2024 @ 1300  
 (options: Wet, Blot Dry, Dry (60-90°C), Dry (>100°C), AFDW (>500°C))  
 Weight Type: Dry (60-90C)

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
Control	A		1.18178	1.18308	0.00130	0.00135	5	0.270	0.2810	5	0.270	0.2879
	B		1.17658	1.17812	0.00154	0.00159	5	0.318		5	0.318	
	C		1.17541	1.17683	0.00142	0.00147	5	0.294		5	0.294	
	D		1.17457	1.17612	0.00155	0.00160	5	0.320		5	0.320	
	E		1.18156	1.18288	0.00132	0.00137	5	0.274		5	0.274	
	F		1.17808	1.17914	0.00106	0.00111	5	0.222		4	0.277	
	G		1.17387	1.17526	0.00139	0.00144	5	0.288		5	0.288	
	H		1.16935	1.17061	0.00126	0.00131	5	0.262		5	0.262	
0.80%	A		1.17033	1.17191	0.00158	0.00163	5	0.326	0.2865	5	0.326	0.2939
	B		1.17915	1.18053	0.00138	0.00143	5	0.286		5	0.286	
	C		1.17031	1.17145	0.00114	0.00119	5	0.238		4	0.298	
	D		1.18500	1.18630	0.00130	0.00135	5	0.270		5	0.270	
	E		1.17912	1.18067	0.00155	0.00160	5	0.320		5	0.320	
	F		1.17935	1.18084	0.00149	0.00154	5	0.308		5	0.308	
	G		1.18153	1.18287	0.00134	0.00139	5	0.278		5	0.278	
	H		1.18782	1.18910	0.00128	0.00133	5	0.266		5	0.266	
2.4%	A		1.17762	1.17905	0.00143	0.00148	5	0.296	0.2977	5	0.296	0.2977
	B		1.18242	1.18383	0.00141	0.00146	5	0.292		5	0.292	
	C		1.17869	1.18033	0.00164	0.00169	5	0.338		5	0.338	
	D		1.16968	1.17132	0.00164	0.00169	5	0.338		5	0.338	
	E		1.17264	1.17407	0.00143	0.00148	5	0.296		5	0.296	
	F		1.15601	1.15735	0.00134	0.00139	5	0.278		5	0.278	
	G		1.17730	1.17854	0.00124	0.00129	5	0.258		5	0.258	
	H		1.18102	1.18240	0.00138	0.00143	5	0.286		5	0.286	

Project Number: 14001-056-254

3.6%	A	1.17676	1.17795	0.00119	0.00124	5	0.248	0.2800	4	0.310	0.2964
	B	1.17890	1.18030	0.00140	0.00145	5	0.290		5	0.290	
	C	1.18359	1.18499	0.00140	0.00145	5	0.290		5	0.290	
	D	1.17815	1.17960	0.00145	0.00150	5	0.300		5	0.300	
	E	1.18474	1.18608	0.00134	0.00139	5	0.278		4	0.348	
	F	1.17929	1.18060	0.00131	0.00136	5	0.272		5	0.272	
	G	1.18229	1.18353	0.00124	0.00129	5	0.258		5	0.258	
	H	1.18161	1.18308	0.00147	0.00152	5	0.304		5	0.304	
7.2%	A	1.17774	1.17890	0.00116	0.00121	5	0.242	0.2832	4	0.302	0.2985
	B	1.16364	1.16485	0.00121	0.00126	5	0.252		5	0.252	
	C	1.17818	1.17986	0.00168	0.00173	5	0.346		5	0.346	
	D	1.17824	1.17971	0.00147	0.00152	5	0.304		5	0.304	
	E	1.17858	1.17976	0.00118	0.00123	5	0.246		4	0.307	
	F	1.17954	1.18106	0.00152	0.00157	5	0.314		5	0.314	
	G	1.18454	1.18562	0.00108	0.00113	5	0.226		5	0.226	
	H	1.18087	1.18250	0.00163	0.00168	5	0.336		5	0.336	
10.8%	A	1.18000	1.18126	0.00126	0.00131	5	0.262	0.2932	5	0.262	0.3109
	B	1.18584	1.18708	0.00124	0.00129	5	0.258		5	0.258	
	C	1.18212	1.18373	0.00161	0.00166	5	0.332		5	0.332	
	D	1.17822	1.17967	0.00145	0.00150	5	0.300		5	0.300	
	E	1.18339	1.18508	0.00169	0.00174	5	0.348		5	0.348	
	F	1.18591	1.18692	0.00101	0.00106	5	0.212		3	0.353	
	G	1.17373	1.17516	0.00143	0.00148	5	0.296		5	0.296	
	H	1.17248	1.17412	0.00164	0.00169	5	0.338		5	0.338	
Blank		1.17478	1.17473	-0.00005							

#### Summary Statistics for Survival Data

Treatment	N	Min	Max	Mean	SD	C.V.
Control	8	0.8	1.0	0.9750	0.0707	7.252%
0.80%	8	0.8	1.0	0.9750	0.0707	7.252%
2.4%	8	1.0	1.0	1.0000	0.0000	0.000%
4%	8	0.8	1.0	0.9500	0.0926	9.745%
7%	8	0.8	1.0	0.9500	0.0926	9.745%
11%	8	0.6	1.0	0.9500	0.1414	14.886%

Summary Statistics for Growth Data (dry wt per original)

Treatment	N	Min	Max	Mean	SD	C.V.	% of Control
Control	8	0.222	0.320	0.2810	0.0319	11.350%	--
0.80%	8	0.238	0.326	0.2865	0.0299	10.440%	102%
2.4%	8	0.258	0.338	0.2977	0.0277	9.317%	106%
4%	8	0.248	0.304	0.2800	0.0198	7.081%	100%
7%	8	0.226	0.346	0.2832	0.0470	16.581%	101%
11%	7	0.212	0.348	0.2932	0.0469	15.982%	104%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Control	8	0.262	0.320	0.2879	0.0216	7.502%
0.80%	8	0.266	0.326	0.2939	0.0226	7.703%
2.4%	8	0.258	0.338	0.2977	0.0277	9.317%
4%	8	0.258	0.348	0.2964	0.0268	9.033%
7%	8	0.226	0.346	0.2985	0.0404	13.548%
11%	8	0.258	0.353	0.3109	0.0376	12.088%

Comments:



## CETIS Analytical Report

Report Date: 09 Feb-24 15:34 (p 1 of 2)  
 Test Code: 056-254 | 16-5604-3323

## Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 18-6207-0382	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.7
Analyzed: 09 Feb-24 15:34	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 03-8696-1343	Test Type: Growth-Survival-Fec (7d)	Analyst: Lab Tech
Start Date: 30 Jan-24 14:45	Protocol: EPA/821/R-02-014 (2002)	Diluent: Laboratory Seawater
Ending Date: 06 Feb-24 14:40	Species: Americamysis bahia	Brine: Crystal Sea
Duration: 7d	Source: Aquatic Biosystems, CO	Age: 7d
Sample ID: 09-2805-6674	Code: 37510562	Client: BP Cherry Point
Sample Date: 29 Jan-24 02:47	Material: Ambient Sample	Project: WET Annual Compliance Test
Receive Date: 30 Jan-24 09:30	Source: Discharge Monitoring Report	
Sample Age: 36h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	14.5%	10.8	>10.8	NA	9.259

## Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Dilution Water		0.8	-0.3116	2.31	0.041	14	0.9095	CDF	Non-Significant Effect
		2.4	-0.949	2.31	0.041	14	0.9816	CDF	Non-Significant Effect
		3.6	0.05666	2.31	0.041	14	0.8160	CDF	Non-Significant Effect
		7.2	-0.1275	2.31	0.041	14	0.8684	CDF	Non-Significant Effect
		10.8	-0.694	2.31	0.041	14	0.9632	CDF	Non-Significant Effect

## Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			0.3987	Non-significant Trend in Controls

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.002031414	0.0004062829	5	0.326	0.8945	Non-Significant Effect
Error	0.05233651	0.001246107	42			
Total	0.05436792		47			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	6.844	15.1	0.2325	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9831	0.934	0.7133	Normal Distribution

## Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	0.281	0.2543	0.3077	0.281	0.222	0.32	0.01128	11.3%	0.0%
0.8		8	0.2865	0.2615	0.3115	0.282	0.238	0.326	0.01057	10.4%	-1.96%
2.4		8	0.2977	0.2746	0.3209	0.294	0.258	0.338	0.009808	9.32%	-5.96%
3.6		8	0.28	0.2634	0.2966	0.284	0.248	0.304	0.00701	7.08%	0.36%
7.2		8	0.2833	0.244	0.3225	0.278	0.226	0.346	0.0166	16.6%	-0.8%
10.8		8	0.2932	0.2541	0.3324	0.298	0.212	0.348	0.01657	16.0%	-4.36%

## Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	0.27	0.318	0.294	0.32	0.274	0.222	0.288	0.262
0.8		0.326	0.286	0.238	0.27	0.32	0.308	0.278	0.266
2.4		0.296	0.292	0.338	0.338	0.296	0.278	0.258	0.286
3.6		0.248	0.29	0.29	0.3	0.278	0.272	0.258	0.304
7.2		0.242	0.252	0.346	0.304	0.246	0.314	0.226	0.336
10.8		0.262	0.258	0.332	0.3	0.348	0.212	0.296	0.338

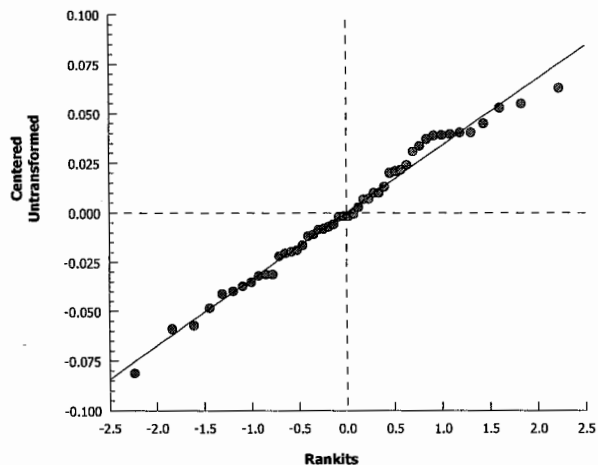
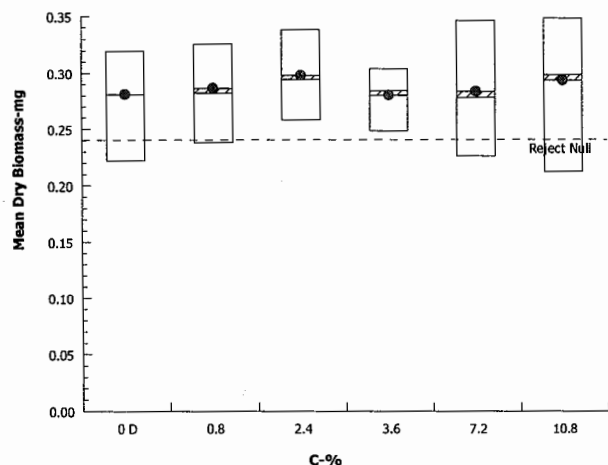
Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 18-6207-0382      Endpoint: Mean Dry Biomass-mg  
Analyzed: 09 Feb-24 15:34      Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.7  
Official Results: Yes

Graphics



## CETIS Analytical Report

Report Date: 14 Feb-24 15:47 (p 1 of 2)  
 Test Code: 056-254 | 16-5604-3323

## Mysidopsis 7-d Survival, Growth and Fecundity Test

## TRE Environmental Strategies

Analysis ID: 13-6367-7940	Endpoint: Mean Dry Weight-mg	CETIS Version: CETISv1.8.7
Analyzed: 14 Feb-24 15:47	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 03-8696-1343	Test Type: Growth-Survival-Fec (7d)	Analyst: Lab Tech
Start Date: 30 Jan-24 14:45	Protocol: EPA/821/R-02-014 (2002)	Diluent: Laboratory Seawater
Ending Date: 06 Feb-24 14:40	Species: Americamysis bahia	Brine: Crystal Sea
Duration: 7d	Source: Aquatic Biosystems, CO	Age: 7d
Sample ID: 09-2805-6674	Code: 37510562	Client: BP Cherry Point
Sample Date: 29 Jan-24 02:47	Material: Ambient Sample	Project: WET Annual Compliance Test
Receive Date: 30 Jan-24 09:30	Source: Discharge Monitoring Report	
Sample Age: 36h	Station: Outfall 001	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	12.1%	10.8	>10.8	NA	9.259

## Dunnett Multiple Comparison Test

Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Dilution Water		0.8	-0.3959	2.31	0.035	14	0.9247	CDF	Non-Significant Effect
		2.4	-0.6474	2.31	0.035	14	0.9586	CDF	Non-Significant Effect
		3.6	-0.5608	2.31	0.035	14	0.9487	CDF	Non-Significant Effect
		7.2	-0.6969	2.31	0.035	14	0.9635	CDF	Non-Significant Effect
		10.8	-1.516	2.31	0.035	14	0.9969	CDF	Non-Significant Effect

## Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			0.5484	Non-significant Trend in Controls

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	0.002290342	0.0004580683	5	0.4985	0.7756	Non-Significant Effect
Error	0.03859621	0.0009189575	42			
Total	0.04088655		47			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	4.514	15.1	0.4780	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9807	0.934	0.6102	Normal Distribution

## Mean Dry Weight-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	0.2879	0.2699	0.306	0.2828	0.262	0.32	0.007637	7.5%	0.0%
0.8		8	0.2939	0.275	0.3129	0.2918	0.266	0.326	0.008005	7.7%	-2.08%
2.4		8	0.2977	0.2746	0.3209	0.294	0.258	0.338	0.009808	9.32%	-3.41%
3.6		8	0.2964	0.2741	0.3188	0.295	0.258	0.3475	0.009467	9.03%	-2.95%
7.2		8	0.2985	0.2647	0.3323	0.3058	0.226	0.346	0.0143	13.5%	-3.67%
10.8		8	0.3109	0.2795	0.3423	0.316	0.258	0.3533	0.01329	12.1%	-7.98%

## Mean Dry Weight-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	0.27	0.318	0.294	0.32	0.274	0.2775	0.288	0.262
0.8		0.326	0.286	0.2975	0.27	0.32	0.308	0.278	0.266
2.4		0.296	0.292	0.338	0.338	0.296	0.278	0.258	0.286
3.6		0.31	0.29	0.29	0.3	0.3475	0.272	0.258	0.304
7.2		0.3025	0.252	0.346	0.304	0.3075	0.314	0.226	0.336
10.8		0.262	0.258	0.332	0.3	0.348	0.3533	0.296	0.338

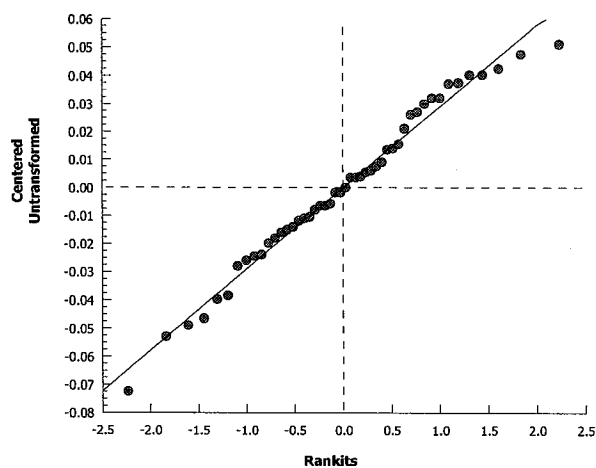
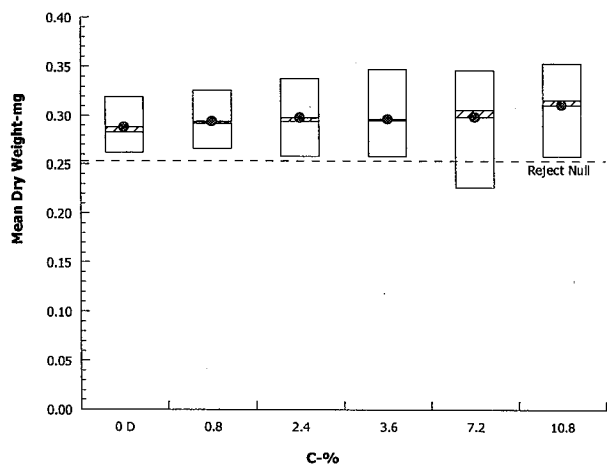
## Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 13-6367-7940 Endpoint: Mean Dry Weight-mg  
 Analyzed: 14 Feb-24 15:47 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.8.7  
 Official Results: Yes

### Graphics



**APPENDIX C****Reference Toxicant Control Chart, Spreadsheet, and Raw Test Data**

FILE IS MYSID CHRONIC 14001-904-XXX  
REFERENCE TOXICANT DATA FOR AMERICAMYSIS BAHIA CHRONICS  
COMMERCIALY SUPPLIED  
EXPRESSED AS G/L KCL, NOMINAL  
TRE ENVIRONMENTAL STRATEGIES, LLC  
IC25 BASED ON MEAN DRY WEIGHT PER ORIGINAL MYSID

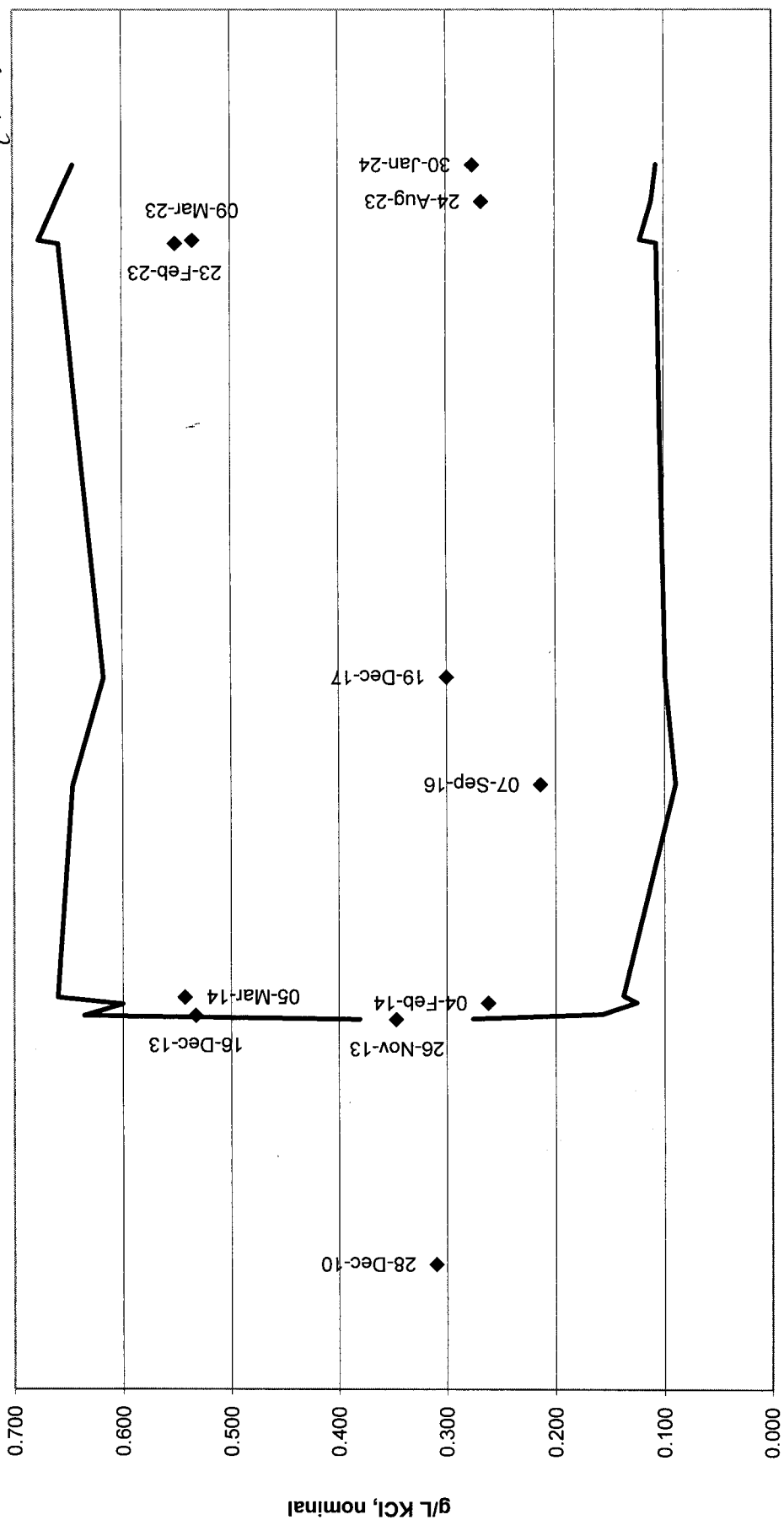
*QAM*  
*2/13/24*

ITONI	DATE	LOT	Linear X	MEAN	ACCEPTABLE RANGE			%CV
			Transform		SD	LOW	HIGH	
1	28-Dec-10	10-045	IC25	0.310	#DIV/0!	#DIV/0!	#DIV/0!	
2	26-Nov-13	13-045	0.347	0.329	0.026	0.276	0.381	7.96
3	16-Dec-13	13-049	0.533	0.397	0.120	0.158	0.636	30.13
4	04-Feb-14	14-005	0.262	0.363	0.119	0.126	0.600	32.66
5	05-Mar-14	14-008	0.543	0.399	0.130	0.138	0.660	32.70
6	07-Sep-16	16-026	0.214	0.368	0.139	0.090	0.646	37.75
7	19-Dec-17	17-038	0.300	0.358	0.129	0.099	0.617	36.12
8	23-Feb-23	23-005	0.551	0.383	0.138	0.107	0.658	36.04
9	09-Mar-23	23-009	0.535	0.399	0.139	0.122	0.677	34.70
10	24-Aug-23	23-033	0.268	0.386	0.137	0.112	0.661	35.52
11	30-Jan-24	24-004	0.276	0.376	0.134	0.108	0.645	35.71
12								
13								
14								
15								
16								
17								
18								
19								
20								

TRE Environmental Strategies, LLC  
**Americamysis bahia** Chronic Ref Tox at 26C  
 IC25 based on dry weight per original organism  
 Commercially Supplied Organisms

December 2010 through January 2024

QAm 2/13/24



## TOXICITY DATA PACKAGE COVER SHEET

QA W  
2/13/24

Test Type: Chronic

Project Number: 14001-904-1450

Test Substance: 100 g/L KCl stock solution

Species: Americamysis bahia

Dilution Water Type: Salt Water @ 25‰ ± 2 ppt

Organism Lot or Batch Number: 24-004

Concurrent Control Water Type: N/A

Age: 7 days (7 days) Supplier: ABS

Date and Time Test Began: 1/30/24 @ 1445

Date and Time Test Ended: 2/6/24 @ 1440

Protocol Number: USEPA 2002, method 1007.0

Investigator(s): JH/MB/WT/SS/TA/AT/AIW

### Background Information

Type of Test: Static Renewal

pH Control?: Yes No If Yes, give % CO<sub>2</sub>: N/A

Test Temperature: 26±1°C

Env. Chmbr/Bath #: 21 Test Chambers: 540 ml plastic containers

Photoperiod: 16 h light : 8 h dark

Light Intensity: 50 – 100 ft.-c

Test Solution Vol.: 150 ml

Number of Replicates per Treatment: 8

Length of Test: 7 days

Number of Organisms per Replicate: 5

Type of Food and Quantity per Chamber: 0.1 ml B.S / 0.2 ml B.S. (PM). \*\* Feeding Frequency: 3 x Daily

Test Substance Characterization Parameters and Frequency:

Hardness: Sx. Receipt

Alkalinity: Sx. Receipt

NH<sub>3</sub>: Sx. Receipt pH: Daily SALINITY: daily in 1 rep of each treatment \*

D.O.: Daily Temp.: Daily TRC: Sx. Receipt

Test Concentrations (Volume): Control, 0.125, 0.25, 0.5 and 1.0 g/L of KCl

Agency Summary Sheet(s)? NA

Reference Toxicant Data:	Test Dates: <u>      </u> to <u>      </u>	LC <sub>50</sub> or IC <sub>25</sub> (Circle): <u>      </u>
Hist. 95% Control Limits:	<u>      </u> to <u>      </u>	Method for Determining Ref. Tox. Value: <u>      </u>

Special Procedures and Considerations:
DO measured using salinity compensating meter set @ <u>      </u> mg/L chloride at 26°C
D.O. maintained ≥ 4.0 mg/L; if DO ≤ 4.0 then aerate study
* Salinity measured in 1 rep of each treatment day 0; and 1 rep of each treatment days 1 to 7 in old solutions
** Feed 0.1 ml B.S AM and Noon and 0.2 ml B.S. in PM
Study Director Initials: <u>AT</u> Date: <u>1/30/24</u>

0JH 1/30/24: 6



# TEST SUBSTANCE USAGE LOG

Project Number 14001-904-1450

at 2/13/24

	Sample 1	Sample 2	Sample 3	Sample 4
Test Substance Number	KCI			
Stock Solution Preparation Date and Time	N/A			
Sample Type (Grab or Comp)	N/A			
Date Test Substance Received	Prepared stock			
Dilution Water Number RW# or TRE#, circle one	ABS <sup>0</sup> /15232			
Concurrent Control Water RW#	N/A			
Date(s) Used	1/30/24 2/3/24 1/31/24 1/4/24 2/1/24 2/5/24 2/2/24			

## PREPARATION OF TEST SOLUTIONS

Test Substance Conc., g/L KCl	Test Substance Stock Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)	Test Substance Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)	Test Substance Volume (ml)	Dilution Water Volume (ml)	Total Volume (ml)
0	0	1200	1200						
0.125	1.5	1198.5	1200						
0.25	3	1197	1200						
0.5	6	1194	1200						
1.0	12	1188	1200						
Total	22.5	5977.5	6000						
Initials/Date	JH 1/30/24 Mixed Muc								
Initials/Date	MB 1/31/24 " "								
Initials/Date	JS 2/1/24 " "								
Initials/Date	JA 2/2/24 " "								
Initials/Date	JS 2/3/24 " "								
Initials/Date	MB 2/4/24 " "								
Initials/Date	WT 2/5/24 " "								
Initials/Date									

Mysid Shrimp (*Americamysis bahia*)  
CHRONIC BIOLOGICAL DATA

et 2/13/24

Project Number: 14001-904-1450

Conc. g/L	Test Replicate	Number of Surviving Organisms								Remarks
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
Control	A	5	5	5	5	5	5	5	5	2 survival 48h/7d 100 ~1 org eaten; TE
	B	5	4~	4	4	4	4	4	4	
	C	5	5	5	5	5	5	5	5	
	D	5	5	5	5	5	5	5	5	
	E	5	5	5	5	5	5	5	5	
	F	5	5	5	5	5	5	5	5	
	G	5	4~	4	4	4	4	4	4	
	H	5	5	5	5	5	5	5	5	
0.125	A	5	5	5	5	5	5	5	5	97.5/92.5 ~1 org NT
	B	5	5	5	5	5	5	5	4	
	C	5	5	5	5	5	5	5	5	
	D	5	4	4	4	4	4	4	4	
	E	5	5	5	5	5	5	5	5	
	F	5	5	5	5	5	5	5	5	
	G	5	5	5	4~	4	4	4	4	
	H	5	5	5	5	5	5	5	5	
0.25	A	5	5	5	5	5	4	4	4	97.5/81.3 +TE 2/4
	B	5	5	5	5	5	5	5	5	
	C	5	5	5	5	4	4	4	4	
	D	5	5	5+4	2~	2	2	2	2	
	E	5	5	5	5	5	4	4	4	
	F	5	5	5	4~	4	4	4	4	
	G	5	5	5	5	5	5	5	5	
	H	5	5	4	4	4	4	4	4	
0.5	A	5	4	4	2	2	2	2	2	10.0 ~1 org eaten ~2 org eaten
	B	5	4	3	2	1	1	1	1	
	C	5	3	3	0	1	1	1	1	
	D	5	4	3	2	1	0	0	0	
	E	5	3	2	0	1	1	1	1	
	F	5	4	3	0	1	1	1	1	
	G	5	4	3	0	1	1	1	1	
	H	5	5	4	2	1	1	1	1	
Date:		2/13/24	2/13/24	2/13/24	2/24/24	2/23/24	2/4/24	2/5/24	2/6/24	
Time:		1445	1030	1540	1040	1010	1020	1440	1440	
Initials:		JH/MS	MB	JS	JK	JS	MB	WT	JH	

at 2/3/24

**Mysid Shrimp (*Americamysis bahia*)  
 CHRONIC BIOLOGICAL DATA**

Project Number: 14001-904-1450

Conc. g/L	Test Replicate	Number of Surviving Organisms								Remarks
		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
1.0	A	5	0							0
	B	5	0							
	C	5	0							
	D	5	0							
	E	5	0							
	F	5	0							
	G	5	0							
	H	5	0							
	A									
	B									
	C									
	D									
	E									
	F									
	G									
	H									
	A									
	B									
	C									
	D									
	E									
	F									
	G									
	H									
	Date:	2/3/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2/6/24	
	Time:	1445	1030	1540	1046	1010	1020	1440	1440	
	Initials:	JH/KB	MB	JS	QA	JS	MB	WT	JH	

QAM 2/13/24

CHRONIC CHEMICAL DATA (INITIAL)

Project Number: 14001-904-1450

Test Species (Circle): *C. dubia* *D. magna* *D. pulex* *P. promelas* Other (Specify): ***Americamysis bahia***

g/L		Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Meter #	Remarks
Conc.:	Cont									All Conc.	
pH		7.7	8.9	8.7	8.7	8.7	8.7	8.6		19	
D.O. (mg/L)		6.2	6.9	6.4	6.2	6.2	6.7	6.7		17	
Temp. (°C)		25	25	25	25	25	25	25		44	
Salinity (ppt)		24	26	25	26	26	24			16	
Hard. (mg/L)		4400		4400		3800				Tit.	
Alk. (mg/L)		80		124		126				Tit.	
TRC (mg/L)		20.02		20.02		20.02				#21	
NH <sub>3</sub> (mg/L)		21.0		21.0		21.0				HA1	
Conc.:	0.125										
pH		7.7	8.9	8.8	8.8	8.7	8.7	8.6			
D.O. (mg/L)		6.1	6.9	6.6	6.4	6.2	6.6	6.6			
Temp. (°C)		*	*	*	*	*	*	*			
Salinity (ppt)		24	26	23	26	26	25				
Hard. (mg/L)											
Alk. (mg/L)											
TRC (mg/L)											
NH <sub>3</sub> (mg/L)											
Conc.:	0.25										
pH		7.7	8.9	8.8	8.8	8.7	8.7	8.6			
D.O. (mg/L)		6.3	7.0	6.6	6.6	6.4	6.7	6.5			
Temp. (°C)		*	*	*	*	*	*	*			
Salinity (ppt)		24	26	24	25	26	25				
Hard. (mg/L)											
Alk. (mg/L)											
TRC (mg/L)											
NH <sub>3</sub> (mg/L)											
Date:		1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24			▲ Salinity, 1 rep each treatment D 0
Time:		1435	1020	1520	1025	1000	1015	1430			
Initials:		JH	MB	JS	BT	JS	MB	WT			

NOTE: Hardness, alkalinity, TRC, and NH<sub>3</sub> data appearing on this page have been transcribed from the wet chemistry log, QA Form No. 084.  
 \* Dilution/control water and stock solution were brought to 26°C prior to mixing the dilution series. The temperature of resulting stock dilution is assumed to also be 26°C.

QA 2/13/24

# CHRONIC CHEMICAL DATA (INITIAL)

Project Number: 14001-904-1450

Test Species (Circle): *C. dubia* *D. magna* *D. pulex* *P. promelas* Other (Specify): ***Americamysis bahia***

g/L	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Meter #	Remarks
Conc.: 0.5										
pH	7.7	8.9	8.8	8.8	8.7	8.7	8.6			
D.O. (mg/L)	6.1	7.0	6.45	6.4	6.4	6.7	6.5			
Temp. (°C)	*	*	*	*	*	*	*			
Salinity (ppt)	25	26	25	26	25	25				
Hard. (mg/L)										
Alk. (mg/L)										
TRC (mg/L)										
NH <sub>3</sub> (mg/L)										
Conc.: 1.0										
pH	7.7	8.9	8.8	/	/	/	/	/		
D.O. (mg/L)	6.2	6.9	6.6	/	/	/	/	/		
Temp. (°C)	*	*	*	/	/	/	/	/		
Salinity (ppt)	25	26		/	/	/	/	/		
Hard. (mg/L)	3,600			/	/	/	/	/		
Alk. (mg/L)	228			/	/	/	/	/		
TRC (mg/L)	<0.02			/	/	/	/	/		
NH <sub>3</sub> (mg/L)	<1.0			/	/	/	/	/		
Conc.:										
pH										
D.O. (mg/L)										
Temp. (°C)										
Salinity (ppt)										
Hard. (mg/L)										
Alk. (mg/L)										
TRC (mg/L)										
NH <sub>3</sub> (mg/L)										
Date:	1/30/24	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24			▲ Salinity, 1 rep each treatment D O
Time:	1435	1020	1520	1025	1000	1015	1435			
Initials:	JH	MB	JS	JK	JS	MB	WT			

NOTE: Hardness, alkalinity, TRC, and NH<sub>3</sub> data appearing on this page have been transcribed from the wet chemistry log, QA Form No. 084.  
 \* Dilution/control water and stock solution were brought to 26°C prior to mixing the dilution series. The temperature of resulting stock dilution is assumed to also be 26°C.

0 MB 1/31/24 WP  
 ① JS 2/1/24 JE

QA ~ 2/13/24

CHRONIC CHEMICAL DATA (FINAL)

Project Number: 14001-904-1450										
Test Species (Circle): <i>C. dubia</i> <i>D. magna</i> <i>D. pulex</i> <i>P. promelas</i> Other (Specify): <b>Americamysis bahia</b>										
g/L	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7		Meter #	Remarks
Conc.: Cont.									All Conc.	
pH	7.9	7.8	7.8	7.9	7.9	7.8	7.5		19	
D.O. (mg/L)	5.9	4.4	4.5	4.5	3.8	4.6	4.0		17	
Temp. (°C)	23~	24	25	24	25	25	25		145	
Salinity (ppt) ▲	26	24	24	26	25		26		2	
Conc.: 0.125										
pH	7.8	7.8	7.9	8.0	7.9	7.8	7.6			
D.O. (mg/L)	5.1	4.6	4.8	4.5	4.4	4.1	3.7			
Temp. (°C)	23~	23~	25	23~	25	25	25			
Salinity (ppt) ▲	26	26	23~	26	25		26			
Conc.: 0.25										
pH	7.8	7.9	7.9	8.0	7.9	7.8	7.6			
D.O. (mg/L)	5.1	4.7	4.8	4.4	4.4	4.1	3.7			
Temp. (°C)	23~	24	25	23~	25	25	25			
Salinity (ppt) ▲	26	26	23~	26	26		26			
Conc.: 0.5										
pH	7.9	7.9	7.9	8.1	8.0	7.8	7.7			
D.O. (mg/L)	5.3	5.0	4.9	4.8	4.7	4.3	4.4			
Temp. (°C)	23~	24	25	24	25	25	25			
Salinity (ppt) ▲	26	26	24	27	26		27			
Conc.: 1.0										
pH	7.9	/	/	/	/	/	/			
D.O. (mg/L)	5.4	/	/	/	/	/	/			
Temp. (°C)	23~	/	/	/	/	/	/			
Salinity (ppt) ▲	26	/	/	/	/	/	/			
Conc.:										
pH										
D.O. (mg/L)										
Temp. (°C)										
Salinity (ppt) ▲										
Date:	1/31/24	2/1/24	2/2/24	2/3/24	2/4/24	2/5/24	2/6/24		▲ Salinity: 1 rep each treatment DAILY	
Time:	1020	1520	1050	1000	1015	1435	1450			
Initials:	MS	JS	JA	TS	MS	WT	JH			

~ checked all Reps

QA *2/13/24*

DAILY TOXICITY TEST LOG

Project Number: 14001-904-1450

Test Species (Circle): *C. dubia* *D. magna* *D. pulex* *P. promelas* *O. mykiss* Other (Specify): **Americamysis bahia**

General Comments	Measured salinity of stock = <u>25</u> ppt Measured salinity of dilution water = <u>25</u> ppt Measured Cl <sup>-</sup> of stock = _____ mg/L Measured Cl <sup>-</sup> of dilution water = _____ mg/L Random Chart ID: _____	Feeding Δ 0.1ml B.S. 2 x Daily  * 0.2 ml B.S. 1 x Daily (PM)	Initials/Date
Test Day 0	Test Solution Mixed at: <u>1430</u> Test Organisms Added at: <u>1445</u>	Fed @  *1530 MB	JH 1/30/24
Test Day 1	Real Time Temp= <u>25</u> °C Range= <u>24-26</u> °C	Fed @ Δ 0820 JS Δ 1215 JS *1635 WT	MB 1/31/24
Test Day 2	Real Time Temp= <u>25</u> °C Range= <u>25-26</u> °C	Fed @ Δ 1130 JS *1645 JS	JS 2/1/24
Test Day 3	Real Time Temp= <u>25</u> °C Range= <u>24-26</u> °C	Fed @ *0830 AIW Δ 1140 MB *1600 MB	PA 2/2/24
Test Day 4	Real Time Temp= <u>25</u> °C Range= <u>24-26</u> °C	Fed @ Δ 0825 JS Δ 1145 AIW	JS 2/3/25
Test Day 5	Real Time Temp= <u>25</u> °C Range= <u>24-26</u> °C	Fed @ Δ 0815 WT Δ 1125 WT *1440 AIW/MB	MB 2/4/24
Test Day 6	Real Time Temp= <u>25</u> °C Range= <u>*-26</u> °C	Fed @ Δ 0840 AIW Δ 1140 AIW *1620 WT	WT 2/5/24
Test Day 7	Real Time Temp= <u>25</u> °C Range= <u>23-25</u> °C	Δ 0840 NONE 1035	JH 2/6/24
Test Day 8			

OWT 2/5/24?E

CETIS Analytical Report

Report Date: 14 Feb-24 14:55 (p 1 of 2)  
Test Code: 904-1450 | 14-2339-2471

Mysidopsis 7-d Survival, Growth and Fecundity Test				TRE Environmental Strategies			
Analysis ID:	02-8471-5784	Endpoint:	2d Survival Rate	CETIS Version:	CETISv1.8.7		
Analyzed:	14 Feb-24 14:55	Analysis:	Trimmed Spearman-Kärber	Official Results:	Yes		
Batch ID:	13-8215-5897	Test Type:	Growth-Survival-Fec (7d)	Analyst:	Lab Tech		
Start Date:	30 Jan-24 14:45	Protocol:	EPA/821/R-02-014 (2002)	Diluent:	Laboratory Seawater		
Ending Date:	06 Feb-24 14:40	Species:	Americamysis bahia	Brine:	Crystal Sea		
Duration:	7d	Source:	Aquatic Biosystems, CO	Age:	7d		
Sample ID:	17-9472-6997	Code:	6AF95C55	Client:	Internal Lab		
Sample Date:	30 Jan-24 11:00	Material:	Potassium chloride	Project:	Special Studies		
Receive Date:	30 Jan-24 12:00	Source:	Reference Toxicant				
Sample Age:	4h	Station:	In House				

Trimmed Spearman-Kärber Estimates							
Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0	2.50%	-0.255	0.02595	0.5559	0.4933	0.6265

Residual Analysis					
Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			1.0000	Non-significant Trend in Controls

2d Survival Rate Summary			Calculated Variate(A/B)								
C-gm/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Dilution Water	8	1	1	1	0	0	0.0%	0.0%	38	38
0.125		8	0.975	0.8	1	0.025	0.07071	7.25%	2.5%	39	40
0.25		8	0.975	0.8	1	0.025	0.07071	7.25%	2.5%	38	39
0.5		8	0.6563	0.5	0.8	0.03946	0.1116	17.0%	34.4%	25	38
1		8	0	0	0	0	0		100.0%	0	40

2d Survival Rate Detail									
C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	1	1	1	1	1	1	1	1
0.125		1	1	1	0.8	1	1	1	1
0.25		1	1	1	1	1	1	1	0.8
0.5		0.8	0.6	0.6	0.6	0.5	0.75	0.6	0.8
1		0	0	0	0	0	0	0	0

2d Survival Rate Binomials									
C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	5/5	4/4	5/5	5/5	5/5	5/5	4/4	5/5
0.125		5/5	5/5	5/5	4/5	5/5	5/5	5/5	5/5
0.25		5/5	5/5	5/5	4/4	5/5	5/5	5/5	4/5
0.5		4/5	3/5	3/5	3/5	2/4	3/4	3/5	4/5
1		0/5	0/5	0/5	0/5	0/5	0/5	0/5	0/5



# CETIS Analytical Report

Report Date: 14 Feb-24 14:55 (p 2 of 2)  
Test Code: 904-1450 | 14-2339-2471

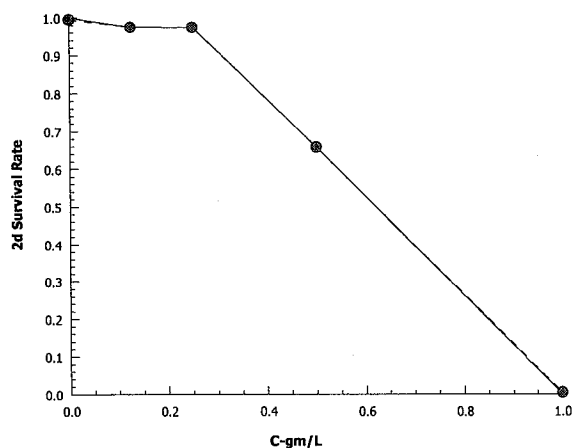
## Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 02-8471-5784      Endpoint: 2d Survival Rate  
Analyzed: 14 Feb-24 14:55      Analysis: Trimmed Spearman-Kärber

CETIS Version: CETISv1.8.7  
Official Results: Yes

### Graphics



# TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 14001-904-1450  
 Balance ID: Sartorius #1  
 Date/Time of Tare Wt: 2/6/24 @ 1100  
 Date/Time of Gross Wt: 2/8/24 @ 1600

Test Substance NaCl Species A. bahia  
 Analyst Tare: MB  
 Analyst Gross: sp

Oven #: 3  
 Time: 1540  
 Time: 825

(options: Wet, Blot Dry, Dry (60-90°C), Dry (>100°C), AFDW (>500°C))  
 Weight Type: Dry (60-90C)

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
Control	A		1.17908	1.18048	0.00140	0.00146	5	0.292	0.2669	5	0.292	0.2669
	B		1.16873	1.16947	0.00074	0.00080	4	0.200		4	0.200	
	C		1.18339	1.18450	0.00111	0.00117	5	0.234		5	0.234	
	D		1.16517	1.16671	0.00154	0.00160	5	0.320		5	0.320	
	E		1.16966	1.17079	0.00113	0.00119	5	0.238		5	0.238	
	F		1.17290	1.17421	0.00131	0.00137	5	0.274		5	0.274	
	G		1.18075	1.18168	0.00093	0.00099	4	0.248		4	0.248	
	H		1.18004	1.18163	0.00159	0.00165	5	0.330		5	0.330	
*0.125	A		1.16961	1.17083	0.00122	0.00128	5	0.256	0.2427	5	0.256	0.2634
	B		1.16503	1.16614	0.00111	0.00117	5	0.234		4	0.292	
	C		1.16555	1.16677	0.00122	0.00128	5	0.256		5	0.256	
	D		1.15794	1.15881	0.00087	0.00093	5	0.186		4	0.232	
	E		1.17781	1.17885	0.00104	0.00110	5	0.220		5	0.220	
	F		1.16644	1.16772	0.00128	0.00134	5	0.268		5	0.268	
	G		1.17592	1.17706	0.00114	0.00120	5	0.240		4	0.300	
	H		1.16380	1.16515	0.00135	0.00141	5	0.282		5	0.282	
*0.25	A		1.17565	1.17654	0.00089	0.00095	5	0.190	0.2211	4	0.237	0.2721
	B		1.17820	1.17954	0.00134	0.00140	5	0.280		5	0.280	
	C		1.17186	1.17296	0.00110	0.00116	5	0.232		4	0.290	
	D		1.17883	1.17935	0.00052	0.00058	4	0.145		2	0.290	
	E		1.16062	1.16176	0.00114	0.00120	5	0.240		4	0.300	
	F		1.16272	1.16362	0.00090	0.00096	5	0.192		4	0.240	
	G		1.16725	1.16865	0.00140	0.00146	5	0.292		5	0.292	
	H		1.17094	1.17187	0.00093	0.00099	5	0.198		4	0.247	

Project Number:		14001-904-1450		Test Substance		NaCl		Species		A. bahia		0.1850	
*0.5	A	1.17714	1.17741	0.00027	0.00033	5	0.066	0.0180	2	0.165	0.130		
	B	1.18049	1.18056	0.00007	0.00013	5	0.026		1	0.130			
	C			0.00000	0.00000	5	0.000		0				
	D			0.00000	0.00000	5	0.000		0				
	E			0.00000	0.00000	4	0.000		0				
	F			0.00000	0.00000	4	0.000		0				
	G			0.00000	0.00000	5	0.000		0				
	H	1.16590	1.16610	0.00020	0.00026	5	0.052		1	0.260			
	A			0.00000	0.00000	5	0.000	0.0000					
	B			0.00000	0.00000	5	0.000						
	C			0.00000	0.00000	5	0.000						
	D			0.00000	0.00000	5	0.000						
	E			0.00000	0.00000	5	0.000						
	F			0.00000	0.00000	5	0.000						
	G			0.00000	0.00000	5	0.000						
	H			0.00000	0.00000	5	0.000						
	A			0.00000	0.00000	5	0.000	0.0000					
	B			0.00000	0.00000	5	0.000						
	C			0.00000	0.00000	5	0.000						
	D			0.00000	0.00000	5	0.000						
	E			0.00000	0.00000	5	0.000						
	F			0.00000	0.00000	5	0.000						
	G			0.00000	0.00000	5	0.000						
	H			0.00000	0.00000	5	0.000						
Blank	A	1.17507	1.17501	0.00000	0.00006								
	B			0.00000	0.00000	5	0.000						
	C			0.00000	0.00000	5	0.000						
	D			0.00000	0.00000	5	0.000						
	E			0.00000	0.00000	5	0.000						
	F			0.00000	0.00000	5	0.000						
	G			0.00000	0.00000	5	0.000						
	H			0.00000	0.00000	5	0.000						

Summary Statistics for Survival Data

Treatment	N	Min	Max	Mean	SD	C.V.
Control	8	1.0	1.0	1.0000	0.0000	0.000%
*0.125	8	0.8	1.0	0.9250	0.1035	11.190%
*0.25	8	0.5	1.0	0.8125	0.1553	19.110%
*0.5	8	0.0	0.4	0.1000	0.1512	151.186%
0%	0	0.0	0.0	0.0000	0.0000	#DIV/0!
0%	0	0.0	0.0	0.0000	0.0000	#DIV/0!

ce 2/13/24

Project Number: 14001-904-1450

Test Substance NaCl Species A. bahia

**Summary Statistics for Growth Data (dry wt per original)**

Treatment	N	Min	Max	Mean	SD	C.V.	% of Control
Control	8	0.200	0.330	0.2669	0.0451	16.903%	--
*0.125	8	0.186	0.282	0.2427	0.0301	12.409%	91%
*0.25	8	0.145	0.292	0.2211	0.0494	22.359%	83%
*0.5	8	0.000	0.066	0.0180	0.0271	150.601%	7%
0%	8	0.000	0.000	0.0000	0.0000	-	0%
0%	7	0.000	0.000	0.0000	0.0000	-	0%

**Summary Statistics for Growth Data (dry wt per surviving organism)**

Treatment	N	Min	Max	Mean	SD	C.V.
Control	8	0.200	0.330	0.2669	0.0451	16.903%
*0.125	8	0.220	0.300	0.2634	0.0280	10.644%
*0.25	8	0.237	0.300	0.2721	0.0259	9.533%
*0.5	3	0.130	0.260	0.1850	0.0673	36.361%
0%	0	0.000	0.000	-	-	-
0%	0	0.000	0.000	-	-	-

Comments: \_\_\_\_\_

## CETIS Analytical Report

Report Date: 13 Feb-24 15:36 (p 1 of 2)  
 Test Code: 904-1450 | 14-2339-2471

## Mysidopsis 7-d Survival, Growth and Fecundity Test

## TRE Environmental Strategies

Analysis ID: 16-9364-2304	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 13 Feb-24 15:36	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 13-8215-5897	Test Type: Growth-Survival-Fec (7d)	Analyst: Lab Tech
Start Date: 30 Jan-24 14:45	Protocol: EPA/821/R-02-014 (2002)	Diluent: Laboratory Seawater
Ending Date: 06 Feb-24 14:40	Species: Americamysis bahia	Brine: Crystal Sea
Duration: 7d	Source: Aquatic Biosystems, CO	Age: 7d
Sample ID: 17-9472-6997	Code: 6AF95C55	Client: Internal Lab
Sample Date: 30 Jan-24 11:00	Material: Potassium chloride	Project: Special Studies
Receive Date: 30 Jan-24 12:00	Source: Reference Toxicant	
Sample Age: 4h	Station: In House	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	13.7%	0.125	0.25	0.1768	

## Steel Many-One Rank Sum Test

Control	vs C-gm/L	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Dilution Water	0.125	56	48	1	14	0.2255	Asymp	Non-Significant Effect
	0.25*	44	48	1	14	0.0159	Asymp	Significant Effect
	0.5*	36	48	0	14	0.0011	Asymp	Significant Effect

## Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			1.0000	Non-significant Trend in Controls

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	4.946836	1.648946	3	88	<0.0001	Significant Effect
Error	0.524686	0.01873879	28			
Total	5.471522		31			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	26.81	11.3	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9517	0.908	0.1610	Normal Distribution

## 7d Survival Rate Summary

C-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	1	1	1	1	1	1	0	0.0%	0.0%
0.125		8	0.925	0.8385	1	1	0.8	1	0.0366	11.2%	7.5%
0.25		8	0.8125	0.6827	0.9423	0.8	0.5	1	0.05489	19.1%	18.8%
0.5		8	0.1	0	0.2264	0	0	0.4	0.05345	151.0%	90.0%
1		8	0	0	0	0	0	0	0		100.0%

## Angular (Corrected) Transformed Summary

C-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	1.338	1.328	1.349	1.345	1.318	1.345	0.004446	0.94%	0.0%
0.125		8	1.256	1.153	1.359	1.345	1.107	1.345	0.04357	9.81%	6.16%
0.25		8	1.126	0.9803	1.273	1.107	0.7854	1.345	0.06181	15.5%	15.8%
0.5		8	0.3492	0.2068	0.4917	0.2527	0.2255	0.6847	0.06025	48.8%	73.9%
1		8	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0	0.0%	83.2%

# CETIS Analytical Report

Report Date: 13 Feb-24 15:36 (p 2 of 2)  
Test Code: 904-1450 | 14-2339-2471

## Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 16-9364-2304 Endpoint: 7d Survival Rate  
Analyzed: 13 Feb-24 15:36 Analysis: Nonparametric-Control vs Treatments

CETIS Version: CETISv1.8.7  
Official Results: Yes

### 7d Survival Rate Detail

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	1	1	1	1	1	1	1	1
0.125		1	0.8	1	0.8	1	1	0.8	1
0.25		0.8	1	0.8	0.5	0.8	0.8	1	0.8
0.5		0.4	0.2	0	0	0	0	0	0.2
1		0	0	0	0	0	0	0	0

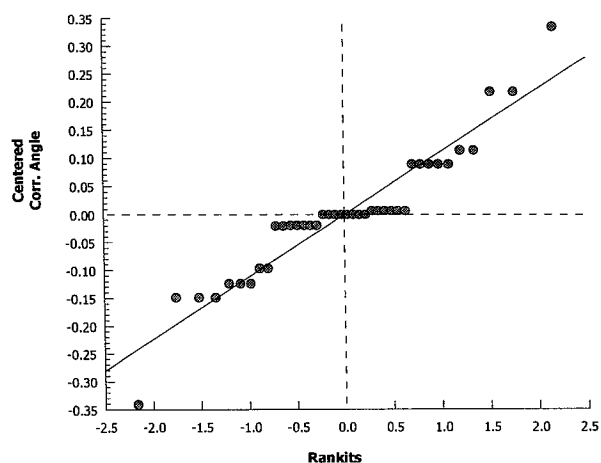
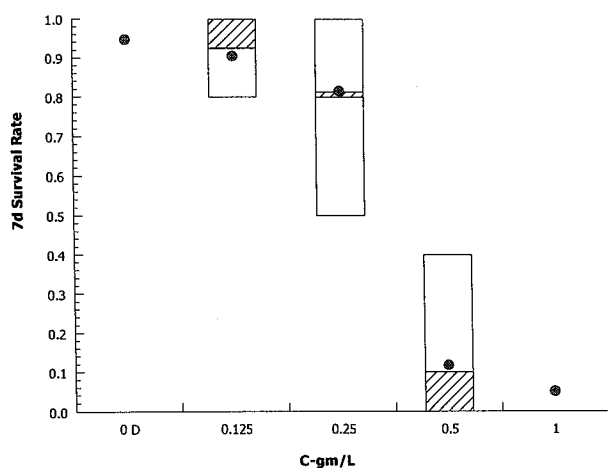
### Angular (Corrected) Transformed Detail

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	1.345	1.318	1.345	1.345	1.345	1.345	1.318	1.345
0.125		1.345	1.107	1.345	1.107	1.345	1.345	1.107	1.345
0.25		1.107	1.345	1.107	0.7854	1.107	1.107	1.345	1.107
0.5		0.6847	0.4636	0.2255	0.2255	0.2527	0.2527	0.2255	0.4636
1		0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255

### 7d Survival Rate Binomials

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	5/5	4/4	5/5	5/5	5/5	5/5	4/4	5/5
0.125		5/5	4/5	5/5	4/5	5/5	5/5	4/5	5/5
0.25		4/5	5/5	4/5	2/4	4/5	4/5	5/5	4/5
0.5		2/5	1/5	0/5	0/5	0/4	0/4	0/5	1/5
1		0/5	0/5	0/5	0/5	0/5	0/5	0/5	0/5

### Graphics



## CETIS Analytical Report

Report Date: 13 Feb-24 15:34 (p 1 of 2)  
Test Code: 904-1450 | 14-2339-2471

## Mysidopsis 7-d Survival, Growth and Fecundity Test

## TRE Environmental Strategies

Analysis ID: 01-3611-0311	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 13 Feb-24 15:33	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 13-8215-5897	Test Type: Growth-Survival-Fec (7d)	Analyst: Lab Tech
Start Date: 30 Jan-24 14:45	Protocol: EPA/821/R-02-014 (2002)	Diluent: Laboratory Seawater
Ending Date: 06 Feb-24 14:40	Species: Americamysis bahia	Brine: Crystal Sea
Duration: 7d	Source: Aquatic Biosystems, CO	Age: 7d
Sample ID: 17-9472-6997	Code: 6AF95C55	Client: Internal Lab
Sample Date: 30 Jan-24 11:00	Material: Potassium chloride	Project: Special Studies
Receive Date: 30 Jan-24 12:00	Source: Reference Toxicant	
Sample Age: 4h	Station: In House	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL <sup>1</sup>	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	15.1%	0.125	0.25	0.1768	

## Dunnett Multiple Comparison Test

Control	vs	C-gm/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision( $\alpha$ :5%)
Dilution Water		0.125	0.3771	2.15	0.17	14	0.5977	CDF	Non-Significant Effect
		0.25*	2.177	2.15	0.17	14	0.0476	CDF	Significant Effect
		0.5*	11.95	2.15	0.17	14	<0.0001	CDF	Significant Effect

## Auxiliary Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			0.5714	Non-significant Trend in Controls

## ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision( $\alpha$ :5%)
Between	4.740178	1.580059	3	63.4	<0.0001	Significant Effect
Error	0.6977861	0.02492093	28			
Total	5.437963		31			

## Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision( $\alpha$ :1%)
Variances	Bartlett Equality of Variance	3.246	11.3	0.3552	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9447	0.908	0.1015	Normal Distribution

## 7d Survival Rate Summary

C-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	0.95	0.8726	1	1	0.8	1	0.03273	9.75%	0.0%
0.125		8	0.925	0.8385	1	1	0.8	1	0.0366	11.2%	2.63%
0.25		8	0.8	0.6452	0.9548	0.8	0.4	1	0.06547	23.1%	15.8%
0.5		8	0.1	0	0.2264	0	0	0.4	0.05345	151.0%	89.5%
1		8	0	0	0	0	0	0	0		100.0%

## Angular (Corrected) Transformed Summary

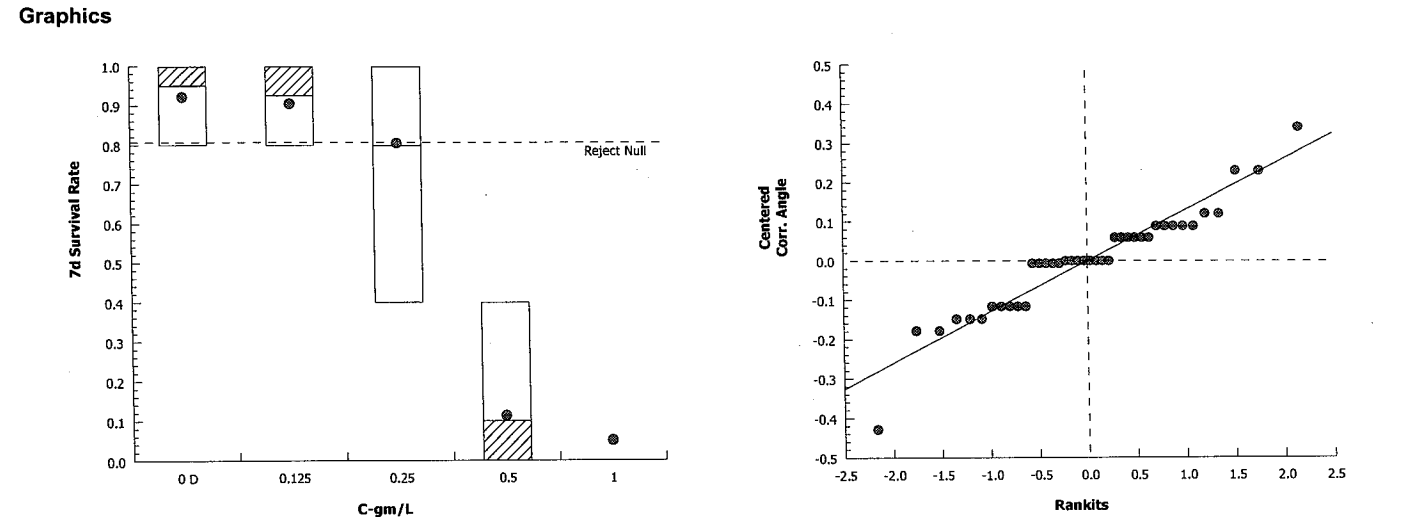
C-gm/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Dilution Water	8	1.286	1.194	1.378	1.345	1.107	1.345	0.03897	8.57%	0.0%
0.125		8	1.256	1.153	1.359	1.345	1.107	1.345	0.04357	9.81%	2.32%
0.25		8	1.114	0.9433	1.284	1.107	0.6847	1.345	0.07215	18.3%	13.4%
0.5		8	0.3424	0.196	0.4889	0.2255	0.2255	0.6847	0.06195	51.2%	73.4%
1		8	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0	0.0%	82.5%

Mysidopsis 7-d Survival, Growth and Fecundity Test					TRE Environmental Strategies				
Analysis ID:	01-3611-0311	Endpoint:	7d Survival Rate			CETIS Version:	CETISv1.8.7		
Analyzed:	13 Feb-24 15:33	Analysis:	Parametric-Control vs Treatments			Official Results:	Yes		

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	1	0.8	1	1	1	1	0.8	1
0.125		1	0.8	1	0.8	1	1	0.8	1
0.25		0.8	1	0.8	0.4	0.8	0.8	1	0.8
0.5		0.4	0.2	0	0	0	0	0	0.2
1		0	0	0	0	0	0	0	0

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	1.345	1.107	1.345	1.345	1.345	1.345	1.107	1.345
0.125		1.345	1.107	1.345	1.107	1.345	1.345	1.107	1.345
0.25		1.107	1.345	1.107	0.6847	1.107	1.107	1.345	1.107
0.5		0.6847	0.4636	0.2255	0.2255	0.2255	0.2255	0.2255	0.4636
1		0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255	0.2255

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	5/5	4/5	5/5	5/5	5/5	5/5	4/5	5/5
0.125		5/5	4/5	5/5	4/5	5/5	5/5	4/5	5/5
0.25		4/5	5/5	4/5	2/5	4/5	4/5	5/5	4/5
0.5		2/5	1/5	0/5	0/5	0/5	0/5	0/5	1/5
1		0/5	0/5	0/5	0/5	0/5	0/5	0/5	0/5





## CETIS Analytical Report

Report Date: 13 Feb-24 16:24 (p 1 of 2)  
Test Code: 904-1450 | 14-2339-2471

## Mysidopsis 7-d Survival, Growth and Fecundity Test

## TRE Environmental Strategies

Analysis ID: 04-3101-2264	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.8.7
Analyzed: 13 Feb-24 16:24	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 13-8215-5897	Test Type: Growth-Survival-Fec (7d)	Analyst: Lab Tech
Start Date: 30 Jan-24 14:45	Protocol: EPA/821/R-02-014 (2002)	Diluent: Laboratory Seawater
Ending Date: 06 Feb-24 14:40	Species: Americamysis bahia	Brine: Crystal Sea
Duration: 7d	Source: Aquatic Biosystems, CO	Age: 7d
Sample ID: 17-9472-6997	Code: 6AF95C55	Client: Internal Lab
Sample Date: 30 Jan-24 11:00	Material: Potassium chloride	Project: Special Studies
Receive Date: 30 Jan-24 12:00	Source: Reference Toxicant	
Sample Age: 4h	Station: In House	

## Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1964343	200	Yes	Two-Point Interpolation

## Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision( $\alpha$ :5%)
Control Trend	Mann-Kendall Trend			0.2751	Non-significant Trend in Controls

## Point Estimates

Level	gm/L	95% LCL	95% UCL
IC5	0.06898	0.031	0.2549
IC10	0.1395	0.06201	0.2692
IC15	0.2166	0.09301	0.2832
IC20	0.2593	0.124	0.2967
IC25	0.2758	0.1846	0.3122
IC40	0.325	0.2723	0.3533
IC50	0.3579	0.3178	0.3826

## Mean Dry Biomass-mg Summary

## Calculated Variate

C-gm/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	8	0.2669	0.2	0.33	0.01595	0.04512	16.9%	0.0%
0.125		8	0.2427	0.186	0.282	0.01065	0.03012	12.4%	9.06%
0.25		8	0.2211	0.145	0.292	0.01748	0.04944	22.4%	17.2%
0.5		8	0.018	0	0.066	0.009584	0.02711	151.0%	93.3%
1		8	0	0	0	0	0		100.0%

## Mean Dry Biomass-mg Detail

C-gm/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Dilution Water	0.292	0.2	0.234	0.32	0.238	0.274	0.2475	0.33
0.125		0.256	0.234	0.256	0.186	0.22	0.268	0.24	0.282
0.25		0.19	0.28	0.232	0.145	0.24	0.192	0.292	0.198
0.5		0.066	0.026	0	0	0	0	0	0.052
1		0	0	0	0	0	0	0	0

# CETIS Analytical Report

Report Date: 13 Feb-24 16:24 (p 2 of 2)  
Test Code: 904-1450 | 14-2339-2471

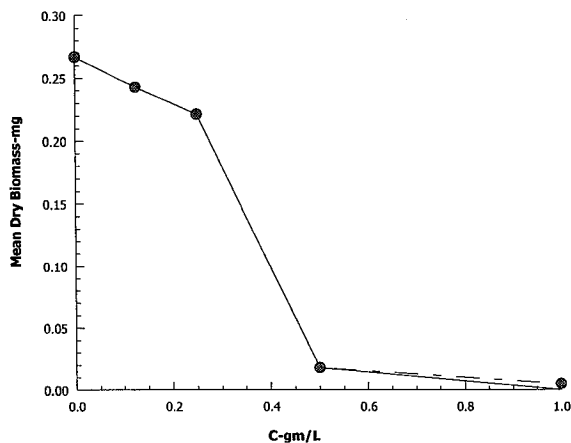
## Mysidopsis 7-d Survival, Growth and Fecundity Test

TRE Environmental Strategies

Analysis ID: 04-3101-2264      Endpoint: Mean Dry Biomass-mg  
Analyzed: 13 Feb-24 16:24      Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.7  
Official Results: Yes

### Graphics



**APPENDIX D**  
**Power Standards**

## POWER STANDARDS CALCULATION FOR CHRONIC TESTS

Project Number: 14001-056-254 Test Species: Americamysis bahia

Test Period: January 30, 2024 to February 6, 2024

CCEC	Mysid average weight / organism (mg)							
	Rep A	Rep B	Rep C	Rep D	Rep E	Rep F	Rep G	Rep H
0.8% effluent	0.326	0.286	0.238	0.270	0.320	0.308	0.278	0.266
Control	Rep A	Rep B	Rep C	Rep D	Rep E	Rep F	Rep G	Rep H
Lab water	0.270	0.318	0.294	0.320	0.274	0.222	0.288	0.262
								Mean
								0.287 (A)
								Mean
								0.281 (B)

1. 0.281 (B) - 0.287 (A) = -0.006 (C)
2.  $\left[ \frac{-0.006}{0.281} \right] \div \frac{0.281}{0.281} \text{ (B)} = \frac{-0.0214}{-0.0214} \times 100 = \frac{-2.14}{-2.14} \text{ (D)}$
3. If (D) is  $\leq 39$  percent, then this test has met the power standard.
4. This test **DOES** / DOES NOT meet the power standard.

Note: WET tests that fail WET limits do not have to meet power standards.