

**Toxicity Tests
For
Western Virginia Water Authority
Report # 3112**

Submitted To: S. Scott Shirley
Chief Operating Officer- Water Quality
Western Virginia Water Authority

Submitted By: Biological Monitoring, Inc.
1800 Kraft Drive, Suite 104
Blacksburg, VA 24060

Phone: 540-953-2821
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Report Date: Mar 6, 2023



Biological Monitoring, Inc. is accredited by The NELAC Institute (TNI 2016, ID:460015). The test results reported herein meet all requirements of TNI. The procedures are deemed compliant with the methods and acceptable for reporting.



Quality Manager

A handwritten signature in black ink, appearing to read "Daniel R. Beebe", written over a horizontal line.



BIOLOGICAL MONITORING, INC

1800 KRAFT DRIVE SUITE 104 BLACKSBURG VIRGINIA 24060

PH:540-953-2821 EMAIL:BMI@BIOMON.COM WWW.BIOMON.COM



TNI ACCREDITED LAB# 460015

Toxicity Testing Data Summary

Client Western Virginia Water Authority **Permit #** 4AROA202.20 **Sample** 13th Street Bridge

Test ID WVA021423-3 **Result** NOEC = 100, IC25 > 100 **Pass/Fail** NA **Next Step** NA

Test ID WVA021423-4 **Result** NOEC = 100, IC25 > 100 **Pass/Fail** NA **Next Step** NA



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TNI ACCREDITED LAB# 460015

Certificate of Analysis

Client Western Virginia Water Authority

Report # 3112

BMI Project # 4268

Report Date Mar 6, 2023

Permit # 4AROA202.20

Sample ID #s WVA021423-2

Sample 13th Street Bridge

Test ID # WVA021423-3

Test Type Short Term Chronic

Organism Pimephales promelas

Test Start Date Feb 14, 2023

Test Start Time 1200

EPA Method # 1000

Test End Date Feb 21, 2023

Test End Time 1200

Photoperiod 16h L/8h D

Endpoint Survival

Method Steel's Many-One Rank Test

Result NOEC = 100

Endpoint Survival

Method Graphical

Result 48h LC50 > 100

Endpoint Growth

Method Dunnett's Test

Result NOEC = 100

Endpoint Growth

Method Linear Interpolation

Result IC25 > 100

Endpoint Growth

Method PMSD

Result 29.47%

Final Result NOEC = 100, IC25 > 100, TUc = 1

Pass/Fail NA



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TNI ACCREDITED LAB# 460015

Certificate of Analysis

Client Western Virginia Water Authority

Report # 3112

BMI Project # 4268

Report Date Mar 6, 2023

Permit # 4AROA202.20

Sample ID #s WVA021423-2

Sample 13th Street Bridge

Test ID # WVA021423-4

Test Type Short Term Chronic

Organism Ceriodaphnia dubia

Test Start Date Feb 14, 2023

Test Start Time 1500

EPA Method # 1002

Test End Date Feb 20, 2023

Test End Time 1500

Photoperiod 16h L/8h D

Endpoint Survival

Method Fisher's Exact Test

Result NOEC = 100

Endpoint Survival

Method Graphical

Result 48h LC50 > 100

Endpoint Reproduction

Method Steel's Many-One Rank Test

Result NOEC = 100

Endpoint Reproduction

Method Linear Interpolation

Result IC25 > 100

Endpoint Reproduction

Method PMSD

Result 14.22%

Final Result NOEC = 100, IC25 > 100, TUc = 1

Pass/Fail NA

Chronic Toxicity Test
(*Pimephales promelas*)

Page 1 of 4

Experiment I.D.# WVA021423-3
 Biologist(s): JR PR VF MH WB
 Permit # 4A20A202.20
 Client: WVWA
 Effluent toxicant: 13th Street
 Sample Type: (Grab) Composite
 Sample Chlorine: 0.06
 Dilution Water Used MHRW
 Feeding Schedule: 0.15 ml Artemia 2x Daily
 Aeration: None
 Template #: 4x6 Even

Start of Test Date: 2/14/23 Time: 1200
 End of Test Date: 2/21/23 Time: 1200
 Test Duration: 7 days
 Test Temperature: 25 +/- 1 deg C
 Test Volume: 350 ml
 Test Containers Used: 500 ml PE
 Renewal Frequency: Daily
 Test Organism Age: 24-48 h
 Organism Batch #: ABS021423-1
 Organisms per concentration: 40
 Waterbath/Shelf #: 7

SAMPLE COLLECTION							
Date(s)		Time(s)		TEST RENEWAL			
From:	To:	From:	To:	Date(s)	Time(s)	Test Day	Diluent Batch #:
2/13/23	—	1239	—	2/14/23	1200	0	8391
				2/15/23	1200	1	8391
				2/16/23	1200	2	8399
				2/17/23	1130	3	8399
				2/18/23	1130	4	8402
				2/19/23	1230	5	8402
				2/20/23	1200	6	8403

Meters: Instrument Id#: Temp.: 077 pH: 061

DO: 061 Conductivity/Salinity: 061

Condition of Organisms at End of Test: Normal

Average weight per control fish: 0.562 mg Control Survival (%): 100

Comments: _____

Experiment ID: WVA021423-3

Conc: Units	Day	Number of Live Organisms				DO (mg/L)		pH		Alkalinity mg/L as CaCO ₃	Hardness mg/L as CaCO ₃	Cond./ Salinity umho/ 0/00	Temp. (C)		Feeding 1	Feeding 2	Comments	Initials
		A	B	C	D	Before	After	Before	After				Before	After				
%	0	10	10	10	10		7.43		8.03	62	94	325		25				WV
	1	10	10	10	10	6.68	8.45	7.97	8.04			522	25	25	✓			WV
	2	10	10	10	10	7.29	7.73	7.92	8.04		86	303	25	25	✓			WV
	3	10	10	10	10	7.42	7.76	7.83	7.94			305	25	25	✓			WV
	4	10	10	10	10	7.52	8.56	8.09	8.08	64	84	307	25	25	✓			WV
	5	10	10	10	10	7.14	8.18	8.13	8.21			305	25	25	✓			WV
	6	10	10	10	10	7.45	7.89	8.11	8.18	64	84	304	25	25	✓			WV
23 6-25	7	10	10	10	10	8.95		8.04					25		No Food			WV
	0	10	10	10	10		7.48		8.06			289		25		✓		WV
	1	10	10	10	10	6.51	8.49	7.88	8.06			298	25	25	✓			WV
	2	10	10	10	10	7.45	7.68	7.95	8.08			277	25	25	✓			WV
	3	10	10	10	10	7.79	7.98	7.95	8.05			274	25	25	✓			WV
	4	10	8	10	10	7.65	8.47	8.05	8.12			281	25	25	✓			WV
	5	10	7	10	10	7.12	8.27	8.06	8.17			278	25	25	✓			WV
33 12-5	6	10	7	10	10	7.18	7.80	8.08	8.15			280	25	25	✓			WV
	7	10	7	10	10	8.71		7.98					25		No Food			WV
	0	10	10	10	10		7.59		8.06			274		25		✓		WV
	1	10	10	10	10	6.48	8.29	7.84	8.04			277	25	25	✓			WV
	2	10	10	10	10	7.61	7.85	7.96	8.09			264	25	25	✓			WV
	3	10	10	10	10	7.66	8.18	7.98	8.06			258	25	25	✓			WV
	4	10	10	10	10	7.55	8.30	8.04	8.12			263	25	25	✓			WV
② WVB 3/5/23	5	10	10	10	10	7.19	8.24	8.04	8.18			264	25	25	✓			WV
	6	10	10	10	10	7.15	7.68	8.09	8.13			265	25	25	✓			WV
	7	10	10	10	10	8.65		7.99					25		No Food			WV

② WVB 3/5/23 ① M4 02/18/23

Experiment ID: WJA021423-3

Conc: Units	Day	Number of Live Organisms				DO (mg/L)		pH		Alkalinity mg/L as CaCO ₃	Hardness mg/L as CaCO ₃	Cond./ Salinity umho/ 0/00	Temp. (C)		Feeding 1	Feeding 2	Comments	Initials
		A	B	C	D	Before	After	Before	After				Before	After				
%	0	10	10	10	10	7.86	7.86	8.05	8.05			252		25		✓		WS
	1	10	10	10	9	6.41	8.47	7.84	8.06			252	25	25	✓	✓		WS
	2	10	10	10	9	7.76	8.05	8.06	8.09			242	25	25	✓	✓		WS
	3	10	10	10	9	7.73	8.19	8.04	8.08			242	25	25	✓	✓		WS
	4	10	10	10	9	7.69	8.26	8.02	8.12			242	25	25	✓	✓		WS
	5	10	10	10	8	7.24	8.24	8.07	8.17			244	25	25	✓	✓		WS
	6	10	10	10	8	7.05	7.85	8.09	8.14			245	25	25	✓	✓		WS
69 0-50	7	10	10	10	8	8.66		7.99					25		No Food			WS
	0	10	10	10	10		7.87		8.06			170		25		✓		WS
	1	10	10	10	10	6.26	8.57	7.84	8.05			224	25	25	✓	✓		WS
	2	10	10	10	10	7.63	7.87	8.03	8.08			219	25	25	✓	✓		WS
	3	10	10	10	10	7.73	8.37	8.01	8.07			219	25	25	✓	✓		WS
	4	10	10	10	10	7.71	8.32	8.02	8.13			216	25	25	✓	✓		WS
	5	10	10	10	10	7.21	7.83	8.06	8.16			216	25	25	✓	✓		WS
100	6	10	10	10	10	7.03	7.99	8.09	8.12			221	25	25	✓	✓		WS
	7	10	10	10	10	8.60		7.99					25		No Food			WS
	0	10	10	10	10		8.01		8.04	70	80	170		25		✓		WS
	1	10	10	10	10	5.87	8.60	7.85	8.05			177	25	25	✓	✓		WS
	2	10	10	10	10	7.52	7.38	8.02	8.10			175	25	25	✓	✓		WS
	3	10	10	10	10	7.21	8.73	7.97	8.05			174	25	25	✓	✓		WS
	4	10	10	10	10	7.88	8.53	8.05	8.13			173	25	25	✓	✓		WS
100	5	10	10	10	10	7.33	7.81	8.08	8.17			175	25	25	✓	✓		WS
	6	10	10	10	10	7.16	8.11	8.09	8.12			178	25	25	✓	✓		WS
	7	10	10	10	10	8.31		7.89					25		No Food			WS

① WJA021423-3

Weight Data Sheet

Experiment ID: WVA021423-3

Treatment ID	Initial Weight (mg)	Final Weight (mg)	# Larvae	Comments	Initials
0 A	18.61	24.17	10		WJ
0 B	17.62	23.58	10		WJ
0 C	17.82	24.05	10		WJ
0 D	17.75	22.46	10		WJ
23 A	17.95	24.61	10		WJ
23 B	17.17	22.12	10		WJ
23 C	18.36	27.21	10		WJ
23 D	18.40	23.47	10		WJ
33 A	17.79	23.28	10		WJ
33 B	18.17	23.99	10		WJ
33 C	18.22	23.61	10		WJ
33 D	18.09	23.92	10		WJ
48 A	18.23	24.91	10		WJ
48 B	17.61	22.90	10		WJ
48 C	18.43	24.60	10		WJ
48 D	17.54	22.90	10		WJ
69 A	17.88	23.23	10		WJ
69 B	17.72	23.00	10		WJ
69 C	17.79	22.99	10		WJ
69 D	17.57	23.83	10		WJ
100 A	18.26	26.08	10		WJ
100 B	17.64	24.18	10		WJ
100 C	17.48	23.17	10		WJ
100 D	17.59	23.00	10		WJ

CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 1 of 4)
Test Code/ID: WVA021423-3 / 18-6019-0198

Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 15-3858-8985	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.9.4
Analyzed: 03 Mar-23 13:45	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Batch ID: 02-5779-3233	Test Type: Growth-Survival (7d)	Analyst: Lab Tech
Start Date: 14 Feb-23 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 21 Feb-23 12:00	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 48
Sample ID: 00-1258-5132	Code: WVA021423-3	Project: Special Studies
Sample Date: 13 Feb-23 12:39	Material: Riverine Monitoring Sample	Source: 4AROA202.20 (4AROA202.2)
Receipt Date: 14 Feb-23 09:00	CAS (PC):	Station: 13th Street Bridge
Sample Age: 23h	Client: Western Va Water Authority	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	11.08%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	16	10	1	6	CDF	0.6105	Non-Significant Effect
		33	18	10	1	6	CDF	0.8333	Non-Significant Effect
		48	16	10	1	6	CDF	0.6105	Non-Significant Effect
		69	18	10	1	6	CDF	0.8333	Non-Significant Effect
		100	18	10	1	6	CDF	0.8333	Non-Significant Effect

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	1	0.8	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0455717	0.0091144	5	0.81	0.5577	Non-Significant Effect
Error	0.20255	0.0112528	18			
Total	0.248122		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	7.29	4.248	6.9E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	0.81	4.248	0.5577	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.6445	0.884	2.0E-06	Non-Normal Distribution

7d Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
23		4	0.9250	0.6863	1.0000	1.0000	0.7000	1.0000	0.0750	16.22%	7.50%
33		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
48		4	0.9500	0.7909	1.0000	1.0000	0.8000	1.0000	0.0500	10.53%	5.00%
69		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
23		4	1.307	0.972	1.642	1.412	0.9912	1.412	0.1052	16.10%	7.45%
33		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
48		4	1.336	1.093	1.578	1.412	1.107	1.412	0.07622	11.41%	5.40%
69		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%

CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 2 of 4)
Test Code/ID: WVA021423-3 / 18-6019-0198

Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 15-3858-8985 Endpoint: 7d Survival Rate
Analyzed: 03 Mar-23 13:45 Analysis: Nonparametric-Control vs Treatments
CETIS Version: CETISv1.9.4
Status Level: 1

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
23		1.0000	0.7000	1.0000	1.0000
33		1.0000	1.0000	1.0000	1.0000
48		1.0000	1.0000	1.0000	0.8000
69		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

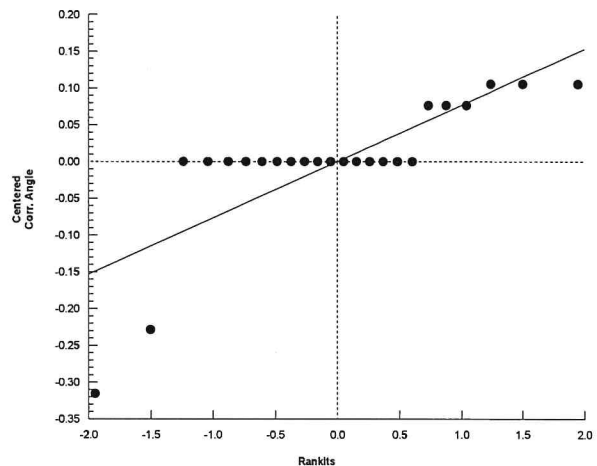
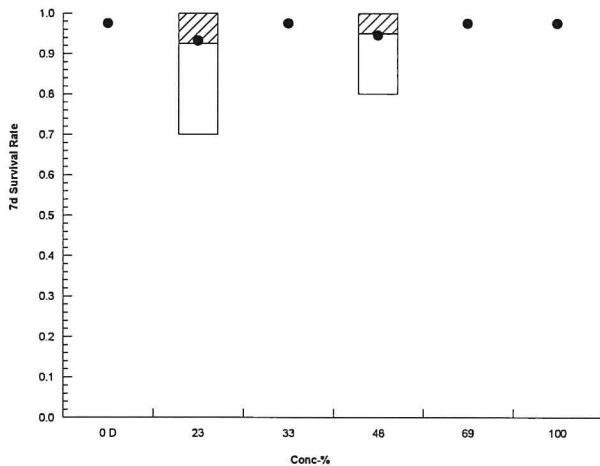
Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
23		1.412	0.9912	1.412	1.412
33		1.412	1.412	1.412	1.412
48		1.412	1.412	1.412	1.107
69		1.412	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

7d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
23		10/10	7/10	10/10	10/10
33		10/10	10/10	10/10	10/10
48		10/10	10/10	10/10	8/10
69		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics



CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 3 of 4)
Test Code/ID: WVA021423-3 / 18-6019-0198

Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 12-6637-7205	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.9.4
Analyzed: 03 Mar-23 13:45	Analysis: Parametric-Control vs Treatments	Status Level: 1
Batch ID: 02-5779-3233	Test Type: Growth-Survival (7d)	Analyst: Lab Tech
Start Date: 14 Feb-23 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 21 Feb-23 12:00	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 48
Sample ID: 00-1258-5132	Code: WVA021423-3	Project: Special Studies
Sample Date: 13 Feb-23 12:39	Material: Riverine Monitoring Sample	Source: 4AROA202.20 (4AROA202.2)
Receipt Date: 14 Feb-23 09:00	CAS (PC):	Station: 13th Street Bridge
Sample Age: 23h	Client: Western Va Water Authority	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	>100	n/a	1	29.47%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	-1.117	2.407	0.165	6	CDF	0.9875	Non-Significant Effect
		33	-0.02546	2.407	0.165	6	CDF	0.8407	Non-Significant Effect
		48	-0.3783	2.407	0.165	6	CDF	0.9208	Non-Significant Effect
		69	0.1346	2.407	0.165	6	CDF	0.7906	Non-Significant Effect
		100	-1.091	2.407	0.165	6	CDF	0.9866	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.5615	0.25	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0297974	0.0059595	5	0.6307	0.6788	Non-Significant Effect
Error	0.170071	0.0094484	18			
Total	0.199869		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	11.44	15.09	0.0433	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9481	0.884	0.2463	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	0.5615	0.456	0.667	0.576	0.471	0.623	0.03316	11.81%	0.00%
23		4	0.6382	0.3486	0.9279	0.5865	0.495	0.885	0.09101	28.52%	-13.67%
33		4	0.5633	0.5273	0.5992	0.5655	0.539	0.583	0.0113	4.01%	-0.31%
48		4	0.5875	0.4811	0.6939	0.5765	0.529	0.668	0.03345	11.39%	-4.63%
69		4	0.5522	0.4734	0.6311	0.5315	0.52	0.626	0.02477	8.97%	1.65%
100		4	0.6365	0.4643	0.8087	0.6115	0.541	0.782	0.05412	17.01%	-13.36%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.556	0.596	0.623	0.471
23		0.666	0.495	0.885	0.507
33		0.549	0.582	0.539	0.583
48		0.668	0.529	0.617	0.536
69		0.535	0.528	0.52	0.626
100		0.782	0.654	0.569	0.541

CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 4 of 4)
Test Code/ID: WVA021423-3 / 18-6019-0198

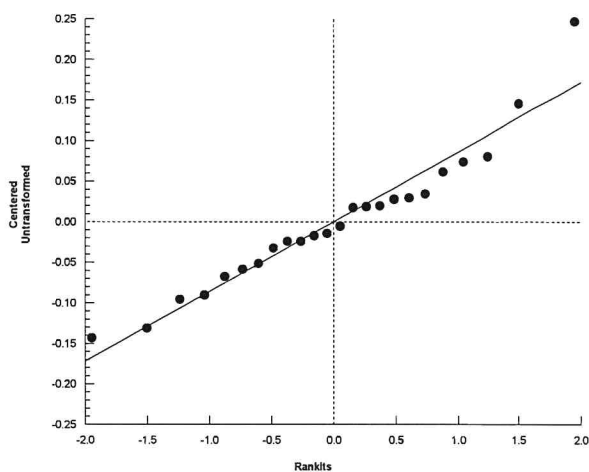
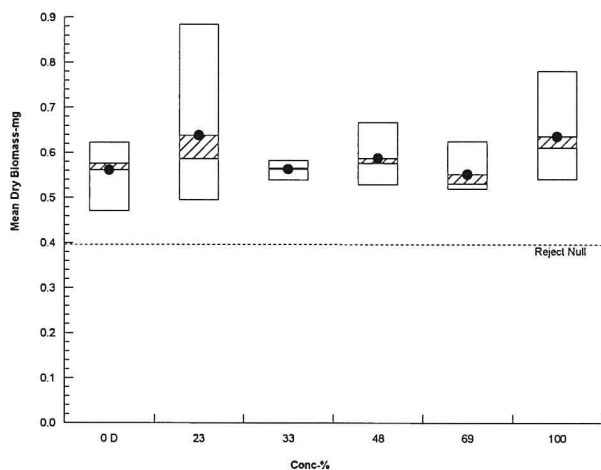
Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 12-6637-7205 Endpoint: Mean Dry Biomass-mg
Analyzed: 03 Mar-23 13:45 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.4
Status Level: 1

Graphics



CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 1 of 2)
Test Code/ID: WVA021423-3 / 18-6019-0198

Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 21-1802-3012	Endpoint: Mean Dry Biomass-mg	CETIS Version: CETISv1.9.4
Analyzed: 03 Mar-23 13:45	Analysis: Linear Interpolation (ICPIN)	Status Level: 1
Batch ID: 02-5779-3233	Test Type: Growth-Survival (7d)	Analyst: Lab Tech
Start Date: 14 Feb-23 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 21 Feb-23 12:00	Species: Pimephales promelas	Brine:
Test Length: 7d 0h	Taxon: Actinopterygii	Source: Aquatic Biosystems, CO Age: 48
Sample ID: 00-1258-5132	Code: WVA021423-3	Project: Special Studies
Sample Date: 13 Feb-23 12:39	Material: Riverine Monitoring Sample	Source: 4AROA202.20 (4AROA202.2)
Receipt Date: 14 Feb-23 09:00	CAS (PC):	Station: 13th Street Bridge
Sample Age: 23h	Client: Western Va Water Authority	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1010220	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	0.5615	0.25	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Mean Dry Biomass-mg Summary

			Calculated Variate							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect		Mean	%Effect
0	D	4	0.5615	0.471	0.623	0.06631	11.81%	0.0%		0.5999	0.0%
23		4	0.6382	0.495	0.885	0.182	28.52%	-13.67%		0.5999	0.0%
33		4	0.5633	0.539	0.583	0.0226	4.01%	-0.31%		0.5849	2.5%
48		4	0.5875	0.529	0.668	0.0669	11.39%	-4.63%		0.5849	2.5%
69		4	0.5522	0.52	0.626	0.04955	8.97%	1.65%		0.5849	2.5%
100		4	0.6365	0.541	0.782	0.1082	17.01%	-13.36%		0.5849	2.5%

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.556	0.596	0.623	0.471
23		0.666	0.495	0.885	0.507
33		0.549	0.582	0.539	0.583
48		0.668	0.529	0.617	0.536
69		0.535	0.528	0.52	0.626
100		0.782	0.654	0.569	0.541

CETIS Analytical Report

Report Date: 03 Mar-23 13:46 (p 2 of 2)
Test Code/ID: WVA021423-3 / 18-6019-0198

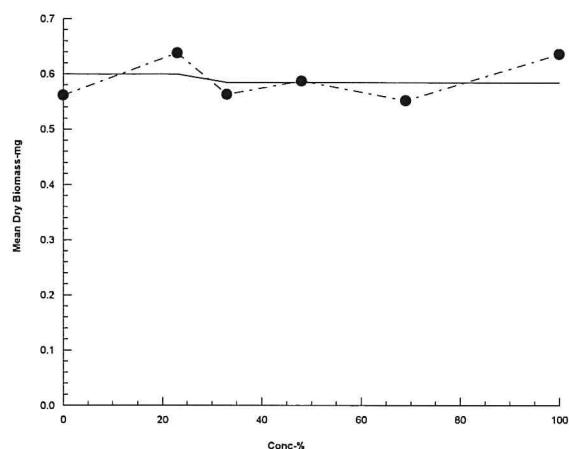
Fathead Minnow 7-d Larval Survival and Growth Test

Biological Monitoring, Inc.

Analysis ID: 21-1802-3012 Endpoint: Mean Dry Biomass-mg
Analyzed: 03 Mar-23 13:45 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.9.4
Status Level: 1

Graphics



Chronic Toxicity Test
(Ceriodaphnia dubia)

Page 1 of 5

Experiment I.D.# WVAC21423-4
 Biologist(s): JR PR WB VF MH
 Permit # 4AR0A202.20
 Client: WVWA
 Effluent toxicant: 13th Street
 Sample Type: Grab Composite
 Sample Chlorine: 0.06
 Dilution Water Used MHRW
 Feeding Schedule: 0.1 ml YCT and Rs Daily
 Aeration: None
 Template #: 13

Start of Test Date: 2/14/23 Time: 1500
 End of Test Date: 2/20/23 Time: 1500
 Test Duration: 3 Broods
 Test Temperature: 25 +/- 1 deg C
 Test Volume: 15 ml
 Test Containers Used: 30 ml PS
 Renewal Frequency: Daily
 Test Organism Age: 17-23 hrs.
 Organism Batch #: 020723 (1600-2200)
 Organisms per concentration: 10
 Waterbath/Shelf #: 8

SAMPLE COLLECTION							
Date(s)		Time(s)		TEST RENEWAL			
From:	To:	From:	To:	Date(s)	Time(s)	Test Day	Diluent Batch #:
2/13/23	—	1239	—	2/14/23	1500	0	8391
				2/15/23	1505	1	8391
				2/16/23	1515	2	8399
				2/17/23	1455	3	8399
				2/18/23	1500	4	8402
				2/19/23	1520	5	8402
						6	

Food Batch/Days Used: YCT 011323 0-5 Algae 020723 0-2
 YCT — Algae 021423 3-5

Meters: Instrument Id#: 077 Temp.: 061 pH: 061
 DO: 061 Conductivity/Salinity: 061

Condition of Organisms at End of Test: Normal
 Control Survival (%): 100 Average # Young/Female: 35.2
 Percent control female with 3 broods (%): 100
 Comments: _____

Experiment ID: WVA021423-4

Conc: Units	Day	A	B	C	D	E	F	G	H	I	J	# Young	# Adults	# Males	Init.
%	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	5	4	0	0	0	0	5	0	4	4	26	10	0	PR
	4	1↑	0	4	5	7	7	0	5	0	1↑	32	10	0	PR
	5	9	13	11	14	16	12	15	11	12	12	125	10	0	PR
	6	20	12	16	18	15	17	21	14	18	18	169	10	0	PR
	7														
0	Total	35	31	33	37	38	36	41	30	34	37	352	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	0	7	0	0	0	0	0	0	0	6	13	10	0	PR
	4	4	1↑	7	6	4	5	4	5	7	0	49	10	0	PR
	5	7	15	12	12	16	11	13	8	12	14	120	10	0	PR
	6	18	10	22	14	14	15	19	18	17	21	168	10	0	PR
23 ① 6.25	7														
	Total	31	33	41	32	36	31	38	31	36	41	350	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	7	0	0	0	0	6	4	5	7	5	36	10	0	PR
	4	0	5	7	4	5	0	0	0	0	0	23	10	0	PR
	5	9	12	12	15	14	10	11	14	9	14	122	10	0	PR
33 ① 12.5	6	11	19	15	16	22	24	18	19	19	18	181	10	0	PR
	7														
	Total	27	36	34	37	41	40	35	38	35	39	362	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	7	0	0	0	0	6	4	5	7	5	36	10	0	PR
	4	0	5	7	4	5	0	0	0	0	0	23	10	0	PR
① 12.5	5	9	12	12	15	14	10	11	14	9	14	122	10	0	PR
	6	11	19	15	16	22	24	18	19	19	18	181	10	0	PR
	7														
	Total	27	36	34	37	41	40	35	38	35	39	362	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	7	0	0	0	0	6	4	5	7	5	36	10	0	PR

① WVD 3/3/23

Experiment ID: WVA02423-4

Conc: Units	Day	A	B	C	D	E	F	G	H	I	J	# Young	# Adults	# Males	Init.
48 1025	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	0	4	4	7	0	0	5	6	7	0	35	10	0	PR
	4	4	0	0	0	7	6	0	0	0	7	26	10	0	PR
	5	10	14	11	16	13	0	13	12	14	14	117	10	0	PR
	6	0	17	22	21	15	18	18	19	15	19	164	10	0	PR
	7														
69 150	Total	16	35	39	44	35	24	36	37	36	40	342	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	0	0	7	0	5	0	5	5	0	4	28	10	0	PR
	4	7	5	0	4	0	6	0	0	7	0	31	10	0	PR
	5	12	13	15	11	16	10	12	13	13	14	129	10	0	PR
	6	20	15	23	18	12	14	16	19	17	18	184	10	0	PR
100	7														
	Total	39	33	45	35	43	32	33	37	37	38	372	10	0	PR
	1	0	0	0	0	0	0	0	0	0	0	0	10		PR
	2	0	0	0	0	0	0	0	0	0	0	0	10		PR
	3	7	6	0	8	9	0	5	0	7	0	33	10	0	PR
	4	0	0	7	0	6	5	0	7	0	7	32	10	0	PR
	5	13	15	10	9	18	12	15	13	10	14	131	10	0	PR
100	6	14	14	19	12	16	20	11	18	19	19	164	10	0	PR
	7														
	Total	34	37	36	29	40	37	31	38	36	42	360	10	0	PR

WVA02423

Experiment ID: WUA021423-4

Conc: Units	Day	Temperature (C)		Dissolved Oxygen (mg/L)		pH		Cond. (umhos)	Alkalinity (mg/L CaCO ₃)	Hardness (mg/L CaCO ₃)	Food	Init.
		Before	After	Before	After	Before	After					
%	0		25		7.43		8.03	325	62	94	✓	WD
	1	25	25	8.01	8.45	8.06	8.04	322			✓	WD
	2	25	25	8.12	7.73	8.12	8.04	303	62	86	✓	WD
	3	25	25	7.91	7.76	8.07	7.94	305			✓	WD
	4	25	25	7.82	8.56	7.99	8.08	307	64	84	✓	WD
	5	25	25	8.26	8.28	8.06	8.21	305			✓	PSL
	6	25		8.22		8.24						PSL
	7											
23 06.25	0		25		7.48		8.06	289			✓	WD
	1	25	25	8.16	8.49	8.02	8.06	298			✓	WD
	2	25	25	8.19	7.68	8.13	8.08	277			✓	WD
	3	25	25	7.79	7.98	8.04	8.05	274			✓	WD
	4	25	25	7.99	8.47	8.06	8.12	281			✓	WD
	5	25	25	8.22	8.27	8.09	8.17	278			✓	PSL
	6	25		8.18		8.18						PSL
	7											
33 12.5	0		25		7.59		8.06	274			✓	WD
	1	25	25	8.18	8.29	8.01	8.04	277			✓	WD
	2	25	25	8.24	7.85	8.10	8.09	264			✓	WD
	3	25	25	7.75	8.18	8.02	8.06	258			✓	WD
	4	25	25	8.11	8.30	8.07	8.12	263			✓	WD
	5	25	25	8.31	8.24	8.10	8.18	264			✓	PSL
	6	25		8.16		8.18						PSL
	7											

(1) WUA 316/23

Experiment ID: WV1021423.4

Conc: Units	Day	Temperature (C)		Dissolved Oxygen (mg/L)		pH		Cond. (umhos)	Alkalinity (mg/L CaCO ₃)	Hardness (mg/L CaCO ₃)	Food	Init.
		Before	After	Before	After	Before	After					
% 48 ① 25	0		25		7.80		8.05	252			✓	WD
	1	25	25	8.12	8.47	8.03	8.06	252			✓	WD
	2	25	25	8.29	8.05	8.09	8.09	242			✓	WD
	3	25	25	7.71	8.19	8.06	8.08	242			✓	WD
	4	25	25	8.26	8.26	8.10	8.12	242			✓	WD
	5	25	25	8.32	8.24	8.12	8.17	244			✓	PL
	6	25		8.11		8.14						PL
69 ① 50	7											
	0		25		7.87		8.06	220			✓	WD
	1	25	25	8.09	8.51	8.08	8.05	224			✓	WD
	2	25	25	8.32	7.87	8.06	8.08	219			✓	WD
	3	25	25	7.70	8.37	8.11	8.07	219			✓	WD
	4	25	25	8.44	8.32	8.14	8.13	216			✓	WD
	5	25	25	8.39	7.83	8.13	8.16	216			✓	PL
100	6	25		7.98		8.11						PL
	7											
	0		25		8.01		8.04	170	70	80	✓	WD
	1	25	25	8.03	8.60	8.12	8.05	177			✓	WD
	2	25	25	8.33	7.38	8.05	8.10	175			✓	WD
	3	25	25	7.54	8.73	8.14	8.05	174			✓	WD
	4	25	25	8.63	8.53	8.12	8.13	173			✓	WD
	5	25	25	8.44	7.81	8.14	8.17	175			✓	PL
	6	25		7.91		8.06						PL
	7											

CETIS Analytical Report

Report Date: 06 Mar-23 10:58 (p 1 of 2)
Test Code/ID: WVA021423-4 / 12-6734-8396

Ceriodaphnia 7-d Survival and Reproduction Test

Biological Monitoring, Inc.

Analysis ID: 08-5817-1176	Endpoint: 6d Survival Rate	CETIS Version: CETISv1.9.4
Analyzed: 06 Mar-23 10:58	Analysis: STP 2xK Contingency Tables	Status Level: 1
Batch ID: 13-3338-4784	Test Type: Reproduction-Survival (7d)	Analyst: Lab Tech
Start Date: 14 Feb-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 20 Feb-23 15:00	Species: Ceriodaphnia dubia	Brine:
Test Length: 6d 0h	Taxon: Branchiopoda	Source: In-House Culture Age: 24
Sample ID: 01-0228-6754	Code: WVA021423-2	Project: Special Studies
Sample Date: 13 Feb-23 12:39	Material: Riverine Monitoring Sample	Source: 4AROA202.20 (4AROA202.2)
Receipt Date: 14 Feb-23 09:00	CAS (PC):	Station: 13th Street Bridge
Sample Age: 26h	Client: Western Va Water Authority	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	>100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	1.0000	Exact	1.0000	Non-Significant Effect
		33	1.0000	Exact	1.0000	Non-Significant Effect
		48	1.0000	Exact	1.0000	Non-Significant Effect
		69	1.0000	Exact	1.0000	Non-Significant Effect
		100	1.0000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	10	0	10	1	0	0.0%
23		10	0	10	1	0	0.0%
33		10	0	10	1	0	0.0%
48		10	0	10	1	0	0.0%
69		10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
23		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
33		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
48		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
69		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
23		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
33		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
48		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
69		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 06 Mar-23 10:59 (p 2 of 2)

Test Code/ID: WVA021423-4 / 12-6734-8396

Ceriodaphnia 7-d Survival and Reproduction Test

Biological Monitoring, Inc.

Analysis ID: 08-5817-1176

Endpoint: 6d Survival Rate

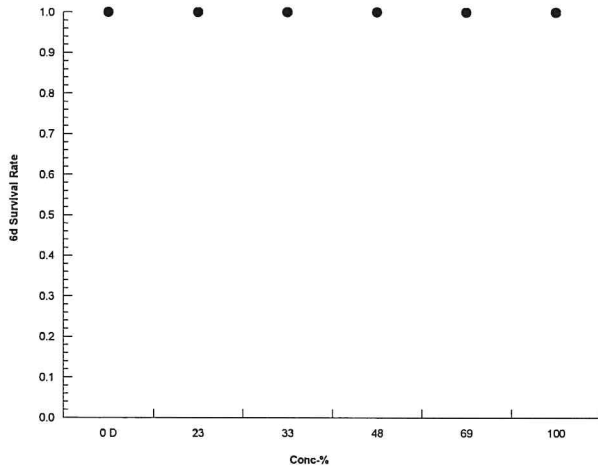
CETIS Version: CETISv1.9.4

Analyzed: 06 Mar-23 10:58

Analysis: STP 2xK Contingency Tables

Status Level: 1

Graphics



CETIS Analytical Report

Report Date: 06 Mar-23 10:58 (p 1 of 2)
Test Code/ID: WVA021423-4 / 12-6734-8396

Ceriodaphnia 7-d Survival and Reproduction Test

Biological Monitoring, Inc.

Analysis ID: 18-8202-0499	Endpoint: Reproduction	CETIS Version: CETISv1.9.4
Analyzed: 06 Mar-23 10:58	Analysis: Nonparametric-Control vs Treatments	Status Level: 1
Batch ID: 13-3338-4784	Test Type: Reproduction-Survival (7d)	Analyst: Lab Tech
Start Date: 14 Feb-23 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Mod-Hard Synthetic Water
Ending Date: 20 Feb-23 15:00	Species: Ceriodaphnia dubia	Brine:
Test Length: 6d 0h	Taxon: Branchiopoda	Source: In-House Culture Age: 24
Sample ID: 01-0228-6754	Code: WVA021423-2	Project: Special Studies
Sample Date: 13 Feb-23 12:39	Material: Riverine Monitoring Sample	Source: 4AROA202.20 (4AROA202.2)
Receipt Date: 14 Feb-23 09:00	CAS (PC):	Station: 13th Street Bridge
Sample Age: 26h	Client: Western Va Water Authority	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	>100	n/a	1	14.22%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	102.5	75	5	18	CDF	0.7709	Non-Significant Effect
		33	116	75	6	18	CDF	0.9754	Non-Significant Effect
		48	110	75	3	18	CDF	0.9223	Non-Significant Effect
		69	118	75	4	18	CDF	0.9843	Non-Significant Effect
		100	112.5	75	5	18	CDF	0.9503	Non-Significant Effect

Test Acceptability Criteria

TAC Limits

Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control Resp	35.2	15	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	55.5333	11.1067	5	0.4648	0.8007	Non-Significant Effect
Error	1290.4	23.8963	54			
Total	1345.93		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	11.01	15.09	0.0511	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9417	0.9459	0.0064	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	35.2	32.82	37.58	35.5	30	41	1.052	9.45%	0.00%
23		10	35	32.14	37.86	34.5	31	41	1.265	11.43%	0.57%
33		10	36.2	33.36	39.04	36.5	27	41	1.254	10.96%	-2.84%
48		10	34.2	28.34	40.06	36	16	44	2.59	23.95%	2.84%
69		10	37.2	34.13	40.27	37	32	45	1.356	11.53%	-5.68%
100		10	36	33.22	38.78	36.5	29	42	1.229	10.80%	-2.27%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	35	31	33	37	38	36	41	30	34	37
23		31	33	41	32	36	31	38	31	36	41
33		27	36	34	37	41	40	35	38	35	39
48		16	35	39	44	35	24	36	37	36	40
69		39	33	45	35	43	32	33	37	37	38
100		34	37	36	29	40	37	31	38	36	42

Ceriodaphnia 7-d Survival and Reproduction Test

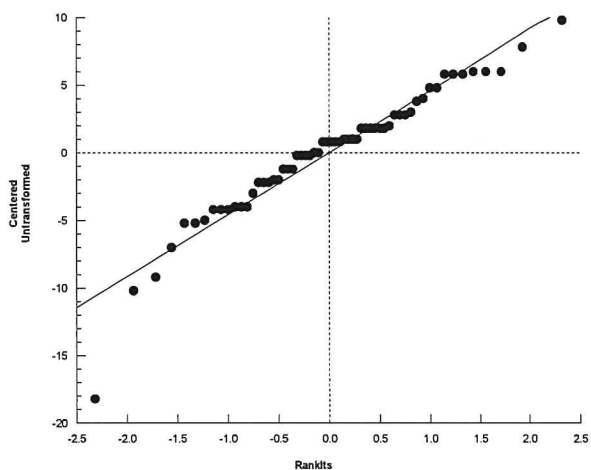
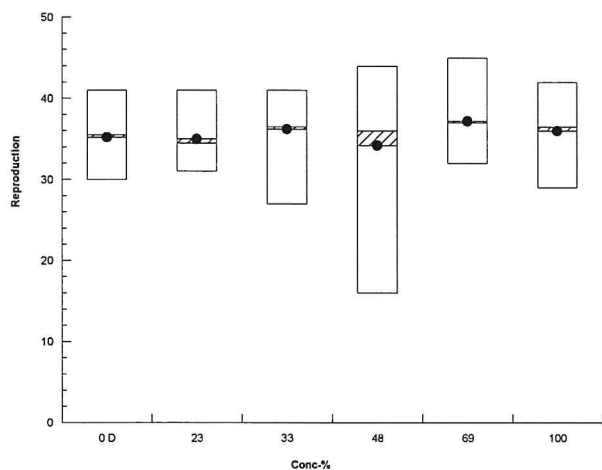
Biological Monitoring, Inc.

Analysis ID: 18-8202-0499
 Analyzed: 06 Mar-23 10:58

Endpoint: Reproduction
 Analysis: Nonparametric-Control vs Treatments

CETIS Version: CETISv1.9.4
 Status Level: 1

Graphics



CETIS Analytical Report

Report Date: 06 Mar-23 10:58 (p 1 of 2)
Test Code/ID: WVA021423-4 / 12-6734-8396

Ceriodaphnia 7-d Survival and Reproduction Test				Biological Monitoring, Inc.	
Analysis ID:	16-0681-7962	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.4
Analyzed:	06 Mar-23 10:58	Analysis:	Linear Interpolation (ICPIN)	Status Level:	1
Batch ID:	13-3338-4784	Test Type:	Reproduction-Survival (7d)	Analyst:	Lab Tech
Start Date:	14 Feb-23 15:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Mod-Hard Synthetic Water
Ending Date:	20 Feb-23 15:00	Species:	Ceriodaphnia dubia	Brine:	
Test Length:	6d 0h	Taxon:	Branchiopoda	Source:	In-House Culture
					Age: 24
Sample ID:	01-0228-6754	Code:	WVA021423-2	Project:	Special Studies
Sample Date:	13 Feb-23 12:39	Material:	Riverine Monitoring Sample	Source:	4AROA202.20 (4AROA202.2)
Receipt Date:	14 Feb-23 09:00	CAS (PC):		Station:	13th Street Bridge
Sample Age:	26h	Client:	Western Va Water Authority		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	621317	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits		Overlap	Decision
Attribute	Test Stat	Lower	Upper		
Control Resp	35.2	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	n/a	n/a	<1	n/a	n/a
IC10	>100	n/a	n/a	<1	n/a	n/a
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Reproduction Summary

			Calculated Variate						Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	Mean	%Effect
0	D	10	35.2	30	41	3.327	9.45%	0.0%	35.63	0.0%
23		10	35	31	41	4	11.43%	0.57%	35.63	0.0%
33		10	36.2	27	41	3.967	10.96%	-2.84%	35.63	0.0%
48		10	34.2	16	44	8.189	23.95%	2.84%	35.63	0.0%
69		10	37.2	32	45	4.29	11.53%	-5.68%	35.63	0.0%
100		10	36	29	42	3.887	10.80%	-2.27%	35.63	0.0%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	35	31	33	37	38	36	41	30	34	37
23		31	33	41	32	36	31	38	31	36	41
33		27	36	34	37	41	40	35	38	35	39
48		16	35	39	44	35	24	36	37	36	40
69		39	33	45	35	43	32	33	37	37	38
100		34	37	36	29	40	37	31	38	36	42

CETIS Analytical Report

Report Date: 06 Mar-23 10:58 (p 2 of 2)

Test Code/ID: WVA021423-4 / 12-6734-8396

Ceriodaphnia 7-d Survival and Reproduction Test

Biological Monitoring, Inc.

Analysis ID: 16-0681-7962

Endpoint: Reproduction

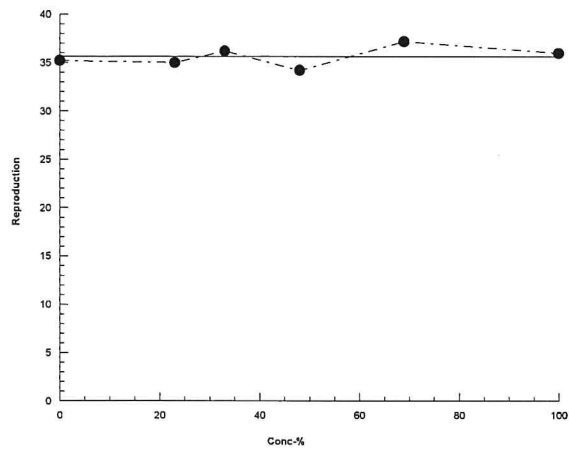
CETIS Version: CETISv1.9.4

Analyzed: 06 Mar-23 10:58

Analysis: Linear Interpolation (ICPIN)

Status Level: 1

Graphics



202



NELAC ACCREDITED LAB # 460015

Sample Collection – Chain of Custody Form

Lab Sample ID
(Lab Use Only)

W	V	A	0	2	1	A	2	3	-	2
---	---	---	---	---	---	---	---	---	---	---

General Information

Client WVWA Contact Name/Phone # (540) 266-2835

NPDES Permit # 4AR0A20220 Outfall Name/# 13th Street

Sample Chlorinated? _____ Dechlorinated? _____

Should BMI Dechlorinate Sample? _____

Sampling Information



Grab Sample _____ Date 02-13-23 Time 1239 Volume 10 gal



Composite Sample Type _____ Time _____ Flow _____

Composite Start Date _____ Composite Start Time _____

Composite End Date _____ Composite End Time _____

Sub-samples _____ Frequency _____ Volume _____

Field Measurements

Temp at Collection Point	Temp In Collection Device	pH	Chlorine	Date/Time	Initials

Custody Information

Relinquished By	Date	Time	Received By	Date	Time
<u>Eric Powers</u>	<u>2/13/23</u>	<u>1550</u>	<u>WVWA</u>	<u>2/13/23</u>	<u>1550</u>

Eric Powers / WVWA
Printed Name/Affiliation

Eric Powers
Signature

2/13/23
Date

Sample Check In (Lab Use Only)

Temperature 4.6 pH 8.10 Chlorine 0.06 DO 9.05 Conductivity/Salinity 170

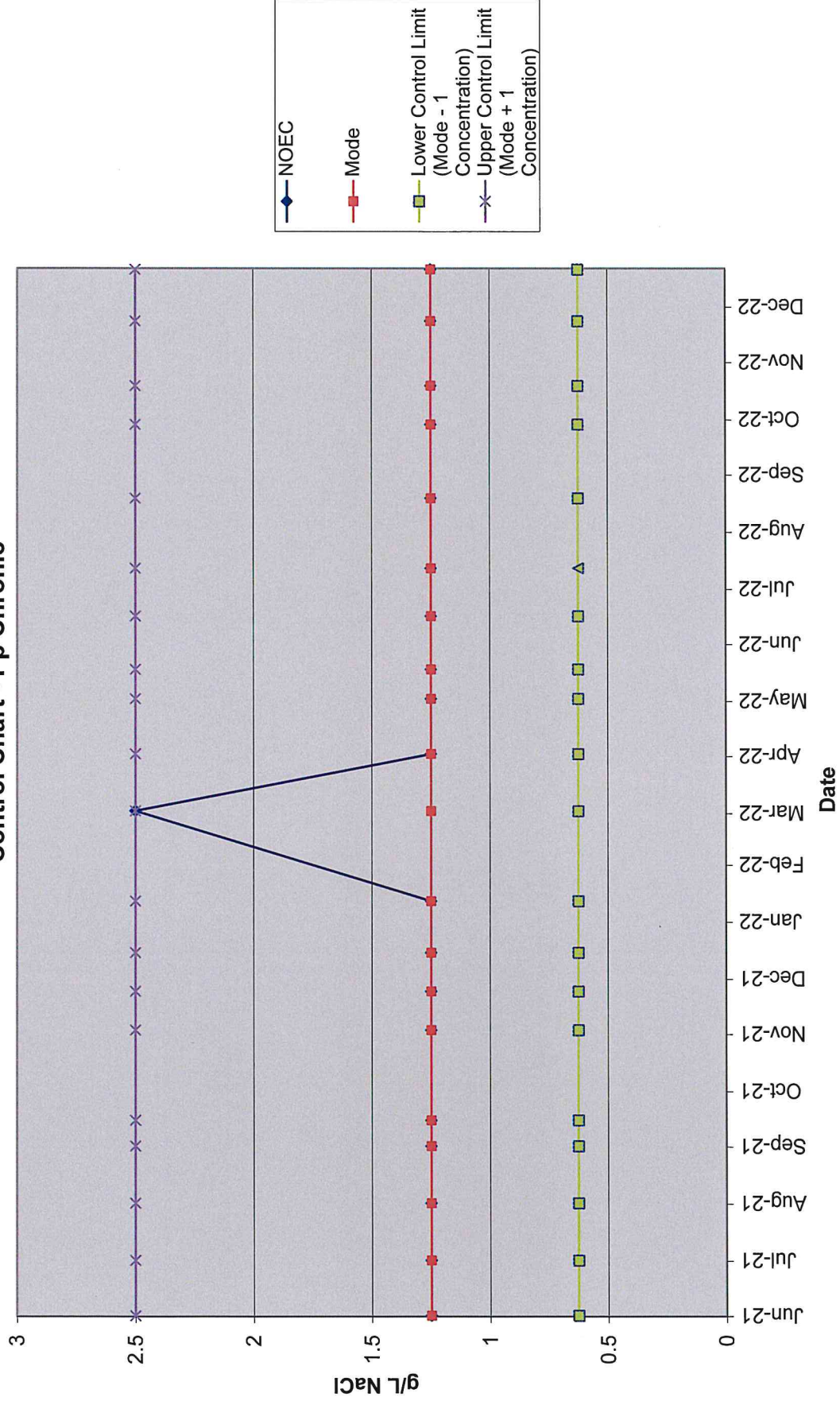
On Ice? ☒ Custody Seal? No Alkalinity 70 Hardness 80

Visual Description Tan, Turbid Odor None

Ammonia (NH₃-N) 0.16 Initials WVWA Date/Time 2/14/23 0900

Biological Monitoring, Inc.

Control Chart - Pp Chronic



Biological Monitoring, Inc.

Control Chart - Cd Chronic

