

**CITY OF MENA
MENA WASTEWATER TREATMENT PLANT
OUTFALL 001**

Chronic Biomonitoring Report
Permit Number NPDES AR0036692

Ceriodaphnia dubia
Pimephales promelas

March 7, 2023

Reviewed by:



Bruce Huther, Technical Director
Huther & Associates, Inc.
1156 North Bonnie Brae
Denton, Texas 76201
(940) 387-1025, Fax: (940) 387-1036

TABLE OF CONTENTS

TOXICITY TEST REPORT	1
SUMMARY.....	3
<i>CERIODAPHNIA DUBIA</i> SURVIVAL AND REPRODUCTION SUMMARY	4
<i>CERIODAPHNIA DUBIA</i> STATISTICAL ANALYSES	8
<i>PIMEPHALES PROMELAS</i> SURVIVAL AND GROWTH SUMMARY.....	9
<i>PIMEPHALES PROMELAS</i> STATISTICAL ANALYSES.....	12
APPENDIX A: RAW DATA.....	13
APPENDIX B: REFERENCE TOXICANTS	14
APPENDIX C: CHAIN OF CUSTODY SHEETS	15



TOXICITY TEST REPORT - CHRONIC

Client	City of Mena	Sample	Outfall 001
Facility	Mena Wastewater Treatment Plant	Laboratory I.D.	34937
Permit No.	NPDES AR0036692	Begin Date	March 7, 2023

Results: **Pass** *Ceriodaphnia dubia* survival and reproduction and *Pimephales promelas* survival and growth at the critical low flow concentration (100% effluent).

SAMPLE COLLECTION

Composite effluent samples from City of Mena, Mena WWTP were picked up by Huther & Associates on March 6, March 8, and March 10, 2023. Effluent samples were collected and composited from Outfall 001 using an automatic sampler by facility personnel. Two toxicity tests were requested: a seven-day *Ceriodaphnia dubia* survival and reproduction test (EPA Method 1002.0), and a seven-day *Pimephales promelas* larval survival and growth test (EPA Method 1000.0). Test organisms, procedures and quality assurance requirements were in accordance with the EPA manual, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," Fourth Edition, (EPA-821-R-02-013).

The effluent and receiving water samples were analyzed for total residual chlorine (Standard Methods, 24th Edition, 4500-Cl D) and contained <0.01 mg/L, <0.01 mg/L, and <0.01 mg/L, respectively. Effluent and receiving dilution water hardness, alkalinity, conductivity, pH, and dissolved oxygen data were collected and recorded.

TEST SETUP
Ceriodaphnia dubia



The seven-day *Ceriodaphnia dubia* survival and reproduction test was initiated at 1545 hours, March 7, 2023. Five concentrations were prepared (32%, 42%, 56%, 80%, and 100% effluent) utilizing receiving water (unnamed tributary of Prairie Creek) as dilution water. The test was conducted in 25 mL distilled water rinsed plastic beakers containing 15 mL of solution (one organism per beaker, ten beakers per concentration). *C. dubia* neonates were less than 24-hours-old and within eight hours of the same age at test initiation. Neonates were placed in beakers following a randomized block test design. Fresh solutions were prepared and renewed daily. Daily feeding consisted of 0.5 mL *Selenastrum capricornutum* and cerophyll per test chamber. The test proceeded for seven days during which survival, reproduction and water quality data were collected daily.

A true control of five replicate beakers of eight larvae each in receiving water was conducted currently with the test. There was 100% survival in the true control. In addition, a performance control of five replicate beakers of eight larvae each in synthetic laboratory water was conducted concurrently with the test. The purpose of the performance control was to assess the health of the test larvae and to identify receiving water toxicity. The performance control data was not used in the statistical analysis of the test data. There was 100% survival in the performance control. At the end of the test, all larvae were sacrificed, dried, and weighed. The test ended at 1540 hours, March 14, 2023. Survival and growth (weight) data were statistically analyzed ($p = 0.05$) according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL
Pimephales promelas

There was 100% survival to *P. promelas* in all of the effluent concentrations tested. Therefore, statistical analyses were not required to determine a no effect concentration.

LOEC: Not Applicable
NOEC: 100% Effluent

GROWTH
Pimephales promelas

P. promelas growth data were normally distributed at the 0.01 alpha level (0.900) using Shapiro Wilk's test for normality. Growth data were homogeneous using Bartlett's test at the 0.01 alpha level (15.09) without data transformations. Therefore, a parametric test was performed on the homogeneous data. Dunnett's test on *P. promelas* growth data demonstrated that there were no statistically significant differences between the control and any of the effluent concentrations.

LOEC: Not Applicable **PMSD: 12.4%**
NOEC: 100% Effluent

SUMMARY

There were no statistically significant differences between the control and the critical low flow concentration (100% effluent) for *C. dubia* survival and reproduction and *P. promelas* survival and growth. Based on biomonitoring requirements for Outfall 001 contained in Permit Number NPDES AR0036692 for City of Mena, Mena Wastewater Treatment Plant, Outfall 001 **passed** for this testing period.

Huthner and Associates
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

CLIENT City of Mena, Mena WWTP	SAMPLE TYPE 24 Hour Composite
TPDES # AR0036692	DATE COLLECTED 03/06/23 03/08/23 03/10/23
LAB ID # 34937	DATE RECEIVED 03/06/23 03/08/23 03/10/23
TEST TYPE 7 Day Chronic	BEGIN DATE/TIME 03/07/23 1545
TEST ORGANISM <i>Ceriodaphnia dubia</i>	END DATE/TIME 03/14/23 1545
ORGANISM AGE < 24-Hours	TEST TEMPERATURE (°C) 25 ± 1
ORGANISM SOURCE In House	PHOTO PERIOD 16-hr. Light 8-hr. Dark
RECEIVING WATER unnamed tributary of Prairie Creek	LIGHT INTENSITY 50-100 ft. cndl.
DILUTION WATER Laboratory	TECHNICIAN M. Homer

SURVIVAL & REPRODUCTION SUMMARY

Performance Control

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
	4	3	5	4	2	3	5	3	3	2
03/11/23	4	3	5	4	2	3	5	3	3	2
	8	10	9	11	7	10	10	8	11	9
03/12/23	12	13	14	15	9	13	15	11	14	11
	A	A	A	A	A	A	A	A	A	A
03/13/23	12	13	14	15	9	13	15	11	14	11
	13	14	13	12	12	12	14	13	13	
03/14/23	25	27	27	27	21	25	27	25	27	24
x # Young 25.5		C.V. 7.68%								
x%Survival 100%		C.V. 0.00%								

True Control

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
	4	2	3	5	3	4	5	3	2	4
03/11/23	4	2	3	5	3	4	5	3	2	4
	10	11	7	9	8	8	10	7	11	9
03/12/23	14	13	10	14	11	12	15	10	13	13
	A	A	A	A	A	A	A	A	A	A
03/13/23	14	13	10	14	11	12	15	10	13	13
	12	12	13	12	14	14	13	13	13	14
03/14/23	26	25	23	26	25	26	28	23	26	27
x # Young 25.5		C.V. 6.20%								
x%Survival 100%		C.V. 0.00%								

32% Effluent

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
	5	3	4	4	3	2	5	3	2	4
03/11/23	5	3	4	4	3	2	5	3	2	4
	8	10	7	9	11	6	10	8	9	10
03/12/23	13	13	11	13	14	8	15	11	11	14
	A	A	A	A	A	A	A	A	A	A
03/13/23	13	13	11	13	14	8	15	11	11	14
	14	12	13	13	12	13	14	12	14	13
03/14/23	27	25	24	26	26	21	29	23	25	27
x # Young 25.3		C.V. 8.95%								
x%Survival 100%		C.V. 0.00%								

42% Effluent

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
	4	3	2	2	5	3	5	4	3	2
03/11/23	4	3	2	2	5	3	5	4	3	2
	9	7	10	6	8	11	7	10	8	9
03/12/23	13	10	12	8	13	14	12	14	11	11
	A	A	A	A	A	A	A	A	A	A
03/13/23	13	10	12	8	13	14	12	14	11	11
	13	13	13	12	14	14	14	13	13	12
03/14/23	26	23	25	20	27	28	26	27	24	23
x # Young 24.9		C.V. 9.74%								
x%Survival 100%		C.V. 0.00%								

where: A = Alive
5 = Alive, 5 young
D = Dead
D5 = 5 Young, Female died

ex 1

A	alive today
4	total young to date

ex 2

5	alive, 5 young today
12	total young to date

Huther and Associates
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Mena WWTP

Lab ID# 34937

Test Date: March 7, 2023

56%Effluent

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/11/23	3	5	2	3	4	3	5	3	4	3
	3	5	2	3	4	3	5	3	4	3
03/12/23	10	9	8	6	9	11	7	10	8	9
	13	14	10	9	13	14	12	13	12	12
03/13/23	A	A	A	A	A	A	A	A	A	A
	13	14	10	9	13	14	12	13	12	12
03/14/23	14	14	13	12	13	13	13	12	14	12
	27	28	23	21	26	27	25	25	26	24
x # Young 252 C.V. 8.32% x%Survival 100% C.V. 0.00%										

80%Effluent

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/11/23	5	3	2	4	3	4	2	3	5	3
	5	3	2	4	3	4	2	3	5	3
03/12/23	10	8	11	7	10	8	9	9	10	7
	15	11	13	11	13	12	11	12	15	10
03/13/23	A	A	A	A	A	A	A	A	A	A
	15	11	13	11	13	12	11	12	15	10
03/14/23	13	12	14	13	14	14	12	13	13	14
	28	23	27	24	27	26	23	25	28	24
x # Young 255 C.V. 7.68% x%Survival 100% C.V. 0.00%										

100%Effluent

Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/08/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/09/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/10/23	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/11/23	4	5	3	2	4	3	3	4	3	5
	4	5	3	2	4	3	3	4	3	5
03/12/23	8	9	11	7	10	8	9	6	10	7
	12	14	14	9	14	11	12	10	13	12
03/13/23	A	A	A	A	A	A	A	A	A	A
	12	14	14	9	14	11	12	10	13	12
03/14/23	14	14	14	13	14	12	13	12	12	14
	26	28	28	22	28	23	25	22	25	26
x # Young 253 C.V. 9.33% x%Survival 100% C.V. 0.00%										

where: A = Alive
 5 = Alive, 5 young
 D = Dead
 D5 = 5 Young, Female died

ex 1:

A
4

 alive today
 total young to date

ex 2:

5
12

 alive, 5 young today
 total young to date

Huthner and Associates
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Mena WWTP

Lab ID# 34937

Test Date: March 7, 2023

WET CHEMISTRY MEASUREMENTS

Date	Time	Temp	Samp. No.	pH of Solution							Analyst
				PCON	TCON	32%	42%	56%	80%	100%	
03/07/23	Start	25.0	1	8.34	8.50	8.08	7.64	7.32	7.09	7.01	HB
03/08/23	24 Hr.	23.7	1	7.96	8.12	7.62	7.33	7.20	7.13	7.07	RP
03/08/23	Renew	25.0	1	8.85	8.96	8.76	8.46	8.25	8.09	7.93	RP
03/09/23	48 Hr.	24.0	1	8.52	7.60	7.25	7.19	7.10	7.01	6.95	JP
03/09/23	Renew	25.0	2	8.46	7.17	6.88	6.71	6.67	6.75	6.79	JP
03/10/23	72 Hr.	24.1	2	8.50	7.96	7.74	7.66	7.61	7.58	7.58	JP
03/10/23	Renew	25.0	2	8.53	8.63	8.13	7.88	7.68	7.48	7.23	JP
03/11/23	96 Hr.	24.0	2	8.61	8.56	8.22	7.91	7.74	7.56	7.36	JP
03/11/23	Renew	25.0	3	8.42	8.24	7.86	7.57	7.44	7.31	7.17	JP
03/12/23	120 Hr.	24.0	3	8.11	7.98	7.22	6.88	6.70	6.59	6.50	AS
03/12/23	Renew	25.0	3	7.17	7.40	6.88	6.68	6.60	6.50	6.45	AS
03/13/23	144 Hr.	23.4	3	8.46	8.49	7.73	7.40	7.31	7.19	7.15	RP
03/13/23	Renew	25.0	3	8.61	7.52	7.37	7.02	7.28	7.10	6.99	RP
03/14/23	168 Hr.	23.9	3	8.26	8.85	8.91	8.70	8.59	8.50	8.45	HB

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution							Analyst
				PCON	TCON	32%	42%	56%	80%	100%	
03/07/23	Start	25.0	1	7.79	7.68	8.54	8.55	8.48	8.49	8.65	HB
03/08/23	24 Hr.	23.7	1	7.91	8.27	8.31	8.56	8.11	8.30	8.42	RP
03/08/23	Renew	25.0	1	8.43	8.27	8.07	8.04	8.15	8.22	8.13	RP
03/09/23	48 Hr.	24.0	1	8.03	8.43	8.00	7.94	8.59	8.28	8.55	JP
03/09/23	Renew	25.0	2	7.86	8.00	7.97	8.61	7.86	7.67	8.10	JP
03/10/23	72 Hr.	24.1	2	8.60	7.15	7.42	7.32	8.20	8.46	7.33	JP
03/10/23	Renew	25.0	2	8.23	8.54	8.24	8.28	7.80	8.33	8.11	JP
03/11/23	96 Hr.	24.0	2	8.10	8.01	8.05	7.97	8.28	8.11	8.29	JP
03/11/23	Renew	25.0	3	8.21	7.75	7.87	8.14	8.05	7.97	8.08	JP
03/12/23	120 Hr.	24.0	3	7.97	8.42	7.76	7.72	8.37	8.54	7.82	AS
03/12/23	Renew	25.0	3	8.27	8.52	7.71	7.81	7.89	7.86	7.90	AS
03/13/23	144 Hr.	23.4	3	7.76	8.49	7.74	7.75	8.58	7.84	7.79	RP
03/13/23	Renew	25.0	3	7.93	8.03	8.00	7.93	7.78	7.78	8.62	RP
03/14/23	168 Hr.	23.9	3	7.20	7.41	8.03	8.21	8.24	8.20	8.18	HB

Huthner and Associates
7-Day/3 Brood *Ceriodaphnia dubia* Survival and Reproduction Chronic Toxicity Test

Mena WWTP

Lab ID# 34937

Test Date: March 7, 2023

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid.Cl ₂ mg/L ¹	Dechlor (mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/07/23	1	7.01	8.65	8	6	120	<0.01	N/A	HB
03/09/23	2	6.79	8.10	12	10	122	<0.01	N/A	JP
03/11/23	3	7.17	8.08	10	8	118	<0.01	N/A	JP

INITIAL CHEMISTRY MEASUREMENTS @ RECEIVING WATER

Date	Sample No.	pH ¹	DO ¹	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. μS/cm ¹	Resid.Cl ₂ mg/L ¹	Dechlor (mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/07/23	RS1	8.50	7.68	4	6	40	<0.01	N/A	HB
03/09/23	RS2	7.17	8.00	4	6	40	<0.01	N/A	JP
03/11/23	RS3	8.24	7.75	4	6	42	<0.01	N/A	JP

¹ Measurements taken in 100% solution.

CERIODAPHNIA DUBIA STATISTICAL ANALYSES
 Reproduction

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	10	23.000	29.000	25.800
2	32% Effluent	10	21.000	29.000	25.300
3	42% Effluent	10	20.000	28.000	24.600
4	56% Effluent	10	21.000	28.000	25.200
5	80% Effluent	10	23.000	28.000	25.500
6	100% Effluent	10	22.000	28.000	25.300

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	3.733	1.932	0.611	7.49
2	32% Effluent	5.122	2.263	0.716	8.95
3	42% Effluent	5.378	2.319	0.733	9.43
4	56% Effluent	4.400	2.098	0.663	8.32
5	80% Effluent	3.833	1.958	0.619	7.68
6	100% Effluent	5.567	2.359	0.746	9.33

Chi-Square Test For Normality: Actual And Expected Frequencies

Interval	< -1.5	-1.5 to -0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
Expected	4.020	14.520	22.920	14.520	4.020
Observed	3	15	22	18	2

Calculated Chi-Square goodness of fit test statistic = 2.1607
 Table Chi-Square value (alpha = 0.01) = 13.277

Data **Pass** normality test. Continue analysis.

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 0.64

Table Chi-square value = 15.09 (alpha = 0.01, DF = 5)
 Table Chi-square value = 11.07 (alpha = 0.05, DF = 5)

Data **Pass** B1 homogeneity test at 0.01 level. Continue analysis.

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	7.883	1.577	0.337
Within (Error)	54	252.300	4.672	
Total	59	260.183		

Critical F value = 2.45 (0.05,5,40)
 Since F < Critical F Fail to Reject Ho: All equal

Dunnett's Test - Table 1 of 2 Ho:Control<Treatment

Grp	Identification	Mean		T Stat	Sig
		Transformed Mean	Calculated In Original Units		
1	Control	25.800	25.800		
2	32% Effluent	25.300	25.300	0.517	
3	42% Effluent	24.600	24.600	1.241	
4	56% Effluent	25.200	25.200	0.621	
5	80% Effluent	25.500	25.500	0.310	
6	100% Effluent	25.300	25.300	0.517	

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, DF=40.5)
 No statistically significant difference

Dunnett's Test - Table 2 of 2 Ho:Control<Treatment

Grp	Identification	Num of Reps	Minimum	Sig	Difference from Control
			Diff (In Orig. Units)	% of Control	
1	Control	10			
2	32% Effluent	10	2.233	8.7	0.500
3	42% Effluent	10	2.233	8.7	1.200
4	56% Effluent	10	2.233	8.7	0.600
5	80% Effluent	10	2.233	8.7	0.300
6	100% Effluent	10	2.233	8.7	0.500

Huther and Associates
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

CLIENT	City of Mena, Mena WWTP	SAMPLE TYPE	24 Hour Composite
TPDES #	AR0036692	DATE COLLECTED	03/06/23 03/08/23 03/10/23
LAB ID #	34937	DATE RECEIVED	03/06/23 03/08/23 03/10/23
TEST TYPE	7 Day Chronic	BEGIN DATE/TIME	03/07/23 1540
TEST ORGANISM	<i>Pimephales promelas</i>	END DATE/TIME	03/14/23 1540
ORGANISM AGE	< 24-Hours	TEST TEMPERATURE (°C)	25 ± 1
ORGANISM SOURCE	In House	PHOTO PERIOD	16-hr. Light 8-hr. Dark
RECEIVING WATER	unnamed tributary of Prairie Creek	LIGHT INTENSITY	50-100 ft. cndl.
DILUTION WATER	Laboratory	TECHNICIAN	J. Castillo

SURVIVAL SUMMARY

Conc.	03/08/23					03/09/23					03/10/23					03/11/23					03/12/23				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
PCON	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
TCON	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
32%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
42%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
56%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
80%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
100%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Conc.	03/13/23					03/14/23					x % Survival	C.V. %
	A	B	C	D	E	A	B	C	D	E		
PCON	8	8	8	8	8	8	8	8	8	8	100.0	0.00
TCON	8	8	8	8	8	8	8	8	8	8	100.0	0.00
32%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
42%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
56%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
80%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
100%	8	8	8	8	8	8	8	8	8	8	100.0	0.00

MEAN DRY WEIGHT PER REP

% Effluent	Rep A	Rep B	Rep C	Rep D	Rep E	x	C.V. %
PCON	0.4820	0.4150	0.4260	0.4750	0.4490	0.4494	6.53
TCON	0.4110	0.4750	0.4250	0.4510	0.4200	0.4364	6.01
32%	0.3860	0.4520	0.4760	0.4890	0.4130	0.4432	9.73
42%	0.4520	0.4860	0.4370	0.4120	0.4790	0.4532	6.71
56%	0.3920	0.4570	0.4260	0.4830	0.4770	0.4470	8.49
80%	0.4840	0.4090	0.4630	0.4150	0.4920	0.4526	8.53
100%	0.4610	0.3850	0.4720	0.4860	0.4490	0.4506	8.68

Huthner and Associates
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

Mena WWTP

Lab ID# 34937

Test Date: March 7, 2023

WET CHEMISTRY MEASUREMENTS

Date	Time	Temp	Samp. No.	pH of Solution						Analyst	
				PCON	TCON	32%	42%	56%	80%		100%
03/07/23	Start	25.0	1	8.34	8.50	8.08	7.64	7.32	7.09	7.01	HB
03/08/23	24 Hr.	23.9	1	8.47	8.58	7.95	7.52	7.36	7.12	7.10	RP
03/08/23	Renew	25.0	1	8.85	8.96	8.76	8.46	8.25	8.09	7.93	RP
03/09/23	48 Hr.	24.2	1	7.96	7.08	6.86	6.81	6.74	6.72	6.74	JP
03/09/23	Renew	25.0	2	8.46	7.17	6.88	6.71	6.67	6.75	6.79	JP
03/10/23	72 Hr.	24.3	2	8.24	7.19	7.00	6.98	6.89	6.87	6.92	JP
03/10/23	Renew	25.0	2	8.53	8.63	8.13	7.88	7.68	7.48	7.23	JP
03/11/23	96 Hr.	24.2	2	7.79	7.11	6.93	6.90	6.78	6.80	6.85	JP
03/11/23	Renew	25.0	3	8.42	8.24	7.86	7.57	7.44	7.31	7.17	JP
03/12/23	120 Hr.	23.9	3	7.54	7.64	7.14	6.98	6.91	6.93	6.60	AS
03/12/23	Renew	25.0	3	7.17	7.40	6.88	6.68	6.60	6.50	6.45	AS
03/13/23	144 Hr.	23.4	3	7.85	7.91	7.52	7.29	7.16	7.03	7.00	RP
03/13/23	Renew	25.0	3	8.61	7.52	7.37	7.02	7.28	7.10	6.99	RP
03/14/23	168 Hr.	23.7	3	8.38	8.30	7.96	7.58	7.43	7.28	7.22	HB

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution						Analyst	
				PCON	TCON	32%	42%	56%	80%		100%
03/07/23	Start	25.0	1	7.79	7.68	8.54	8.55	8.48	8.49	8.65	HB
03/08/23	24 Hr.	23.9	1	7.84	8.39	8.63	8.65	8.58	8.64	8.65	RP
03/08/23	Renew	25.0	1	8.43	8.27	8.07	8.04	8.15	8.22	8.13	RP
03/09/23	48 Hr.	24.2	1	8.56	8.12	8.40	8.57	7.69	7.86	8.15	JP
03/09/23	Renew	25.0	2	7.86	8.00	7.97	8.61	7.86	7.67	8.10	JP
03/10/23	72 Hr.	24.3	2	8.16	7.86	8.27	8.54	7.77	7.84	8.05	JP
03/10/23	Renew	25.0	2	8.23	8.54	8.24	8.28	7.80	8.33	8.11	JP
03/11/23	96 Hr.	24.2	2	8.52	8.61	8.45	8.59	8.22	8.44	8.39	JP
03/11/23	Renew	25.0	3	8.21	7.75	7.87	8.14	8.05	7.97	8.08	JP
03/12/23	120 Hr.	23.9	3	7.41	8.11	8.45	8.47	7.47	8.48	8.56	AS
03/12/23	Renew	25.0	3	8.27	8.52	7.71	7.81	7.89	7.86	7.90	AS
03/13/23	144 Hr.	23.4	3	7.75	7.69	8.64	8.63	7.77	8.64	8.63	RP
03/13/23	Renew	25.0	3	7.93	8.03	8.00	7.93	7.78	7.78	8.62	RP
03/14/23	168 Hr.	23.7	3	7.05	7.34	8.37	8.36	8.31	8.42	8.33	HB

Huther and Associates
7-Day *Pimephales promelas* Survival and Growth Chronic Toxicity Test

Mena WWTP

Lab ID# 34937

Test Date: March 7, 2023

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid.Cl ₂ mg/L ¹	Dechlor (mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/07/23	1	7.01	8.65	8	6	120	<0.01	N/A	HB
03/09/23	2	6.79	8.10	12	10	122	<0.01	N/A	JP
03/11/23	3	7.17	8.08	10	8	118	<0.01	N/A	JP

INITIAL CHEMISTRY MEASUREMENTS @ RECEIVING WATER

Date	Sample No.	pH ¹	DO ¹	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. μS/cm ¹	Resid.Cl ₂ mg/L ¹	Dechlor (mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/07/23	RS1	8.50	7.68	4	6	40	<0.01	N/A	HB
03/09/23	RS2	7.17	8.00	4	6	40	<0.01	N/A	JP
03/11/23	RS3	8.24	7.75	4	6	42	<0.01	N/A	JP

¹ Measurements taken in 100% solution.

Huther and Associates, Inc.
 Begin Date: March 07, 2023
 Lab I.D.# 34937

PIMEPHALES PROMELAS STATISTICAL ANALYSES
 Growth

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	5	0.411	0.475	0.436
2	32% Effluent	5	0.386	0.489	0.443
3	42% Effluent	5	0.412	0.486	0.453
4	56% Effluent	5	0.392	0.483	0.447
5	80% Effluent	5	0.409	0.492	0.453
6	100% Effluent	5	0.385	0.486	0.451

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	0.001	0.026	0.012	6.01
2	32% Effluent	0.002	0.043	0.019	9.73
3	42% Effluent	0.001	0.030	0.014	6.71
4	56% Effluent	0.001	0.038	0.017	8.49
5	80% Effluent	0.001	0.039	0.017	8.53
6	100% Effluent	0.002	0.039	0.018	8.68

Shapiro - Wilk's Test For Normality

D = 0.032

W = 0.927

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

Data **Pass** normality test at P=0.01 level. Continue analysis.

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 1.16

Table Chi-square value = 15.09 (alpha = 0.01, DF = 5)

Table Chi-square value = 11.07 (alpha = 0.05, DF = 5)

Data **Pass** B1 homogeneity test at 0.01 level. Continue analysis.

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	0.001	0.000	0.158
Within (Error)	24	0.032	0.001	
Total	29	0.033		

Critical F value = 2.62 (0.05,5,24)

Since F < Critical F Fail to Reject Ho: All equal

Dunnett's Test - Table 1 of 2 Ho:Control<Treatment

Grp	Identification	Transformed	Mean	T Stat	Sig
		Mean	Calculated In Original Units		
1	Control	0.436	0.436		
2	32% Effluent	0.443	0.443	-0.296	
3	42% Effluent	0.453	0.453	-0.731	
4	56% Effluent	0.447	0.447	-0.461	
5	80% Effluent	0.453	0.453	-0.704	
6	100% Effluent	0.451	0.451	-0.617	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, DF=24.5)

No statistically significant difference

Dunnett's Test - Table 2 of 2 Ho:Control<Treatment

Grp	Identification	Num of Reps	Minimum	Sig	% of Control	Difference from Control
			Diff (In Orig. Units)	Diff		
1	Control	5				
2	32% Effluent	5	0.054	12.4	12.4	-0.007
3	42% Effluent	5	0.054	12.4	12.4	-0.017
4	56% Effluent	5	0.054	12.4	12.4	-0.011
5	80% Effluent	5	0.054	12.4	12.4	-0.016
6	100% Effluent	5	0.054	12.4	12.4	-0.014

**APPENDIX A
RAW DATA**

7-DAY CERIODAPHNIA DUBIA SURVIVAL & REPRODUCTION

DAILY RAW DATA TABLE

PAGE 1 OF 2

CLIENT Mena

START DATE/TIME 3-7-23 MH 1545

OUTFALL 001

END DATE/TIME 3-14-23 MH 1545

LAB ID # 34937

Pcon

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	4	3	5	4	2	3	5	3	3	2	JC TG	1300
3/12	8	10	9	11	7	10	10	8	11	9	JC	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	13	14	13	12	12	12	12	14	13	13	MH	1545
	25	27	27	27	21	25	27	25	27	24		

\bar{x} # Young w/o Dead = 25.5 CV% = 7.68

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

Tcon

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	4	2	3	5	3	4	5	3	2	4	JC	1300
3/12	10	11	7	9	8	8	10	7	11	9	JC	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	12	12	13	12	14	14	13	13	13	14	MH	1545
	26	25	23	26	25	26	28	23	26	27		

\bar{x} # Young w/o Dead = 25.5 CV% = 6.20

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

32

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	5	3	4	4	3	2	5	3	2	4	JC	1300
3/12	8	10	7	9	11	6	10	8	9	10	JC	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	14	12	13	13	12	13	14	12	14	13	MH	1545
	27	25	24	26	26	21	29	23	25	27		

\bar{x} # Young w/o Dead = 25.3 CV% = 8.95

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

45

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	4	3	2	2	5	3	5	4	3	2	JC	1300
3/12	9	7	10	6	8	11	7	10	8	9	JC	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	13	13	13	12	14	14	14	13	13	12	MH	1545
	26	23	25	20	27	28	26	27	24	23		

\bar{x} # Young w/o Dead = 24.9 CV% = 9.74

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

7-DAY CERIODAPHNA DUBIA SURVIVAL & REPRODUCTION

DAILY RAW DATA TABLE

PAGE 2 OF 2

CLIENT Mena

START DATE/TIME 3-7-23 MH 1545

OUTFALL 001

END DATE/TIME 3-14-23 MH 1545

LAB ID # 34937

56

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	3	5	2	3	4	3	5	3	4	3	JL	1300
3/12	10	9	8	6	9	11	7	10	8	9	JL	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	14	14	13	12	13	13	13	12	14	12	MH	1545

\bar{x} # Young w/o Dead = 25.2 CV% = 8.32

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

80

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	5	3	2	4	3	4	2	3	5	3	JL	1300
3/12	10	8	11	7	10	8	9	9	10	7	JL	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	13	12	14	13	14	14	12	13	13	14	MH	1545

\bar{x} # Young w/o Dead = 25.5 CV% = 7.68

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

100

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/8	A	A	A	A	A	A	A	A	A	A	MH	1545
3/9	A	A	A	A	A	A	A	A	A	A	TG	1330
3/10	A	A	A	A	A	A	A	A	A	A	TG	1400
3/11	4	5	3	2	4	3	3	4	3	5	JL	1300
3/12	8	9	11	7	10	8	9	6	10	7	JL	1230
3/13	A	A	A	A	A	A	A	A	A	A	TG	1300
3/14	14	14	14	13	14	12	13	12	12	14	MH	1545

\bar{x} # Young w/o Dead = 25.3 CV% = 9.33

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = 100 CV% = 0.00

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time

\bar{x} # Young w/o Dead = CV% =

\bar{x} # Young w/Dead = CV% =

\bar{x} % Survival = CV% =

7-DAY CHRONIC TOXICITY TEST
PIMEPHALES PROMELAS (fathead minnow) SURVIVAL

CLIENT/FACILITY
Mena

DATE/TIME STARTED
3-7-23 JC 1540

OUTFALL #
001

DATE/TIME ENDED
3-14-23 JC 1540

ORGANISM ID#
APU-23-068

PROJECT #
34937

Conc.	3-8-23 JC 1540					3-9-23 JC 928					3-10-23 NB 835					3-11-23 RR 0900					3-12-23 RR 0910				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
Pcon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tcon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
32	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
45	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
56	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
80	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
160	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Conc.	3-13-23 NB 850					3-14-23 JC 1540					C.V. %
	A	B	C	D	E	A	B	C	D	E	
Pcon	0	0	0	0	0	X	X	X	X	X	100.0
Tcon	0	0	0	0	0	X	X	X	X	X	100.0
32	0	0	0	0	0	X	X	X	X	X	100.0
45	0	0	0	0	0	X	X	X	X	X	100.0
56	0	0	0	0	0	X	X	X	X	X	100.0
80	0	0	0	0	0	X	X	X	X	X	100.0
160	0	0	0	0	0	X	X	X	X	X	100.0

ORR 3-12-23

AB 3/16/23

**APPENDIX B
REFERENCE TOXICANTS**

CHRONIC REFERENCE TOXICANT TEST RESULTS

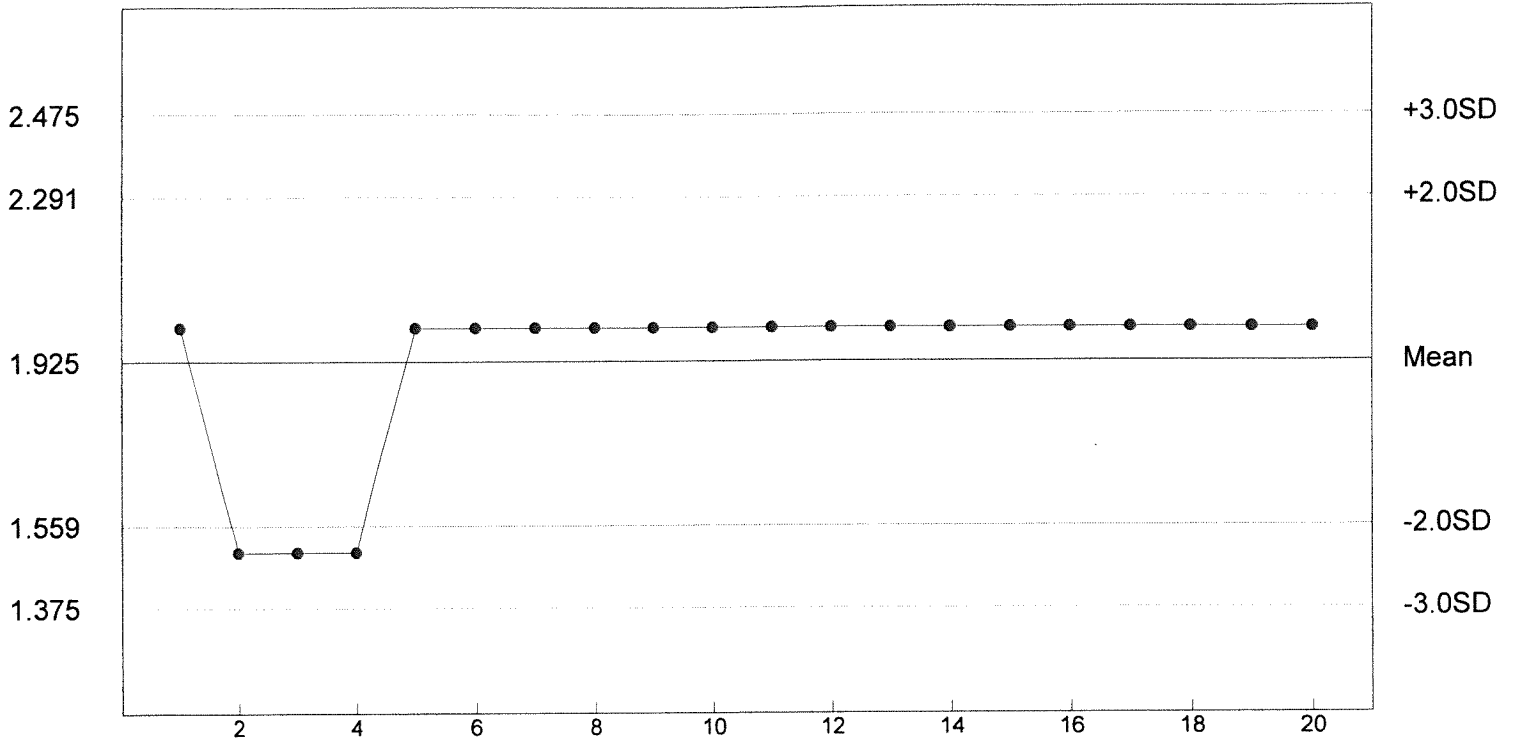
SPECIES: *Ceriodaphnia dubia*
 CHEMICAL: Sodium Chloride
 DURATION: 7-Days
 TEST NUMBER: 3
 TEST DATE: 03/02/23 - 03/09/23
 0915 Hrs - 0915 Hrs
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (g/L)	NUMBER EXPOSED	NUMBER DEAD
0.5	10	0
1.0	10	0
1.5	10	0
2.0	10	0
2.5	10	10
3.0	10	10
4.0	10	10

LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR REPRODUCTION	NOEC FOR REPRODUCTION
2.5 g/L	2.0 g/L	2.0 g/L	1.5 g/L

Reference Tox Sodium Chloride g/L

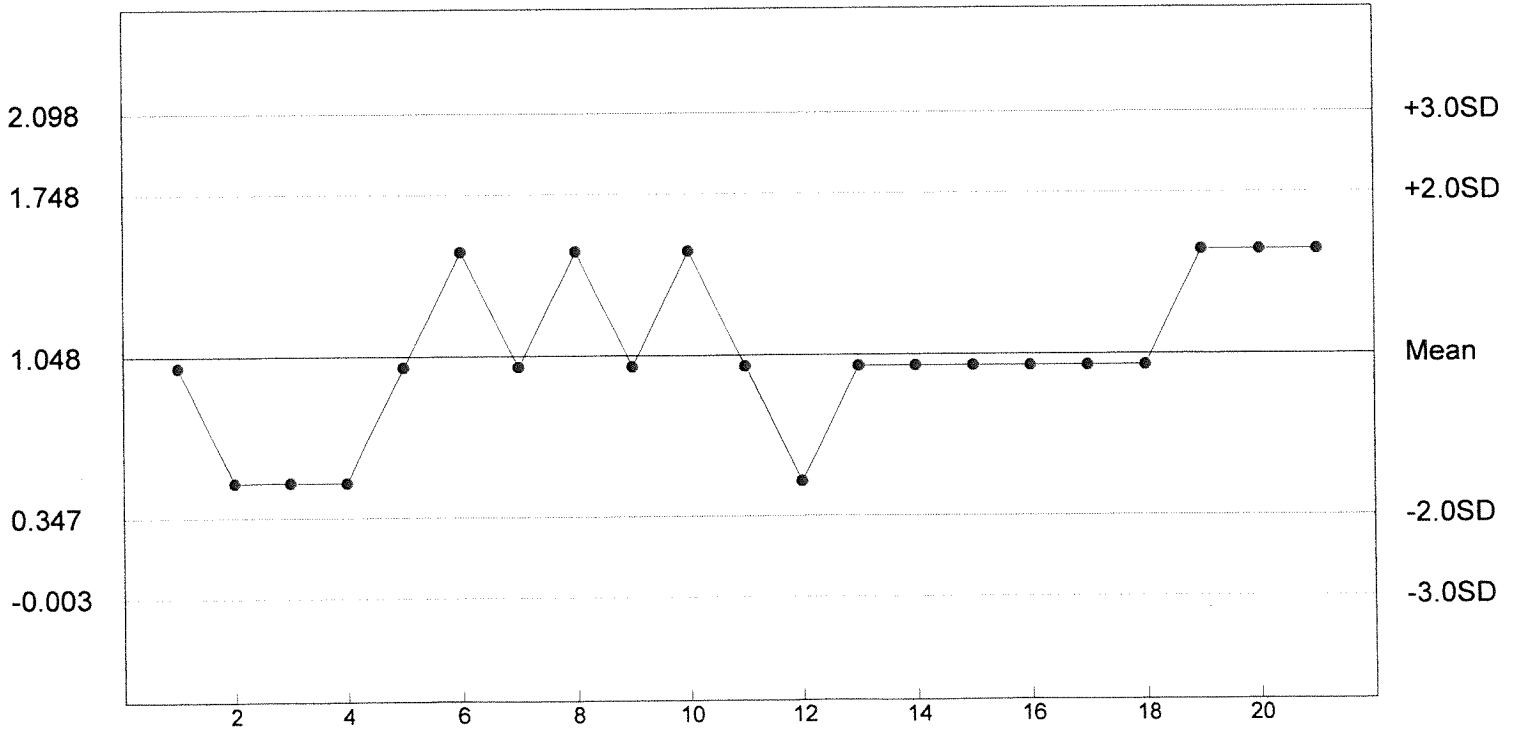
C. dubia Survival - NOEC



n= 20 Mean= 1.925 SD= 0.183 CV= 9.52% Min= 1.500 Max= 2.000

Reference Tox Sodium Chloride g/L

C. dubia Reproduction - NOEC



n= 21 Mean= 1.048 SD= 0.350 CV= 33.43% Min= 0.500 Max= 1.500

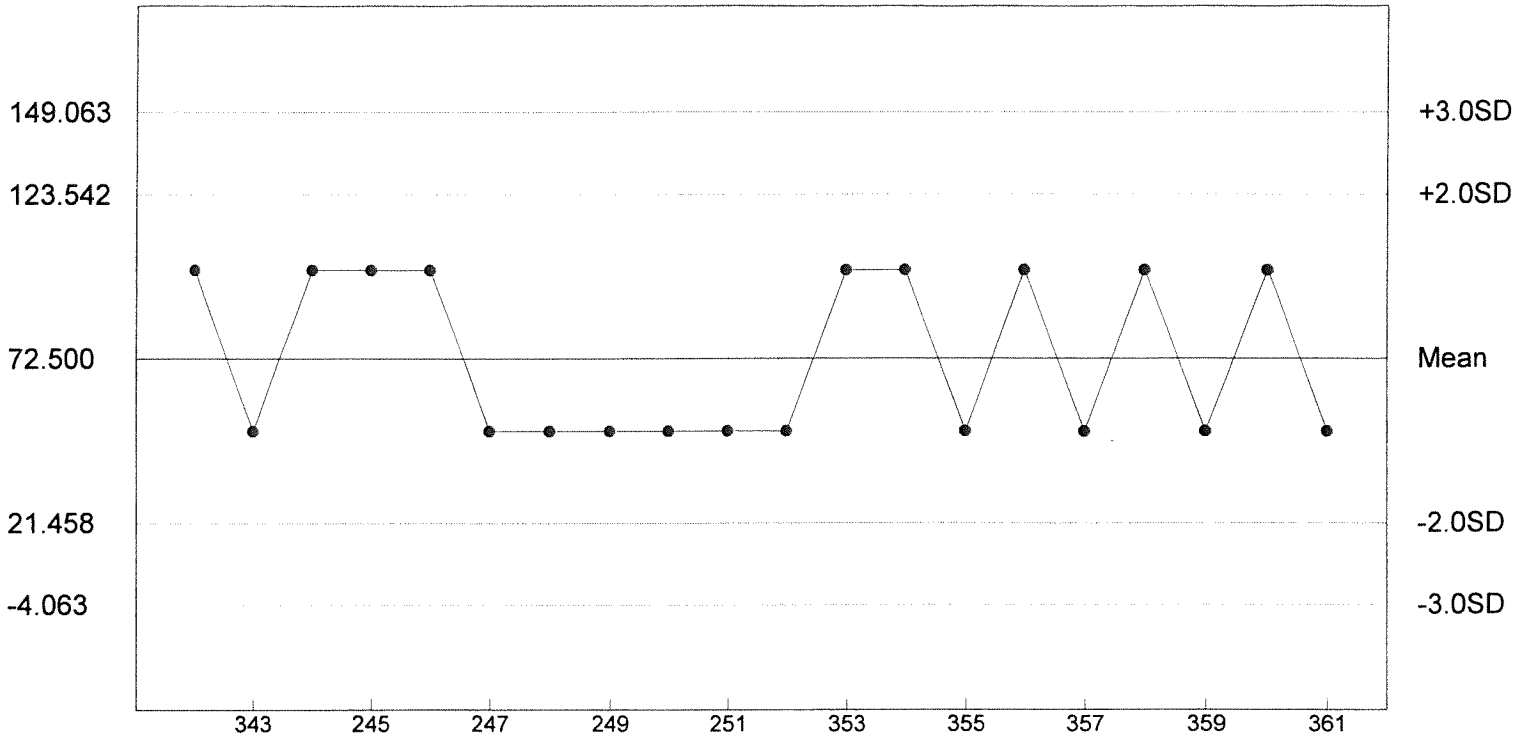
CHRONIC REFERENCE TOXICANT TEST RESULTS

SPECIES: *Pimephales promelas*
 CHEMICAL: Copper Nitrate
 DURATION: 7-Days
 TEST NUMBER: 3
 TEST DATE: 03/02/23 - 03/09/23
 1300 Hrs -1300 Hrs
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (ug/L)	NUMBER EXPOSED	NUMBER DEAD
12.5	40	0
25	40	0
50	40	0
100	40	13
200	40	27
400	40	40
800	40	40

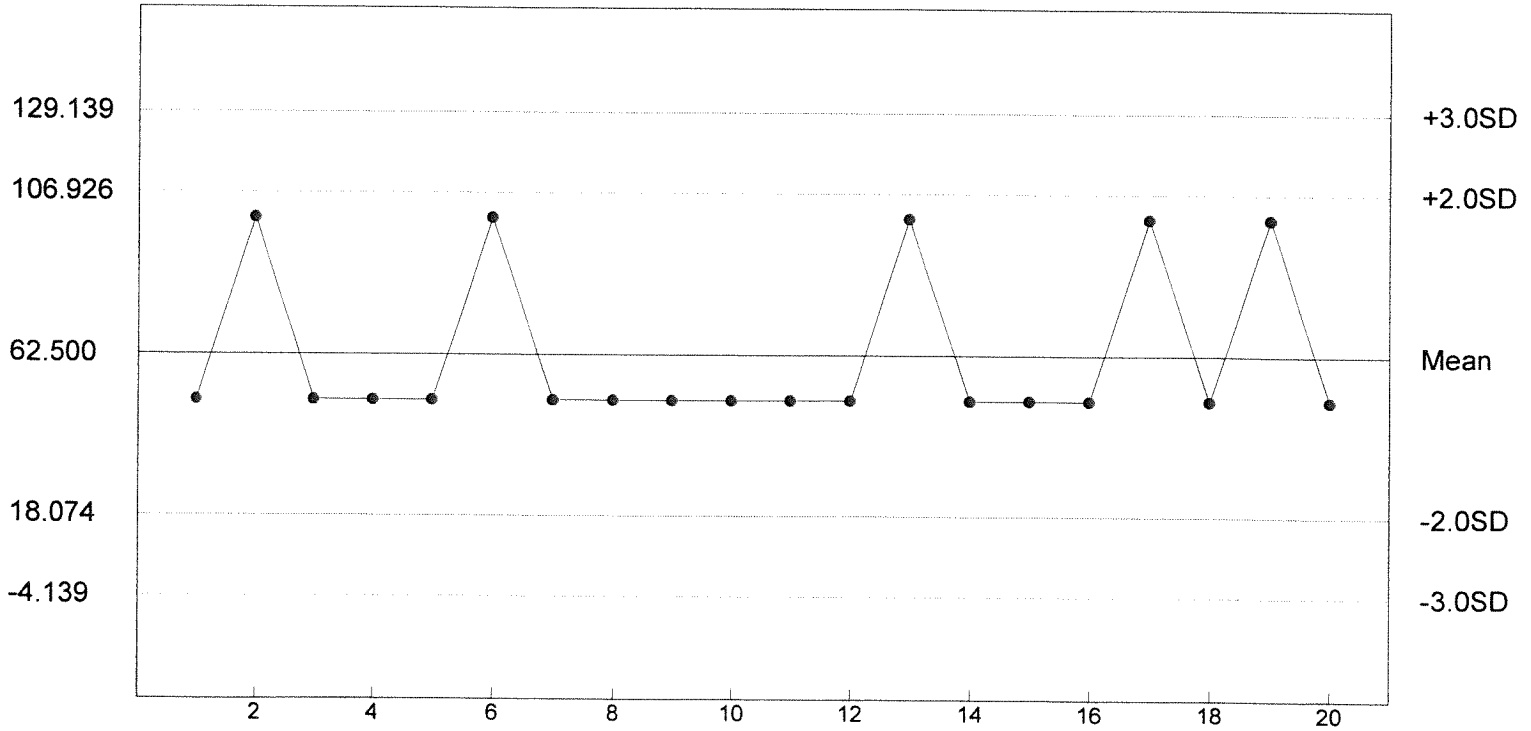
LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR GROWTH	NOEC FOR GROWTH
100 ug/L	50 ug/L	100 ug/L	50 ug/L

Reference Tox Copper Nitrate ug/L
P. promelas Chronic Survival - NOEC



n= 20 Mean= 72.500 SD= 25.521 CV= 35.20% Min= 50.000 Max= 100.000

Reference Tox Copper Nitrate ug/L
P. promelas Growth - NOEC



n= 20 Mean= 62.500 SD= 22.213 CV= 35.54% Min= 50.000 Max= 100.000

**APPENDIX C
CHAIN OF CUSTODY SHEETS**

HUTHER & ASSOCIATES
 1156 NORTH BONNIE BRAE STREET
 DENTON, TX 76201
 (940) 387-1025 • FAX (940) 387-1036

CHAIN OF CUSTODY RECORD

PROJECT # 34937 PROJECT NAME Mena PERMIT# AR 6036692

OUTFALL SAMPLES

24-Hr Flow Weighted Composite Other

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
001	M Spencer	3/23/00 0800	3/23/00 0900	24	Auto	-	Auto	1

RECEIVING WATER SAMPLES

SAMPLE IDENTIFICATION (FOR REC'NG) H ₂ O GRABS, GIVE NAME OF STREAM AND LOCATION	PERSON TAKING SAMPLE	DATE	TIME	# OF CONTAINERS TO BE SHIPPED
Prairie Creek	M Spencer	3/23/00	0800	1

TYPE OF TEST 7 day C/F
 NAME OF RECEIVING WATER Y.T. to Prairie Creek
 DILUTION WATER USED FOR THIS TEST RS

RELINQUISHED BY: [Signature] DATE: 3/23/00 TIME: 1000 RECEIVED BY AT THIS DATE/TIME: Dance Brown
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____
 METHOD OF SHIPMENT: Greyhound Pick Up _____ Client Delivered _____ Other _____

RECEIVED: [Signature] DATE: 3/6/03 TIME: 1800 SAMPLE TEMP. @ RECEIPT: 0.3°C

HUTHER & ASSOCIATES
 1156 NORTH BONNIE BRAE STREET
 DENTON, TX 76201
 (940) 387-1025 • FAX (940) 387-1036

CHAIN OF CUSTODY RECORD

PROJECT # 34937 PROJECT NAME Mena PERMIT# AR 0036692

OUTFALL SAMPLES

24-Hr Flow Weighted Composite _____ Other _____

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
001	Spencer	3/18/23 8:00	3/18/23 8:00	24	AUTO	MAN	AUTO	1

RECEIVING WATER SAMPLES

SAMPLE IDENTIFICATION (FOR REC'NG) H ₂ O GRABS, GIVE NAME OF STREAM AND LOCATION	PERSON TAKING SAMPLE	DATE	TIME	# OF CONTAINERS TO BE SHIPPED	TYPE OF TEST	NAME OF RECEIVING WATER	DILUTION WATER USED FOR THIS TEST

RELINQUISHED BY: [Signature] DATE: 3/18/23 TIME: 1000 RECEIVED BY AT THIS DATE/TIME: Spencer @ 13:00

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____

METHOD OF SHIPMENT: _____ Greyhound _____ Pick Up _____ Client Delivered _____ Other _____

RECEIVED: [Signature] DATE: 3/18/23 TIME: 1730 SAMPLE TEMP. @ RECEIPT: 0.12c

HUTHER & ASSOCIATES
 1156 NORTH BONNIE BRAE STREET
 DENTON, TX 76201
 (940) 387-1025 • FAX (940) 387-1036

CHAIN OF CUSTODY RECORD

PROJECT # 34937 PROJECT NAME Mena PERMIT# HR 0036692

OUTFALL SAMPLES

24-Hr Flow Weighted Composite Other _____

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
001	M Spencer	9 0900	10 Mar 2008 0900	24	Auto	-	Auto	1

RECEIVING WATER SAMPLES

SAMPLE IDENTIFICATION (FOR REC'NG) H ₂ O GRABS, GIVE NAME OF STREAM AND LOCATION	PERSON TAKING SAMPLE	DATE	TIME	# OF CONTAINERS TO BE SHIPPED
Prairie Creek	Spencer	10 Mar 23	1030	1

TYPE OF TEST 7 day C/F
 NAME OF RECEIVING WATER y.t. to Prairie Creek
 DILUTION WATER USED FOR THIS TEST RS

RELINQUISHED BY: M Spencer DATE: 10 Mar 23 TIME: 1030 RECEIVED BY AT THIS DATE/TIME: Rance @ FPO

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME: _____

METHOD OF SHIPMENT: Greyhound Pick Up _____ Client Delivered _____ Other _____

RECEIVED: Rance DATE: 3/10/23 TIME: 1700 SAMPLE TEMP. @ RECEIPT: 0.3821

**CITY OF MENA WWTP
 NPDES PERMIT NO. AR0036692
 AFIN 57-00423
 BIOMONITORING REPORTING
 TEST DATE: 03/07/23**

Ceriodaphnia dubia

Response

A. If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter TLP3B	0
B. Report the NOEC value for survival. Parameter TOP3B	100%
C. Report the NOEC value for reproduction. Parameter TPP3B	100%
D. If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter TGP3B	0
E. Report the higher (critical dilution or control) Coefficient of Variation (CV%), Parameter TQP3B	9.33%
F. Report the lowest NOEC value for survival or reproduction, Limit Parameter No. 51710	100%
G. The permittee shall submit the results of the monthly increased frequency toxicity text on the Unscheduled DMRs	

Pimephales promelas

Response

A. If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter TLP6C	0
B. Report the NOEC value for survival. Parameter TOP6C	100%
C. Report the NOEC value for growth. Parameter TPP6C	100%
D. If the NOEC for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter TGP6C	0
E. Report the higher (critical dilution or control) Coefficient of Variation (CV%), Parameter TQP6C	8.68%
F. Report the lowest NOEC value for survival or growth, Limit Parameter No. 51714	100%
G. The permittee shall submit the results of the monthly increased frequency toxicity text on the Unscheduled DMRs	