



Springdale Water Utilities

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Enforcement Branch
Arkansas Dept. of Environmental Quality
5301 Northshore Dr.
North Little Rock, AR 72118-5317

**RE: NPDES Permit No. AR0022063
AFIN #72-00003
Springdale, AR**

April 14, 2015

Dear Sir or Madame:

Enclosed please find the results of first quarter Ceriodaphnia dubia and Pimephales promelas analyses, and first quarter Table III analyses conducted on Springdale Water Utilities' wastewater treatment facility influent, effluent, and sludge (belt press influent) for 2015. These analyses are required by our NPDES Permit.

Please feel free to call Ms. Jennifer Enos at (479)756-3657 if you have any questions concerning these analyses.

Sincerely yours,

Heath A. Ward
Executive Director

JEE/jee

Enclosures

Cc: Jennifer Enos, SWU
Mary Barnett, ADEQ
File

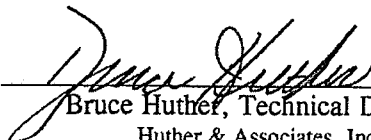
**CITY OF SPRINGDALE WWTF
OUTFALL 001**

**Chronic Biomonitoring Report
Permit Number NPDES AR0022063
AFIN Number 72-00003**

Ceriodaphnia dubia
Pimephales promelas

March 3, 2015

Reviewed by:



Bruce Huther, Technical Director

Huther & Associates, Inc.
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Denton, Texas 76201
(940) 387-1025, Fax: (940) 387-1036

TABLE OF CONTENTS

TOXICITY TEST REPORT 1

SUMMARY 3

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION SUMMARY 4

CERIODAPHNIA DUBIA STATISTICAL ANALYSES 8

PIMEPHALES PROMELAS SURVIVAL AND GROWTH SUMMARY 9

PIMEPHALES PROMELAS STATISTICAL ANALYSES 12

APPENDIX A: RAW DATA 13

APPENDIX B: REFERENCE TOXICANTS..... 14

APPENDIX C: CHAIN OF CUSTODY SHEETS 15

TOXICITY TEST REPORT - CHRONIC

Client City of Springdale WWTF Laboratory I.D. 23845
 Permit No. NPDES AR0022063 Begin Date March 3, 2015
 Sample Outfall 001

Results: Pass *Ceriodaphnia dubia* survival and reproduction and *Pimephales promelas* survival and growth at the critical low flow concentration (97% effluent).

SAMPLE COLLECTION

Composite effluent samples from City of Springdale WWTF were delivered by Greyhound Package Express courier to Huther & Associates on March 3, and March 9, 2015. Effluent samples were collected and composited from Outfall 001 using an automatic sampler by facility personnel. Two toxicity tests were requested: a seven-day *Ceriodaphnia dubia* survival and reproduction test (EPA Method 1002.0), and a seven-day *Pimephales promelas* larval survival and growth test (EPA Method 1000.0). Test organisms, procedures and quality assurance requirements were in accordance with the EPA manual, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013). Note: Due to inclement weather, the 2nd and 3rd samples arrived on March 9, 2015. The 3rd sample was used for test renewal March 9, 2015. The test ended March 10, 2015.

The effluent samples were analyzed for total residual chlorine (Standard Methods, 22nd Edition, 4500-Cl D) and contained <0.01 mg/L, <0.01 mg/L, and <0.01 mg/L, respectively. Effluent and laboratory dilution water hardness, alkalinity, conductivity, pH, and dissolved oxygen data were collected and recorded.

TEST SETUP
Ceriodaphnia dubia



The seven-day *Ceriodaphnia dubia* survival and reproduction test was initiated at 1530 hours, March 3, 2015. Five concentrations were prepared (31%, 41%, 55%, 73%, and 97% effluent) utilizing distilled, deionized laboratory water reconstituted to match the hardness, alkalinity and pH of the receiving stream (Spring Creek). The test was conducted in 25 mL distilled water rinsed plastic beakers containing 15 mL of solution (one organism per beaker, ten beakers per concentration). *C. dubia* neonates were less than 24 hours old and within eight hours of the same age at test initiation. Neonates were placed in beakers following a randomized block test design. Fresh solutions were prepared and renewed daily. Daily feeding consisted of 0.5 mL *Selenastrum capricornutum* and cerophyll per test chamber. The test proceeded for seven days during which survival, reproduction and water quality data were collected daily.

A control of 10 replicate beakers containing one neonate each in distilled, deionized, reconstituted water (same as diluent) was conducted concurrently with the test. There was 100% survival in the control. The test ended at 1530 hours, March 10, 2015. Survival and reproduction data were statistically analyzed ($p = 0.05$) according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL***Ceriodaphnia dubia***

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

LOEC: Not Applicable

NOEC: 97% Effluent

REPRODUCTION***Ceriodaphnia dubia***

C. dubia reproduction data were normally distributed at the 0.01 alpha level (13.277) using Chi-Square test for normality. Reproduction data were homogeneous using Bartlett's test at the 0.01 alpha level (15.09) without data transformations. Therefore, a parametric test was performed on the homogeneous data. Dunnett's test on *C. dubia* reproduction data demonstrated that there were no statistically significant differences between the control and any of the effluent concentrations.

LOEC: Not Applicable

NOEC: 97% Effluent

PMSD: 9.0%

TEST SETUP***Pimephales promelas***

The seven-day *Pimephales promelas* larval survival and growth test was initiated at 1625 hours, March 3, 2015. Five concentrations were prepared (31%, 41%, 55%, 73%, and 97% effluent) utilizing distilled, deionized laboratory water reconstituted to match the hardness, alkalinity and pH of the receiving stream (Spring Creek). The test was conducted in 300 mL distilled water rinsed plastic beakers containing 250 mL of solution (eight larvae per beaker, five beakers per concentration). *P. promelas* larvae were less than 24-hours old at test initiation and originated from a minimum of three in-house spawnings. Fresh solutions were prepared and renewed daily. Larvae in each test chamber were fed <24-hour-old *Artemia* (brine shrimp) three times per day. The test proceeded for seven days during which survival and water quality data were collected daily.

A control of five replicate chambers containing eight larvae each in distilled, deionized, reconstituted water (same as diluent) was conducted concurrently with the test. There was 100% survival in the control. The test ended at 1625 hours, March 10, 2015. At test termination, all larvae were sacrificed, dried for 24-hours, and weighed. Survival and growth (weight) data were statistically analyzed ($p = 0.05$) according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

SURVIVAL
Pimephales promelas

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

LOEC: Not Applicable
NOEC: 97% Effluent

GROWTH
Pimephales promelas

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

LOEC: Not Applicable **PMSD: 10.5%**
NOEC: 97% Effluent

SUMMARY

There were no statistically significant differences between the control and the critical low flow concentration (97% effluent) for *C. dubia* survival and reproduction and *P. promelas* survival and growth. Based on biomonitoring requirements for Outfall 001 contained in Permit Number NPDES AR0022063 for City of Springdale WWTF, Outfall 001 passed for this testing period.

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

CLIENT	City of Springdale WWTF	SAMPLE TYPE	24 Hour Composite
NPDES #	AR0022063	DATE COLLECTED	03/02/15 03/04/15 03/06/15
LAB ID #	23845	DATE RECEIVED	03/03/15 03/09/15 03/09/15
TEST TYPE	7 Day Chronic	BEGIN DATE/TIME	03/03/15 1530
TEST ORGANISM	<i>Ceriodaphnia dubia</i>	END DATE/TIME	03/10/15 1530
ORGANISM AGE	< 24 Hours	TEST TEMPERATURE (°C)	25 ± 1
ORGANISM SOURCE	In House	PHOTO PERIOD	16-hr. Light 8-hr. Dark
RECEIVING WATER	Spring Creek	LIGHT INTENSITY	50-100 ft. candl.
DILUTION WATER	Laboratory	TECHNICIAN	N. Lehr

SURVIVAL & REPRODUCTION SUMMARY

Control										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/04/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/05/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/06/15	2	3	2	2	2	3	2	2	2	2
	2	3	2	2	2	3	2	2	2	2
03/07/15	A	A	A	A	A	A	A	A	A	A
	2	3	2	2	2	3	2	2	2	2
03/08/15	A	A	A	A	A	A	A	A	A	A
	2	3	2	2	2	3	2	2	2	2
03/09/15	7	6	8	6	6	9	7	6	9	6
	9	9	10	8	8	12	9	8	11	8
03/10/15	12	14	13	12	13	13	12	12	13	12
	21	23	23	20	21	25	21	20	24	20
x# Young 21.8 C.V. 8.32% x% Survival 100% C.V. 0.00%										

31% Effluent										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/04/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/05/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/06/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/07/15	3	2	2	4	2	2	3	4	3	2
	3	2	2	4	2	2	3	4	3	2
03/08/15	A	A	A	A	A	A	A	A	A	A
	3	2	2	4	2	2	3	4	3	2
03/09/15	8	6	7	9	6	8	7	6	9	6
	11	8	9	13	8	10	10	10	12	8
03/10/15	12	12	11	14	13	13	12	13	14	12
	23	20	20	27	21	23	22	23	26	20
x# Young 22.5 C.V. 10.94% x% Survival 100% C.V. 0.00%										

41% Effluent										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/04/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/05/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/06/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/07/15	2	2	3	2	4	4	3	3	2	3
	2	2	3	2	4	4	3	3	2	3
03/08/15	A	A	A	A	A	A	A	A	A	A
	2	2	3	2	4	4	3	3	2	3
03/09/15	6	9	8	7	6	10	7	9	8	8
	8	11	11	9	10	14	10	12	10	11
03/10/15	12	13	13	12	12	12	13	12	14	13
	20	24	24	21	22	26	23	24	24	24
x# Young 23.2 C.V. 7.55% x% Survival 100% C.V. 0.00%										

55% Effluent										
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
03/04/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/05/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/06/15	A	A	A	A	A	A	A	A	A	A
	0	0	0	0	0	0	0	0	0	0
03/07/15	2	4	2	2	2	2	3	2	3	4
	2	4	2	2	2	2	3	2	3	4
03/08/15	A	A	A	A	A	A	A	A	A	A
	2	4	2	2	2	2	3	2	3	4
03/09/15	8	6	10	8	7	7	6	9	7	8
	10	10	12	8	9	9	9	11	10	12
03/10/15	13	12	14	13	12	11	12	13	12	13
	23	22	26	21	21	20	21	24	22	25
x# Young 22.5 C.V. 8.70% x% Survival 100% C.V. 0.00%										

where: A = Alive ex 1:

A
4

 alive today total young to date

5 = Alive, 5 young ex 2:

5
12

 alive, 5 young today total young to date

D = Dead

D5 = 5 Young, Female died

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

City of Springdale WWTF

Lab ID# 23845

Test Date: March 3, 2015

73% Effluent																						
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10												
03/04/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/05/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/06/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/07/15	3	3	2	2	3	2	3	2	2	3												
	3	3	2	2	3	2	3	2	2	3												
03/08/15	A	A	A	A	A	A	A	A	A	A												
	3	3	2	2	3	2	3	2	2	3												
03/09/15	8	9	7	7	6	9	6	9	7	6												
	11	12	9	9	9	11	9	11	9	9												
03/10/15	13	12	13	12	13	13	14	14	13	12												
	24	24	22	21	22	24	23	25	22	21												
<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">x # Young</td> <td style="width: 15%;">22.8</td> <td style="width: 15%;"></td> <td style="width: 15%;">C.V.</td> <td style="width: 15%;">6.13%</td> </tr> <tr> <td></td> <td>x% Survival</td> <td>100%</td> <td></td> <td>C.V.</td> <td>0.00%</td> </tr> </table>												x # Young	22.8		C.V.	6.13%		x% Survival	100%		C.V.	0.00%
	x # Young	22.8		C.V.	6.13%																	
	x% Survival	100%		C.V.	0.00%																	

97% Effluent																						
Date	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10												
03/04/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/05/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/06/15	A	A	A	A	A	A	A	A	A	A												
	0	0	0	0	0	0	0	0	0	0												
03/07/15	2	3	2	2	4	2	3	2	4	4												
	2	3	2	2	4	2	3	2	4	4												
03/08/15	A	A	A	A	A	A	A	A	A	A												
	2	3	2	2	4	2	3	2	4	4												
03/09/15	8	7	9	6	10	7	6	8	6	7												
	10	10	11	8	14	9	9	10	10	11												
03/10/15	13	13	12	12	13	12	14	12	13	12												
	23	23	23	20	27	21	23	22	23	23												
<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;">x # Young</td> <td style="width: 15%;">22.8</td> <td style="width: 15%;"></td> <td style="width: 15%;">C.V.</td> <td style="width: 15%;">7.95%</td> </tr> <tr> <td></td> <td>x% Survival</td> <td>100%</td> <td></td> <td>C.V.</td> <td>0.00%</td> </tr> </table>												x # Young	22.8		C.V.	7.95%		x% Survival	100%		C.V.	0.00%
	x # Young	22.8		C.V.	7.95%																	
	x% Survival	100%		C.V.	0.00%																	

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

ex 1:

A
4

 alive today
total young to date

ex 2:

5
12

 alive, 5 young today
total young to date

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

City of Springdale WWTF

Lab ID# 23845

Test Date: March 3, 2015

WET CHEMISTRY MEASUREMENTS

Date	Time	Temp	Samp. No.	pH of Solution						Analyst
				CON	31%	41%	55%	73%	97%	
03/03/15	Start	25.0	1	7.95	7.86	7.80	7.77	7.73	7.64	CS
03/04/15	24 Hr.	25.4	1	7.86	7.87	7.91	7.88	7.86	7.87	CS
03/04/15	Renew	25.5	1	7.90	7.92	7.93	7.94	7.95	7.96	CS
03/05/15	48 Hr.	25.5	1	8.31	8.30	8.27	8.20	8.16	8.12	CS
03/05/15	Renew	25.7	1	8.12	8.06	8.05	8.03	8.02	7.98	CS
03/06/15	72 Hr.	25.6	1	8.33	8.20	8.16	8.08	7.94	7.97	EMS
03/06/15	Renew	25.6	1	8.26	8.26	8.32	8.07	8.00	7.86	EMS
03/07/15	96 Hr.	25.6	1	8.22	8.19	8.17	8.16	8.15	8.10	CS
03/07/15	Renew	25.2	1	8.44	8.42	8.39	8.36	8.34	8.35	CS
03/08/15	120 Hr.	25.2	1	8.25	8.22	8.18	8.21	8.16	8.20	EMS
03/08/15	Renew	25.2	1	8.51	8.39	8.42	8.33	8.41	8.33	EMS
03/09/15	144 Hr.	25.5	1	8.20	8.19	8.16	8.15	8.14	8.10	CS
03/09/15	Renew	25.6	3	8.56	8.52	8.49	8.47	8.43	8.40	CS
03/10/15	168 Hr.	25.5	3	8.33	8.30	8.29	8.26	8.21	8.17	CS

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution						Analyst
				CON	31%	41%	55%	73%	97%	
03/03/15	Start	25.0	1	8.62	8.44	8.57	8.63	8.71	8.88	CS
03/04/15	24 Hr.	25.4	1	8.99	8.98	8.94	8.96	8.97	8.99	CS
03/04/15	Renew	25.5	1	8.58	8.41	8.52	8.64	8.77	8.90	CS
03/05/15	48 Hr.	25.5	1	8.74	8.63	8.51	8.40	8.58	8.26	CS
03/05/15	Renew	25.7	1	8.89	8.55	8.46	8.33	8.71	8.85	CS
03/06/15	72 Hr.	25.6	1	8.24	8.34	8.06	8.61	8.46	8.06	EMS
03/06/15	Renew	25.6	1	7.56	8.05	8.69	7.96	8.15	8.36	EMS
03/07/15	96 Hr.	25.6	1	8.52	8.12	8.08	8.31	8.40	8.66	CS
03/07/15	Renew	25.2	1	8.67	8.44	8.53	8.68	8.12	8.97	CS
03/08/15	120 Hr.	25.2	1	8.44	8.54	8.60	8.23	8.65	8.61	EMS
03/08/15	Renew	25.2	1	8.71	8.54	8.58	8.55	8.69	8.66	EMS
03/09/15	144 Hr.	25.5	1	8.30	8.65	8.82	8.41	8.75	8.55	CS
03/09/15	Renew	25.6	3	8.74	8.58	8.62	8.44	8.75	8.23	CS
03/10/15	168 Hr.	25.5	3	8.52	8.63	8.41	8.49	8.37	8.55	CS

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

City of Springdale WWTF

Lab ID# 23845

Test Date: March 3, 2015

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid. Cl ₂ mg/L ¹	Dechlor(mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/03/15	1	7.40	8.92	84	98	784	<0.01	N/A	TG
03/09/15	3	7.96	8.37	82	96	781	<0.01	N/A	TG
03/03/15	Con	7.95	8.62	160	116	597	--	--	TG

¹ Measurements taken in 100% solution.

Huther and Associates, Inc.
 Begin Date: March 03, 2015
 Lab I.D.# 23845

CERIODAPHNIA DUBIA STATISTICAL ANALYSES
 Reproduction

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	10	20.000	25.000	21.800
2	31% Effluent	10	20.000	27.000	22.500
3	41% Effluent	10	20.000	26.000	23.200
4	55% Effluent	10	20.000	26.000	22.500
5	73% Effluent	10	21.000	25.000	22.800
6	97% Effluent	10	20.000	27.000	22.800

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	3.289	1.814	0.573	8.32
2	31% Effluent	6.056	2.461	0.778	10.94
3	41% Effluent	3.067	1.751	0.554	7.55
4	55% Effluent	3.833	1.958	0.619	8.70
5	73% Effluent	1.956	1.398	0.442	6.13
6	97% Effluent	3.289	1.814	0.573	7.95

Chi-Square Test For Normality: Actual And Expected Frequencies

Interval	< -1.5	-1.5 to -0.5	-0.5 to 0.5	> 0.5 to 1.5	> 1.5
Expected	4.020	14.520	22.920	14.520	4.020
Observed	2	19	24	9	6

Calculated Chi-Square goodness of fit test statistic = 5.5219
 Table Chi-Square value (alpha = 0.01) = 13.277

Data Pass normality test. Continue analysis.

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 2.91

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

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

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

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	11.000	2.200	0.614
Within (Error)	54	193.400	3.581	
Total	59	204.400		

Critical F value = 2.45 (0.05,5,40)

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

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

Grp	Identification	Transformed Mean	Mean	T Stat	Sig
			Calculated In Original Units		
1	Control	21.800	21.800		
2	31% Effluent	22.500	22.500	-0.827	
3	41% Effluent	23.200	23.200	-1.654	
4	55% Effluent	22.500	22.500	-0.827	
5	73% Effluent	22.800	22.800	-1.182	
6	97% Effluent	22.800	22.800	-1.182	

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, DF=40,5)

No statistically significant difference

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

Grp	Identification	Num of Reps	Minimum Sig Diff (In Orig. Units)	% of Control	Difference
					from Control
1	Control	10			
2	31% Effluent	10	1.955	9.0	-0.700
3	41% Effluent	10	1.955	9.0	-1.400
4	55% Effluent	10	1.955	9.0	-0.700
5	73% Effluent	10	1.955	9.0	-1.000
6	97% Effluent	10	1.955	9.0	-1.000

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

CLIENT	City of Springdale WWTF	SAMPLE TYPE	24 Hour Composite
NPDES #	AR0022063	DATE COLLECTED	03/02/15 03/04/15 03/06/15
LAB ID #	23845	DATE RECEIVED	03/03/15 03/09/15 03/09/15
TEST TYPE	7 Day Chronic	BEGIN DATE/TIME	03/03/15 1625
TEST ORGANISM	<i>Pimephales promelas</i>	END DATE/TIME	03/10/15 1625
ORGANISM AGE	< 24 Hours	TEST TEMPERATURE (°C)	25 ± 1
ORGANISM SOURCE	In House	PHOTO PERIOD	16-hr. Light 8-hr. Dark
RECEIVING WATER	Spring Creek	LIGHT INTENSITY	50-100 ft. cndI.
DILUTION WATER	Laboratory	TECHNICIAN	Z. Geiger

SURVIVAL SUMMARY

Conc.	03/04/15					03/05/15					03/06/15					03/07/15					03/08/15									
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E					
Con	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
31%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
41%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
55%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
73%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
97%	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Conc.	03/09/15					03/10/15					x % Survival	C.V. %
	A	B	C	D	E	A	B	C	D	E		
Con	8	8	8	8	8	8	8	8	8	8	100.0	0.00
31%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
41%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
55%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
73%	8	8	8	8	8	8	8	8	8	8	100.0	0.00
97%	8	8	8	8	8	8	8	8	8	8	100.0	0.00

MEAN DRY WEIGHT PER REP

% Effluent	Rep A	Rep B	Rep C	Rep D	Rep E	x	C.V. %
Con	0.4250	0.4670	0.4910	0.4350	0.4810	0.4598	6.25
31%	0.4670	0.4250	0.5010	0.4860	0.4590	0.4676	6.18
41%	0.4820	0.4710	0.4960	0.4170	0.5060	0.4744	7.32
55%	0.4960	0.5040	0.4470	0.4920	0.4260	0.4730	7.27
73%	0.4350	0.4670	0.4950	0.5060	0.4170	0.4640	8.20
97%	0.4560	0.4710	0.5030	0.4820	0.4290	0.4682	5.94

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

City of Springdale WWTF

Lab ID# 23845

Test Date: March 3, 2015

WET CHEMISTRY MEASUREMENTS

Date	Time	Temp	Samp. No.	pH of Solution						Analyst
				CON	31%	41%	55%	73%	97%	
03/03/15	Start	25.0	1	7.95	7.86	7.80	7.77	7.73	7.64	CS
03/04/15	24 Hr.	25.4	1	8.01	8.03	7.99	7.97	7.98	7.97	CS
03/04/15	Renew	25.5	1	7.90	7.92	7.93	7.94	7.95	7.96	CS
03/05/15	48 Hr.	25.5	1	8.18	8.17	8.16	8.15	8.14	8.13	CS
03/05/15	Renew	25.7	1	8.12	8.06	8.05	8.03	8.02	7.98	CS
03/06/15	72 Hr.	25.4	1	8.20	8.18	8.22	8.28	8.25	8.10	EMS
03/06/15	Renew	25.4	1	8.26	8.26	8.32	8.07	8.00	7.86	EMS
03/07/15	96 Hr.	25.5	1	8.14	8.11	8.09	8.06	8.05	8.04	CS
03/07/15	Renew	25.2	1	8.44	8.42	8.39	8.36	8.34	8.35	CS
03/08/15	120 Hr.	25.6	1	8.33	8.35	8.29	8.34	8.33	8.21	EMS
03/08/15	Renew	25.6	1	8.51	8.39	8.42	8.33	8.41	8.33	EMS
03/09/15	144 Hr.	25.6	1	8.49	8.41	8.40	8.44	8.45	8.22	EMS
03/09/15	Renew	25.6	3	8.56	8.52	8.49	8.47	8.43	8.40	CS
03/10/15	168 Hr.	25.5	3	8.39	8.38	8.36	8.35	8.34	8.33	CS

Date	Time	Temp	Samp. No.	DO (mg/L) of Solution						Analyst
				CON	31%	41%	55%	73%	97%	
03/03/15	Start	25.0	1	8.62	8.44	8.57	8.63	8.71	8.88	CS
03/04/15	24 Hr.	25.4	1	8.96	8.94	8.92	8.84	8.80	8.76	CS
03/04/15	Renew	25.5	1	8.58	8.41	8.52	8.64	8.77	8.90	CS
03/05/15	48 Hr.	25.5	1	8.14	8.46	8.51	8.36	8.70	8.83	CS
03/05/15	Renew	25.7	1	8.89	8.55	8.46	8.33	8.71	8.85	CS
03/06/15	72 Hr.	25.4	1	8.58	8.44	8.61	8.82	8.91	8.06	EMS
03/06/15	Renew	25.4	1	7.56	8.05	8.69	7.96	8.15	8.36	EMS
03/07/15	96 Hr.	25.5	1	8.77	8.41	8.36	8.59	8.27	8.50	CS
03/07/15	Renew	25.2	1	8.67	8.44	8.53	8.68	8.12	8.97	CS
03/08/15	120 Hr.	25.6	1	8.65	8.38	8.29	8.51	8.66	8.45	EMS
03/08/15	Renew	25.6	1	8.71	8.54	8.58	8.55	8.69	8.66	EMS
03/09/15	144 Hr.	25.6	1	8.10	8.31	8.15	8.46	8.93	8.09	EMS
03/09/15	Renew	25.6	3	8.74	8.58	8.62	8.44	8.75	8.23	CS
03/10/15	168 Hr.	25.5	3	8.51	8.76	8.48	8.20	8.87	8.42	CS

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

City of Springdale WWTF

Lab ID# 23845

Test Date: March 3, 2015

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid. Cl ₂ mg/L ¹	Dechlor(mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
03/03/15	1	7.40	8.92	84	98	784	<0.01	N/A	TG
03/09/15	3	7.96	8.37	82	96	781	<0.01	N/A	TG
03/03/15	Con	7.95	8.62	160	116	597	--	--	TG

¹Measurements taken in 100% solution.

Huther and Associates, Inc.
 Begin Date: March 03, 2015
 Lab I.D.# 23845

PIMEPHALES PROMELAS STATISTICAL ANALYSES
 Growth

Summary Statistics on Transformed Data Table 1 of 2

Grp	Identification	N	Min	Max	Mean
1	Control	5	0.425	0.491	0.460
2	31% Effluent	5	0.425	0.501	0.468
3	41% Effluent	5	0.417	0.506	0.474
4	55% Effluent	5	0.426	0.504	0.473
5	73% Effluent	5	0.417	0.506	0.464
6	97% Effluent	5	0.429	0.503	0.468

Summary Statistics on Transformed Data Table 2 of 2

Grp	Identification	Variance	Sd	Sem	C.V.%
1	Control	0.001	0.029	0.013	6.25
2	31% Effluent	0.001	0.029	0.013	6.18
3	41% Effluent	0.001	0.035	0.016	7.32
4	55% Effluent	0.001	0.034	0.015	7.27
5	73% Effluent	0.001	0.038	0.017	8.20
6	97% Effluent	0.001	0.028	0.012	5.94

Shapiro - Wilk's Test For Normality

D = 0.025

W = 0.922

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

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

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

Bartlett's Test For Homogeneity of Variance

Calculated B1 statistic = 0.61

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

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

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

ANOVA Table

SOURCE	DF	SS	MS	F
Between	5	0.001	0.000	0.143
Within (Error)	24	0.025	0.001	
Total	29	0.026		

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

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

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

Grp	Identification	Transformed	Mean	T Stat	Sig
		Mean	Calculated In Original Units		
1	Control	0.460	0.460		
2	31% Effluent	0.468	0.468	-0.381	
3	41% Effluent	0.474	0.474	-0.714	
4	55% Effluent	0.473	0.473	-0.646	
5	73% Effluent	0.464	0.464	-0.205	
6	97% Effluent	0.468	0.468	-0.411	

Dunnnett table value = 2.36 (1 Tailed Value, P=0.05, DF=24,5)

No statistically significant difference

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

Grp	Identification	Num of Reps	Minimum Sig Diff (In Orig. Units)	% of Control	Difference
					from Control
1	Control	5			
2	31% Effluent	5	0.048	10.5	-0.008
3	41% Effluent	5	0.048	10.5	-0.015
4	55% Effluent	5	0.048	10.5	-0.013
5	73% Effluent	5	0.048	10.5	-0.004
6	97% Effluent	5	0.048	10.5	-0.008

**APPENDIX A
RAW DATA**

7-DAY CERIODAPHNIA DUBIA SURVIVAL & REPRODUCTION
DAILY RAW DATA TABLE
PAGE 1 OF 2

CLIENT Springdale
OUTFALL 001
LAB ID # 23845
001

START DATE/TIME 3-3-15 NL 1530
END DATE/TIME 3-10-15 NL 1530

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	2	3	2	2	2	3	2	2	2	2	MH	1450
3/7	A	A	A	A	A	A	A	A	A	A	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	7	6	8	6	6	9	7	6	9	6	MH	1015
3/10	12	14	13	12	13	13	12	12	13	12	NL	1530

\bar{x} # Young w/o Dead = 21.8 CV% = 8.32
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

31

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	A	A	A	A	A	A	A	A	A	A	MH	1450
3/7	3	2	2	4	2	2	3	4	3	2	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	8	6	7	9	6	8	7	6	9	6	MH	1015
3/10	12	12	11	14	13	13	12	13	14	12	NL	1530

\bar{x} # Young w/o Dead = 22.5 CV% = 10.94
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

41

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	A	A	A	A	A	A	A	A	A	A	MH	1450
3/7	2	2	3	2	4	4	3	3	2	3	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	6	9	8	7	6	10	7	9	8	8	MH	1015
3/10	12	13	13	12	12	12	13	12	14	13	NL	1530

\bar{x} # Young w/o Dead = 23.2 CV% = 7.55
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

55

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	A	A	A	A	A	A	A	A	A	A	MH	1450
3/7	2	4	2	2	2	2	3	2	3	4	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	8	6	10	6	7	7	6	9	7	8	MH	1015
3/10	13	12	14	13	12	11	12	13	12	13	NL	1530

\bar{x} # Young w/o Dead = 22.5 CV% = 8.70
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

7-DAY CERIODAPHNA DUBIA SURVIVAL & REPRODUCTION

DAILY RAW DATA TABLE

PAGE 2 OF 2

CLIENT Springdale
 OUTFALL 001
 LAB ID # 23845
73

START DATE/TIME 3-3-15 NL 1530
 END DATE/TIME 3-10-15 NL 1530
97

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	A	A	A	A	A	A	A	A	A	A	MH	1450
3/7	3	3	2	2	3	2	3	2	2	3	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	8	9	7	7	6	9	6	9	7	6	MH	1015
3/10	13	12	13	12	13	13	14	14	13	12	NL	1530

Date	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Analyst	Time
3/4	A	A	A	A	A	A	A	A	A	A	NL	1530
3/5	A	A	A	A	A	A	A	A	A	A	NL	1545
3/6	A	A	A	A	A	A	A	A	A	A	MH	1450
3/7	2	3	2	2	4	2	3	2	4	4	NL	1245
3/8	A	A	A	A	A	A	A	A	A	A	NL	1030
3/9	8	7	9	6	10	7	6	8	6	7	MH	1015
3/10	13	13	12	12	13	12	14	12	13	12	NL	1530

\bar{x} # Young w/o Dead = 22.8 CV% = 6.13
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

\bar{x} # Young w/o Dead = 22.8 CV% = 7.95
 \bar{x} # Young w/Dead = CV% =
 \bar{x} % Survival = 100.0 CV% = 0.00

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

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

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

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

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

CLIENT/FACILITY Springdale
 OUTFALL # 001 PROJECT # 23845
 ORGANISM ID# PP0-15-061

DATE/TIME STARTED 3-3-15 TG 1625
 DATE/TIME ENDED 3-10-15 TB 1625

Conc.	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E					
Con	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
31	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
41	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
55	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
73	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
97	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Initials Date/Time	3-4-15 MH 1625					3-5-15 TB 0940					3-6-15 TB 0910					3-7-15 TG 0910					3-8-15 TG 0900				

Conc.	A	B	C	D	E	A	B	C	D	E	Mean Survival	C.V. %
Con	8	8	8	8	8	8	8	8	8	8	100.0	0.00
31	8	8	8	8	8	8	8	8	8	8	100.0	0.00
41	8	8	8	8	8	8	8	8	8	8	100.0	0.00
55	8	8	8	8	8	8	8	8	8	8	100.0	0.00
73	8	8	8	8	8	8	8	8	8	8	100.0	0.00
97	8	8	8	8	8	8	8	8	8	8	100.0	0.00
Initials Date/Time	3-4-15 TB 0900					3-10-15 TB 1625						

Huther and Associates, Inc.

environmental toxicologists, biologists, consultants

7-DAY CHRONIC TOXICITY TEST
 PIMEPHALES PROMELAS (fathead minnow) MEAN WEIGHT/REP

Client Springdale
 Project# 23845

Date/Time Start 3/2/15 1625
 Date/Time End 3/10/15 1625

% Effluent	Rep A	Rep B	Rep C	Rep D	Rep E	\bar{x}	C.V.%	Analyst
Ca	.4250	.4670	.4910	.4350	.4810	.4598	6.25	BH
31	.4670	.4250	.5010	.4860	.4590	.4676	6.18	
41	.4820	.4710	.4960	.4170	.5060	.4744	7.32	
55	.4960	.5040	.4470	.4920	.4260	.4730	7.27	
73	.4350	.4670	.4950	.5060	.4170	.4640	8.79	
97	.4560	.4710	.5030	.4820	.4290	.4682	5.94	

© RA 3/12/15

Client / Facility Springdale
 Lab ID Number 23848
 Outfall Number 001
 Test Date 3-3-15

INITIAL CHEMISTRY MEASUREMENTS @ 100% EFFLUENT

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid. Cl ₂ mg/L ¹	Dechlor(mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
3/3	1	7.40	8.92	84	98	784	60.01	Na	TG
~~~~~									
3/9	3	7.96	8.37	82	96	781	60.01	Na	TG
3/3	CON	7.95	8.62	160	116	597	—	—	TG

**INITIAL CHEMISTRY MEASUREMENTS @ RECEIVING WATER**

Date	Samp. No.	pH	DO	Hardness mg/L CaCO ₃ ¹	Alkalinity mg/L CaCO ₃ ¹	Conduct. umhos/cm ¹	Resid. Cl ₂ mg/L ¹	Dechlor(mL) Na ₂ S ₂ O ₃ mg/L ¹	Analyst
~~~~~									

Notes:

**APPENDIX B
REFERENCE TOXICANTS**

CHRONIC REFERENCE TOXICANT TEST RESULTS

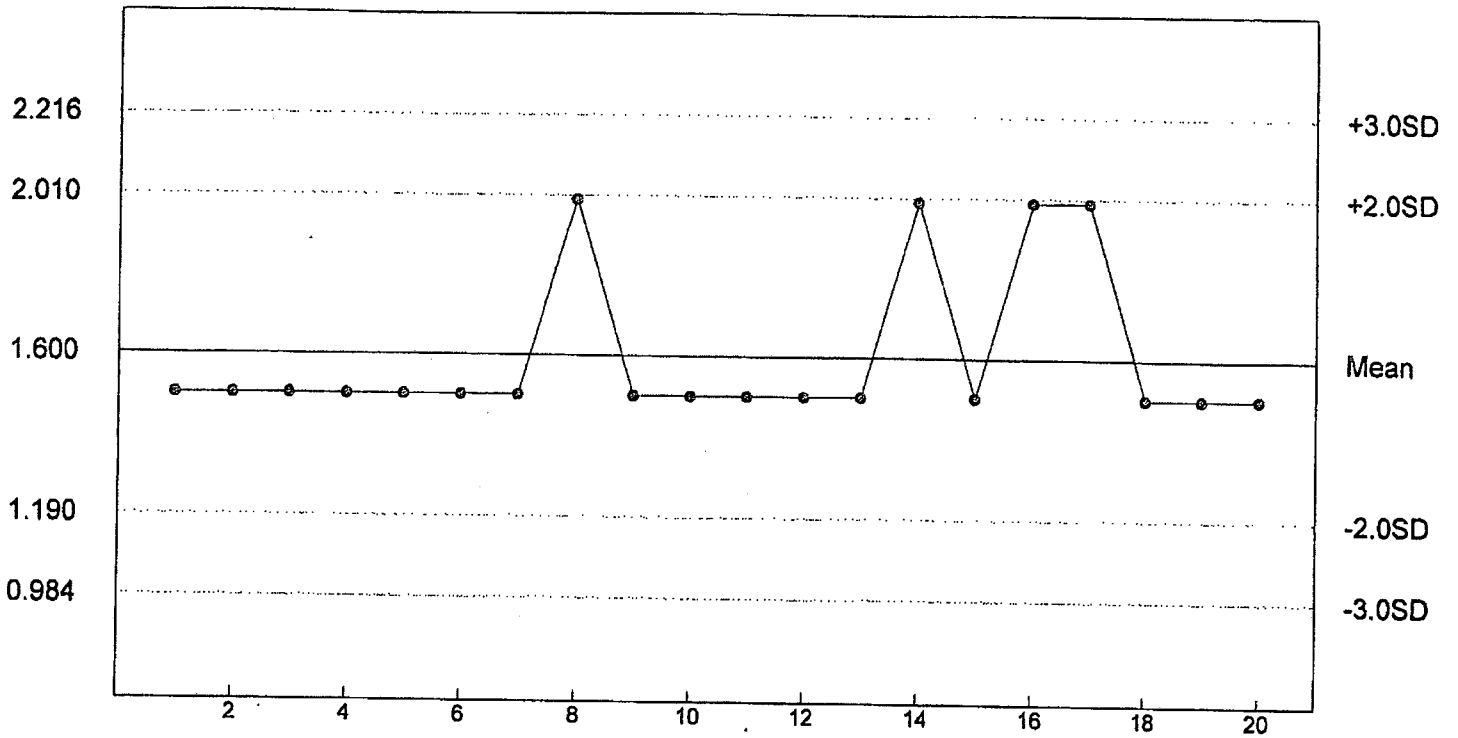
SPECIES: *Ceriodaphnia dubia*
 CHEMICAL: Copper Nitrate
 DURATION: 7-Days
 TEST NUMBER: 3
 TEST DATE: 03/04/15 - 03/11/15
 1000 Hrs - 1000 Hrs
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (ug/L)	NUMBER EXPOSED	NUMBER DEAD
0.5	10	0
1.0	10	0
1.5	10	0
2.0	10	5
2.5	10	10
3.0	10	10

LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR GROWTH	NOEC FOR GROWTH
2.0 ug/L	1.5 ug/L	1.0 ug/L	0.5 ug/L

Reference Tox Sodium Chloride g/L

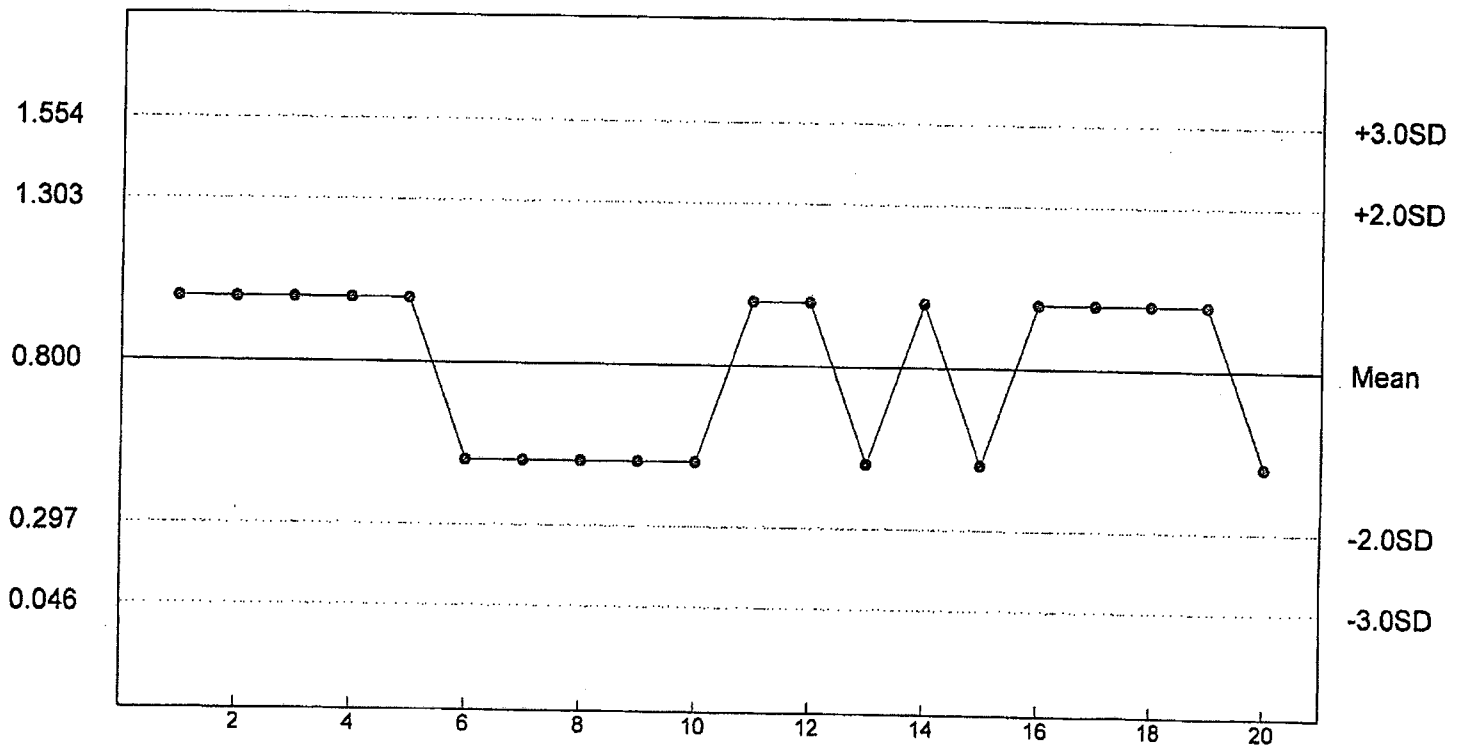
C. dubia Survival - NOEC



n= 20 Mean= 1.600 SD= 0.205 CV= 12.82% Min= 1.500 Max= 2.000

Reference Tox Sodium Chloride g/L

C. dubia Reproduction - NOEC



n= 20 Mean= 0.800 SD= 0.251 CV= 31.41% Min= 0.500 Max= 1.000

CHRONIC REFERENCE TOXICANT TEST RESULTS

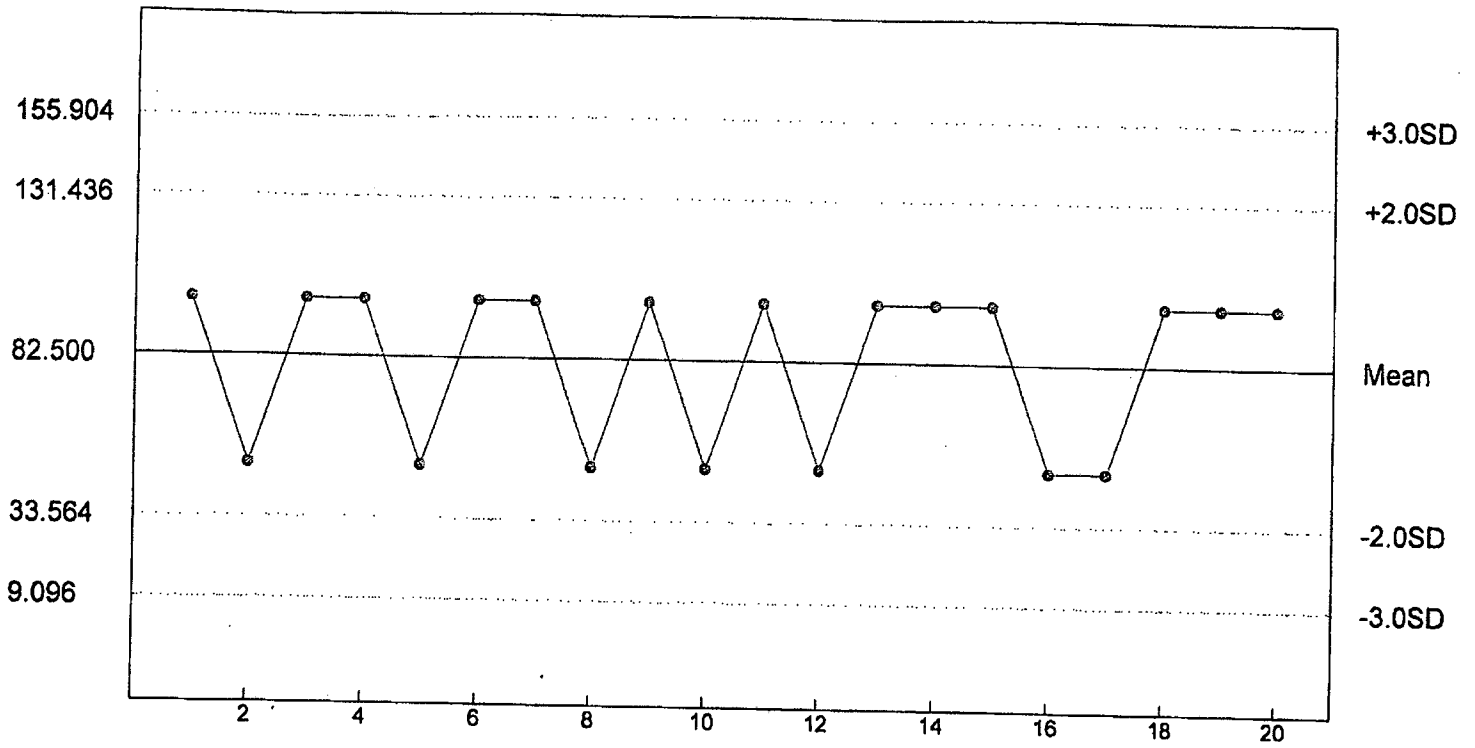
SPECIES: *Pimephales promelas*
 CHEMICAL: Copper Nitrate
 DURATION: 7-Days
 TEST NUMBER: 3
 TEST DATE: 03/04/15 - 03/11/15
 1540 Hrs - 1540 Hrs
 STATISTICAL METHOD: Dunnetts/Steels

CONCENTRATION (ug/L)	NUMBER EXPOSED	NUMBER DEAD
25	40	0
50	40	0
100	40	0
200	40	6
400	40	15
800	40	40

LOEC FOR SURVIVAL	NOEC FOR SURVIVAL	LOEC FOR GROWTH	NOEC FOR GROWTH
200 ug/L	100 ug/L	200 ug/L	100 ug/L

Reference Tox Copper Nitrate ug/L

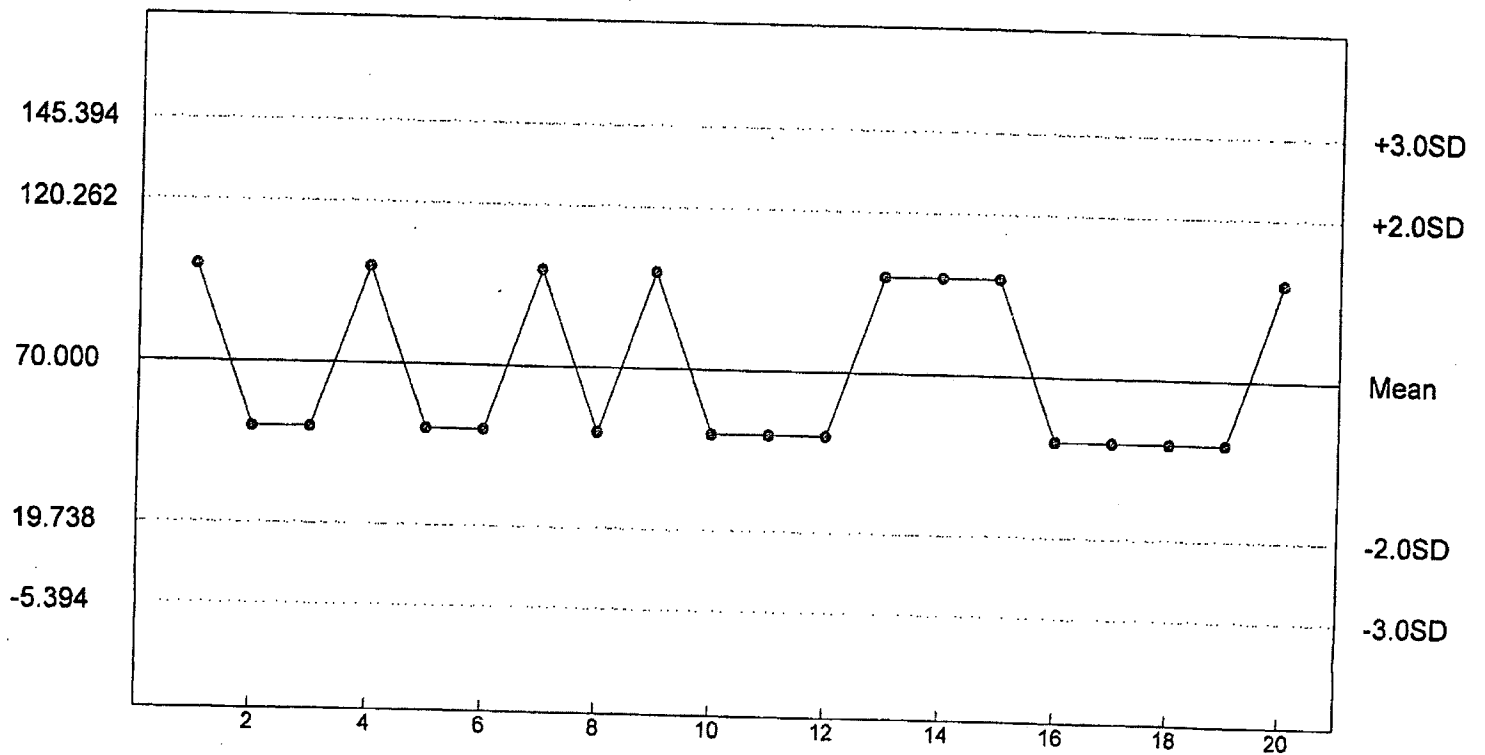
P. promelas Chronic Survival - NOEC



n= 20 Mean= 82.500 SD= 24.468 CV= 29.66% Min= 50.000 Max= 100.000

Reference Tox Copper Nitrate ug/L

P. promelas Growth - NOEC



n= 20 Mean= 70.000 SD= 25.131 CV= 35.90% Min= 50.000 Max= 100.000

APPENDIX C
CHAIN OF CUSTODY SHEETS

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

CHAIN OF CUSTODY RECORD

PROJECT # 23845 PROJECT NAME Springdale PERMIT# AR0022063

OUTFALL SAMPLES

24-Hr Flow Weighted Composite _____ Other 24HR Flow Composite

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
001	OPERATION STAFF	02/01/15 0600	02/02/15 0600	180	✓			(1)

RECEIVING WATER SAMPLES

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

TYPE OF TEST 7day C/F
 NAME OF RECEIVING WATER Spring creek
 DILUTION WATER USED FOR THIS TEST Lab

RELINQUISHED BY: Michelle Phillips DATE: 02/02/15 TIME: 0630 RECEIVED BY AT THIS DATE/TIME _____

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

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

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

RECEIVED: Matt Horner DATE: 3-3-15 TIME: 1000 SAMPLE TEMP. @ RECEIPT. 5.1

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

CHAIN OF CUSTODY RECORD

PROJECT # 23845 PROJECT NAME Springdale PERMIT# AR0022003

OUTFALL SAMPLES

24-Hr Flow Weighted Composite _____ Other 24 Hr Flow Composite

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
<u>001</u>	<u>OPERATIONS STAFF</u>	<u>02/03/15 0600</u>	<u>02/04/15 0600</u>	<u>122 25 Comp</u>	<u>✓</u>			<u>(1)</u>

RECEIVING WATER SAMPLES

SAMPLE IDENTIFICATION (FOR REC'NG) H ₂ O GRABS. GIVE NAME OF STREAM AND LOCATION	PERSON TAKING SAMPLE	DATE	TIME	# OF CONTAINERS TO BE SHIPPED
 	 	 	 	
 	 	 	 	

TYPE OF TEST 7day C/F
 NAME OF RECEIVING WATER Spring Creek
 DILUTION WATER USED FOR THIS TEST lab

RELINQUISHED BY: Miles Pluhly DATE: 03/04/15 TIME: 0635 RECEIVED BY AT THIS DATE/TIME _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME _____
 METHOD OF SHIPMENT: Greyhound X Pick Up _____ Client Delivered _____ Other _____
 RECEIVED: Matt Harner DATE: 3-9-15 TIME: 1120 SAMPLE TEMP. @ RECEIPT. 2.9

CHAIN OF CUSTODY RECORD

PROJECT # 23845 PROJECT NAME Springdale PERMIT# AL0022003

OUTFALL SAMPLES

24-Hr Flow Weighted Composite _____ Other 24HR Flow Prop.

OUTFALL NUMBER	PERSON TAKING SAMPLE	START DATE/TIME	END DATE/TIME	# OF PORTIONS COMPOSITED	METHODS OF COLLECTION AND COMPOSITE			# OF CONTAINERS TO BE SHIPPED
					AUTO COLL. AUTO COMP.	MANUAL COLL. MANUAL COMP.	AUTO COLL. MANUAL COMP.	
001	OPERATIONS STAFF	0600 03/05/15	0600 03/06/15	135	✓			(1)

RECEIVING WATER SAMPLES

SAMPLE IDENTIFICATION (FOR REC'NG) H.O GRABS, GIVE NAME OF STREAM AND LOCATION	PERSON TAKING SAMPLE	DATE	TIME	# OF CONTAINERS TO BE SHIPPED

TYPE OF TEST 7day C/F
NAME OF RECEIVING WATER Spring Creek
DILUTION WATER USED FOR THIS TEST Lab

RELINQUISHED BY: Josh Weaver DATE: 03/05/15 TIME: 0700 RECEIVED BY AT THIS DATE/TIME _____
RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME _____
RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY AT THIS DATE/TIME _____

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

RECEIVED: Matt Horner DATE: 3-9-15 TIME: 1120 SAMPLE TEMP. @ RECEIPT. 2.3

**CITY OF SPRINGDALE WWTF
 NPDES PERMIT NO. AR0022063
 AFIN NO. 72-00003
 BIOMONITORING REPORTING
 TEST DATE: 03/03/15**

I. *Ceriodaphnia dubia*

Response

- (A) If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP3B.
- (B) Report the NOEC value for survival, Parameter No. TOP3B.
- (C) Report the NOEC value for reproduction, Parameter No. TPP3B.
- (D) If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TGP3B.
- (E) Report the higher (critical dilution or control) Coefficient of Variation, Parameter No. TQP3B.

0
97%
97%
0
8.32%

II. *Pimephales promelas* (fathead minnow)

Response

- (A) If the No Observed Effect Concentration (NOEC) for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP6C.
- (B) Report the NOEC value for survival, Parameter No. TOP6C.
- (C) Report the NOEC value for growth, Parameter No. TPP6C.
- (D) If the No Observed Effect Concentration (NOEC) for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0". Parameter No. TGP6C.
- (E) Report the highest (critical dilution or control) Coefficient of Variation, Parameter No. TQP6C.

0
97%
97%
0
6.25%

22415 Retest Number 1

Leave Blank

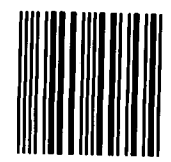
22416 Retest Number 2

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Springdale, AR 72765-0769



1000



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Mary Barnett
Arkansas Dept. of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317