

November 4, 2014.

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

Control No. 183759-1

Prepared for:

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

Prepared by:

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November 4, 2014
Control No. 183759-1
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Huntsville Water Utilities
ATTN: Mr. Bill Eoff
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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

PDF cc: Huntsville Water Utilities
ATTN: Mr. Bill Eoff
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I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.375	PASS
Control Growth CV < or = 40%	9.77	PASS
Growth Minimum Significant Difference 12 to 30%	15.5	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	23.6	PASS
Control CV < or = 40% per Surviving Female	18.7	PASS
Reproduction Minimum Significant Difference 13 to 47%	23.2	PASS
Critical Dilution CV < or = 40%	16.8	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)	6.1	7.6	8.0
pH (standard units)	7.4	7.4	7.5
Alkalinity (mg/l as CaCO ₃)	140	150	150
Hardness (mg/l as CaCO ₃)	230	250	220
Conductivity (umhos/cm)	1000	1000	930
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	<0.1	4.2	3.9

2. Dilution Water Samples: Synthetic Moderately Hard Water #4147

- a. Dates Prepared: October 11 through October 25, 2014
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	6.5	8.2	8.3
pH (standard units)	7.9	7.5	7.5
Alkalinity (mg/l as CaCO ₃)	58	58	59
Hardness (mg/l as CaCO ₃)	89	89	89
Conductivity (umhos/cm)	320	300	290
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 21, 2014 at 1410
Date & Time Test Terminated: October 28, 2014 at 1520
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 21, 2014 at 1350
Date & Time Test Terminated: October 27, 2014 at 1350
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 analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

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

The results were as follows: (Control No. 1833793-1.)

Survival LC-50: mg/l

Growth IC-25: mg/l

Growth PMSD:

Ceriodaphnia dubia

Chronic reference tests are performed monthly.

A chronic reference test was performed on

The results were as follows: (Control No. 1833793-2.)

Survival LC-50: mg/l

Growth IC-25: mg/l

Growth PMSD:

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	102	1.19
pH	SM 4500-H+ B	100	0.810
Conductivity	EPA 120.1	107	3.21

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: October 21, 2014

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 21, 2014

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

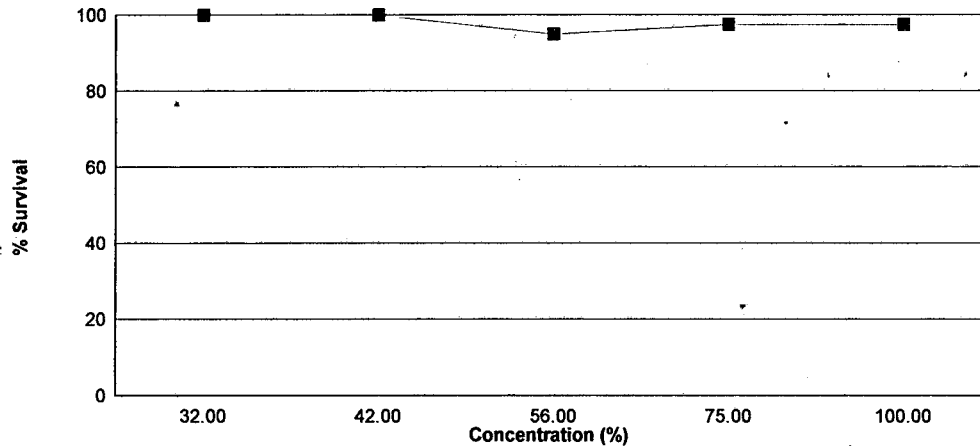
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

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 21, 2014 at 1410 and continued through October 28, 2014 at 1520. 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	100	0.375
32 %	100	0.391
42 %	100	0.426
56 %	95.0	0.403
75 %	97.5	0.443
100 %	97.5	0.411

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

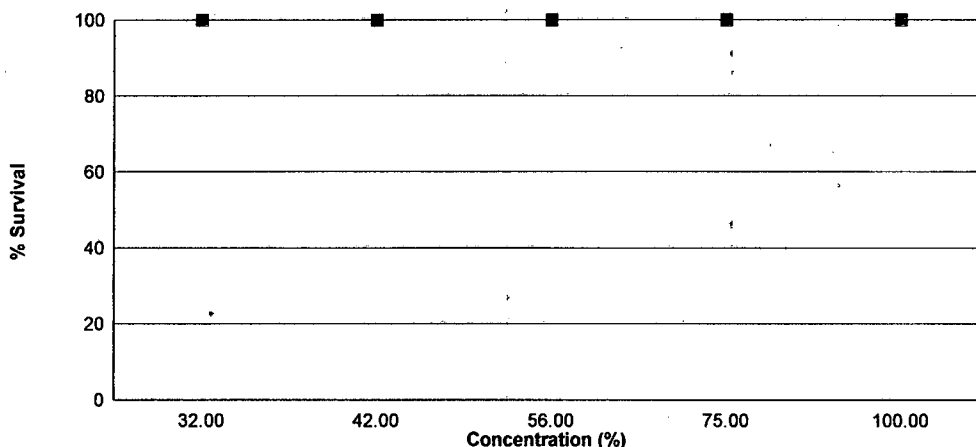
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

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 21, 2014 at 1350 and continued through October 27, 2014 at 1350. 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



Concentration	Percent Survival	Mean Reproduction
Control	100	23.6
32 %	100	24.2
42 %	100	25.5
56 %	100	30.8
75 %	100	28.3
100 %	100	30.0

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: October 21, 2014 at 1410

Date and Time Test Terminated: October 28, 2014 at 1520

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	8	8	8	8	8	8	8
	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	7	7	7
	D	8	8	8	8	8	8	7
	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	7
	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	7	7	7	7	7
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: October 21, 2014 at 1410
Test Terminated: October 28, 2014 at 1520

Drying Started: October 24, 2014 at 1520
Drying Ended: October 29, 2014 at 1100

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.92673	.92921	0.00248	8	0.310
	B	.92687	.93006	0.00319	8	0.399
	C	.93108	.93417	0.00309	8	0.386
	D	.92648	.92960	0.00312	8	0.390
	E	.92807	.93119	0.00312	8	0.390
32 %	A	.92847	.93165	0.00318	8	0.398
	B	.93327	.93645	0.00318	8	0.398
	C	.92941	.93223	0.00282	8	0.352
	D	.93057	.93381	0.00324	8	0.405
	E	.93410	.93732	0.00322	8	0.402
42 %	A	.92994	.93277	0.00283	8	0.354
	B	.92405	.92745	0.00340	8	0.425
	C	.92675	.93043	0.00368	8	0.460
	D	.92778	.93101	0.00323	8	0.404
	E	.92389	.92779	0.00390	8	0.488
56 %	A	.92563	.92864	0.00301	8	0.376
	B	.92610	.92937	0.00327	8	0.409
	C	.92438	.92755	0.00317	8	0.396
	D	.92564	.92904	0.00340	8	0.425
	E	.92825	.93151	0.00326	8	0.408
75 %	A	.92614	.92981	0.00367	8	0.459
	B	.92711	.93056	0.00345	8	0.431
	C	.92665	.93050	0.00385	8	0.481
	D	.93282	.93592	0.00310	8	0.388
	E	.93363	.93726	0.00363	8	0.454
100 %	A	.93099	.93393	0.00294	8	0.368
	B	.92621	.93014	0.00393	8	0.491
	C	.93303	.93584	0.00281	8	0.351
	D	.92932	.93262	0.00330	8	0.412
	E	.92816	.93161	0.00345	8	0.431

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: October 21, 2014 at 1350

Date and Time Test Terminated: October 27, 2014 at 1350

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	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	0	3	4	0	0	0	0	0	0	11	10	1.10
4	0	5	0	0	5	4	5	4	4	3	30	10	3.00
5	8	8	8	10	10	9	11	9	9	0	82	10	8.20
6	12	12	13	15	11	12	8	11	10	9	113	10	11.3
7													
8													
TOTAL	24	25	24	29	26	25	24	24	23	12	236	10	23.6

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	4	0	4	0	0	0	0	0	0	0	8	10	0.800
4	0	5	0	5	5	6	4	6	4	5	40	10	4.00
5	11	12	9	11	0	11	10	11	12	10	97	10	9.70
6	14	15	16	14	14	10	0	0	14	0	97	10	9.70
7													
8													
TOTAL	29	32	29	30	19	27	14	17	30	15	242	10	24.2

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	3	0	0	0	0	0	0	3	10	0.300
4	5	6	6	0	4	5	4	4	4	5	43	10	4.30
5	10	12	10	10	11	10	11	10	10	8	102	10	10.2
6	14	13	12	13	14	13	0	14	14	0	107	10	10.7
7													
8													
TOTAL	29	31	28	26	29	28	15	28	28	13	255	10	25.5

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: October 21, 2014 at 1350

Date and Time Test Terminated: October 27, 2014 at 1350

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	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	4	0	4	5	0	0	0	0	0	0	13	10	1.30
4	0	5	0	0	4	6	3	4	4	5	31	10	3.10
5	11	10	11	14	11	11	10	11	9	12	110	10	11.0
6	16	14	16	19	19	13	9	17	14	17	154	10	15.4
7													
8													
TOTAL	31	29	31	38	34	30	22	32	27	34	308	10	30.8

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	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	5	0	0	0	0	0	0	0	0	0	5	10	0.500
4	0	5	0	0	4	5	4	5	0	4	27	10	2.70
5	10	11	11	12	11	14	10	12	9	9	109	10	10.9
6	12	10	16	18	17	17	10	15	14	13	142	10	14.2
7													
8													
TOTAL	27	26	27	30	32	36	24	32	23	26	283	10	28.3

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	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	3	0	0	0	0	0	0	3	10	0.300
4	4	5	5	0	5	5	0	5	5	4	38	10	3.80
5	11	12	11	13	13	11	12	13	12	10	118	10	11.8
6	19	14	15	18	14	19	14	0	14	14	141	10	14.1
7													
8													
TOTAL	34	31	31	34	32	35	26	18	31	28	300	10	30.0

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	1.00000	1.39310
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	0.87500	1.20940
4	56 %	4	0.87500	1.20940
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	0.87500	1.20940
5	75 %	5	1.00000	1.39310
6	100 %	1	1.00000	1.39310
6	100 %	2	1.00000	1.39310
6	100 %	3	0.87500	1.20940
6	100 %	4	1.00000	1.39310
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 = 0.09449 W = 0.7601 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 %	27.50	16.00	5.00	
3	42 %	27.50	16.00	5.00	
4	56 %	22.50	16.00	5.00	
5	75 %	25.00	16.00	5.00	
6	100 %	25.00	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	0.0147	0.00294	1.932	
Within (Error)	24	0.03654	0.001522		
Total	29	0.05124			
Critical F = 3.9 (alpha = 0.01, df = 5,24)					
2.62 (alpha = 0.05, df = 5,24)					
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	0.375	0.375		
2	32 %	0.391	0.391	-0.6485	
3	42 %	0.4262	0.4262	-2.075	
4	56 %	0.4028	0.4028	-1.127	
5	75 %	0.4426	0.4426	-2.74	
6	100 %	0.4106	0.4106	-1.443	
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	0.05823	15.5	-0.016	
3	42 %	5	0.05823	15.5	-0.0512	
4	56 %	5	0.05823	15.5	-0.0278	
5	75 %	5	0.05823	15.5	-0.0676	
6	100 %	5	0.05823	15.5	-0.0356	

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
D = 0.166 D* = 1.302 Critical D* = 1.035 (alpha = 0.01, N = 60)	
Data FAIL normality test (alpha = 0.01).	

Steel's Many-One Rank Test					No Transformation
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	32 %	117.00	75.00	10.00	
3	42 %	130.50	75.00	10.00	
4	56 %	144.50	75.00	10.00	
5	75 %	135.50	75.00	10.00	
6	100 %	143.50	75.00	10.00	

Critical values are 1 tailed (k=5)

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Dunnett's Test for PMSD Calculation (excluding deaths if applicable)

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	467.5	93.5	3.326	
Within (Error)	54	1518	28.11		
Total	59	1986			
Critical F = 3.38 (alpha = 0.01, df = 5,54)					
2.38 (alpha = 0.05, df = 5,54)					
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	23.6	23.6			
2	32 %	24.2	24.2	-0.253		
3	42 %	25.5	25.5	-0.8013		
4	56 %	30.8	30.8	-3.037		
5	75 %	28.3	28.3	-1.982		
6	100 %	30	30	-2.699		
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	5.477	23.2	-0.6		
3	42 %	10	5.477	23.2	-1.9		
4	56 %	10	5.477	23.2	-7.2		
5	75 %	10	5.477	23.2	-4.7		
6	100 %	10	5.477	23.2	-6.4		

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: October 21, 2014 at 0919

Date and Time Test Terminated: October 28, 2014 at 1520

Effluent Conc.: Control	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	6.5	7.8	8.2	8.2	8.3	8.7	7.7
	Final *1	7.2	7.5	7.4	7.0	8.0	7.8	6.3
	Final *2	7.9	7.7	7.6	8.4	7.6	7.7	NA
pH, units	Initial	7.9	7.9	7.5	7.5	7.5	7.7	7.4
	Final *1	7.8	7.6	7.3	7.2	7.8	7.6	7.2
	Final *2	8.0	7.5	7.4	7.6	7.7	7.6	NA
Alkalinity, mg CaCO ₃ /l	58	NA	58	NA	59	NA	NA	
Hardness, mg CaCO ₃ /l	89	NA	89	NA	89	NA	NA	
Conductivity, umhos/cm	320	330	300	300	290	290	290	
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	6.4	7.6	8.2	8.1	7.8	8.4	7.6
	Final *1	7.0	6.6	7.4	7.1	8.2	8.6	5.7
	Final *2	7.9	7.9	7.7	8.9	7.8	7.5	NA
pH, units	Initial	7.8	7.9	7.5	7.4	7.6	7.8	7.5
	Final *1	7.8	7.6	7.4	7.5	8.0	7.6	7.2
	Final *2	8.0	7.7	7.6	7.8	7.9	7.8	NA

Effluent Conc.: 42 %	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
DO, mg/l	Initial	6.6	7.8	8.2	8.0	7.9	8.3	7.6
	Final *1	7.2	6.8	7.5	6.9	8.0	7.2	6.4
	Final *2	7.8	8.0	7.4	8.1	7.7	7.4	NA
pH, units	Initial	7.7	7.8	7.5	7.4	7.6	7.8	7.5
	Final *1	7.9	7.7	7.5	7.6	8.0	7.7	7.5
	Final *2	8.1	7.7	7.7	7.9	8.0	7.8	NA

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: October 21, 2014 at 0919

Date and Time Test Terminated: October 28, 2014 at 1520

Effluent Conc.: 56 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	6.3	7.7	7.8	7.7	8.2	8.3	7.6
	Final *1	7.1	6.4	7.3	7.3	7.8	7.1	6.7
	Final *2	7.8	8.0	7.7	8.2	8.1	7.5	NA
pH, units	Initial	7.7	7.9	7.5	7.5	7.6	7.8	7.5
	Final *1	8.0	7.7	7.5	7.7	8.0	7.8	7.6
	Final *2	8.2	7.8	7.8	8.0	8.0	7.9	NA

Effluent Conc.: 75 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	6.3	7.6	7.7	7.7	8.3	8.0	7.7
	Final *1	7.2	6.6	7.3	7.0	7.9	7.5	6.7
	Final *2	7.9	7.8	7.8	7.8	8.2	7.8	NA
pH, units	Initial	7.7	7.9	7.4	7.4	7.7	7.9	7.6
	Final *1	8.1	7.9	7.6	7.7	8.1	7.8	7.6
	Final *2	8.2	7.8	7.9	8.1	8.1	8.0	NA

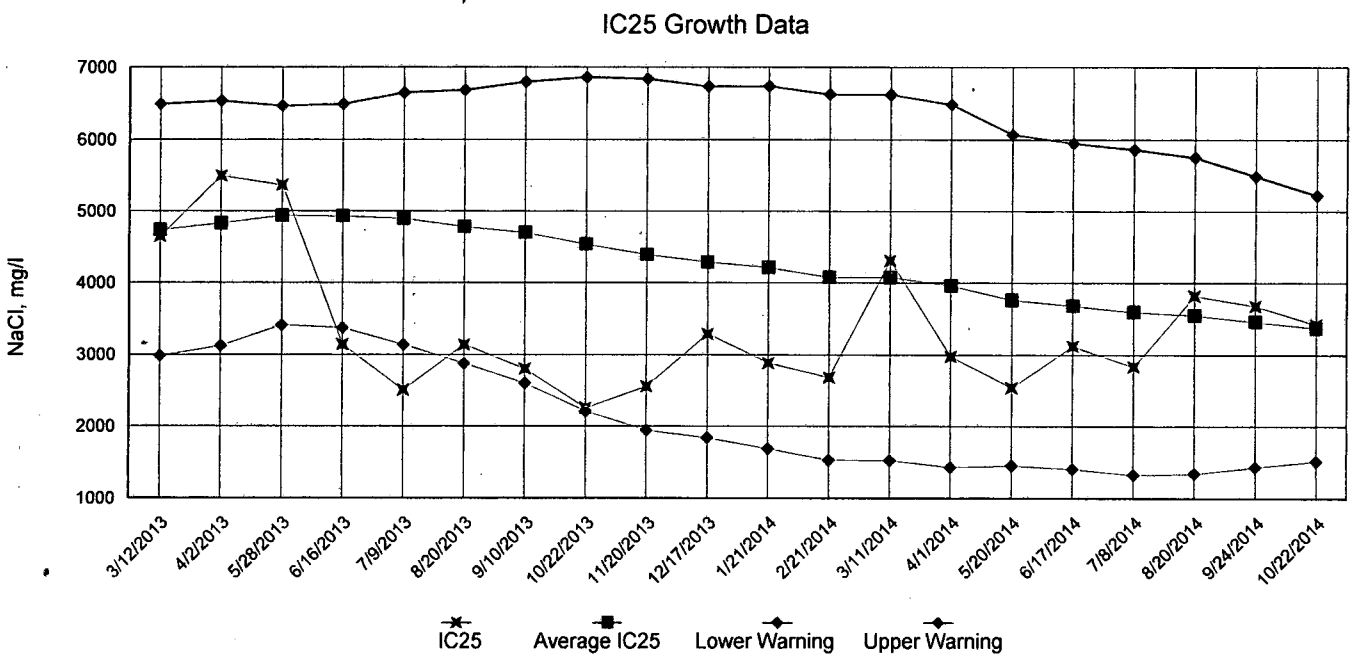
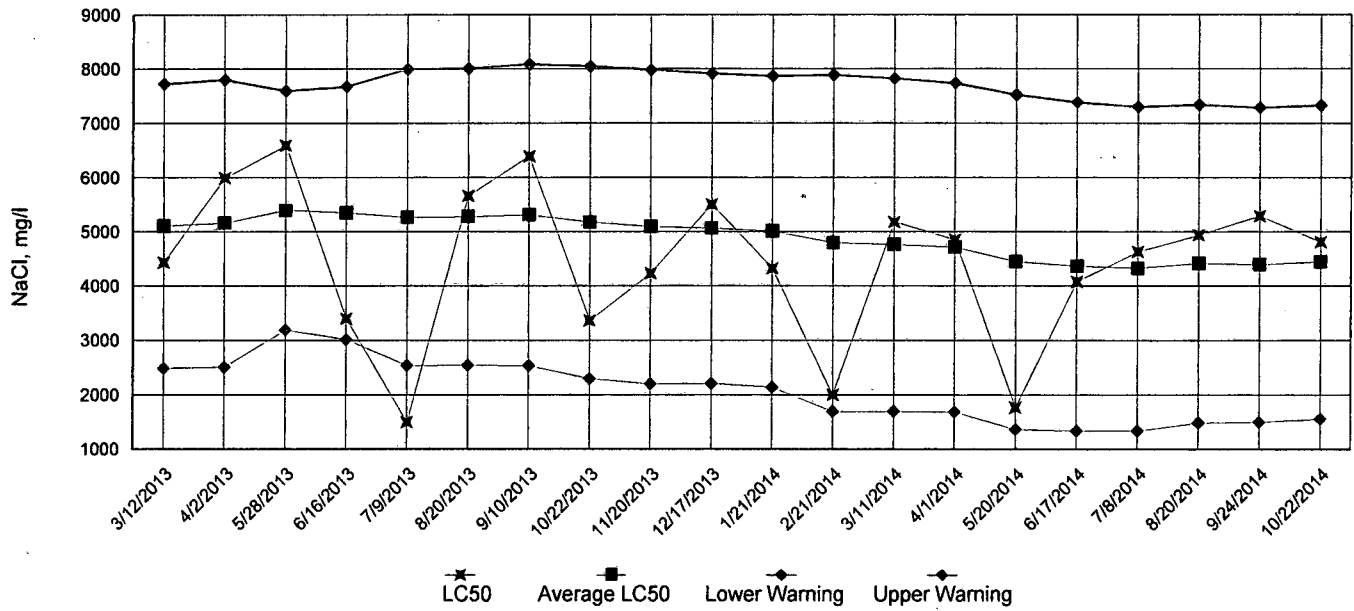
Effluent Conc.: 100 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	6.1	7.4	7.6	7.2	8.0	7.8	7.5
	Final *1	7.0	6.9	7.3	7.1	8.0	7.3	6.3
	Final *2	7.8	7.8	7.7	7.7	7.8	7.5	NA
pH, units	Initial	7.4	7.6	7.4	7.3	7.5	7.8	7.5
	Final *1	8.1	7.8	7.6	7.8	8.2	7.8	7.7
	Final *2	8.3	7.9	8.0	8.1	8.2	8.1	NA
Alkalinity, mg CaCO ₃ /l	140	NA	150	NA	150	NA	NA	NA
Hardness, mg CaCO ₃ /l	230	NA	250	NA	220	NA	NA	NA
Conductivity, umhos/cm	1000	1100	1000	940	930	940	940	940
Res. Chlorine, mg/l	<0.05	NA	<0.05	NA	<0.05	NA	NA	NA

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

Appendix A4: Test 1000.0

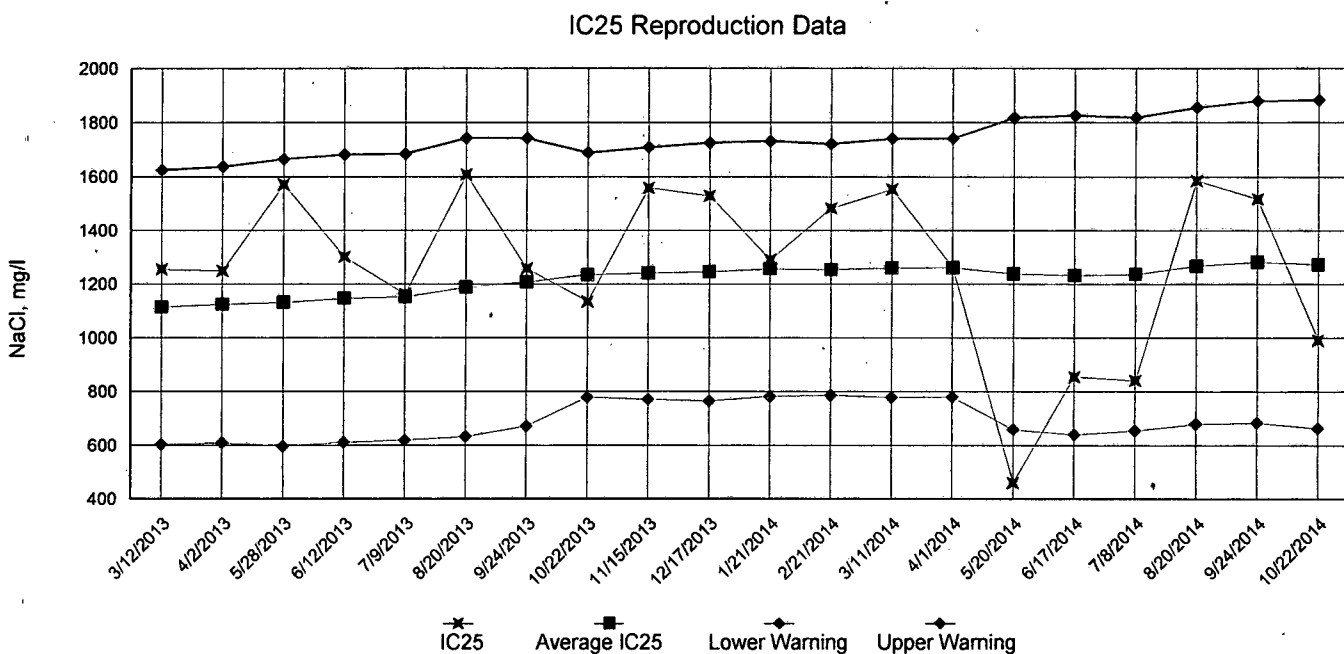
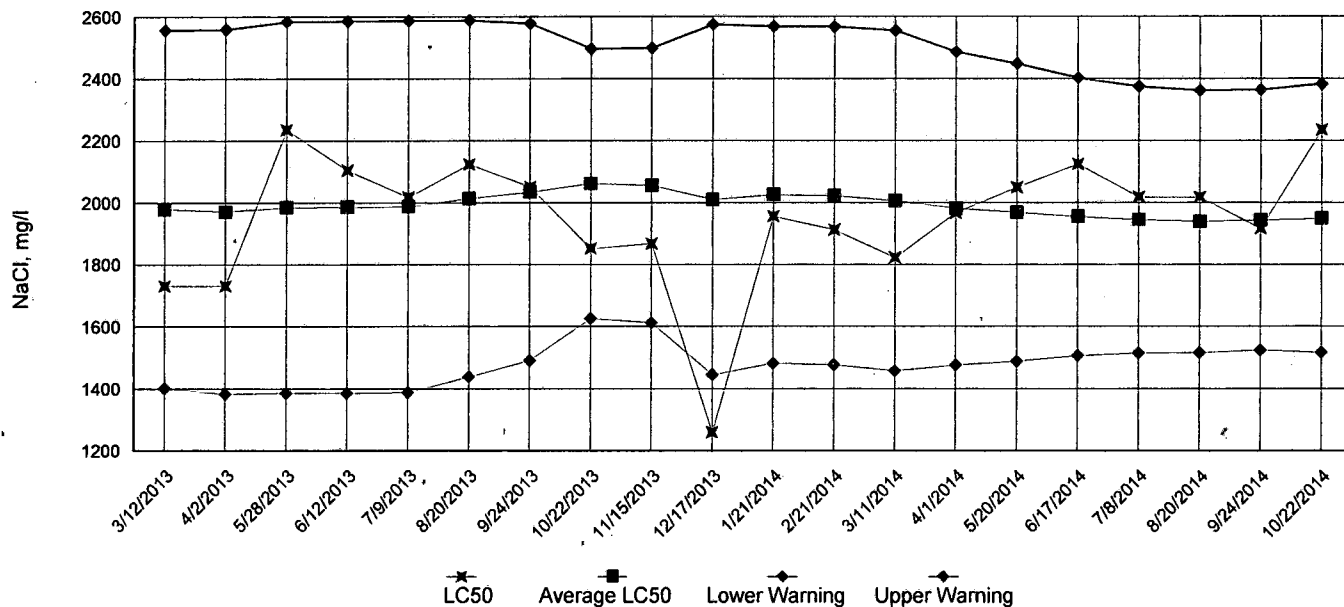
Chronic Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



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

LC50 Survival 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 21, 2014 at 1410

Date and Time Test Terminated: October 28, 2014 at 1520

Dilution water used: Synthetic Moderately Hard Water #4147

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	100	100	100	100	100	0.00
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	87.5	87.5	100	100	100	95.0	7.21
75 %	100	100	100	87.5	100	100	100	97.5	5.73
100 %	100	100	87.5	100	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	0.310	0.399	0.386	0.390	0.390	0.375	9.77
32 %	0.398	0.398	0.352	0.405	0.402	0.391	5.63
42 %	0.354	0.425	0.460	0.404	0.488	0.426	12.1
56 %	0.376	0.409	0.396	0.425	0.408	0.403	4.51
75 %	0.459	0.431	0.481	0.388	0.454	0.443	7.98
100 %	0.368	0.491	0.351	0.412	0.431	0.411	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 %)	_____ YES	_____ X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ 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 %)	_____ YES	_____ X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ 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 SAMPLE No. 1 COLLECTED ending: DATE: October 20, 2014 TIME: 0500
 NPDES NO.: AR0022004 AFIN# 44-00018 SAMPLE No. 2 COLLECTED ending: DATE: October 22, 2014 TIME: 0500
 CONTACT: Mr. Bill Eoff SAMPLE No. 3 COLLECTED ending: DATE: October 24, 2014 TIME: 0500
 ANALYST: 280, 304, 310 Test Initiated: DATE: October 21, 2014 TIME: 1410
 Test Terminated: DATE: October 28, 2014 TIME: 1520

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.5	7.8	8.2	8.2	8.3	8.7	7.7
Final	7.2	7.5	7.4	7.0	8.0	7.8	6.3
pH Initial	7.9	7.9	7.5	7.5	7.5	7.7	7.4
Final	7.8	7.6	7.3	7.2	7.8	7.6	7.2
Alkalinity	58	NA	58	NA	59	NA	NA
Hardness	89	NA	89	NA	89	NA	NA
Conductivity	320	330	300	300	290	290	290
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.4	7.6	8.2	8.1	7.8	8.4	7.6
Final	7.0	6.6	7.4	7.1	8.2	8.6	5.7
pH Initial	7.8	7.9	7.5	7.4	7.6	7.8	7.5
Final	7.8	7.6	7.4	7.5	8.0	7.6	7.2
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	530	560	530	520	520	500	490
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.6	7.8	8.2	8.0	7.9	8.3	7.6
Final	7.2	6.8	7.5	6.9	8.0	7.2	6.4
pH Initial	7.7	7.8	7.5	7.4	7.6	7.8	7.5
Final	7.9	7.7	7.5	7.6	8.0	7.7	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	600	630	590	590	580	560	560
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.3	7.7	7.8	7.7	8.2	8.3	7.6
Final	7.1	6.4	7.3	7.3	7.8	7.1	6.7
pH Initial	7.7	7.9	7.5	7.5	7.6	7.8	7.5
Final	8.0	7.7	7.5	7.7	8.0	7.8	7.6
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	700	740	680	680	670	640	610
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.3	7.6	7.7	7.7	8.3	8.0	7.7
Final	7.2	6.6	7.3	7.0	7.9	7.5	6.7
pH Initial	7.7	7.9	7.4	7.4	7.7	7.9	7.6
Final	8.1	7.9	7.6	7.7	8.1	7.8	7.6
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	840	880	840	830	820	770	770
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.1	7.4	7.6	7.2	8.0	7.8	7.5
Final	7.0	6.9	7.3	7.1	8.0	7.3	6.3
pH Initial	7.4	7.6	7.4	7.3	7.5	7.8	7.5
Final	8.1	7.8	7.6	7.8	8.2	7.8	7.7
Alkalinity	140	NA	150	NA	150	NA	NA
Hardness	230	NA	250	NA	220	NA	NA
Conductivity	1000	1100	1000	940	930	940	940
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 21, 2014 at 1350

Date and Time Test Terminated: October 27, 2014 at 1350

Dilution water used: Synthetic Moderately Hard Water #4147

PERCENT SURVIVAL

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

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

Replicates	Control	Percent Effluent				
		32 %	42 %	56 %	75 %	100 %
A	24	29	29	31	27	34
B	25	32	31	29	26	31
C	24	29	28	31	27	31
D	29	30	26	38	30	34
E	26	19	29	34	32	32
F	25	27	28	30	36	35
G	24	14	15	22	24	26
H	24	17	28	32	32	18
I	23	30	28	27	23	31
J	12	15	13	34	26	28
Mean per Adult	23.6	24.2	25.5	30.8	28.3	30.0
Mean per Surviving Adult	23.6	24.2	25.5	30.8	28.3	30.0
CV %	18.7	29.2	24.3	14.1	14.4	16.8

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 %)	_____ YES	_____ X _____ NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ _____ NO

2. Steel's Many-One Rank 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 %)	_____ YES	_____ X _____ NO
b.) 1/2 LOW FLOW DILUTION	(NA)	_____ YES	_____ _____ 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: 18.7 (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: Huntsville Water Utilities SAMPLE No. 1 COLLECTED ending: DATE: October 20, 2014 TIME: 0500
 NPDES NO.: AR0022004 AFIN# 44-00018 SAMPLE No. 2 COLLECTED ending: DATE: October 22, 2014 TIME: 0500
 CONTACT: Mr. Bill Eoff SAMPLE No. 3 COLLECTED ending: DATE: October 24, 2014 TIME: 0500
 ANALYST: 280, 304, 310 Test Initiated: DATE: October 21, 2014 TIME: 1350
 Test Terminated: DATE: October 27, 2014 TIME: 1350

DILUTION Control	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.5	7.8	8.2	8.2	8.3	8.7	7.7
Final	7.9	7.7	7.6	8.4	7.6	7.7	NA
pH Initial	7.9	7.9	7.5	7.5	7.5	7.7	7.4
Final	8.0	7.5	7.4	7.6	7.7	7.6	NA
Alkalinity	58	NA	58	NA	59	NA	NA
Hardness	89	NA	89	NA	89	NA	NA
Conductivity	320	330	300	300	290	290	290
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.4	7.6	8.2	8.1	7.8	8.4	7.6
Final	7.9	7.9	7.7	8.9	7.8	7.5	NA
pH Initial	7.8	7.9	7.5	7.4	7.6	7.8	7.5
Final	8.0	7.7	7.6	7.8	7.9	7.8	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	530	560	530	520	520	500	490
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.6	7.8	8.2	8.0	7.9	8.3	7.6
Final	7.8	8.0	7.4	8.1	7.7	7.4	NA
pH Initial	7.7	7.8	7.5	7.4	7.6	7.8	7.5
Final	8.1	7.7	7.7	7.9	8.0	7.8	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	600	630	590	590	580	560	560
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.3	7.7	7.8	7.7	8.2	8.3	7.6
Final	7.8	8.0	7.7	8.2	8.1	7.5	NA
pH Initial	7.7	7.9	7.5	7.5	7.6	7.8	7.5
Final	8.2	7.8	7.8	8.0	8.0	7.9	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	700	740	680	680	670	640	610
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.3	7.6	7.7	7.7	8.3	8.0	7.7
Final	7.9	7.8	7.8	7.8	8.2	7.8	NA
pH Initial	7.7	7.9	7.4	7.4	7.7	7.9	7.6
Final	8.2	7.8	7.9	8.1	8.1	8.0	NA
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	840	880	840	830	820	770	770
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY						
	1	2	3	4	5	6	7
D.O. Initial	6.1	7.4	7.6	7.2	8.0	7.8	7.5
Final	7.8	7.8	7.7	7.7	7.8	7.5	NA
pH Initial	7.4	7.6	7.4	7.3	7.5	7.8	7.5
Final	8.3	7.9	8.0	8.1	8.2	8.1	NA
Alkalinity	140	NA	150	NA	150	NA	NA
Hardness	230	NA	250	NA	220	NA	NA
Conductivity	1000	1100	1000	940	930	940	940
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA



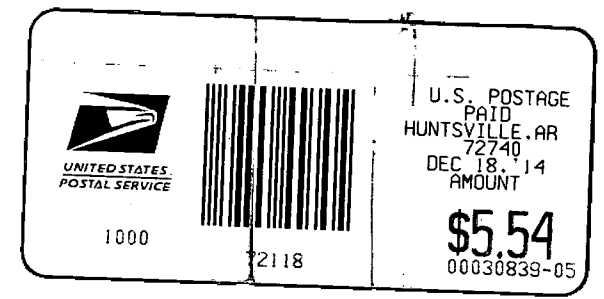
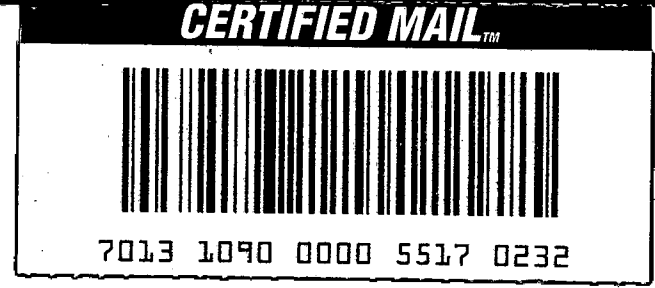
8600 Kanis Road
 Little Rock, AR 72204-2322
 (501) 224-5060
 FAX (501) 224-5072

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

PAGE OF

Client: Huntsville Water Utilities			PO No.		NO OF BOTTLES	Cd & Pb Chronic	ANALYSES REQUESTED										AIC CONTROL NO: 183759												
Project Reference: Bio Monitoring			SAMPLE MATRIX				W	A	S	O	I	L	S	S	S	S	S	S	S	S	S	AIC PROPOSAL NO:							
Project Manager: Bill Eoff			G	C	A	M																P	B	P	R	L	S	S	S
Sampled By: Bill Eoff							A	I	C	T	I	M	E	S	I	D	E	S	S	S	S								
AIC No.	Sample Identification	Date/Time Collected	B	P	R	L																S	S	S	S	S	S	S	S
1	Huntsville#1	10/19/14 @ 7:00- 10/20/14 @ 5:00					X	X																					
Container Type p			Preservative 4C		Field pH calibration on _____ @ _____ 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) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: <u>BM 20</u>					Date/Time: <u>10/20/14 @ 8:00</u>					Received By: _____					Date/Time: _____									
Expedited results requested by: _____					Relinquished By: _____					Date/Time: _____					Received in Lab By: <u>Lynne Hester</u>					Date/Time: <u>10-21-14</u>									
Who should AIC contact with questions: <u>Bill Eoff</u>					Comments: <u>809 4081 1911</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>																													

Huntsville Water U.S. Aes
P.O. Box 430
Huntsville, AR 72740



A.D.E.Q.
Water Enforcement Division
5301 Northshore Drive
North Little Rock, AR 72118-5317

