March 2, 2015

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

Control No. 187733-1

Prepared for:

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

Prepared by:

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AMERICAN INTERPLEX CORPORATION
LABORATORIES

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 %. Any statistical difference with sublethal effects cannot be considered toxic due to the minimum significant difference (PMSD) calculated result being below the lower PMSD bounds. **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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Table of Contents

I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	95.0	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.292	PASS
Control Growth CV < or = 40%	13.8	PASS
Growth Minimum Significant Difference 12 to 30%	17.0	PASS
Critical Dilution CV < or = 40%	7.00	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	28.5	PASS
Control CV < or = 40% per Surviving Female	18.3	PASS
Reproduction Minimum Significant Difference 13 to 47%	11.6	BELOW
Critical Dilution CV < or = 40%	8.21	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)	8.4	8.2	7.1
pH (standard units)	7.5	7.5	7.4
Alkalinity (mg/l as CaCO3)	170	150	150
Hardness (mg/l as CaCO3)	180	180	180
Conductivity (umhos/cm)	960	920	940
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	<0.1	0.19	0.39

2. Dilution Water Samples: Synthetic Moderately Hard Water #4184
   a. Dates Prepared: February 7 through February 21, 2015
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.9	7.9	8.2
pH (standard units)	7.4	7.6	7.6
Alkalinity (mg/l as CaCO3)	64	64	64
Hardness (mg/l as CaCO3)	88	90	90
Conductivity (umhos/cm)	250	250	250
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:	February 19, 2015 at 1700
Date & Time Test Terminated:	February 26, 2015 at 1515
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:	February 19, 2015 at 1405
Date & Time Test Terminated:	February 25, 2015 at 1215
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 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 February 4, 2015 at 1425 to February 11, 2015 at 1310
The results were as follows: (Control No. 187315-1.)
Survival LC-50: 4540 mg/l
Growth IC-25: 3331 mg/l
Growth PMSD: 16.3

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on February 4, 2015 at 1530 to February 10, 2015 at 1530
The results were as follows: (Control No. 187315-2.)
Survival LC-50: 2180 mg/l
Growth IC-25: 1316 mg/l
Growth PMSD: 23.4

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.341
Hardness	EPA 200.7	101	0.300
pH	SM 4500-H+ B	101	0.404
Conductivity	EPA 120.1	101	5.52

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: February 19, 2015
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: February 19, 2015
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

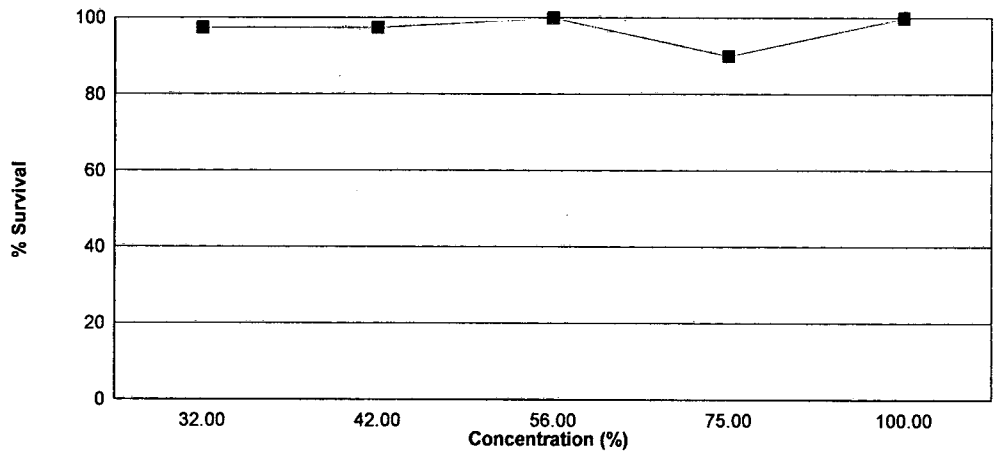
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

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 February 19, 2015 at 1700 and continued through February 26, 2015 at 1515. 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	95.0	0.277
32 %	97.5	0.382
42 %	97.5	0.324
56 %	100	0.373
75 %	90.0	0.348
100 %	100	0.386

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

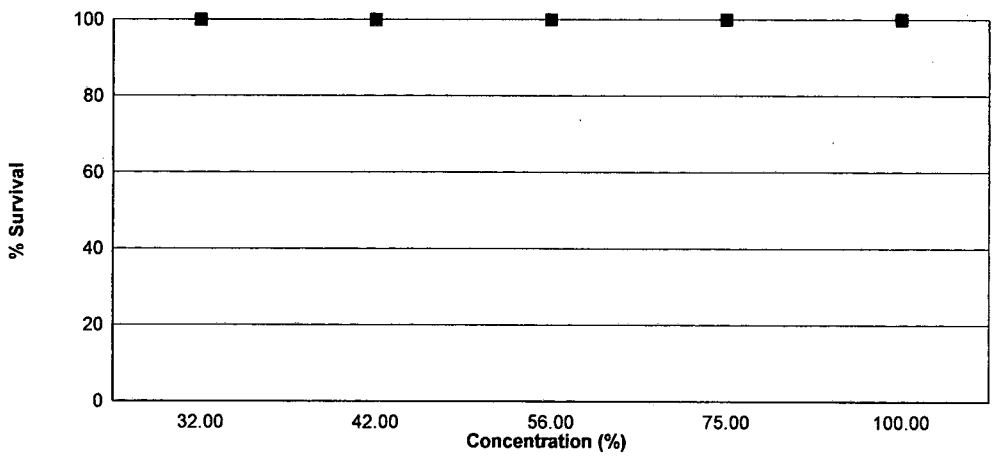
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

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 February 19, 2015 at 1405 and continued through February 25, 2015 at 1215. 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 6-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	28.5
32 %	100	27.6
42 %	100	28.8
56 %	100	29.0
75 %	100	29.4
100 %	100	30.1

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: February 19, 2015 at 1700
Date and Time Test Terminated: February 26, 2015 at 1515

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	7	7	7	7	7
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	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	7	7	7	7	7	7
42 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	7	7
	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	7	6	6	6	6	6
	D	8	7	7	7	7	7	7
	E	8	7	7	7	7	7	7
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	8
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: February 19, 2015 at 1700
Test Terminated: February 26, 2015 at 1515
Drying Started: February 25, 2015 at 0910
Drying Ended: February 27, 2015 at 1350

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.93890	.94082	0.00192	8	0.240
	B	.93892	.94084	0.00192	8	0.240
	C	.93819	.94038	0.00219	8	0.274
	D	.93715	.93966	0.00251	8	0.314
	E	.94009	.94264	0.00255	8	0.319
32 %	A	.93805	.94082	0.00277	8	0.346
	B	.94037	.94392	0.00355	8	0.444
	C	.94054	.94342	0.00288	8	0.360
	D	.93835	.94136	0.00301	8	0.376
	E	.93136	.93442	0.00306	8	0.382
42 %	A	.93649	.93887	0.00238	8	0.298
	B	.94204	.94459	0.00255	8	0.319
	C	.93919	.94165	0.00246	8	0.308
	D	.93367	.93649	0.00282	8	0.352
	E	.93574	.93847	0.00273	8	0.341
56 %	A	.93608	.93903	0.00295	8	0.369
	B	.93542	.93820	0.00278	8	0.348
	C	.93569	.93881	0.00312	8	0.390
	D	.93520	.93831	0.00311	8	0.389
	E	.93713	.94009	0.00296	8	0.370
75 %	A	.93772	.94018	0.00246	8	0.308
	B	.93466	.93735	0.00269	8	0.336
	C	.93018	.93274	0.00256	8	0.320
	D	.94036	.94361	0.00325	8	0.406
	E	.93678	.93972	0.00294	8	0.368
100 %	A	.94049	.94380	0.00331	8	0.414
	B	.93810	.94085	0.00275	8	0.344
	C	.94278	.94597	0.00319	8	0.399
	D	.93513	.93830	0.00317	8	0.396
	E	.93646	.93947	0.00301	8	0.376

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: February 19, 2015 at 1405
Date and Time Test Terminated: February 25, 2015 at 1215

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	6	4	0	4	6	5	5	4	5	2	41	10	4.10
4	0	0	0	1	0	0	0	0	0	0	1	10	0.100
5	12	11	6	14	11	11	9	10	11	9	104	10	10.4
6	15	9	12	17	15	13	15	16	14	13	139	10	13.9
7													
8													
TOTAL	33	24	18	36	32	29	29	30	30	24	285	10	28.5

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	5	5	4	5	4	3	4	5	1	5	41	10	4.10
4	0	0	0	0	7	0	0	0	0	0	7	10	0.700
5	11	10	10	9	10	10	11	11	12	9	103	10	10.3
6	10	15	16	14	15E	16	12	13	15	14	125	10	12.5
7													
8													
TOTAL	26	30	30	28	21	29	27	29	28	28	276	10	27.6

E = Excluded fourth brood neonates

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	5	4	3	6	5	3	2	4	4	3	39	10	3.90
4	0	0	0	7	0	2	0	0	0	0	9	10	0.900
5	12	13	11	9	10	12	9	10	13	11	110	10	11.0
6	16	17	14	15E	16	14	13	15	11	14	130	10	13.0
7													
8													
TOTAL	33	34	28	22	31	31	24	29	28	28	288	10	28.8

E = Excluded fourth brood neonates

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: February 19, 2015 at 1405
Date and Time Test Terminated: February 25, 2015 at 1215

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	3	3	6	6	3	4	1	3	6	39	10	3.90
4	0	0	1	0	1	0	0	0	0	0	2	10	0.200
5	11	10	10	11	10	10	10	11	11	10	104	10	10.4
6	10	15	16	14	15	16	15	15	13	16	145	10	14.5
7													
8													
TOTAL	25	28	30	31	32	29	29	27	27	32	290	10	29.0

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	5	3	4	6	5	7	3	4	1	43	10	4.30
4	0	1	0	0	0	0	0	1	0	0	2	10	0.200
5	10	9	10	12	11	11	10	11	12	10	106	10	10.6
6	15	14	16	15	13	12	14	13	15	16	143	10	14.3
7													
8													
TOTAL	30	29	29	31	30	28	31	28	31	27	294	10	29.4

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	4	3	2	4	5	4	4	4	3	0	33	10	3.30
4	0	0	0	0	0	0	0	0	0	1	1	10	0.100
5	13	11	11	11	12	12	12	11	11	14	118	10	11.8
6	17	14	15	13	17	15	16	13	15	14	149	10	14.9
7													
8													
TOTAL	34	28	28	28	34	31	32	28	29	29	301	10	30.1

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	0.87500	1.20940
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	0.87500	1.20940
3	42 %	1	1.00000	1.39310
3	42 %	2	1.00000	1.39310
3	42 %	3	0.87500	1.20940
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	0.75000	1.04720
5	75 %	4	0.87500	1.20940
5	75 %	5	0.87500	1.20940
6	100 %	1	1.00000	1.39310
6	100 %	2	1.00000	1.39310
6	100 %	3	1.00000	1.39310
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))
D = 0.1799		
W = 0.899		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data FAIL normality test (alpha = 0.01).		

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 %	32.50	16.00	5.00	
5	75 %	24.00	16.00	5.00	
6	100 %	32.50	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
D = 0.02397		
W = 0.9542		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data PASS normality test (alpha = 0.01).		

Bartlett's Test for Homogeneity of Variance		No Transformation
Calculated B1 statistic = 3.684		
Critical B = 15.086	(alpha = 0.01, df = 5)	
Data PASS B1 homogeneity test at 0.01 level.		

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation
SOURCE	DF	SS	MS	F
Between	5	0.04386	0.008772	8.783
Within (Error)	24	0.02397	0.0009988	
Total	29	0.06783		

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	0.2774	0.2774		
2	32 %	0.3816	0.3816	-5.213	
3	42 %	0.3236	0.3236	-2.311	
4	56 %	0.3732	0.3732	-4.793	
5	75 %	0.3476	0.3476	-3.512	
6	100 %	0.3858	0.3858	-5.423	

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	0.04717	17	-0.1042
3	42 %	5	0.04717	17	-0.0462
4	56 %	5	0.04717	17	-0.0958
5	75 %	5	0.04717	17	-0.0702
6	100 %	5	0.04717	17	-0.1084

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 = 0.1118		
D* = 0.8771		
Critical D* = 1.035	(alpha = 0.01, N = 60)	
Data PASS normality test (alpha = 0.01).		

Bartlett's Test for Homogeneity of Variance		No Transformation
Calculated B1 statistic = 16.35		
Critical B = 15.086	(alpha = 0.01, df = 5)	
Data FAIL B1 homogeneity test at 0.01 level.		

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 %	91.00	75.00	10.00	
3	42 %	102.50	75.00	10.00	
4	56 %	103.00	75.00	10.00	
5	75 %	105.00	75.00	10.00	
6	100 %	107.50	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	35.6	7.12	0.694
Within (Error)	54	553.8	10.26	
Total	59	589.4		

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	28.5	28.5		
2	32 %	27.6	27.6	0.6283	
3	42 %	28.8	28.8	-0.2094	
4	56 %	29	29	-0.349	
5	75 %	29.4	29.4	-0.6283	
6	100 %	30.1	30.1	-1.117	

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	3.309	11.6	0.9
3	42 %	10	3.309	11.6	-0.3
4	56 %	10	3.309	11.6	-0.5
5	75 %	10	3.309	11.6	-0.9
6	100 %	10	3.309	11.6	-1.6

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: February 19, 2015 at 1115
Date and Time Test Terminated: February 26, 2015 at 1515

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	8.0	7.9	8.4	8.2	8.0	8.3
	Final *1	8.1	7.6	7.9	7.3	8.1	7.7	6.9
	Final *2	8.0	7.9	7.9	7.9	8.2	8.1	
pH, units	Initial	7.4	7.6	7.6	8.0	7.6	7.7	7.6
	Final *1	7.5	7.5	7.7	7.4	7.6	7.8	7.7
	Final *2	7.7	7.8	7.8	7.5	8.0	8.1	
Alkalinity, mg CaCO3/l		64	NA	64	NA	64	NA	NA
Hardness, mg CaCO3/l		88	NA	90	NA	90	NA	NA
Conductivity, umhos/cm		250	230	250	320	250	230	270
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	8.2	8.0	8.2	8.1	7.9	7.8	8.3
	Final *1	7.9	7.2	7.8	7.3	7.9	7.7	7.7
	Final *2	7.9	8.0	8.5	7.8	8.4	8.2	
pH, units	Initial	7.4	7.7	7.5	7.9	7.6	7.8	7.6
	Final *1	7.7	7.6	8.0	7.6	7.9	8.0	8.0
	Final *2	8.0	8.1	8.0	7.8	8.2	8.4	

Effluent Conc.: 42 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	8.2	8.3	8.0	7.8	8.2	8.3
	Final *1	7.8	7.3	7.8	7.5	7.7	7.5	7.8
	Final *2	7.8	8.2	8.3	8.4	8.5	8.3	
pH, units	Initial	7.4	7.6	7.5	7.9	7.6	7.8	7.6
	Final *1	7.8	7.7	8.0	7.6	7.9	8.0	8.0
	Final *2	7.8	8.2	8.1	8.0	8.3	8.4	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: February 19, 2015 at 1115
Date and Time Test Terminated: February 26, 2015 at 1515

Effluent Conc.: 56 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	8.0	7.8	8.1	7.8	8.3	8.2
	Final *1	8.0	7.4	7.6	7.3	7.7	7.8	7.7
	Final *2	8.0	8.1	8.0	8.2	8.2	8.2	
pH, units	Initial	7.4	7.6	7.5	7.8	7.6	7.9	7.7
	Final *1	7.8	7.9	8.0	7.7	8.0	8.1	8.1
	Final *2	8.1	8.2	8.2	8.1	8.3	8.4	

Effluent Conc.: 75 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	7.9	7.9	8.0	8.0	8.4	7.8
	Final *1	7.8	7.1	7.4	7.3	7.6	7.7	7.2
	Final *2	7.8	8.0	8.1	8.1	8.0	7.9	
pH, units	Initial	7.4	7.6	7.4	7.8	7.5	7.9	7.6
	Final *1	7.8	7.8	8.1	7.8	8.1	8.1	8.1
	Final *2	8.1	8.3	8.2	8.1	8.4	8.5	

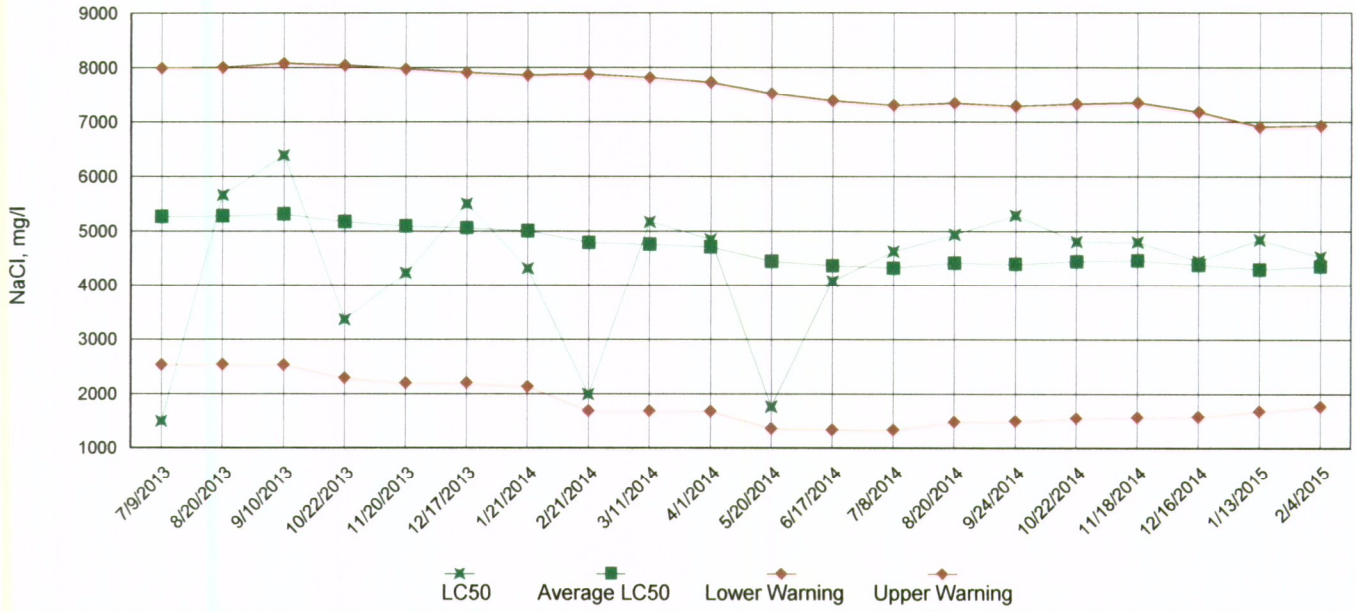
Effluent Conc.: 100 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.4	7.4	8.2	7.8	7.1	7.9	7.5
	Final *1	7.6	7.1	7.4	6.8	7.4	7.4	7.4
	Final *2	7.6	8.2	8.5	8.1	8.1	7.9	
pH, units	Initial	7.5	7.4	7.5	7.7	7.4	7.8	7.4
	Final *1	7.9	7.9	8.2	7.7	8.1	8.2	8.2
	Final *2	8.2	8.4	8.3	8.2	8.4	8.5	
Alkalinity, mg CaCO3/l		170	NA	150	NA	150	NA	NA
Hardness, mg CaCO3/l		180	NA	180	NA	180	NA	NA
Conductivity, umhos/cm		960	900	920	1100	940	880	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

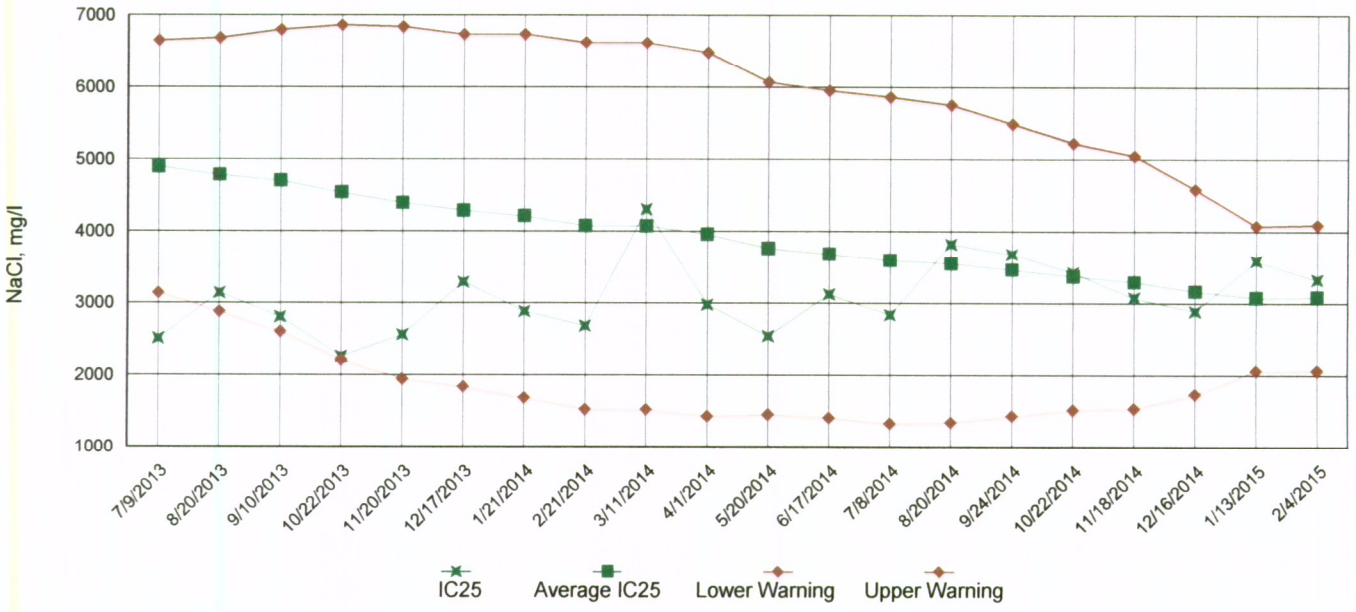
Appendix A4: Test 1000.0

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

LC50 Survival Data



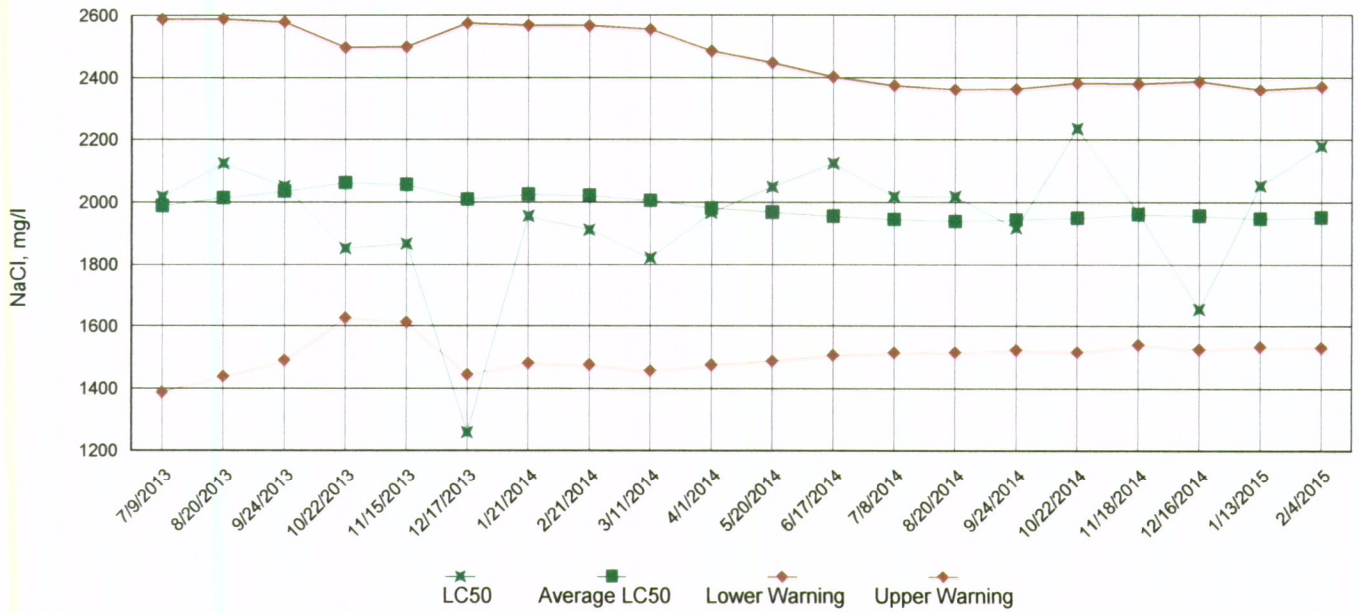
IC25 Growth Data



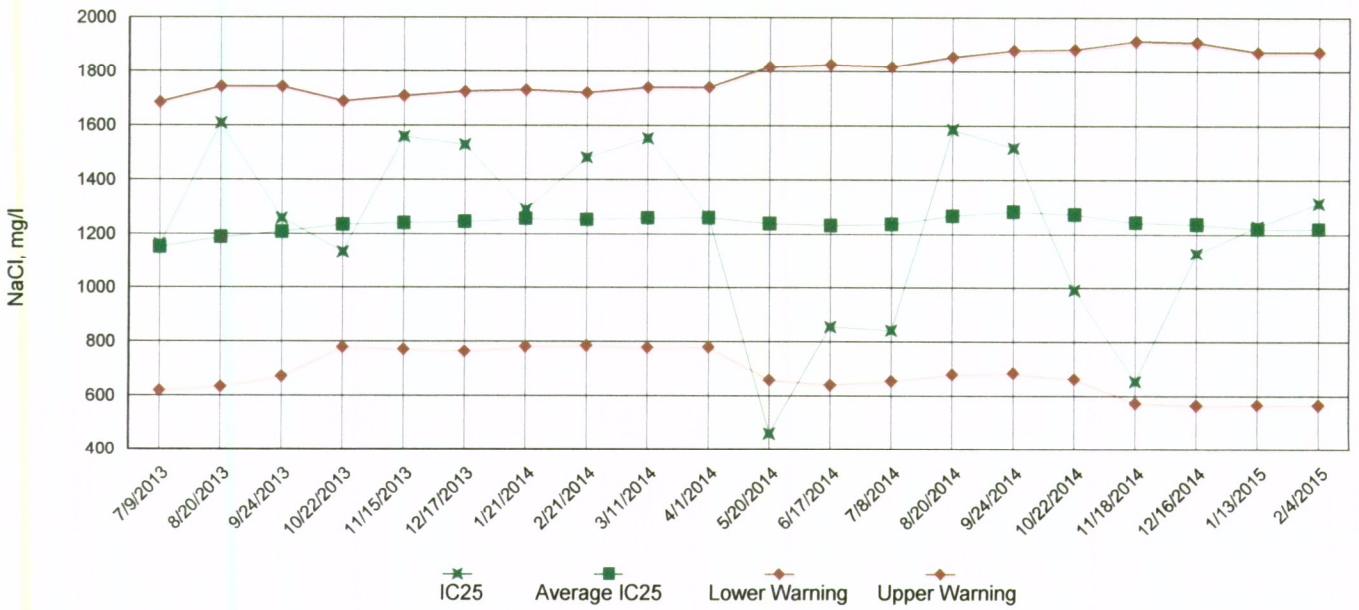
Appendix A4: Test 1002.0

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: February 19, 2015 at 1700
Date and Time Test Terminated: February 26, 2015 at 1515
Dilution water used: Synthetic Moderately Hard Water #4184

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers A	B	C	D	E	Mean percent survival 24 hr	48 hr	7 days	CV%
Control	100	87.5	100	87.5	100	100	100	95.0	7.21
32 %	100	100	100	100	87.5	100	97.5	97.5	5.73
42 %	100	100	87.5	100	100	100	100	97.5	5.73
56 %	100	100	100	100	100	100	100	100	0.00
75 %	100	100	75.0	87.5	87.5	100	92.5	90.0	11.6
100 %	100	100	100	100	100	100	100	100	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers A	B	C	D	E	Mean dry weight, mg	CV%
Control	0.240	0.240	0.274	0.314	0.319	0.277	13.8
32 %	0.346	0.444	0.360	0.376	0.382	0.382	9.86
42 %	0.298	0.319	0.308	0.352	0.341	0.324	6.96
56 %	0.369	0.348	0.390	0.389	0.370	0.373	4.63
75 %	0.308	0.336	0.320	0.406	0.368	0.348	11.4
100 %	0.414	0.344	0.399	0.396	0.376	0.386	7.00

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: 13.8 (TQP6C)

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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: 280, 304, 310

SAMPLE No. 1 COLLECTED ending: DATE: February 18, 2015 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: February 20, 2015 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: February 23, 2015 TIME: 0500
Test Initiated: DATE: February 19, 2015 TIME: 1700
Test Terminated: DATE: February 26, 2015 TIME: 1515

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	8.0	7.9	8.4	8.2	8.0	8.3
Final	8.1	7.6	7.9	7.3	8.1	7.7	6.9
pH Initial	7.4	7.6	7.6	8.0	7.6	7.7	7.6
Final	7.5	7.5	7.7	7.4	7.6	7.8	7.7
Alkalinity	64	NA	64	NA	64	NA	NA
Hardness	88	NA	90	NA	90	NA	NA
Conductivity	250	230	250	320	250	230	270
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.0	8.2	8.1	7.9	7.8	8.3
Final	7.9	7.2	7.8	7.3	7.9	7.7	7.7
pH Initial	7.4	7.7	7.5	7.9	7.6	7.8	7.6
Final	7.7	7.6	8.0	7.6	7.9	8.0	8.0
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	470	450	460	560	470	440	530
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.2	8.3	8.0	7.8	8.2	8.3
Final	7.8	7.3	7.8	7.5	7.7	7.5	7.8
pH Initial	7.4	7.6	7.5	7.9	7.6	7.8	7.6
Final	7.8	7.7	8.0	7.6	7.9	8.0	8.0
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	540	510	520	630	530	500	580
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	8.0	7.8	8.1	7.8	8.3	8.2
Final	8.0	7.4	7.6	7.3	7.7	7.8	7.7
pH Initial	7.4	7.6	7.5	7.8	7.6	7.9	7.7
Final	7.8	7.9	8.0	7.7	8.0	8.1	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	640	600	620	740	630	590	690
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.9	7.9	8.0	8.0	8.4	7.8
Final	7.8	7.1	7.4	7.3	7.6	7.7	7.2
pH Initial	7.4	7.6	7.4	7.8	7.5	7.9	7.6
Final	7.8	7.8	8.1	7.8	8.1	8.1	8.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	780	720	740	870	750	700	820
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.4	7.4	8.2	7.8	7.1	7.9	7.5
Final	7.6	7.1	7.4	6.8	7.4	7.4	7.4
pH Initial	7.5	7.4	7.5	7.7	7.4	7.8	7.4
Final	7.9	7.9	8.2	7.7	8.1	8.2	8.2
Alkalinity	170	NA	150	NA	150	NA	NA
Hardness	180	NA	180	NA	180	NA	NA
Conductivity	960	900	920	1100	940	880	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: February 19, 2015 at 1405
Date and Time Test Terminated: February 25, 2015 at 1215
Dilution water used: Synthetic Moderately Hard Water #4184

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	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

		Percent Effluent				
Replicates	Control	32 %	42 %	56 %	75 %	100 %
A	33	26	33	25	30	34
B	24	30	34	28	29	28
C	18	30	28	30	29	28
D	36	28	22	31	31	28
E	32	21	31	32	30	34
F	29	29	31	29	28	31
G	29	27	24	29	31	32
H	30	29	29	27	28	28
I	30	28	28	27	31	29
J	24	28	28	32	27	29
Mean per Adult	28.5	27.6	28.8	29.0	29.4	30.1
Mean per Surviving Adult	28.5	27.6	28.8	29.0	29.4	30.1
CV %	18.3	9.54	13.0	7.96	4.86	8.21

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: __18.3__ (TQP3B)

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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: 280, 304, 310

SAMPLE No. 1 COLLECTED ending: DATE: February 18, 2015 TIME: 0500
SAMPLE No. 2 COLLECTED ending: DATE: February 20, 2015 TIME: 0500
SAMPLE No. 3 COLLECTED ending: DATE: February 23, 2015 TIME: 0500
Test Initiated: DATE: February 19, 2015 TIME: 1405
Test Terminated: DATE: February 25, 2015 TIME: 1215

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	8.0	7.9	8.4	8.2	8.0	8.3
Final	8.0	7.9	7.9	7.9	8.2	8.1	--
pH Initial	7.4	7.6	7.6	8.0	7.6	7.7	7.6
Final	7.7	7.8	7.8	7.5	8.0	8.1	--
Alkalinity	64	NA	64	NA	64	NA	NA
Hardness	88	NA	90	NA	90	NA	NA
Conductivity	250	230	250	320	250	230	270
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 32 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.0	8.2	8.1	7.9	7.8	8.3
Final	7.9	8.0	8.5	7.8	8.4	8.2	--
pH Initial	7.4	7.7	7.5	7.9	7.6	7.8	7.6
Final	8.0	8.1	8.0	7.8	8.2	8.4	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	470	450	460	560	470	440	530
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 42 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.2	8.3	8.0	7.8	8.2	8.3
Final	7.8	8.2	8.3	8.4	8.5	8.3	--
pH Initial	7.4	7.6	7.5	7.9	7.6	7.8	7.6
Final	7.8	8.2	8.1	8.0	8.3	8.4	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	540	510	520	630	530	500	580
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 56 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	8.0	7.8	8.1	7.8	8.3	8.2
Final	8.0	8.1	8.0	8.2	8.2	8.2	--
pH Initial	7.4	7.6	7.5	7.8	7.6	7.9	7.7
Final	8.1	8.2	8.2	8.1	8.3	8.4	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	640	600	620	740	630	590	690
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 75 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.9	7.9	8.0	8.0	8.4	7.8
Final	7.8	8.0	8.1	8.1	8.0	7.9	--
pH Initial	7.4	7.6	7.4	7.8	7.5	7.9	7.6
Final	8.1	8.3	8.2	8.1	8.4	8.5	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	780	720	740	870	750	700	820
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 100 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.4	7.4	8.2	7.8	7.1	7.9	7.5
Final	7.6	8.2	8.5	8.1	8.1	7.9	--
pH Initial	7.5	7.4	7.5	7.7	7.4	7.8	7.4
Final	8.2	8.4	8.3	8.2	8.4	8.5	--
Alkalinity	170	NA	150	NA	150	NA	NA
Hardness	180	NA	180	NA	180	NA	NA
Conductivity	960	900	920	1100	940	880	1000
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.

AIC CONTROL NO: 187733
AIC PROPOSAL NO:
Carrier:
Received on Ice (4°C)? YES 1.1°C NO

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic	Remarks
(1)	Huntsville#2	2/17/15 @ 7:00 2/18/15 @ 5:00		X	X		3	X	
		Container Type	P						Field pH calibration
		Preservative	4C						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
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
Phone: (479) - 738 - 2087 Fax: (479) - 738 - 1285
Report Attention to: Bill Eoff
Report Address to: Bill Eoff
Huntsville Water Utilities
P.O. Box 430

Relinquished By:	Date/Time	Received By:	Date/Time
BM	2/18/15 @ 8:00		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		[signature]	2/19/15 1010

Comments:
FedEx 9764 3753 5621

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.

AIC CONTROL NO: 187733
AIC PROPOSAL NO:
Carrier:
Received on Ice (4°C)? (YES) 2.3°C NO

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic	Remarks
(2)	Huntsville#3	2/19/15 @ 7:00 2/20/15 @ 5:00		X	X		3	X	
		Container Type	P						Field pH calibration
		Preservative	4C						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
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
Phone: (479) - 738 - 2081 Fax: (479) - 738 - 1285
Report Attention to: Bill Eoff
Report Address to: Bill Eoff
Huntsville Water Utilities
P.O. Box 430

Relinquished By:	Date/Time	Received By:	Date/Time
BM	2/20/15 @ 800		
Relinquished By:	Date/Time	Received in Lab By: William Davenport	Date/Time 0930 2-21-15

Comments:
FedEx 8764 3753 5600

AMERICAN INTERPLEX CORPORATION
LABORATORIES

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

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: Huntsville Water Utilities
Project Reference: Bio Monitoring
Project Manager: Bill Eoff
Sampled By: Bill Eoff

PO No.:

AIC CONTROL NO: 107733
AIC PROPOSAL NO:
Carrier: FED X
Received on Ice (4°C)? YES 1.0 NO

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	SAMPLE MATRIX: WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Cd & Fh Chronic	Remarks
3	Huntsville#3B	2-22-15 @7:00 2-23-15 @8:00		X	X		3	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
Expedited results requested by: _____
Who should AIC contact with questions: Bill Eoff
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

Relinquished By:	Date/Time	Received By:	Date/Time
BM	2-23-15 0800		
Relinquished By:	Date/Time	Received in Lab By: Kimberly Hunter	Date/Time 02/24/15 11:05

Comments:
FED X 8019 4081 0043

F101

Hu[redacted]
P.O. [redacted]
Huntsville, AR 72740

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Water Division Enforcement

5301 Northshore Drive

North Little Rock, AR 72118-5317