



November 9, 2012
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Test Results of
Fourth Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 001
Huntsville, AR

Control No. 162075-1

Prepared for:

Mr. Bill Eoff
Huntsville Water Utilities
Post Office Box 430
Huntsville, AR 72740

Prepared by:

AMERICAN INTERPLEX CORPORATION
8600 Kanis Road
Little Rock, AR 72204-2322



Huntsville Water Utilities
ATTN: Mr. Bill Eoff
Post Office Box 430
Huntsville, AR 72740

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 001 - Huntsville, AR
NPDES Permit No. AR0022004 AFIN# 44-00018

Dear Mr. Bill Eoff:

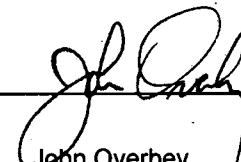
This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 100 % effluent, which is equal to the critical dilution of 100 %. The NOEC for growth occurred at 100 % effluent, which is equal to the critical dilution of 100 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 100 % effluent, which is equal to the critical dilution of 100 %. The NOEC for reproduction occurred at 100 % effluent, which is equal to the critical dilution of 100 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION



John Overbey
Laboratory Director

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I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	97.5	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.262	PASS
Control Growth CV < or = 40%	9.43	PASS
Growth Minimum Significant Difference 12 to 30%	21.0	PASS
Critical Dilution CV < or = 40%	13.5	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	17.0	PASS
Control CV < or = 40% per Surviving Female	22.4	PASS
Reproduction Minimum Significant Difference 13 to 47%	27.5	PASS
Critical Dilution CV < or = 40%	39.1	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0022004 AFIN# 44-00018
2. Test Requirements: Chronic Biomonitoring, Quarterly
Test Methods 1000.0 and 1002.0
3. Receiving Stream: White River Basin

B. Source of Effluent/Dilution Water

1. Effluent Samples:

- a. Sampling Point: Outfall 001
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	8.4	7.3
pH (standard units)	7.6	8.0	7.8
Alkalinity (mg/l as CaCO ₃)	120	120	110
Hardness (mg/l as CaCO ₃)	260	260	230
Conductivity (umhos/cm)	1000	1100	1100
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	<0.1	1.2	<0.1

2. Dilution Water Samples: Synthetic Moderately Hard Water #3924

- a. Dates Prepared: October 16 through October 30, 2012
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	8.0	7.8
pH (standard units)	7.9	8.2	8.2
Alkalinity (mg/l as CaCO ₃)	59	59	59
Hardness (mg/l as CaCO ₃)	90	90	84
Conductivity (umhos/cm)	310	320	310
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

Pimephales promelas (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated: October 30, 2012 at 1355
Date & Time Test Terminated: November 6, 2012 at 1300
Type & Volume of Test Chamber: 500 ml disposable beaker
Volume of Sample: 250 ml
Number of Organisms per replicate: 8
Number of Replicates per dilution: 5

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated: October 30, 2012 at 1335
Date & Time Test Terminated: November 6, 2012 at 1325
Type & Volume of Test Chamber: 30 ml disposable beaker
Volume of Sample: 15 ml
Number of Organisms per replicate: 1
Number of Replicates per dilution: 10

4. Acclimation of test organisms: Obtained from in-house cultures

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

- a. Test 1000.0 *Pimephales promelas*
- b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

Pimephales promelas (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

Ceriodaphnia dubia survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and Bartlett's test and analyzed with Dunnett's Test to determine the No Observable Effects Concentration (NOEC) for Reproduction.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

Pimephales promelas (Fathead minnow)

Chronic reference tests are performed monthly.

A chronic reference test was performed on October 25, 2012 at 1135 to November 1, 2012 at 1145

The results were as follows: (Control No. 161400-1.)

Survival LC-50: 5726 mg/l

Growth IC-25: 4768 mg/l

Growth PMSD: 26

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on October 17, 2012 at 1410 to October 23, 2012 at 1525

The results were as follows: (Control No. 161400-2.)

Survival LC-50: 2370 mg/l

Growth IC-25: 974.5 mg/l

Growth PMSD: 21.3

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	2.75
Hardness	EPA 200.7	104	0.290
pH	SM 4500-H+ B	101	0.00
Conductivity	EPA 120.1	102	1.98

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: October 30, 2012

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

Ceriodaphnia dubia

Date: October 30, 2012

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

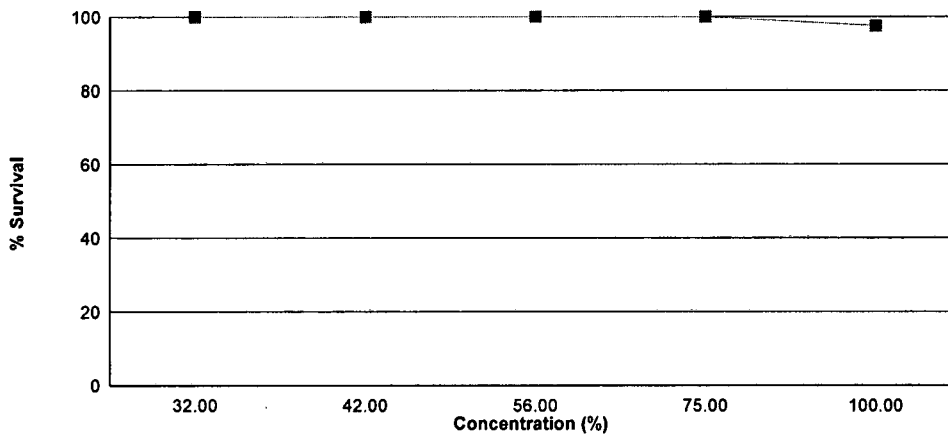
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 32 %, 42 %, 56 %, 75 %, 100 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 100 % effluent.

The test was initiated on October 30, 2012 at 1355 and continued through November 6, 2012 at 1300. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 100 % effluent
- b.) NOEC growth = 100 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	97.5	0.255
32 %	100	0.269
42 %	100	0.321
56 %	100	0.313
75 %	100	0.301
100 %	97.5	0.277

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

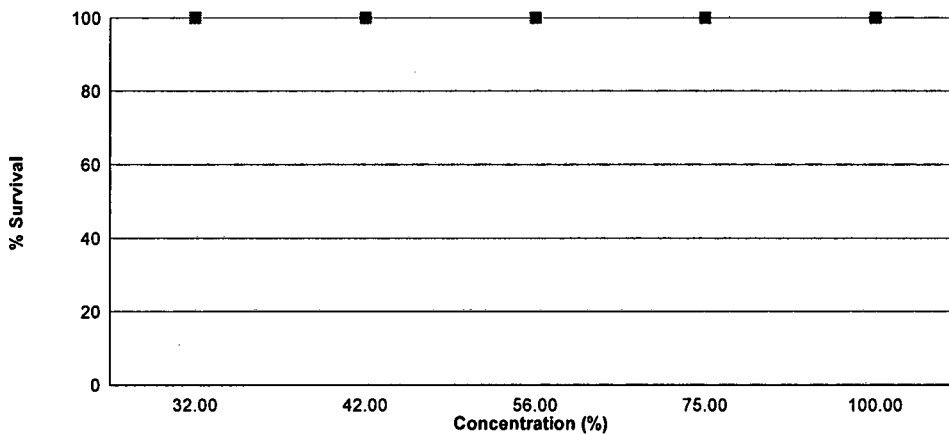
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 32 %, 42 %, 56 %, 75 %, 100 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 100 % effluent.

The test was initiated on October 30, 2012 at 1335 and continued through November 6, 2012 at 1325. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

- a.) NOEC survival = 100 % effluent
- b.) NOEC reproduction = 100 % effluent



Summary of the 7-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	17.0
32 %	100	18.4
42 %	100	18.8
56 %	100	16.2
75 %	100	15.7
100 %	100	14.0

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: October 30, 2012 at 1355
Date and Time Test Terminated: November 6, 2012 at 1300

Concentration	Replicate	Number of Survivors						
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	7	7	7	7	7	7	7
	E	8	8	8	8	8	8	8
32 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
42 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
56 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
75 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
100 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	7
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: October 30, 2012 at 1355
Test Terminated: November 6, 2012 at 1300

Drying Started: November 5, 2012 at 1030
Drying Ended: November 7, 2012 at 1240

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.95019	.95203	0.00184	8	0.230
	B	.94262	.94476	0.00214	8	0.268
	C	.94352	.94581	0.00229	8	0.286
	D	.94390	.94576	0.00186	8	0.232
	E	.94256	.94465	0.00209	8	0.261
32 %	A	.94441	.94654	0.00213	8	0.266
	B	.94490	.94734	0.00244	8	0.305
	C	.94463	.94686	0.00223	8	0.279
	D	.94371	.94572	0.00201	8	0.251
	E	.94475	.94672	0.00197	8	0.246
42 %	A	.95157	.95391	0.00234	8	0.292
	B	.95214	.95446	0.00232	8	0.290
	C	.95041	.95287	0.00246	8	0.308
	D	.95245	.95522	0.00277	8	0.346
	E	.95307	.95601	0.00294	8	0.368
56 %	A	.94932	.95139	0.00207	8	0.259
	B	.94475	.94728	0.00253	8	0.316
	C	.94507	.94719	0.00212	8	0.265
	D	.94509	.94801	0.00292	8	0.365
	E	.94644	.94931	0.00287	8	0.359
75 %	A	.94789	.94986	0.00197	8	0.246
	B	.94826	.95081	0.00255	8	0.319
	C	.94718	.94973	0.00255	8	0.319
	D	.94821	.95043	0.00222	8	0.278
	E	.94707	.94981	0.00274	8	0.342
100 %	A	.95446	.95646	0.00200	8	0.250
	B	.95003	.95188	0.00185	8	0.231
	C	.95336	.95561	0.00225	8	0.281
	D	.95361	.95600	0.00239	8	0.299
	E	.95099	.95358	0.00259	8	0.324

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: October 30, 2012 at 1335
Date and Time Test Terminated: November 6, 2012 at 1325

Concentration: Control														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	2	2	2	4	3	2	3	2	2	1	23	10	2.30	
5	5	5	7	4	7	4	5	4	4	3	48	10	4.80	
6	5	6	11	6	1	0	0	0	0	0	29	10	2.90	
7	0	0	0	0	13	11	13	10	12	11	70	10	7.00	
8														
TOTAL	12	13	20	14	24	17	21	16	18	15	170	10	17.0	

Concentration: 32 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	2	2	2	3	3	0	4	2	2	0	20	10	2.00
5	4	3	5	6	5	5	8	5	5	2	48	10	4.80
6	1	8	0	5	0	0	1	0	0	2	17	10	1.70
7	10	2	12	0	14	13	11	13	12	12	99	10	9.90
8													
TOTAL	17	15	19	14	22	18	24	20	19	16	184	10	18.4

Concentration: 42 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	3	0	2	2	2	2	4	2	1	2	20	10	2.00
5	5	5	6	0	5	5	7	4	5	5	47	10	4.70
6	8	6	0	9	0	1	1	0	2	1	28	10	2.80
7	1	0	11	11	12	9	12	12	12	13	93	10	9.30
8													
TOTAL	17	11	19	22	19	17	24	18	20	21	188	10	18.8

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: October 30, 2012 at 1335
Date and Time Test Terminated: November 6, 2012 at 1325

Concentration: 56 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	3	2	3	2	4	2	0	2	2	2	24	10	2.40
5	5	7	7	3	7	6	4	2	4	5	5	50	10	5.00
6	8	0	0	0	0	0	1	0	1	0	10	10	10	1.00
7	0	11	10	0	13	12	7	0	12	13	78	10	7.80	
8														
TOTAL	17	21	19	6	22	22	14	2	19	20	162	10	16.2	

Concentration: 75 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	2	2	3	2	0	2	2	2	1	2	18	10	1.80	
5	4	2	7	5	3	4	5	4	4	4	42	10	4.20	
6	9	3	0	0	1	0	0	0	1	2	16	10	1.60	
7	1	2	10	10	11	9	9	8	11	10	81	10	8.10	
8														
TOTAL	16	9	20	17	15	15	16	14	17	18	157	10	15.7	

Concentration: 100 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	3	0	2	2	2	2	3	0	1	0	15	10	1.50	
5	3	4	4	6	5	6	4	0	4	6	42	10	4.20	
6	1	9	1	1	0	0	0	6	1	0	19	10	1.90	
7	9	9	8	10	0	9	0	0	9	10	64	10	6.40	
8														
TOTAL	16	22	15	19	7	17	7	6	15	16	140	10	14.0	

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Transformation of Data				Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed	
1	Control	1	1.00000	1.39310	
1	Control	2	1.00000	1.39310	
1	Control	3	1.00000	1.39310	
1	Control	4	0.87500	1.20940	
1	Control	5	1.00000	1.39310	
2	32 %	1	1.00000	1.39310	
2	32 %	2	1.00000	1.39310	
2	32 %	3	1.00000	1.39310	
2	32 %	4	1.00000	1.39310	
2	32 %	5	1.00000	1.39310	
3	42 %	1	1.00000	1.39310	
3	42 %	2	1.00000	1.39310	
3	42 %	3	1.00000	1.39310	
3	42 %	4	1.00000	1.39310	
3	42 %	5	1.00000	1.39310	
4	56 %	1	1.00000	1.39310	
4	56 %	2	1.00000	1.39310	
4	56 %	3	1.00000	1.39310	
4	56 %	4	1.00000	1.39310	
4	56 %	5	1.00000	1.39310	
5	75 %	1	1.00000	1.39310	
5	75 %	2	1.00000	1.39310	
5	75 %	3	1.00000	1.39310	
5	75 %	4	1.00000	1.39310	
5	75 %	5	1.00000	1.39310	
6	100 %	1	1.00000	1.39310	
6	100 %	2	1.00000	1.39310	
6	100 %	3	1.00000	1.39310	
6	100 %	4	0.87500	1.20940	
6	100 %	5	1.00000	1.39310	

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
<p>D = 0.05399 W = 0.5466 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data FAIL normality test (alpha = 0.01).</p>		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	32 %	30.00	16.00	5.00	
3	42 %	30.00	16.00	5.00	
4	56 %	30.00	16.00	5.00	
5	75 %	30.00	16.00	5.00	
6	100 %	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

Shapiro - Wilk's Test for Normality	No Transformation
<p>D = 0.03087 W = 0.945 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data PASS normality test (alpha = 0.01).</p>	

Bartlett's Test for Homogeneity of Variance	No Transformation
<p>Calculated B1 statistic = 2.948 Critical B = 15.086 (alpha = 0.01, df = 5)</p> <p>Data PASS B1 homogeneity test at 0.01 level.</p>	

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	0.01687	0.003374	2.624	
Within (Error)	24	0.03086	0.001286		
Total	29	0.04773			
Critical F = 3.9 (alpha = 0.01, df = 5,24)					
2.62 (alpha = 0.05, df = 5,24)					
Since F > Critical F REJECT Ho: All equal (alpha = 0.05)					

Dunnett's Test - Table 1 of 2					No Transformation	
Ho:Control<Treatment						
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05	
1	Control	0.2554	0.2554			
2	32 %	0.2694	0.2694	-0.6173		
3	42 %	0.3208	0.3208	-2.884		
4	56 %	0.3128	0.3128	-2.531		
5	75 %	0.3008	0.3008	-2.002		
6	100 %	0.277	0.277	-0.9524		
Dunnett's critical value = 2.36 (1 Tailed, alpha = 0.05, df = 5,24)						

Dunnett's Test - Table 2 of 2						No Transformation	
Ho:Control<Treatment							
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control		
1	Control	5					
2	32 %	5	0.05353	21	-0.014		
3	42 %	5	0.05353	21	-0.0654		
4	56 %	5	0.05353	21	-0.0574		
5	75 %	5	0.05353	21	-0.0454		
6	100 %	5	0.05353	21	-0.0216		

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
32 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
42 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
56 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
75 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
100 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) ($\alpha=0.05$) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Test				
Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	0	
1	32 %	10	0	
2	42 %	10	0	
3	56 %	10	0	
4	75 %	10	0	
5	100 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality	No Transformation
<p>D = 0.1032 D* = 0.8097 Critical D* = 1.035 (alpha = 0.01, N = 60)</p> <p>Data PASS normality test (alpha = 0.01).</p>	

Bartlett's Test for Homogeneity of Variance	No Transformation
<p>Calculated B1 statistic = 10.87 Critical B = 15.086 (alpha = 0.01, df = 5)</p> <p>Data PASS B1 homogeneity test at 0.01 level.</p>	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	159.3	31.86	1.556	
Within (Error)	54	1106	20.48		
Total	59	1265			
Critical F = 3.38 (alpha = 0.01, df = 5,54)					
2.38 (alpha = 0.05, df = 5,54)					
Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)					

Dunnett's Test - Table 1 of 2					No Transformation	
Ho:Control<Treatment						
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05	
1	Control	17	17			
2	32 %	18.4	18.4	-0.6917		
3	42 %	18.8	18.8	-0.8894		
4	56 %	16.2	16.2	0.3953		
5	75 %	15.7	15.7	0.6423		
6	100 %	14	14	1.482		
Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,54)						

Dunnett's Test - Table 2 of 2					No Transformation	
Ho:Control<Treatment						
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control	
1	Control	10				
2	32 %	10	4.675	27.5	-1.4	
3	42 %	10	4.675	27.5	-1.8	
4	56 %	10	4.675	27.5	0.8	
5	75 %	10	4.675	27.5	1.3	
6	100 %	10	4.675	27.5	3	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: October 30, 2012 at 1014
Date and Time Test Terminated: November 6, 2012 at 1325

Effluent Conc.: Control	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	8.0	8.3	8.0	8.2	7.8	8.0	7.9
	Final *1	7.8	7.7	4.4	6.9	4.5	7.6	7.2
	Final *2	8.6	7.8	8.6	8.4	7.9	7.7	8.1
pH, units	Initial	7.9	8.0	8.2	8.0	8.2	8.2	8.1
	Final *1	7.9	8.0	7.6	7.9	8.2	8.1	7.9
	Final *2	8.3	8.2	8.4	8.6	8.5	8.4	8.2
Alkalinity, mg CaCO ₃ /l	59	NA	59	NA	59	NA	NA	
Hardness, mg CaCO ₃ /l	90	NA	90	NA	84	NA	NA	
Conductivity, umhos/cm	310	NA	320	320	310	320	310	
Res. Chlorine, mg/l	<0.05	NA	<0.05	NA	<0.05	NA	NA	

Effluent Conc.: 32 %	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	8.0	8.2	7.9	8.0	7.7	7.9	7.6
	Final *1	7.8	7.4	6.8	6.7	7.9	7.2	6.7
	Final *2	8.5	7.7	8.2	8.6	8.2	8.3	7.9
pH, units	Initial	7.6	7.9	8.1	7.8	8.0	8.0	7.9
	Final *1	7.9	8.0	7.7	7.8	8.0	8.0	7.8
	Final *2	8.4	8.3	8.6	8.6	8.5	8.5	8.1

Effluent Conc.: 42 %	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	8.1	8.2	7.8	7.9	7.6	7.4	7.7
	Final *1	7.9	7.6	6.6	6.8	6.8	7.3	6.8
	Final *2	8.5	7.7	8.4	8.3	8.2	7.8	7.8
pH, units	Initial	7.6	7.9	8.1	7.9	8.0	7.9	7.8
	Final *1	8.0	8.1	7.7	7.9	8.0	7.9	7.8
	Final *2	8.4	8.3	8.5	8.5	8.5	8.4	8.1

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: October 30, 2012 at 1014
Date and Time Test Terminated: November 6, 2012 at 1325

Effluent Conc.: 56 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	8.2	7.8	7.7	7.7	7.8	7.8
	Final *1	7.7	7.7	6.7	6.4	7.3	7.2	6.8
	Final *2	8.4	7.6	8.2	8.2	8.1	7.9	7.8
pH, units	Initial	7.5	8.0	8.1	7.8	8.0	7.9	7.8
	Final *1	8.0	8.1	7.7	7.9	8.2	8.0	7.8
	Final *2	8.4	8.4	8.6	8.6	8.5	8.5	8.1

Effluent Conc.: 75 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.6	8.2	8.0	8.1	7.9	8.1	7.7
	Final *1	8.0	7.5	4.3	6.7	4.4	7.2	6.9
	Final *2	8.5	7.9	8.7	8.9	8.4	7.8	7.8
pH, units	Initial	7.5	7.9	8.1	7.8	7.9	7.9	7.8
	Final *1	8.1	8.3	7.5	8.1	8.2	8.1	7.9
	Final *2	8.4	8.4	8.6	8.6	8.5	8.5	8.2

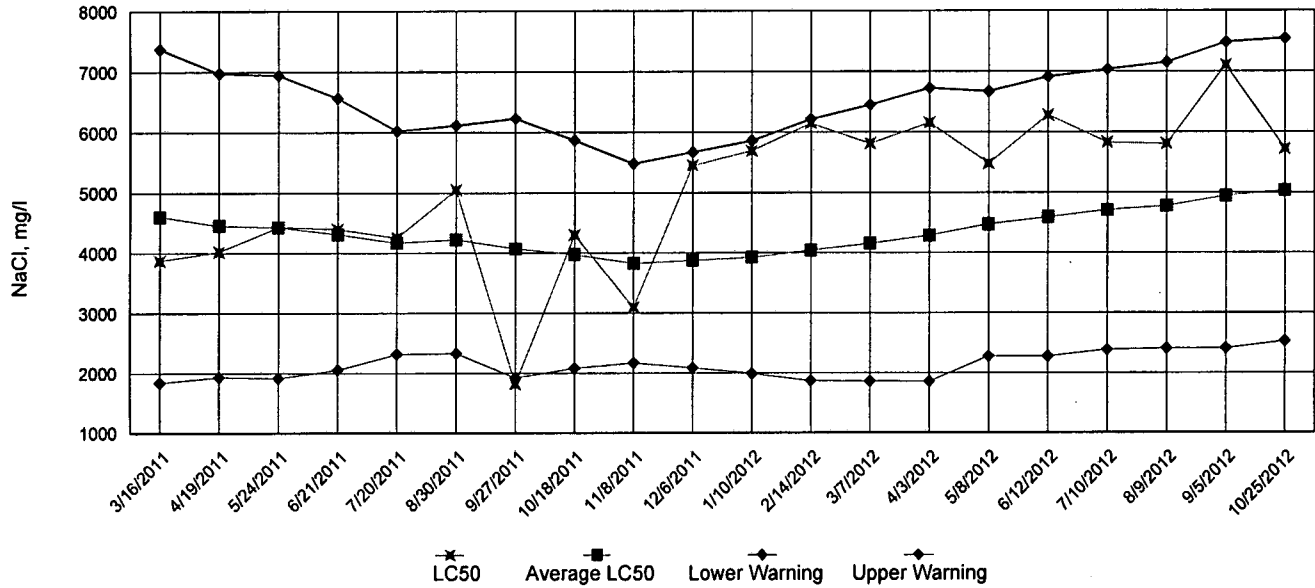
Effluent Conc.: 100 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	8.0	8.4	7.8	7.3	8.1	7.9
	Final *1	8.1	7.7	7.1	6.8	7.5	7.4	7.0
	Final *2	8.4	7.8	8.5	8.5	8.1	7.8	8.3
pH, units	Initial	7.6	7.8	8.0	8.0	7.8	7.6	7.9
	Final *1	8.1	8.2	7.9	8.0	8.1	8.1	8.0
	Final *2	8.4	8.4	8.5	8.6	8.6	8.5	8.3
Alkalinity, mg CaCO ₃ /l		120	NA	120	NA	110	NA	NA
Hardness, mg CaCO ₃ /l		260	NA	260	NA	230	NA	NA
Conductivity, umhos/cm		1000	NA	1100	1100	1100	1000	1000
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

*1 = data from the *Pimephales promelas* (Fathead Minnow) test *2 = data from the *Ceriodaphnia dubia* test

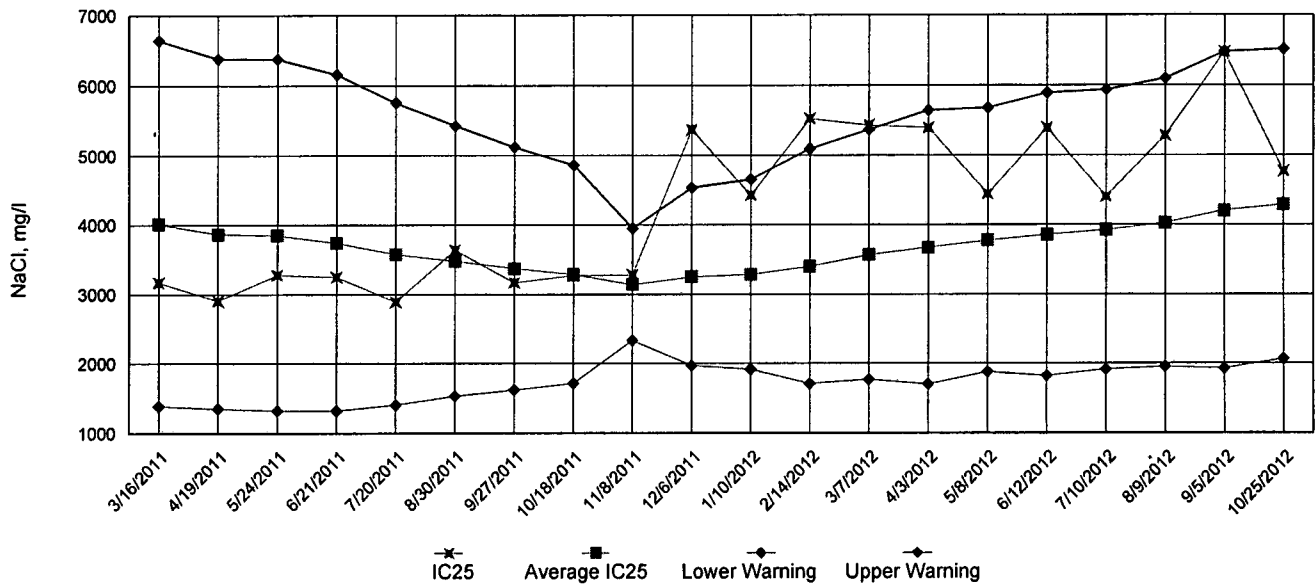
Appendix A4: Test 1000.0

Chronic Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data

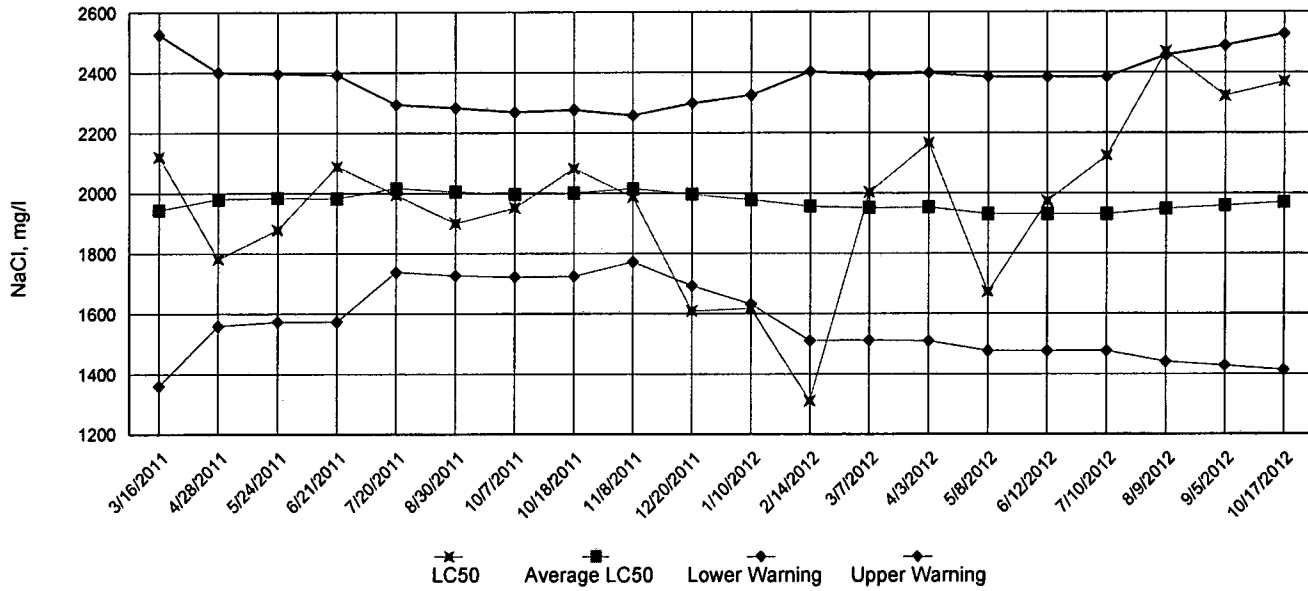


IC25 Growth Data

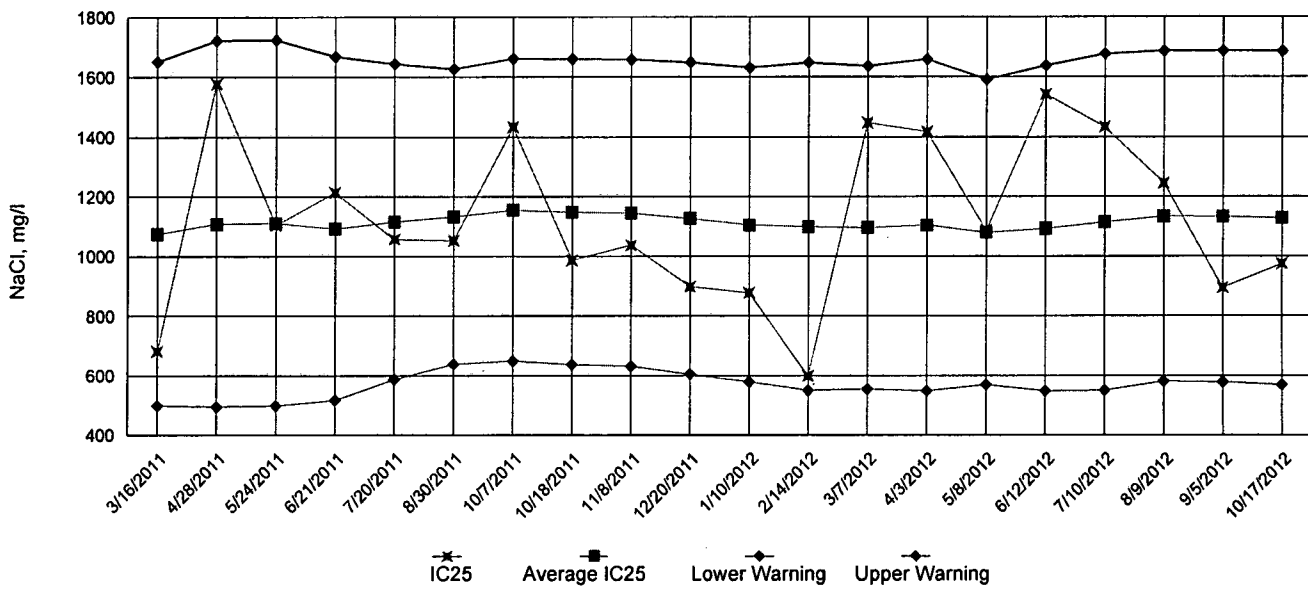


Appendix A4: Test 1002.0
Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



Appendix B: Test 1000.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

Permittee: Huntsville Water Utilities

NPDES No.: AR0022004 AFIN# 44-00018

Date and Time Test Initiated: October 30, 2012 at 1355

Date and Time Test Terminated: November 6, 2012 at 1300

Dilution water used: Synthetic Moderately Hard Water #3924

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers					Mean percent survival			CV%
	A	B	C	D	E	24 hr	48 hr	7 days	
Control	100	100	100	87.5	100	97.5	97.5	97.5	5.73
32 %	100	100	100	100	100	100	100	100	0.00
42 %	100	100	100	100	100	100	100	100	0.00
56 %	100	100	100	100	100	100	100	100	0.00
75 %	100	100	100	100	100	100	100	100	0.00
100 %	100	100	100	87.5	100	100	100	97.5	5.73

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers					Mean dry weight, mg	CV%
	A	B	C	D	E		
Control	0.230	0.268	0.286	0.232	0.261	0.255	9.43
32 %	0.266	0.305	0.279	0.251	0.246	0.269	8.82
42 %	0.292	0.290	0.308	0.346	0.368	0.321	10.8
56 %	0.259	0.316	0.265	0.365	0.359	0.313	16.0
75 %	0.246	0.319	0.319	0.278	0.342	0.301	12.7
100 %	0.250	0.231	0.281	0.299	0.324	0.277	13.5

CV = Coefficient of variation = standard deviation * 100 / mean

Appendix B: Test 1000.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(100 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

2. Dunnett's Test:

Is the mean dry weight (growth) significantly different ($p=0.05$) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(100 %)	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<input type="checkbox"/> YES	<input type="checkbox"/> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP6C)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP6C)
5. NOEC Pimephales Lethality: 100 % (TOP6C)
6. LOEC Pimephales Lethality: 100 % (TXP6C)
7. NOEC Pimephales Sublethality: 100 % (TPP6C)
8. LOEC Pimephales Sublethality: 100 % (TYP6C)
9. Coefficient of variation for Pimephales growth: 13.5 (TQP6C)

Appendix B: Test 1000.0

CHRONIC TOXICITY SUMMARY FORM
Pimephales promelas (Fathead minnow)
CHEMICAL PARAMETERS CHART

PERMITTEE: Huntsville Water Utilities
NPDES NO.: AR0022004 AFIN# 44-00018
CONTACT: Mr. Bill Eoff
ANALYST: 275, 280, 298, 304

SAMPLE No. 1 COLLECTED ending: DATE: October 29, 2012 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: October 31, 2012 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: November 2, 2012 TIME: 0500
Test Initiated: DATE: October 30, 2012 TIME: 1355
Test Terminated: DATE: November 6, 2012 TIME: 1300

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.3	8.0	8.2	7.8	8.0	7.9
Final	7.8	7.7	4.4	6.9	4.5	7.6	7.2
pH Initial	7.9	8.0	8.2	8.0	8.2	8.2	8.1
Final	7.9	8.0	7.6	7.9	8.2	8.1	7.9
Alkalinity	59	NA	59	NA	59	NA	NA
Hardness	90	NA	90	NA	84	NA	NA
Conductivity	310	NA	320	320	310	320	310
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.2	7.9	8.0	7.7	7.9	7.6
Final	7.8	7.4	6.8	6.7	7.9	7.2	6.7
pH Initial	7.6	7.9	8.1	7.8	8.0	8.0	7.9
Final	7.9	8.0	7.7	7.8	8.0	8.0	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	540	NA	560	560	550	560	550
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.1	8.2	7.8	7.9	7.6	7.4	7.7
Final	7.9	7.6	6.6	6.8	6.8	7.3	6.8
pH Initial	7.6	7.9	8.1	7.9	8.0	7.9	7.8
Final	8.0	8.1	7.7	7.9	8.0	7.9	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	620	NA	640	640	640	640	630
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	8.2	7.8	7.7	7.7	7.8	7.8
Final	7.7	7.7	6.7	6.4	7.3	7.2	6.8
pH Initial	7.5	8.0	8.1	7.8	8.0	7.9	7.8
Final	8.0	8.1	7.7	7.9	8.2	8.0	7.8
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	720	NA	740	750	740	750	730
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.6	8.2	8.0	8.1	7.9	8.1	7.7
Final	8.0	7.5	4.3	6.7	4.4	7.2	6.9
pH Initial	7.5	7.9	8.1	7.8	7.9	7.9	7.8
Final	8.1	8.3	7.5	8.1	8.2	8.1	7.9
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	860	NA	890	910	890	900	850
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.0	8.4	7.8	7.3	8.1	7.9
Final	8.1	7.7	7.1	6.8	7.5	7.4	7.0
pH Initial	7.6	7.8	8.0	8.0	7.8	7.6	7.9
Final	8.1	8.2	7.9	8.0	8.1	8.1	8.0
Alkalinity	120	NA	120	NA	110	NA	NA
Hardness	260	NA	260	NA	230	NA	NA
Conductivity	1000	NA	1100	1100	1100	1000	1000
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: Huntsville Water Utilities

NPDES No.: AR0022004 AFIN# 44-00018

Date and Time Test Initiated: October 30, 2012 at 1335

Date and Time Test Terminated: November 6, 2012 at 1325

Dilution water used: Synthetic Moderately Hard Water #3924

PERCENT SURVIVAL

Time of Reading	Percent Effluent					
	Control	32 %	42 %	56 %	75 %	100 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	100	100	100	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Replicates	Percent Effluent					
	Control	32 %	42 %	56 %	75 %	100 %
A	12	17	17	17	16	16
B	13	15	11	21	9	22
C	20	19	19	19	20	15
D	14	14	22	6	17	19
E	24	22	19	22	15	7
F	17	18	17	22	15	17
G	21	24	24	14	16	7
H	16	20	18	2	14	6
I	18	19	20	19	17	15
J	15	16	21	20	18	16
Mean per Adult	17.0	18.4	18.8	16.2	15.7	14.0
Mean per Surviving Adult	17.0	18.4	18.8	16.2	15.7	14.0
CV %	22.4	16.8	18.7	42.7	18.5	39.1

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0
SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

Is the mean survival significantly different ($p=0.05$) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(100 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

2. Dunnett's Test:

Is the mean number of young produced per female significantly different ($p=0.05$) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(100 %)	<u> </u> YES	<u> X </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u> </u> YES	<u> </u> NO

- 3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP3B)
- 4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP3B)
- 5. NOEC Ceriodaphnia Lethality: 100 % (TOP3B)
- 6. LOEC Ceriodaphnia Lethality: 100 % (TXP3B)
- 7. NOEC Ceriodaphnia Sublethality: 100 % (TPP3B)
- 8. LOEC Ceriodaphnia Sublethality: 100 % (TYP3B)
- 9. Coefficient of variation for Ceriodaphnia Reproduction: 39.1 (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: Huntsville Water Utilities
NPDES NO.: AR0022004 AFIN# 44-00018
CONTACT: Mr. Bill Eoff
ANALYST: 275, 280, 298, 304

SAMPLE No. 1 COLLECTED ending: DATE: October 29, 2012 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: October 31, 2012 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: November 2, 2012 TIME: 0500
Test Initiated: DATE: October 30, 2012 TIME: 1335
Test Terminated: DATE: November 6, 2012 TIME: 1325

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.3	8.0	8.2	7.8	8.0	7.9
Final	8.6	7.8	8.6	8.4	7.9	7.7	8.1
pH Initial	7.9	8.0	8.2	8.0	8.2	8.2	8.1
Final	8.3	8.2	8.4	8.6	8.5	8.4	8.2
Alkalinity	59	NA	59	NA	59	NA	NA
Hardness	90	NA	90	NA	84	NA	NA
Conductivity	310	NA	320	320	310	320	310
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.2	7.9	8.0	7.7	7.9	7.6
Final	8.5	7.7	8.2	8.6	8.2	8.3	7.9
pH Initial	7.6	7.9	8.1	7.8	8.0	8.0	7.9
Final	8.4	8.3	8.6	8.6	8.5	8.5	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	540	NA	560	560	550	560	550
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.1	8.2	7.8	7.9	7.6	7.4	7.7
Final	8.5	7.7	8.4	8.3	8.2	7.8	7.8
pH Initial	7.6	7.9	8.1	7.9	8.0	7.9	7.8
Final	8.4	8.3	8.5	8.5	8.5	8.4	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	620	NA	640	640	640	640	630
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	7.8	8.2	7.8	7.7	7.7	7.8	7.8
Final	8.4	7.6	8.2	8.2	8.1	7.9	7.8
pH Initial	7.5	8.0	8.1	7.8	8.0	7.9	7.8
Final	8.4	8.4	8.6	8.6	8.5	8.5	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	720	NA	740	750	740	750	730
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.6	8.2	8.0	8.1	7.9	8.1	7.7
Final	8.5	7.9	8.7	8.9	8.4	7.8	7.8
pH Initial	7.5	7.9	8.1	7.8	7.9	7.9	7.8
Final	8.4	8.4	8.6	8.6	8.5	8.5	8.2
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	860	NA	890	910	890	900	850
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	8.0	8.0	8.4	7.8	7.3	8.1	7.9
Final	8.4	7.8	8.5	8.5	8.1	7.8	8.3
pH Initial	7.6	7.8	8.0	8.0	7.8	7.6	7.9
Final	8.4	8.4	8.5	8.6	8.6	8.5	8.3
Alkalinity	120	NA	120	NA	110	NA	NA
Hardness	260	NA	260	NA	230	NA	NA
Conductivity	1000	NA	1100	1100	1100	1000	1000
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA



8600 Kanis Road
 Little Rock, AR 72204-2322
 (501) 224-5060
 FAX (501) 224-5072

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: <u>Huntsville Water Utilities</u>			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: <u>162075</u>						
Project Reference: <u>Bio Monitoring</u>			SAMPLE MATRIX			Cd & Pb Chronic																AIC PROPOSAL NO:
Project Manager: <u>Bill Eoff</u>			G R A B	C O M P	W A S T E R L		O I L	S	3	X												Carrier: <u>fed-t</u>
Sampled By: <u>Bill Eoff</u>						Date/Time Collected					X	X										
AIC No.	Sample Identification																					
<u>2</u>	<u>Huntsville #2</u>	<u>10/30/12 @ 7:00</u> <u>10/31/12 @ 5:00</u>																				
Container Type <u>P</u>			Field pH calibration on _____ @ _____																			
Preservative <u>4C</u>			Buffer:																			
G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate																						
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate																						
Turnaround Time Requested: (Please circle) <u> </u> NORMAL or EXPEDITED IN <u> </u> DAYS						Relinquished By: <u>B.E.</u>		Date/Time: <u>10/31/12 @ 8:00</u>		Received By: _____		Date/Time: _____										
Expedited results requested by: _____						Relinquished By: _____		Date/Time: _____		Received in Lab By: <u>[Signature]</u>		Date/Time: <u>11-1-12 8:30 AM</u>										
Who should AIC contact with questions: <u>Bill Eoff</u>						Comments:						<u>8764 3753 5860</u>										
Phone: <u>(479) - 738 - 208</u> Fax: <u>(479) - 738 - 1285</u>																						
Report Attention to: <u>Bill Eoff</u>																						
Report Address to: <u>Bill Eoff</u> <u>Huntsville Water Utilities</u> <u>P.O. Box 430</u>																						



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CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: Huntsville Water Utilities			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 162075					
Project Reference: Bio Monitoring			SAMPLE MATRIX			Cd & Pb Chronic															AIC PROPOSAL NO:
Project Manager: Bill Eoff			G R A B	C O M P	W A T E R		S O I L	B O T T L E S	Cd & Pb Chronic												Carrier: Fed Ex
Sampled By: Bill Eoff																Received on Ice (4°C)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
AIC No.	Sample Identification	Date/Time Collected																		Remarks	
3	Huntsville #3	11/1/12 @ 7:00 11/2/12 @ 5:00		X	X			3	X												
		Container Type	P																	Field pH calibration on _____ @ _____ Buffer:	
		Preservative	4C																		
		G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate																			
		NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate																			
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS						Relinquished By: <i>BE</i>		Date/Time: 11/2/12 @ 8:00		Received By: <i>JE</i>		Date/Time: 11-3-12 0835									
Expedited results requested by: _____						Relinquished By: _____		Date/Time: _____		Received in Lab By: _____		Date/Time: _____									
Who should AIC contact with questions: Bill Eoff						Comments: _____															
Phone: (479) - 738 - 208 Fax: (479) - 738 - 1285																					
Report Attention to: Bill Eoff																					
Report Address to: Bill Eoff Huntsville Water Utilities P.O. Box 430																					

Huntsville Water Utilities

P.O. Box 430

Huntsville, AR 72740



A.D.E.Q.

NPDES Enforcement Section

5301 Northshore Drive

North Little Rock, AR 72118-5317

