Toxicity Tests
For
Western Virginia Water Authority

Report # 3111

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
Fax: 540-951-1481

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

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 #** **4AROA198.08** **Sample** Explore Park

Test ID WVA021423-1 **Result** NOEC = 100, IC25 > 100 **Pass/Fail** NA **Next Step** NA

Test ID WVA021423-2 **Result** NOEC = 100, IC25 > 100 **Pass/Fail** NA **Next Step** NA

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Certificate of Analysis

Client	**Western Virginia Water Authority**	**Report #**	**3111**
BMI Project #	**4268**	**Report Date**	**Mar 6, 2023**
Permit #	**4AROA198.08**	**Sample ID #s**	**WVA021423-1**
Sample	**Explore Park**	**Test ID #**	**WVA021423-1**

Test Type	**Short Term Chronic**			**Organism**	**Pimephales promelas**
Test Start Date	**Feb 14, 2023**	**Test Start Time**	**1230**	**EPA Method #**	**1000**
Test End Date	**Feb 21, 2023**	**Test End Time**	**1230**	**Photoperiod**	**16h L/8h D**

Endpoint	Survival	**Method**	Steel's Many-One Rank Tes	**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**	21.80%

Final Result NOEC = 100, IC25 > 100, TUc = 1 **Pass/Fail** NA

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Certificate of Analysis

Client	**Western Virginia Water Authority**	**Report #**	**3111**
BMI Project #	**4268**	**Report Date**	**Mar 6, 2023**
Permit #	**4AROA198.08**	**Sample ID #s**	**WVA021423-1**
Sample	**Explore Park**	**Test ID #**	**WVA021423-2**

Test Type	**Short Term Chronic**			**Organism**	**Ceriodaphnia dubia**
Test Start Date	**Feb 14, 2023**	**Test Start Time**	**1430**	**EPA Method #**	**1002**
Test End Date	**Feb 20, 2023**	**Test End Time**	**1430**	**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**	Dunnett's Test	**Result**	NOEC = 100
Endpoint	Reproduction	**Method**	Linear Interpolation	**Result**	IC25 > 100
Endpoint	Reproduction	**Method**	PMSD	**Result**	16.30%

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

Pass/Fail NA

Chronic Toxicity Test
(*Pimephales promelas*)

Experiment I.D.# WVA021423-1
Biologist(s): JR PR VF MH WB
Permit # 4AROA198.08
Client: WVWA
Effluent toxicant: Explore Park
Sample Type: (Grab) Composite
Sample Chlorine: 0.06
Dilution Water Used MHRW
Feeding Schedule: 0.15 ml Artemia 2x Daily
Aeration: None
Template #: 4x6Even

Start of Test Date: 2/14/23 Time: 1230
End of Test Date: 2/21/23 Time: 1230
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: 24-48h
Organism Batch #: ABS021423
Organisms per concentration: 40
Waterbath/Shelf #: 7

SAMPLE COLLECTION				TEST RENEWAL			
Date(s)		Time(s)					
From:	To:	From:	To:	Date(s)	Time(s)	Test Day	Diluent Batch #:
2/13/23	—	1326	—	2/14/23	1230	0	8391
				2/15/23	1230	1	8391
				2/16/23	1230	2	8399
				2/17/23	1200	3	8399
				2/18/23	1200	4	8402
				2/19/23	1300	5	8402
				2/20/23	1230	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: 0.681 mg Control Survival (%): 97.5

Comments:

Experiment ID: WVA021423-1

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		7.58		8.05	~~64~~ 62	~~86~~ 94	356		25		✓		WD
	1	10	10	10	10	6.04	8.59	7.85	8.00			325	25	25	✓	✓		WD
	2	10	10	10	10	7.69	7.76	8.00	8.01	62	86	304	25	25	✓	✓		WD
	3	10	10	10	10	~~7.51~~ 7.51	7.64	7.94	8.08			303	25	25	✓	✓		WD
0	4	10	9 ③	10	10	7.85	8.35	8.03	8.08	64	84	309	25	25	✓	✓		WD
	5	10	9	10	10	7.19	7.92	7.96	8.29			305	25	25	✓	✓		WD
	6	10	9	10	10	6.94	7.50	8.05	8.16	64	84	317	25	25	✓	✓		WD
	7	10	9	10	10	8.98		7.97					25		No Food			WD
	0	10	10	10	10		7.75		8.06			294		25		✓		WD
	1	10	10	10	10	6.26	8.65	7.89	8.04			296	25	25	✓	✓		WD
	2	10	10	10	10	7.85	7.89	8.01	8.10			282	25	25	✓	✓		WD
.23	3	10	10	10	10	7.64	7.78	7.98	8.09			279	25	25	✓	✓		WD
① ~~6.25~~	4	10	10	10	10	8.00	8.54	8.02	8.12			271	25	25	✓	✓		WD
	5	9	9	10	10	7.29	7.94	8.07	8.27			280	25	25	✓	✓		WD
	6	9	9	10	10	6.90	7.33	8.04	8.13			278	25	25	✓	✓		WD
	7	9	9	10	10	9.05		7.96					25		No Food			WD
	0	10	10	10	10		7.77		8.05			280		25		✓		WD
	1	10	10	10	10	5.91	8.61	7.85	8.03			278	25	25	✓	✓		WD
	2	10	10	10	10	7.95	7.91	8.00	8.10			267	25	25	✓	✓		WD
33	3	10	10	10	10	7.63	7.83	7.99	8.10			267	25	25	✓	✓		WD
① ~~12.5~~	4	10	10	10	10	7.96	8.59	7.96	8.12			284	25	25	✓	✓		WD
	5	10	10	10	10	7.12	8.01	8.03	8.25			268	25	25	✓	✓		WD
	6	10	10	10	10	6.95	7.35	8.06	8.12			268	25	25	✓	✓		WD
	7	10	10	10	10	8.95		7.93					25		No Food			WD

① WD 2/14/23
② WD 2/17/23
③ WD 2/18/23

Experiment ID: WVA021423-1

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		7.91		8.04			260		25		✓		MH
	1	10	10	10	10	5.72	8.62	7.81	8.03			261	25	25	✓	✓		WD
	2	10	10	10	10	7.95	7.97	7.99	8.08			248	25	25	✓	✓		WD
48	3	10	10	10	9	7.54	7.93	7.99	8.08			247	25	25	✓	✓		WD
① ~~25~~	4	10	10	10	9	7.98	8.64	8.03	8.11			249	25	25	✓	✓		WD
	5	10	10	10	9	7.13	8.22	8.03	8.21			251	25	25	✓	✓		WD
	6	10	10	10	9	7.02	7.71	8.07	8.13			249	25	25	✓	✓		WD
	7	10	10	10	9	8.94		7.90					25		No Food			WD
	0	10	10	10	10		7.82		8.03			228		25		✓		MH
	1	10	10	10	10	5.57	8.50	7.81	8.04			228	25	25	✓	✓		WD
	2	10	10	10	10	7.77	8.00	8.04	8.08			225	25	25	✓	✓		WD
69	3	10	10	10	10	7.45	8.13	8.00	8.06			230	25	25	✓	✓		WD
① ~~50~~	4	10	10	10	10	7.84	8.72	7.97	8.11			225	25	25	✓	✓		WD
	5	10	10	10	10	6.98	8.10	7.89	8.19			226	25	25	✓	✓		WD
	6	10	10	10	10	7.10	7.83	8.08	8.12			229	25	25	✓	✓		WD
	7	10	10	10	10	9.05		7.98					25		No Food			WD
	0	10	10	10	10		7.87		8.02	74	86	186		25		✓		MH
	1	10	10	10	10	5.44	8.53	7.83	8.02			187	25	25	✓	✓		WD
	2	9	9	10	10	7.53	7.62	8.01	8.11			186	25	25	✓	✓		WD
	3	9	9	9	10	7.42	8.04	7.99	8.05			187	25	25	✓	✓		WD
100	4	9	9	9	10	8.09	8.66	7.99	8.12			188	25	25	✓	✓		WD
	5	9	9	9	10	7.28	8.08	8.00	8.20			190	25	25	✓	✓		WD
	6	9	9	8	9	7.19	7.73	8.13	8.11			193	25	25	✓	✓		WD
	7	9	9	8	9	9.14		8.04					25		No Food			WD

① WD 2/14/23

Weight Data Sheet

Experiment ID: WVA021423-1

Treatment ID	Initial Weight (mg)	Final Weight (mg)	# Larvae	Comments	Initials
0 A	17.79	23.75	10		LW
0 B	17.61	25.25	10		LW
0 C	17.63	24.91	10		LW
0 D	17.85	24.20	10		LW
23 A	17.36	24.71	10		LW
23 B	18.17	25.00	10		LW
23 C	17.45	23.49	10		LW
23 D	17.45	24.47	10		LW
					L
33 A	17.08	23.77	10		LW
33 B	17.30	23.79	10		LW
33 C	17.99	24.65	10		LW
33 D	17.08	23.14	10		LW
48 A	17.36	22.71	10		LW
48 B	17.85	25.83	10		LW
48 C	17.69	25.09	10		LW
48 D	17.54	26.10	10		LW
69 A	18.17	25.29	10		LW
69 B	17.74	25.59	10		LW
69 C	18.02	23.61	10		LW
69 D	17.78	23.84	10		LW
100 A	18.35	25.40	10		LW
100 B	18.09	23.95	10		LW
100 C	17.94	25.58	10		LW
100 D	17.91	24.90	10		LW

CETIS Analytical Report

Test Code/ID: WVA021423-1 / 01-7684-1425

Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	03-6923-5961	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1
Batch ID:	00-8624-1973	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 12:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	21 Feb-23 12:30	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Biosystems, CO **Age:** 48
Sample ID:	13-6676-0295	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
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	7.22%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	16	10	2	6	CDF	0.6105	Non-Significant Effect
		33	20	10	1	6	CDF	0.9516	Non-Significant Effect
		48	18	10	2	6	CDF	0.8333	Non-Significant Effect
		69	20	10	1	6	CDF	0.9516	Non-Significant Effect
		100	11.5	10	1	6	CDF	0.1083	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.975	0.8	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.11028	0.0220559	5	4.871	0.0054	Significant Effect
Error	0.0814994	0.0045277	18			
Total	0.191779		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	6.227	4.248	0.0016	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1.22	4.248	0.3399	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8409	0.884	0.0015	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	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
23		4	0.9500	0.8581	1.0000	0.9500	0.9000	1.0000	0.0289	6.08%	2.56%
33		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-2.56%
48		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	0.00%
69		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	-2.56%
100		4	0.8750	0.7954	0.9546	0.9000	0.8000	0.9000	0.0250	5.71%	10.26%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%
23		4	1.331	1.181	1.48	1.331	1.249	1.412	0.04705	7.07%	2.97%
33		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	-2.97%
48		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	0.00%
69		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	-2.97%
100		4	1.214	1.101	1.326	1.249	1.107	1.249	0.03547	5.85%	11.50%

Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	03-6923-5961	**Endpoint:**	7d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

7d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	0.9000	1.0000	1.0000
23		0.9000	0.9000	1.0000	1.0000
33		1.0000	1.0000	1.0000	1.0000
48		1.0000	1.0000	1.0000	0.9000
69		1.0000	1.0000	1.0000	1.0000
100		0.9000	0.9000	0.8000	0.9000

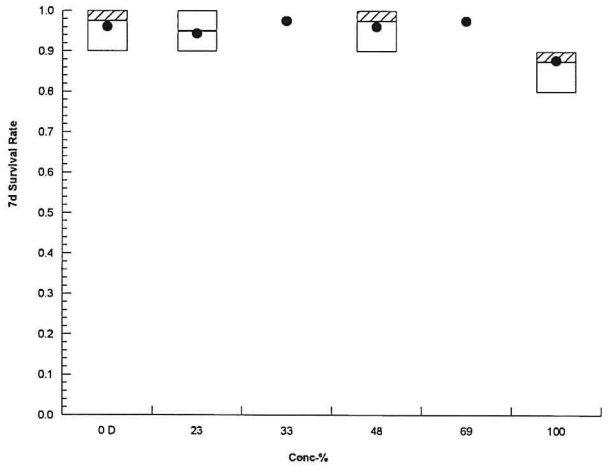
Angular (Corrected) Transformed Detail

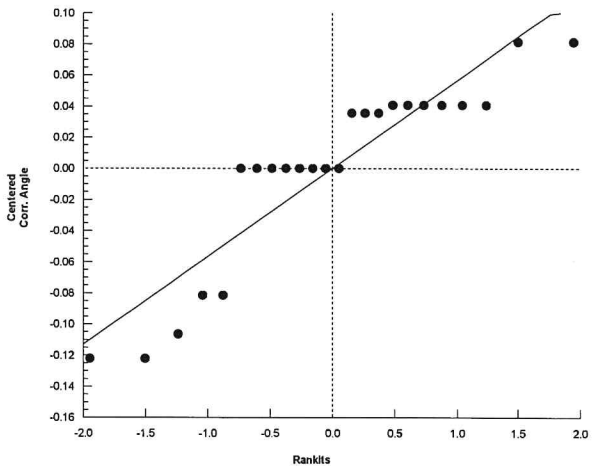
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.249	1.412	1.412
23		1.249	1.249	1.412	1.412
33		1.412	1.412	1.412	1.412
48		1.412	1.412	1.412	1.249
69		1.412	1.412	1.412	1.412
100		1.249	1.249	1.107	1.249

7d Survival Rate Binomials

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

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	19-7101-4739	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Batch ID:	00-8624-1973	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 12:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	21 Feb-23 12:30	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Biosystems, CO **Age:** 48
Sample ID:	13-6676-0295	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
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	21.80%

Dunnett Multiple Comparison Test

Control vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water	23	-0.004054	2.407	0.148	6	CDF	0.8345	Non-Significant Effect
	33	0.5394	2.407	0.148	6	CDF	0.6303	Non-Significant Effect
	48	-0.8355	2.407	0.148	6	CDF	0.9733	Non-Significant Effect
	69	0.2474	2.407	0.148	6	CDF	0.7503	Non-Significant Effect
	100	-0.1257	2.407	0.148	6	CDF	0.8677	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6808	0.25	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0161213	0.0032243	5	0.4243	0.8257	Non-Significant Effect
Error	0.136777	0.0075987	18			
Total	0.152898		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	6.279	15.09	0.2800	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.96	0.884	0.4380	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	0.6807	0.556	0.8055	0.6815	0.596	0.764	0.0392	11.52%	0.00%
23		4	0.681	0.5925	0.7695	0.6925	0.604	0.735	0.02782	8.17%	-0.04%
33		4	0.6475	0.6013	0.6937	0.6575	0.606	0.669	0.01452	4.48%	4.88%
48		4	0.7322	0.5098	0.9547	0.769	0.535	0.856	0.06988	19.09%	-7.57%
69		4	0.6655	0.5029	0.8281	0.659	0.559	0.785	0.05109	15.35%	2.24%
100		4	0.6885	0.5702	0.8068	0.702	0.586	0.764	0.03718	10.80%	-1.14%

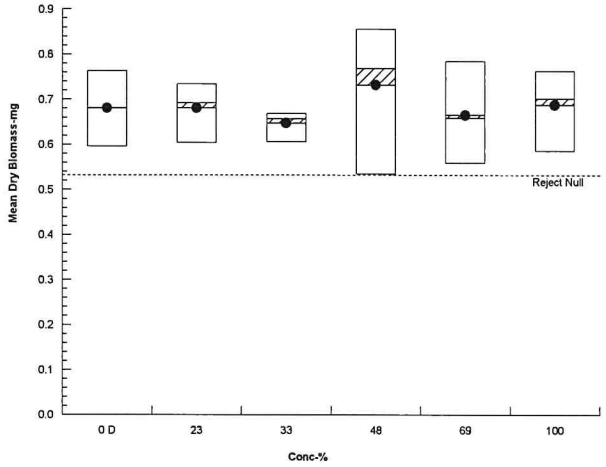
Mean Dry Biomass-mg Detail

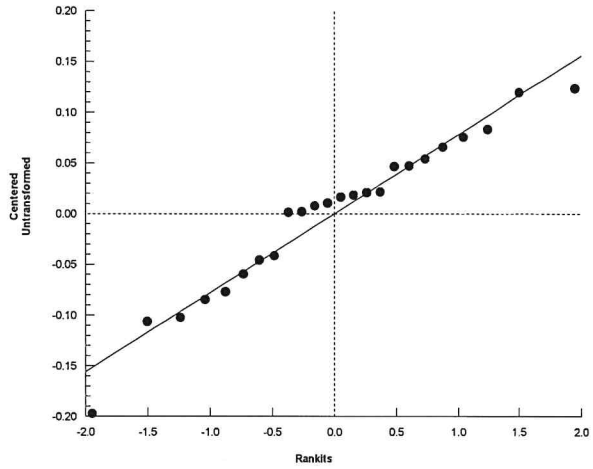
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.596	0.764	0.728	0.635
23		0.735	0.683	0.604	0.702
33		0.669	0.649	0.666	0.606
48		0.535	0.798	0.74	0.856
69		0.712	0.785	0.559	0.606
100		0.705	0.586	0.764	0.699

Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	19-7101-4739	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Graphics





CETIS Analytical Report

Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	02-0471-9045	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Batch ID:	00-8624-1973	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 12:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	21 Feb-23 12:30	**Species:**	Pimephales promelas	**Brine:**	
Test Length:	7d 0h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Biosystems, CO **Age:** 48
Sample ID:	13-6676-0295	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
Sample Age:	23h	**Client:**	Western Va Water Authority		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	731614	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	0.6808	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	0.6807	0.596	0.764	0.0784	11.52%	0.0%	0.6854	0.0%
23		4	0.681	0.604	0.735	0.05565	8.17%	-0.04%	0.6854	0.0%
33		4	0.6475	0.606	0.669	0.02903	4.48%	4.88%	0.6854	0.0%
48		4	0.7322	0.535	0.856	0.1398	19.09%	-7.57%	0.6854	0.0%
69		4	0.6655	0.559	0.785	0.1022	15.35%	2.24%	0.677	1.22%
100		4	0.6885	0.586	0.764	0.07436	10.80%	-1.14%	0.677	1.22%

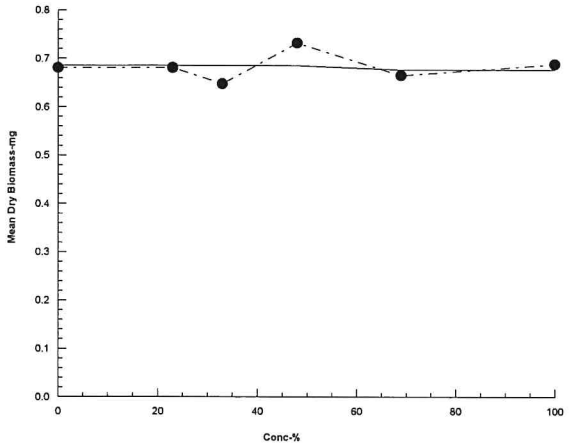
Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	0.596	0.764	0.728	0.635
23		0.735	0.683	0.604	0.702
33		0.669	0.649	0.666	0.606
48		0.535	0.798	0.74	0.856
69		0.712	0.785	0.559	0.606
100		0.705	0.586	0.764	0.699

Fathead Minnow 7-d Larval Survival and Growth Test — **Biological Monitoring, Inc.**

Analysis ID:	02-0471-9045	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.4
Analyzed:	03 Mar-23 11:36	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



Chronic Toxicity Test

(*Ceriodaphnia dubia*)

Experiment I.D.# WVA021423-1,2 (1)

Biologist(s): JR PR WB VF MH

Permit # 4AROA198.08

Client: WVWA

Effluent toxicant: Explore Park

Sample Type: ~~Grab~~ Composite

Sample Chlorine: 0.06

Dilution Water Used MHRW

Feeding Schedule: 0.1 ml YCT and Rs Daily

Aeration: None

Template #: 8

Start of Test Date: 2/14/23 Time: 1430

End of Test Date: 2/20/23 Time: 1430

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: 16.5 - 22.5 hrs.

Organism Batch #: 020723 (1600-2200)

Organisms per concentration: 10

Waterbath/Shelf #: 8

SAMPLE COLLECTION				TEST RENEWAL			
Date(s)		Time(s)					
From:	To:	From:	To:	Date(s)	Time(s)	Test Day	Diluent Batch #:
2/13/23	—	1326	—	2/14/23	1430	0	8391
				2/15/23	1430	1	8391
				2/16/23	1440	2	8399
				2/17/23	1425	3	8399
				2/18/23	1430	4	8402
				2/19/23	1430	5	8402
						6	

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

YCT — Algae 021423 3-5

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

DO: 061 Conductivity/Salinity: 061

Condition of Organisms at End of Test: Normal

Control Survival (%): 100 Average # Young/Female: 33.9

Percent control female with 3 broods (%): 100

Comments: (1) WRD 2/14/23

Experiment ID: WVA021423-2

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		AR
	2	0	0	0	0	0	0	0	0	0	0	0	10		AR
	3	5	5	4	5	4	4	5	5	4	4	51	10	0	AR
	4	0	0	0	0	0	0	0	0	0	0	0	10	0	AR
0	5	10	12	10	16	11	9	13	12	13	14	120	10	0	AR
	6	13	17	15	21	18	15	20	14	19	16	168	10	0	AR
	7														
	Total	28	34	29	42	35	30	38	31	38	34	339	10	0	AR
	1	0	0	0	0	0	0	0	0	0	0	0	10		AR
	2	0	0	0	0	0	0	0	0	0	0	0	10		AR
	3	5	6	5	0	6	7	0	6	0	5	40	10	0	AR
23	4	0	0	0	7	0	0	5	0	6	0	18	10	0	AR
① ~~6.25~~	5	13	14	11	11	16	10	8	12	16	12	123	10	0	AR
	6	18	15	22	20	15	19	19	19	17	14	178	10	0	AR
	7														
	Total	36	35	38	38	37	36	32	37	39	31	359	10	0	AR
	1	0	0	0	0	0	0	0	0	0	0	0	10		AR
	2	0	0	0	0	0	0	0	0	0	0	0	10		AR
	3	6	0	0	7	5	6	5	0	7	6	42	10	0	AR
33	4	0	5	7	0	0	0	0	7	0	17	20	10	0	AR
① ~~12.5~~	5	15	13	10	13	11	14	9	16	16	10	127	10	0	AR
	6	24	18	18	11	17	17	20	17	19	15	176	10	0	AR
	7														
	Total	45	36	35	31	33	37	34	40	42	32	365	10	0	AR

① WMD 3/3/23

Experiment ID: WVA021423-2

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		PBL
	2	0	0	0	0	0	0	0	0	0	0	0	10		PBL
	3	7	0	0	5	5	6	0	6	6	7	42	10	0	PBL
48 ① ~~25~~	4	0	6	5	0	17	0	7	0	0	0	19	10	0	PBL
	5	10	13	13	15	11	14	16	11	13	0	116	10	0	PBL
	6	21	14	18	0	19	16	22	15	20	14	159	10	0	PBL
	7														
	Total	38	33	36	20	36	36	45	32	39	21	336	10	0	PBL
	1	0	0	0	0	0	0	0	0	0	0	0	10		PBL
	2	0	0	0	0	0	0	0	0	0	0	0	10		PBL
	3	7	5	6	6	10	5	6	6	7	0	48	10	0	PBL
69 ① ~~50~~	4	0	0	1	1	7	0	0	1	0	6	16	10	0	PBL
	5	12	16	13	14	10	9	15	14	15	13	131	10	0	PBL
	6	19	17	16	20	18	12	19	21	14	0	156	10	0	PBL
	7														
	Total	38	38	36	41	35	26	40	42	36	19	351	10	0	PBL
	1	0	0	0	0	0	0	0	0	0	0	0	10		PBL
	2	0	0	0	0	0	0	0	0	0	0	0	10		PBL
	3	7	6	0	7	7	8	7	6	5	6	59	10	0	PBL
	4	0	0	5	0	0	0	17	0	1	0	7	10	0	PBL
100	5	14	13	10	9	16	13	13	11	14	12	125	10	0	PBL
	6	17	20	14	17	19	15	19	22	18	16	177	10	0	PBL
	7														
	Total	38	39	29	33	42	36	40	39	38	34	368	10	0	PBL

①wm 3/3/23

Experiment ID: WVA021423-2

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		7.58		8.05	356	62	94	✓	WM
	1	25	25	7.63	8.59	8.16	8.00	325			✓	WM
	2	25	25	7.69	7.76	8.04	8.01	304	62	86	✓	WM
	3	25	25	8.01	7.64	8.06	8.08	303			✓	WM
0	4	25	25	7.78	① 8.635	8.09	8.08	309	64	84	✓	WM
	5	25	25	8.07	7.92	8.08	8.29	305			✓	BR
	6	25		7.88		8.24						BR
	7											
	0		25		7.75		8.06	294			✓	WM
	1	25	25	7.67	8.65	8.18	8.04	296			✓	WM
	2	25	25	7.91	7.89	8.07	8.10	282			✓	WM
23	3	25	25	7.86	7.78	8.11	8.09	279			✓	WM
② ~~6.25~~	4	25	25	7.81	8.54	8.11	8.12	271			✓	WM
	5	25	25	8.22	7.94	8.13	8.27	280			✓	BR
	6	25		7.92		8.25						BR
	7											
	0		25		7.77		8.05	280			✓	WM
	1	25	25	7.69	8.61	8.14	8.03	278			✓	WM
	2	25	25	8.04	7.91	8.10	8.10	267			✓	WM
33	3	25	25	7.84	7.83	8.13	8.10	267			✓	WM
② ~~12.5~~	4	25	25	7.86	8.59	8.10	8.12	284			✓	WM
	5	25	25	8.29	8.01	8.14	8.25	268			✓	BR
	6	25		7.98		8.22						BR
	7											

② WM 3/6/23

① WM 2/18/23

Experiment ID: WVA021423-2

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		7.91		8.04	260			✓	WD
	1	25	25	7.80	8.62	8.11	8.03	261			✓	WD
	2	25	25	8.09	7.97	8.10	8.08	248			✓	WD
48	3	25	25	7.83	7.93	8.13	8.08	247			✓	WD
ⓘ ~~25~~	4	25	25	7.91	8.64	8.08	8.11	249			✓	WD
	5	25	25	8.37	8.22	8.13	8.03	251			✓	AR
	6	25		8.03		8.16						AR
	7											
	0		25		7.82		8.03	228			✓	WD
	1	25	25	7.82	8.50	8.08	8.04	228			✓	WD
	2	25	25	8.16	8.00	8.09	8.09	225			✓	WD
69	3	25	25	7.78	8.13	8.14	8.06	230			✓	WD
ⓘ ~~50~~	4	25	25	7.98	8.72	8.06	8.11	225			✓	WD
	5	25	25	8.41	8.10	8.12	7.89	226			✓	AR
	6	25		8.08		8.08						AR
	7											
	0		25		7.87		8.02	186	74	86	✓	WD
	1	25	25	7.91	8.53	8.06	8.02	187			✓	WD
	2	25	25	8.21	7.62	8.08	8.11	186			✓	WD
	3	25	25	7.71	8.04	8.13	8.05	187			✓	WD
100	4	25	25	8.08	8.66	8.03	8.12	188			✓	WD
	5	25	25	8.46	8.08	8.10	8.00	190			✓	AR
	6	25		8.16		8.03						AR
	7											

ⓘ WD 3/6/23

CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	00-1225-7254	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1
Batch ID:	12-7026-3915	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	20 Feb-23 14:30	**Species:**	Ceriodaphnia dubia	**Brine:**	
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:** 24
Sample ID:	08-1760-9323	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
Sample Age:	25h	**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

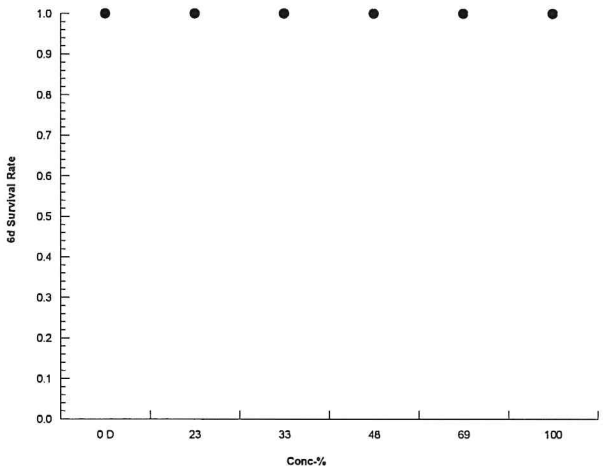
6d Survival Rate Binomials

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

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	00-1225-7254	**Endpoint:**	6d Survival Rate	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	STP 2xK Contingency Tables	**Status Level:**	1

Graphics



CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	01-9691-5331	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1
Batch ID:	12-7026-3915	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	20 Feb-23 14:30	**Species:**	Ceriodaphnia dubia	**Brine:**	
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:** 24
Sample ID:	08-1760-9323	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
Sample Age:	25h	**Client:**	Western Va Water Authority		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	100	>100	n/a	1	16.30%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		23	-0.8286	2.289	5.526	18	CDF	0.9744	Non-Significant Effect
		33	-1.077	2.289	5.526	18	CDF	0.9875	Non-Significant Effect
		48	0.1243	2.289	5.526	18	CDF	0.7938	Non-Significant Effect
		69	-0.4971	2.289	5.526	18	CDF	0.9405	Non-Significant Effect
		100	-1.201	2.289	5.526	18	CDF	0.9915	Non-Significant Effect

Test Acceptability Criteria

		TAC Limits			
Attribute	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
Control Resp	33.9	15	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	89.4	17.88	5	0.6137	0.6898	Non-Significant Effect
Error	1573.2	29.1333	54			
Total	1662.6		59			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	13.21	15.09	0.0215	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.9516	0.9459	0.0184	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	33.9	30.68	37.12	34	28	42	1.426	13.30%	0.00%
23		10	35.9	34.04	37.76	36.5	31	39	0.8226	7.25%	-5.90%
33		10	36.5	33.24	39.76	35.5	31	45	1.44	12.47%	-7.67%
48		10	33.6	28.05	39.15	36	20	45	2.455	23.10%	0.88%
69		10	35.1	29.95	40.25	37	19	42	2.278	20.52%	-3.54%
100		10	36.8	34.04	39.56	38	29	42	1.218	10.47%	-8.55%

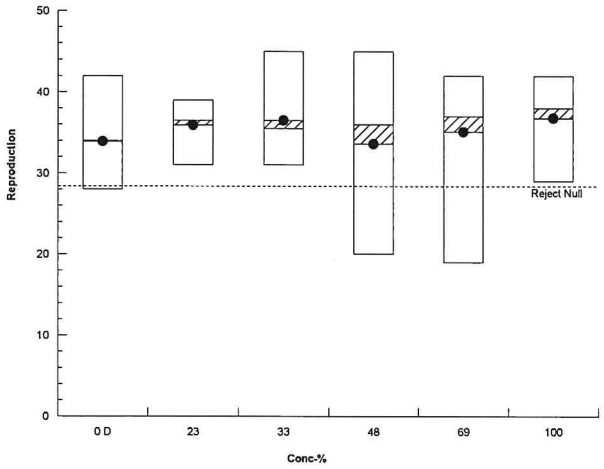
Reproduction Detail

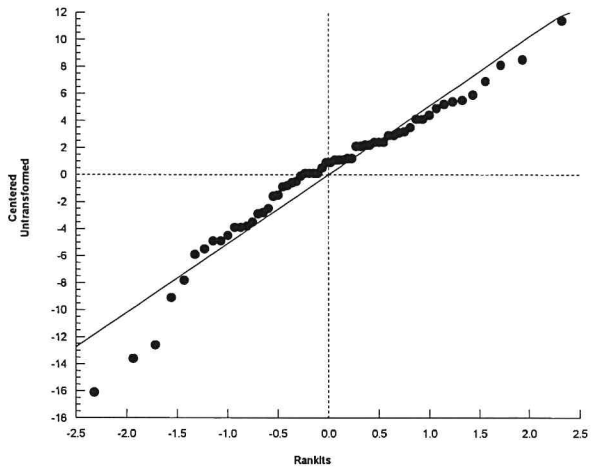
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	28	34	29	42	35	30	38	31	38	34
23		36	35	38	38	37	36	32	37	39	31
33		45	36	35	31	33	37	34	40	42	32
48		38	33	36	20	36	36	45	32	39	21
69		38	38	36	41	35	26	40	42	36	19
100		38	39	29	33	42	36	40	39	38	34

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	01-9691-5331	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Graphics





CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	07-4091-8297	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1
Batch ID:	12-7026-3915	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lab Tech
Start Date:	14 Feb-23 14:30	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	20 Feb-23 14:30	**Species:**	Ceriodaphnia dubia	**Brine:**	
Test Length:	6d 0h	**Taxon:**	Branchiopoda	**Source:**	In-House Culture **Age:** 24
Sample ID:	08-1760-9323	**Code:**	WVA021423-1	**Project:**	Special Studies
Sample Date:	13 Feb-23 13:26	**Material:**	Riverine Monitoring Sample	**Source:**	4AROA198.08 (4AROA198.0)
Receipt Date:	14 Feb-23 09:00	**CAS (PC):**		**Station:**	Explore Park
Sample Age:	25h	**Client:**	Western Va Water Authority		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	401859	1000	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits Lower	Upper	Overlap	Decision
Control Resp	33.9	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	33.9	28	42	4.508	13.30%	0.0%	35.43	0.0%
23		10	35.9	31	39	2.601	7.25%	-5.9%	35.43	0.0%
33		10	36.5	31	45	4.552	12.47%	-7.67%	35.43	0.0%
48		10	33.6	20	45	7.763	23.10%	0.89%	35.17	0.75%
69		10	35.1	19	42	7.203	20.52%	-3.54%	35.17	0.75%
100		10	36.8	29	42	3.853	10.47%	-8.56%	35.17	0.75%

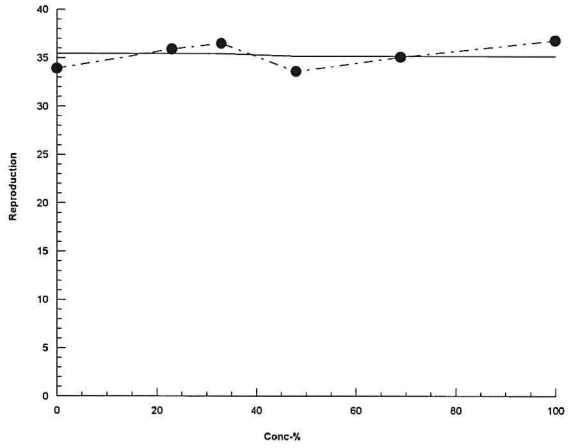
Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	28	34	29	42	35	30	38	31	38	34
23		36	35	38	38	37	36	32	37	39	31
33		45	36	35	31	33	37	34	40	42	32
48		38	33	36	20	36	36	45	32	39	21
69		38	38	36	41	35	26	40	42	36	19
100		38	39	29	33	42	36	40	39	38	34

Ceriodaphnia 7-d Survival and Reproduction Test — **Biological Monitoring, Inc.**

Analysis ID:	07-4091-8297	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.4
Analyzed:	06 Mar-23 10:47	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Graphics



BIOLOGICAL MONITORING, INC.
1800 KRAFT DRIVE SUITE 104 BLACKSBURG VIRGINIA 24060
PH: 540-953-2821 FAX: 540-951-1481 WWW.BIOMON.COM

NELAC ACCREDITED LAB # 460015

198

Sample Collection – Chain of Custody Form

Lab Sample ID (Lab Use Only): W V A 0 2 1 4 2 3 - 1

General Information

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

NPDES Permit # 4AR0A198.08 Outfall Name/# Explore Park

Sample Chlorinated? _____ Dechlorinated? _____

Should BMI Dechlorinate Sample? _____

Sampling Information

[X] Grab Sample _____ Date 02-13-23 Time 1326 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
Eric Powers	2/13/23	1550	[signature]	2/13/23	1550

Eric Powers TDEQ — Printed Name/Affiliation

Eric Powers — Signature

2/13/23 — Date

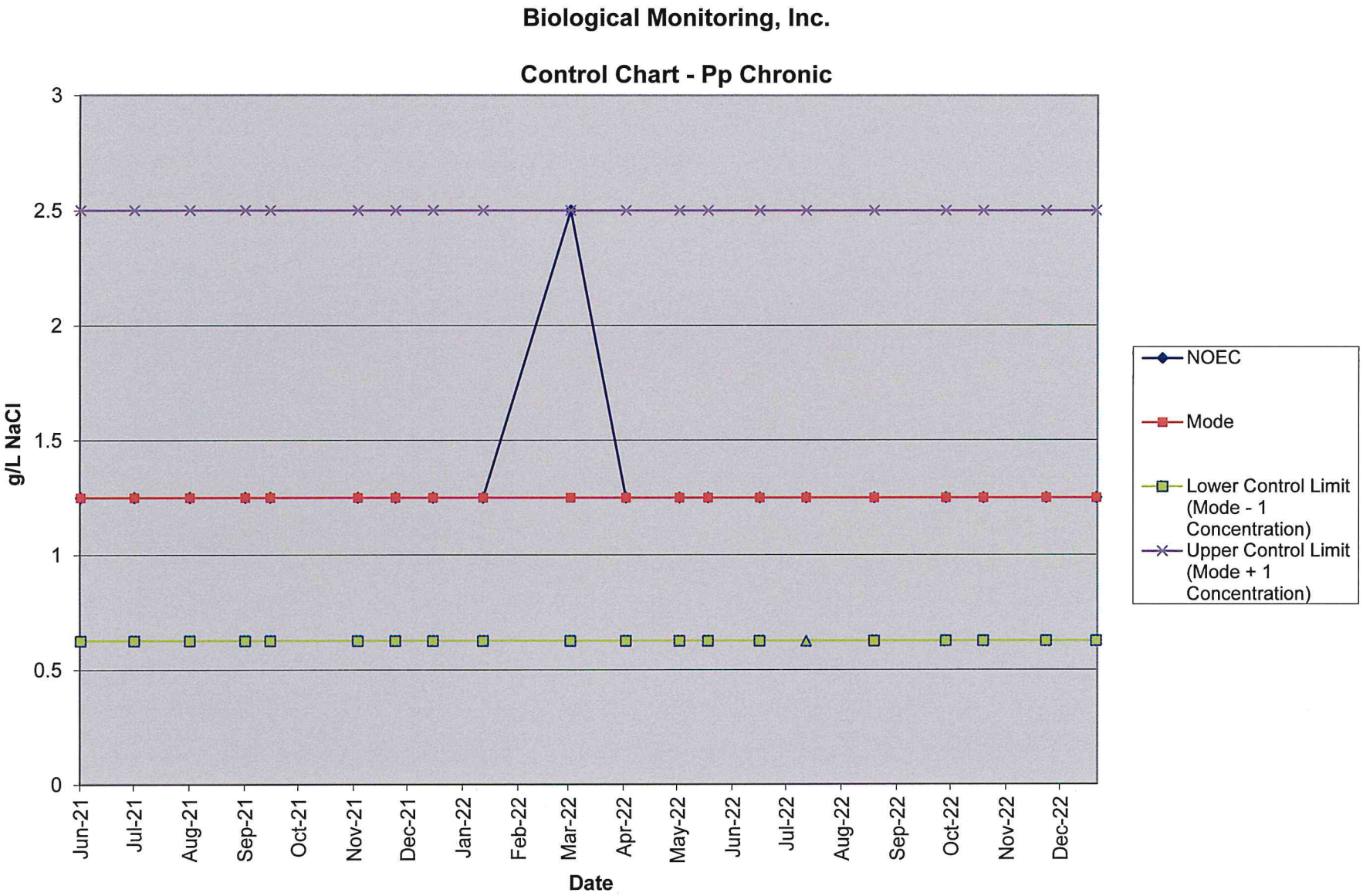
Sample Check In (Lab Use Only)

Temperature 4.6 pH 8.09 Chlorine 0.06 DO 9.04 Conductivity/Salinity 184

On Ice? ✓ Custody Seal? No Alkalinity 74 Hardness 86

Visual Description Tan, Turbid Odor None

Ammonia (NH3-N) 0.25 Initials WW Date/Time 2/14/23 0900


Biological Monitoring, Inc.
Control Chart - Pp Chronic
g/L NaCl
3
2.5
2
1.5
1
0.5
0
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Date
NOEC
Mode
Lower Control Limit (Mode - 1 Concentration)
Upper Control Limit (Mode + 1 Concentration)

Biological Monitoring, Inc.

Control Chart - Cd Chronic