4500 NORTH WEST AVE. • P.O. BOX 231 • EL DORADO, AR. 71731 • (870) 863-1400

EL DORADO
CHEMICAL COMPANY

June 23, 2015

Arkansas Department of Environmental Quality
Water Enforcement Branch
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: NPDES Permit AR0000752 Discharge Monitoring Report for period ending May 31, 2015.

Enclosed you will find the Discharge Monitoring Reports ending May 31, 2015. The DMR's for Outfall 010-A were entered on the blank DMR forms provided by Amy Schluterman, ADEQ Water Enforcement.

Enclosed also is the addition of the description NA=NODI Code 9 provided by Layne Pemberton on three of the pages where the designation N/A has been used in the past reports.

If you have any questions regarding this report, please contact Edward L Pearson at (870) 863-1400.

Sincerely,

Edward L Pearson

Environmental Technician

Enclosures

NON-COMPLIANCE REPORT

Facility Name: El Dorado Chemical Company

Permit Number: AR0000752 **AFIN:** 70-00040

Month / Year: May-15

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006/Zinc Monthly Average (610 ug/L)	115.62 ug/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 /Zinc Daily Max (610 ug/L)	231.99 ug/L Daily Max	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Monthly Average (83 ug/L)	3.8 ug/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (83 ug/L)	7.62 ug/L Daily Max.	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 TDS Monthly Average (370 mg/L)	291 mg/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Zinc Monthly Average (160 ug/L)	115.62 ug/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / Lead Monthly Average (18 ug/L)	3.8 ug/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / Lead Daily Average (18 ug/L)	7.62 ug/L Daily Max.	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (430 mg/L)	291 mg/L Monthly Average	5/8/2015	Unknown	EDCC has land applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.

I CERTIFY THAT UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C 1001 AND 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

Signature / Date 6/23/15

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5737

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X5737
Outfall: Outfall 006 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. David Sartain
Test Dates: May 8 - 12, 2015
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0- **Pass.**
2. Report the NOEC for survival, Parameter TOM6C - 100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 1 - **Fail.**
2. Report the NOEC for survival, Parameter TOM3D -75.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 27.12%.

This report contains a total of 37 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 006 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X5737

Test Dates: May 8 -12, 2015
Report Date: June 15, 2015

Prepared for:
Mr. David Sartain
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X5737

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X5737

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 006 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex.* The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

Both tests were initiated on May 8, 2015; however, the *Daphnia pulex* test was invalid and was initiated again on May 10, 2015. This report summarizes the valid test data. All valid and invalid test data can be found in the appendices.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately four days old at test initiation. The minnows were acclimated to dilution water hardness prior to testing. The *Daphnia pulex* test organisms were also raised in-house at test temperature and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the tests were 100.0, 75.0, 56.0, 45.0, 32.0 and 22.0 percent effluent and a reconstituted water control. The critical dilution was defined as 100.0 percent effluent. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One sample of Outfall 006 was collected by El Dorado Chemical personnel on May 8, 2015. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 2.9^0 Celsius.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured using a HACH^R test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured on the control and the highest effluent concentration.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

BAL
ADEQ #88-0630
Project X5737

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in the fathead minnow test after 48 hours of exposure; however, they were noted in the *Daphnia pulex* test (a non-true dose response also occurred in the daphnid test) (p=.05). The NOEC values for the fathead minnow *Daphnia pulex* tests was 100.0 and 75.0 percent effluent, respectively (p=.05). The 48-hour LC_{50} values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration. See Appendix C- Statistical Analyses, for more information.

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	92.5
22.0	100.0	82.5
32.0	97.5	65.0
45.0	100.0	75.0
56.0	100.0	62.5
75.0	100.0	72.0
100.0	100.0	55.0

The 48-hour reference toxicant test results indicated that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X5737

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on May 8, 2015, was not found to be lethally toxic to the fathead minnow test organisms in the 100.0 percent critical dilution after 48 hours of exposure; however, lethal toxicity was noted in the *Daphnia pulex* test (p=.05). The 48-hour LC_{50} values could not be calculated because greater than 50.0 percent survival occurred in the effluent dilutions (p=.05).

BAL
ADEQ #88-0630
Project X5737

5.0 References

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
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1-800-259-1246
Fax: (318) 745-2775

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company				**Phone:** (870) 863-1484	**Analysis:**										**Project Number:** X5737 006	
Address: 4500 Norwest Ave., El Dorado, AR 71731				**Fax:** (870) 863-~~7499~~ 1499											**Temp. upon arrival:** 2.9°C Therm 29 EC 5/8/15	
Permit #: AR0000752/AFIN 70-00040				**Purchase Order:**												
Sampler's Signature/Printed Name/Affiliation: Edward L Pearson / Edward L Pearson / EDCC																
Date Start / **Date End**	**Time Start** / **Time End**	**C**	**G**	**# and type of container**	**Sample Identification**	Chronic Ceriodaphnia	Chronic minnow	Acute minnow(fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	**Lab Control Number:**	**Preservative: (below)**		
05-08-15	0630	X		6 half gallons	Outfall 006			X	X				C1093	ICE		
05-08-15	0830															
05-08-15	0700	X		1 half gallons	Outfall 007			X	X					ICE		
05-08-15	0900															
Relinquished by/Affiliation: Edward L Pearson / EDCC					**Date:** 05-08-15	**Time:** 1000	**Received by/Affiliation:**						**Date:** 5-8-15	**Time:** 1045		
Relinquished by/Affiliation:					**Date:**	**Time:**	**Received by/Affiliation:**						**Date:**	**Time:**		
Relinquished by/Affiliation:					**Date:** 5-8-15	**Time:** 1300	**Received by/Affiliation:**						**Date:** 5/8/15	**Time:** 1300		

Method of Shipment: ___ Lab ___ Bus ___ Fed Ex ___ DHL ___ UPS ___ Client ___ Other **Tracking #**_____

Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X 5737

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 006

Technicians: EGB/RC/CR

D.pulex

Test initiated: Date 5/8/15 Time 1750 Date 5/10/15 Time 1741

Test terminated: Date 5/10/15 Time 1609 Date 5/12/15 Time 1630

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
Conductivity Meter: Model # Control Co. Serial #122175539
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness 100%	Alkalinity 100%	Tech
C10927	8.1/98.9	NO	<0.01	NO	1.0	N/A	108.0	20.0	RC
↓	8.2/99.4%	No	↓	↓	↓	↓	↓	↓	CR
↓	8.0/99.2%	ND	↓	↓	↓	↓	↓	↓	CR
C10927	9.4/87.4%	NO	Dilution Water Information				↓	↓	CR

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3726	N/A	N/A	N/A	N/A	7.2	40.0	28.0	RC
↓	↓	↓	↓	↓	↓	↓	↓	26 RC 6/8/15	CR
Soft H2O	3729	Test Species Information				7.34 RC 6/8/15	44.0	28.0	CR

Test Species Info.	Species: ID#: D.pulex BAL	Species: ID#: P.promelas BAL/050415	Species: ID#:	Species: ID#:
Age	<24 hrs	4 days		
Test Container Size	30 ml	300 ml		
Test volume	25 ml	200 ml		
Feeding: Type	2 hrs prior to			
Amount	Test	initiation		
Aeration?	N/A	N/A		
Amount	↓	↓		
Condition of survivors	Good RC	Good CR		

Comments:

pH prior to aeration - 100% - 6.66.9 - RC 5/8/15 - RC - No aeration needed on 5/8/15

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC 006

Test started: Date 5/10/15 Time 1741

Test ended: Date 5/12/15 Time 1630

Test Species D. pulex ID# BAL N23-N24

Sample Description 006

Technician:	Ohour CR	24hour RC	48hour RC	72hour ____ 96hour ____
Time:	Ohour 1741	24hour 1700	48hour 1630	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.3	24hour 24.4	48hour 24.4	72hour ____ 96hour ____

CR 5/11/15

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A		8	6	6			8.4 / 7.4	8.8 / 8.5	8.5			7.6 / 8.4	7.1 / 8.5	7.6			167.0	205 / 159.5	230		
	B		8	8	8																	
	C		8	8	8																	
	D		8	7	7																	
	E		8	8 / 5/12/15	8																	
22	A		8	7	7			8.3	8.7 / 8.2	8.5			7.3	7.3 / 7.4	7.4			242	274 / 228	301		
	B		8	8	7																	
	C		8	8	8																	
	D		8	5	5																	
	E		8	6	6																	
Chemistry Tech prerenewal/postrenewal								CR	RC / CR	RC			CR	RC / CR	RC			CR	RC / CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC 0006

Sample Description 306

Test started: Date 5/10/15 Time 1741

Test ended: Date 5/12/15 Time 1630

Test Species D. pulex ID# BAL N23·N24

Technician:	Ohour CR	24hour RC	48hour RC	72hour	96hour
Time:	Ohour 1741	24hour 1700	48hour 1630	72hour	96hour
Temperature (°C):	Ohour 24.3	24hour 24.4	48hour 24.4	72hour	96hour

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
32.0	A		8	8	2			8.2	8.0/8.1	8.4			7.3	7.5/7.3	7.3			282	302/265	323		
	B		8	6	6																	
	C		8	7	7																	
	D		8	8	7																	
	E		8	7	4																	
45.0	A		8	6	6			8.2	8.6/8.0	8.3			7.3	7.4/7.2	7.2			318	340/310	364		
	B		8	8	5																	
	C		8	8	8																	
	D		8	5	5																	
	E		8	7	6																	
Chemistry Tech prerenewal/postrenewal								CR	RC/CR	RC			CR	RC/CR	RC			CR	RC/CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC 0016

Sample Description 006

Test started: Date 5/10/15 Time 1741

Test ended: Date 5/12/15 Time 1630

Test Species D. pulex ID# BBL N23-N24

Technician:	Ohour CR	24hour RC	48hour RC	72hour ____ 96hour ____
Time:	Ohour 1741	24hour 1700	48hour 1630	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.3	24hour 24.4	48hour 24.4	72hour ____ 96hour ____

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
56.0	A		8	7	4			8.1	8.5/7.8	8.2			7.2	7.4/7.1	7.1			360	380/371	417		
	B		8	8	6																	
	C		8	4	4																	
	D		8	5	5																	
	E		8	8	6																	
				RC 5/12/15																		
75	A		8	8	7			8.0 CR	8.5/7.6	8.2			7.1	7.3/7.0	7.1			421	443/413	469			X5/10/15 CR
	B		8	5	5																	
	C		8	6	5																	
	D		8	6	6																	
	E		8	6	6																	
Chemistry Tech prerenewal/postrenewal								CR	RC/CR	RC			CR	RC/CR	RC			CR	RC/CR	RC		

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BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC 0006

Sample Description 006

Test started: Date 5/10/15 Time 1741

Test ended: Date 5/12/15 Time 1630

Test Species D. pulex ID# BALN23-N24

Technician:	Ohour CR	24hour RC	48hour RC	72hour ____ 96hour ____
Time:	Ohour 1741	24hour 1700	48hour 1630	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.3	24hour 24.4	48hour 24.4	72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		MA																				
100	A		8	4	3			7.9	8.4/7.3	8.1			7.0	7.2/6.9	7.0			515	525/504	517		
	B		8	5	3																	
	C		8	7	7																	
	D		8	8	5																	
	E		8	8	4																	
	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								CR	RC/CR	RC			CR	RC/CR	RC			CR	RC/CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1750

Test ended: Date 5/10/15 Time 1609

Test Species P.promelas ID# BAL/050415

Technician:	Ohour RC	24hour CR	48hour CR	72hour _____ 96hour _____
Time:	Ohour 1750	24hour 2046	48hour 1609	72hour _____ 96hour _____
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour _____ 96hour _____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
0	A		8	8	8			8.3	8.4/8.6	8.2			7.6	7.4/7.7	7.6			170.8	187.5/169.2	177.0		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.3	8.3/8.4	8.1			7.4	7.3/7.3	7.3			250	253/246	243		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# XS737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1750

Test ended: Date 5/10/15 Time 1609

Test Species P. promelas ID# BA4050415

Technician:	Ohour RC	24hour CR	48hour CR	72hour	96hour
Time:	Ohour 1750	24hour 2046	48hour 1609	72hour	96hour
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
32.0	A		8	8	8			8.3	8.3/8.3	8.0			7.3	7.3/7.2	7.3			287	291/281	278		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	7																	
45.0	A		8	8	8			8.2	8.1/8.2	7.9			7.3	7.3/7.2	7.2			329	331/325	322		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# XS737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1750

Test ended: Date 5/10/15 Time 1609

Test Species P. promelas ID# BAL050415

Technician:	Ohour RC	24hour CR	48hour CR	72hour ____ 96hour ____
Time:	Ohour 1750	24hour 2046	48hour 1609	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
56.0	A		8	8	8			8.2	8.0/8.2	7.9			7.2	7.2/7.2	7.2			369	368/366	362		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			8.2	8.0/NS	7.8			7.1	7.1/7.0	7.1			443	433/430	427		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1750

Test ended: Date 5/10/15 Time 1609

Test Species P. promelas ID# BAL050415

Technician: Ohour RC 24hour CR 48hour CR 72hour ____ 96hour ____

Time: Ohour 1756 24hour 2046 48hour 1009 72hour ____ 96hour ____

Temperature (°C): Ohour 24.4 24hour 24.4 48hour 24.4 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0%		N/A																				
100.0	A		8	8	8			8.2	7.9/7.3	7.7			7.0	7.0/6.8	7.0			530	517/524	520		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
100.0 DH adj	A		8	5																		
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1800

Test ended: Date 5/9/15 Time 1957

Test Species D. pulex ID# BAL/M22-N24

Technician:	Ohour CR	24hour CR	48hour	72hour 96hour
Time:	Ohour 1806	24hour 1957	48hour	72hour 96hour
Temperature (°C):	Ohour 24.3	24hour 24.3	48hour	72hour 96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
0	A		8	0				8.3	8.9/8.6				7.6	7.6/7.7				170.8	198/169.2			
	B		8	0																		
	C		8	0																		
	D		8	0																		
	E		8	0																		
22.0	A							8.3	8.1/8.4				7.4	7.4/7.3				250	251/246			
	B																					
	C																					
	D																					
	E																					
Chemistry Tech prerenewal/postrenewal								RC	CR/CR				RC	CR/CR				RC	CR/CR			

ACUTE2 Rev 1.0

Test invalid EDB 5/9/15

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1806

Test ended: Date 5/9/15 Time 1957

Test Species D. pulex ID# BAL/m22-N24

Technician: Ohour CR 24hour CR 48hour _____ 72hour _____ 96hour _____

Time: Ohour 1806 24hour 1957 48hour _____ 72hour _____ 96hour _____

Temperature (°C): Ohour 24.3 24hour 24.3 48hour _____ 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
32.0	A		8					8.3	8.2/8.3				7.3	7.4/7.2				287	294/281			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
45.0	A		8					8.2	8.2/8.2				7.3	7.3/7.2				329	330/325			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR				RC	CR/CR				RC	CR/CR			

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCC

Sample Description 006

Test started: Date 5/8/15 Time 1806

Test ended: Date 5/9/15 Time 1957

Test Species D. pulex ID# BAL/m22-N24

Technician:	Ohour CR	24hour CR	48hour	72hour	96hour
Time:	Ohour 1806	24hour 1957	48hour	72hour	96hour
Temperature (°C):	Ohour 24.3	24hour 24.3	48hour	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0%		N/A																				
56.0	A		8					8.2	8.1/8.2				7.2	7.3/7.2				369	385/396			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
75.0	A		8					8.2	8.1/7.8				7.1	7.2/7.0				443	437/430			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR				RC	CR/CR				RC	CR/CR			

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5737

Client EDCG

Sample Description 006

Test started: Date 5/8/15 Time 1806

Test ended: Date 5/9/15 Time 1957

Test Species D. pulex ID# BAL/M22-N24

Technician: Ohour CR 24hour CR 48hour ____ 72hour ____ 96hour ____

Time: Ohour 1806 24hour 1957 48hour ____ 72hour ____ 96hour ____

Temperature (°C): Ohour 24-3 24hour 24-3 48hour ____ 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
100.0	A		8					8.2	8.1/8.3				7.0	7.1/6.8				530	505/524			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
1000 pH adj	A		8						/					/					/			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR				RC	CR/CR				RC	CR/CR			

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

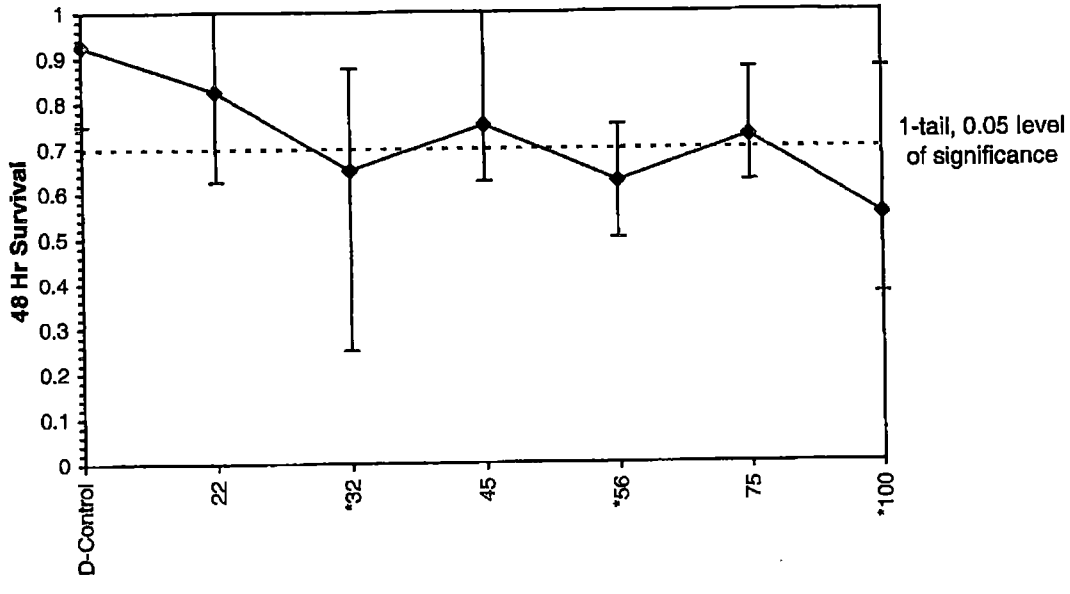
Start Date:	5/10/2015	Test ID:	X5737DP	Sample ID:	AR0000752006
End Date:	5/12/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	5/8/2015	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex
Comments:					

Conc-%	1	2	3	4	5
D-Control	0.7500	1.0000	1.0000	0.8750	1.0000
22	0.8750	0.8750	1.0000	0.6250	0.7500
32	0.2500	0.7500	0.8750	0.8750	0.5000
45	0.7500	0.6250	1.0000	0.6250	0.7500
56	0.5000	0.7500	0.5000	0.6250	0.7500
75	0.8750	0.6250	0.6250	0.7500	0.7500
100	0.3750	0.3750	0.8750	0.6250	0.5000

			Transform: Arcsin Square Root					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.9250	1.0000	1.2872	1.0472	1.3931	12.116	5			
22	0.8250	0.8919	1.1542	0.9117	1.3931	15.823	5	1.072	2.409	0.2989
*32	0.6500	0.7027	0.9550	0.5236	1.2094	31.099	5	2.677	2.409	0.2989
45	0.7500	0.8108	1.0622	0.9117	1.3931	18.545	5	1.813	2.409	0.2989
*56	0.6250	0.6757	0.9154	0.7854	1.0472	14.302	5	2.996	2.409	0.2989
75	0.7250	0.7838	1.0255	0.9117	1.2094	12.008	5	2.109	2.409	0.2989
*100	0.5500	0.5946	0.8449	0.6591	1.2094	27.116	5	3.564	2.409	0.2989

Auxiliary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)					0.98147		0.934		0.02704	-0.133
Bartlett's Test indicates equal variances (p = 0.63)					4.36985		16.8119			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	75	100	86.6025	1.33333	0.22432	0.24338	0.11288	0.0385	0.02392	6, 28
Treatments vs D-Control										

Dose-Response Plot



ECB 5/14/15

Acute Fish Test-48 Hr Survival

Start Date:	5/8/2010	Test ID:	X5737PP	Sample ID:	AR0000752
End Date:	5/10/2010	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	5/8/2010	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	0.8750
45	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
32	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.38831	0.934	-4.1486	23.0852
Equality of variance cannot be confirmed				

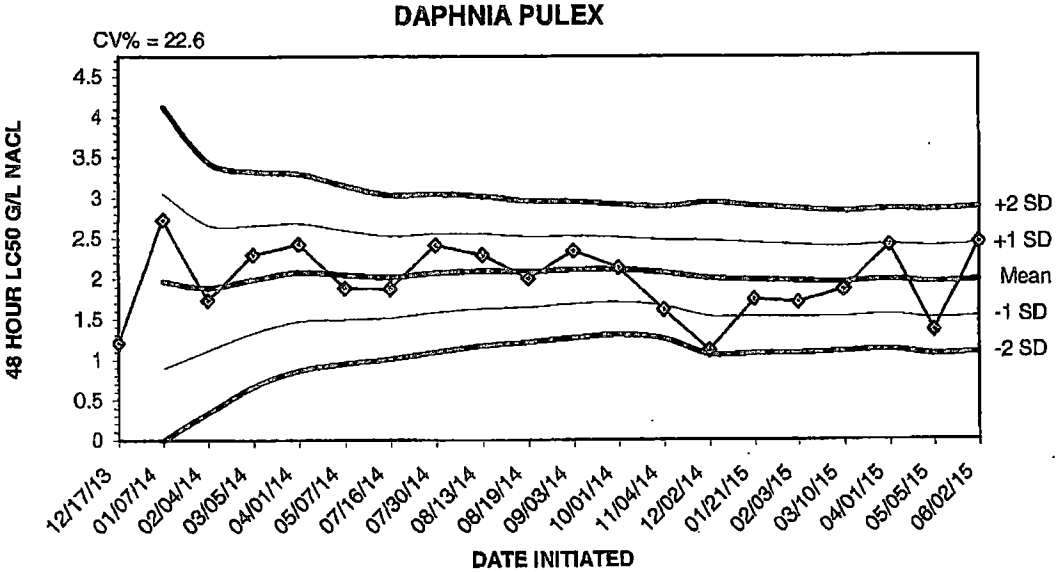
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

ToxCalc v5.0.23

Reviewed by: EAB 5/11/10

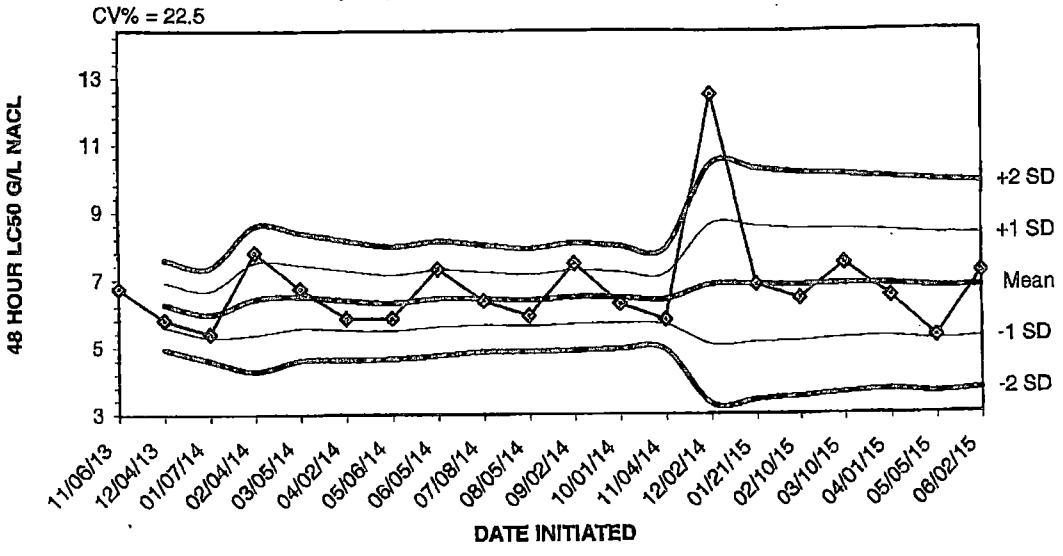
APPENDIX D
QUALITY ASSURANCE CHARTS

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/17/13	1.2100					
01/07/14	2.7400	1.9750	0.8931	0.0000	3.0569	4.1387
02/04/14	1.7400	1.8967	1.1197	0.3428	2.6736	3.4505
03/05/14	2.3000	1.9975	1.3318	0.6662	2.6632	3.3288
04/01/14	2.4300	2.0840	1.4759	0.8679	2.6921	3.3001
05/07/14	1.8900	2.0517	1.5021	0.9525	2.6013	3.1509
07/16/14	1.8800	2.0271	1.5213	1.0154	2.5330	3.0389
07/30/14	2.4200	2.0763	1.5877	1.0992	2.5648	3.0533
08/13/14	2.3000	2.1011	1.6381	1.1751	2.5641	3.0271
08/19/14	2.0100	2.0920	1.6545	1.2170	2.5295	2.9670
09/03/14	2.3500	2.1155	1.6932	1.2709	2.5377	2.9600
10/01/14	2.1400	2.1175	1.7148	1.3121	2.5202	2.9229
11/04/14	1.6200	2.0792	1.6698	1.2603	2.4887	2.8982
12/02/14	1.1200	2.0107	1.5411	1.0716	2.4803	2.9499
01/21/15	1.7500	1.9933	1.5359	1.0784	2.4508	2.9083
02/03/15	1.7100	1.9756	1.5280	1.0804	2.4232	2.8708
03/10/15	1.8700	1.9694	1.5353	1.1011	2.4036	2.8377
04/01/15	2.4200	1.9944	1.5601	1.1257	2.4288	2.8632
05/05/15	1.3600	1.9611	1.5145	1.0680	2.4076	2.8541
06/02/15	2.4500	1.9855	1.5374	1.0892	2.4336	2.8818

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/06/13	6.7500					
12/04/13	5.8100	6.2800	5.6153	4.9506	6.9447	7.6094
01/07/14	5.4000	5.9867	5.2945	4.6024	6.6788	7.3709
02/04/14	7.8200	6.4450	5.3681	4.2913	7.5219	8.5987
03/05/14	6.7500	6.5060	5.5635	4.6210	7.4485	8.3910
04/02/14	5.8600	6.3983	5.5150	4.6317	7.2816	8.1649
05/06/14	5.8600	6.3214	5.4898	4.6582	7.1530	7.9847
06/05/14	7.3100	6.4450	5.5995	4.7539	7.2905	8.1361
07/08/14	6.3700	6.4367	5.6453	4.8540	7.2280	8.0193
08/05/14	5.9200	6.3850	5.6212	4.8575	7.1488	7.9125
09/02/14	7.4800	6.4845	5.6883	4.8921	7.2808	8.0770
10/01/14	6.2800	6.4675	5.7060	4.9446	7.2290	7.9904
11/04/14	5.8100	6.4169	5.6654	4.9139	7.1684	7.9200
12/02/14	12.5000	6.8514	5.0725	3.2936	8.6303	10.4092
01/21/15	6.8500	6.8513	5.1371	3.4230	8.5655	10.2797
02/10/15	6.4200	6.8244	5.1648	3.5052	8.4839	10.1435
03/10/15	7.4800	6.8629	5.2482	3.6335	8.4777	10.0924
04/01/15	6.4800	6.8417	5.2726	3.7035	8.4108	9.9799
05/05/15	5.2900	6.7600	5.1941	3.6282	8.3259	9.8918
06/02/15	7.2000	6.7820	5.2547	3.7274	8.3093	9.8366

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 5/08/15** **To: 5/08/15**
From: **To:**
Test Initiated: 5/10/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	75.0	87.5	100.0	75.0	87.5	100.0	50.0
	B	100.0	100.0	75.0	100.0	100.0	62.5	62.5
	C	100.0	100.0	87.5	100.0	50.0	75.0	87.5
	D	87.5	62.5	100.0	62.5	62.5	75.0	100.0
	E	100.0	75.0	87.5	87.5	75.0	75.0	100.0
48-hour	A	75.0	87.5	25.0	75.0	50.0	87.5	37.5
	B	100.0	87.5	75.0	62.5	75.0	62.5	37.5
	C	100.0	100.0	87.5	100.0	50.0	62.5	87.5
	D	87.5	62.5	87.5	62.5	62.5	75.0	62.5
	E	100.0	75.0	50.0	75.0	75.0	75.0	50.0
	Mean	92.5	82.5	65.0	75.0	62.5	72.0	55.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **X YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits:
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs, Callahan, Rose
Sample Collected **From:** **Date 5/08/15** **Time 0630**
To: **Date 5/08/15** **Time 0830**
Test Begin **Date 5/10/15** **Time 1741**
Test End **Date 5/12/15** **Time 1630**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.4	8.5	8.5	24.3	24.4	24.4	28.0			40.0			7.6	7.7	7.6
22.0	8.3	8.2	8.5	24.3	24.4	24.4							7.3	7.4	7.4
32.0	8.2	8.1	8.4	24.3	24.4	24.4							7.3	7.3	7.3
45.0	8.2	8.0	8.3	24.3	24.4	24.4							7.3	7.2	7.2
56.0	8.1	7.8	8.2	24.3	24.4	24.4							7.2	7.1	7.1
75.0	8.0	7.6	8.2	24.3	24.4	24.4							7.1	7.0	7.1
100.0	7.9	7.3	8.1	24.3	24.4	24.4	20.0			108.0			7.0	6.9	7.0

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 5/08/15** **To: 5/08/15**
From: **To:**
Test Initiated: 5/08/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	87.5	100.0	100.0	100.0	100.0
	Mean	100.0	100.0	97.5	100.0	100.0	100.0	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **YES** **X NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits:
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs, Callahan, Rose

Sample Collected	**From:**	**Date 5/08/15**	**Time 0630**
	To:	**Date 5/08/15**	**Time 0830**
Test Begin		**Date 5/08/15**	**Time 1750**
Test End		**Date 5/10/15**	**Time 1609**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.3	8.6	8.2	24.4	24.4	24.4	28.0			40.0			7.6	7.7	7.6
22.0	8.3	8.4	8.1	24.4	24.4	24.4							7.4	7.3	7.3
32.0	8.3	8.3	8.0	24.4	24.4	24.4							7.3	7.2	7.3
45.0	8.2	8.2	7.9	24.4	24.4	24.4							7.3	7.2	7.2
56.0	8.2	8.2	7.9	24.4	24.4	24.4							7.2	7.2	7.2
75.0	8.2	7.8	7.8	24.4	24.4	24.4							7.1	7.0	7.1
100.0	8.2	7.3	7.9	24.4	24.4	24.4	20.0			108.0			7.0	6.8	7.0

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: EDCC - 006

Project#: X5737

Chain of Custody Documents Checked by: RC 6/8/15
Technician/Date

Raw Data Documents Checked by: RC 6/8/15
Technician/Date

Statistical Analysis Package Checked by: ECB 5/14/15
Quality Manager/Date

Quality Control Data Checked by: ECB 5/31/15
Quality Manager/Date

Report Checked by: ECB 6/15/15
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Erin L. Brupp, BS 6/15/15
Quality Manager Date

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5738

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X5738
Outfall: Outfall 007 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. David Sartain
Test Dates: May 8 - 11, 2015
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0 - **Pass**
2. Report the NOEC for survival, Parameter TOM6C - 100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 0-**Pass**
2. Report the NOEC for survival, Parameter TOM3D - 100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 7.84%.

This report contains a total of 32 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

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Fax: (318) 745-2773

THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 007 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X5738

Test Dates: May 8 - 11, 2015
Report Date: June 15, 2015

Prepared for:
Mr. David Sartain
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X5738

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X5738

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 007 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex*. The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house at test temperature and were approximately four days old at test initiation. The minnows were acclimated to dilution water hardness prior to test initiation. The *Daphnia pulex* test organisms were also raised in-house at test temperature and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

BAL
ADEQ #88-0630
Project X5738

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the tests were 100.0, 75.0, 56.0, 50.0, 45.0, and 32.0 percent effluent and a reconstituted water control. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One sample of Outfall 007 was collected by El Dorado Chemical personnel on May 8, 2015. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 3.6^0 Celsius.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured using a HACH^R test strip. An aliquot of the sample was adjusted from an initial pH of 3.9 to a pH range of 6.0-9.0. An extra 100.0 percent dilution was added to each test in order to document any lethality due to low pH. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured on the control and the highest effluent concentration.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

BAL
ADEQ #88-0630
Project X5738

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in neither tests after 48 hours of exposure (p=.05). The NOEC for survival for the *Daphnia pulex* and the fathead minnow test was 100.0 percent effluent (p=.05). The 48 hour LC_{50} values for the *Daphnia pulex* and the fathead minnow test could not be determined because greater than 50.0 percent survival occurred in the 100.0 percent effluent dilution.

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	97.5
32.0	100.0	90.0
45.0	100.0	85.0
50.0	100.0	92.5
56.0	100.0	85.0
75.0	100.0	80.0
100.0	100.0	92.5

The 48-hour reference toxicant test results indicated that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X5738

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on May 8, 2015, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05).

BAL
ADEQ #88-0630
Project X5738

5.0 References

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1246
Fax: (318) 743-2773

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company
Phone: (870) 863-1484
Address: 4500 Norwest Ave., El Dorado, AR 71731
Fax: (870) 863-~~7499~~ 1499
Permit #: AR0000752/AFIN 70-00040
Purchase Order:
Sampler's Signature/Printed Name/Affiliation: Edward L Pearson / Edward L Pearson / EDCC

Analysis:

Date Start / Date End	Time Start / Time End	C	G	# and type of container	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow(fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Lab Control Number:	Project Number:
05-08-15 / 05-08-15	0630 / 0830	X		6 half gallons	Outfall 006			X	X				~~C10928~~ 8050528	X5738 007
05-08-15 / 05-08-15	0700 / 0900	X		6 half gallons	Outfall 007			X	X				C10928	Temp. upon arrival: 3.6°C Therm #29 EB 5/8/15
														Preservative: (below)

	Date:	Time:		Date:	Time:
Relinquished by/Affiliation: Edward L Pearson / EDCC	05-08-15	1000	Received by/Affiliation:	5-8-15	1045
Relinquished by/Affiliation:			Received by/Affiliation:		
Relinquished by/Affiliation:	5-8-15	1300	Received by/Affiliation:	5/8/15	1300

Method of Shipment: ___ Lab ___ Bus ___ Fed Ex ___ DHL ___ UPS ___ Client ___ Other Tracking #_____
Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X 5738

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/RC/CR

Test initiated: Date 5/8/15 Time 1715 | D. pulex Date 5/9/15 Time 1919

Test terminated: Date 5/10/15 Time 1541 | 5/11/15 1745

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
Conductivity Meter: Model # Control Co. Serial #80277924
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness 100%	Alkalinity 100%	Tech
C10928	8.1/99.7%	No	<0.01	NO	1.0	N/A	196.0	12.0	RC
↓	8.2/100.9%	NO	↓	↓	↓	↓	↓	↓	CR
↓	8.1/100.5%	NO	↓	↓	↓	↓	↓	↓	CR

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3726	N/A	N/A	N/A	N/A	7.2	28.0	40.0	RC
		↓	↓	↓	↓				

Test Species Information

Test Species Info.	Species: D. pulex ID#: BAL/	Species: P. promelas ID#: BAL/050415	Species: ID#:	Species: ID#:
Age	<24 hrs	4 days		
Test Container Size	30 ml	300 ml		
Test volume	25 ml	200 ml		
Feeding: Type	2 hrs	prior to		
Amount	test	initiation		
Aeration?	N/A	N/A		
Amount	1	1		
Condition of survivors	RC Good	CR Good		

Comments:
pH prior to aeration 100% - ~~6.9~~ RC 5/8/15 6.6 - RC - No aeration needed on 5/8/15

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/9/15 Time 1919

Test ended: Date 5/11/15 Time 1745

Test Species D. pulex ID# BAL L23-m25

Technician:	Ohour CR	24hour CR	48hour RC	72hour ____ 96hour ____
Time:	Ohour 1919	24hour 1704	48hour 1745	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.3	24hour 24.3	48hour 24.4	72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
0	A		8	8	8			8.3	8.3/8.4	8.7			7.6	7.7/7.7	7.7			172.7	187.8/168.1	227		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A		8	7	7			8.2	8.3/8.3	8.7			7.3	7.5/7.3	7.5			317	305/294	353		
	B		8	8	8																	
	C		8	8	8																	
	D		8	7	6																	
	E		8	7	7																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	RC			RC	CR/CR	RC			RC	CR/CR	RC		

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BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

RC 5/8/15

Project# ~~X53~~ X5738

Client EDCC

Sample Description 007

Test started: Date 5/9/15 Time 1919

Test ended: Date 5/11/15 Time 1745

Test Species D. pulex ID# BP4/L23-M25

Technician:	Ohour CR	24hour CR	48hour RC	72hour	96hour
Time:	Ohour 1919	24hour 1704	48hour 1745	72hour	96hour
Temperature (°C):	Ohour 24.3	24hour 24.5	48hour 24.4	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
45.0	A		8	8	8			8.1	8.2/8.2	8.5			7.1	7.4/7.1	7.5			368	362/355	416		
	B		8	8	8																	
	C		8	8	7																	
	D		8	8	5																	
	E		8	8	6																	
50.0	A		8	8	5			8.1	8.2/8.2	8.5			7.1	7.4/7.1	7.6			386	377/380	437		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	RC			RC	CR/CR	RC			RC	CR/CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/9/15 Time 1919

Test ended: Date 5/11/15 Time 1745

Test Species D. pulex ID# BAL/L23-M25

Technician:	Ohour CR	24hour CR	48hour RC	72hour	96hour
Time:	Ohour 1919	24hour 1704	48hour 1745	72hour	96hour
Temperature (°C):	Ohour 24.3	24hour 24.3	48hour 24.4	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
56.0	A		8	8	8			8.2	8.1/8.2	8.5			7.0	7.4/7.0	7.4			410	409/399	448		
	B		8	8	6																	
	C		8	8	6																	
	D		8	7	7																	
	E		8	8	7																	
75.0	A		8	8	5			8.2	8.9/8.2	8.4			6.9	7.4/6.9	7.3			486	463/468	518		
	B		8	7	7																	
	C		8	8	6																	
	D		8	7	6																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	RC			RC	CR/CR	RC			RC	CR/CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/9/15 Time 1919

Test ended: Date 5/11/15 Time 1745

Test Species D. pulex ID# BAL L23-mgs

Technician: Ohour CR 24hour CR/2 48hour RC 72hour _____ 96hour _____

Time: Ohour 1919 24hour 1764 48hour 1745 72hour _____ 96hour _____

Temperature (°C): Ohour 24.3 24hour 24.3 48hour 24.4 72hour _____ 96hour _____

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
100.0	A		8	7	7			8.2	7.9/8.1	8.4			6.7	7.1/6.7	7.3			589	561/570	620		
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
100.0 pH adj	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	RC			RC	CR/CR	RC			RC	CR/CR	RC		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Test started: Date 5/8/15 Time 1715

Test ended: Date 5/10/15 Time 1541

Test Species P. promelas ID# BAL 050415

Sample Description 007

Technician: Ohour RC 24hour CR 48hour CR 72hour ____ 96hour ____

Time: Ohour 1715 24hour 1809 48hour 1541 72hour ____ 96hour ____

Temperature (°C): Ohour 24.4 24hour 24.4 48hour 24.4 72hour ____ 96hour ____

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
0	A		8	8	8			8.3	8.2/8.6	8.1			7.6	7.4/7.7	7.4			172.7	183.9/164	187	176.0	
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A		8	8	8			8.2	8.1/8.5	8.0			7.3	7.2/7.3	CR 5/10/15 8.3			317	299/296	299		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/8/15 Time 1715

Test ended: Date 5/12/15 Time 1541

Test Species P. promelas ID# BAL050415

Technician:	Ohour RC	24hour CR	48hour CR	72hour ____	96hour ____
Time:	Ohour 1715	24hour 1804	48hour 1541	72hour ____	96hour ____
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour ____	96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
45.0	A		8	8	8			8.1	8.0/8.5	7.8			7.1	7.1/7.2	7.2			368	364/351	358		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
50.0	A		8	8	8			8.1	7.9/8.4	7.7			7.1	7.1/7.1	7.2			386	383/370	376		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/8/15 Time 1715

Test ended: Date 5/10/15 Time 1541

Test Species P. promelas ID# BAL/050415

Technician:	Ohour RC	24hour CR	48hour CR	72hour ____ 96hour ____
Time:	Ohour 1715	24hour 1804	48hour 1541	72hour ____ 96hour ____
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
56.0	A		8	8	8			8.2	7.8/8.4	7.7			7.0	7.1/7.1	7.2			410	408/~~390~~	405		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			8.2	7.7/8.3	7.6			6.9	7.0/7.0	7.1			486	477/471	476		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X5738

Client EDCC

Sample Description 007

Test started: Date 5/8/15 Time 1715

Test ended: Date 5/10/15 Time 1541

Test Species P. promelas ID# BAL

Technician:	Ohour RC	24hour CR	48hour CR	72hour ____	96hour ____
Time:	Ohour 1715	24hour 1804	48hour 1541	72hour ____	96hour ____
Temperature (°C):	Ohour 24.4	24hour 24.4	48hour 24.4	72hour ____	96hour ____

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
100.0	A		8	8	8			8.2	7.6/8.2	7.5			6.7	6.9/6.7	7.0			589	570/571	574		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
100.0 pH adj	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	CR/CR	CR			RC	CR/CR	CR			RC	CR/CR	CR		

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

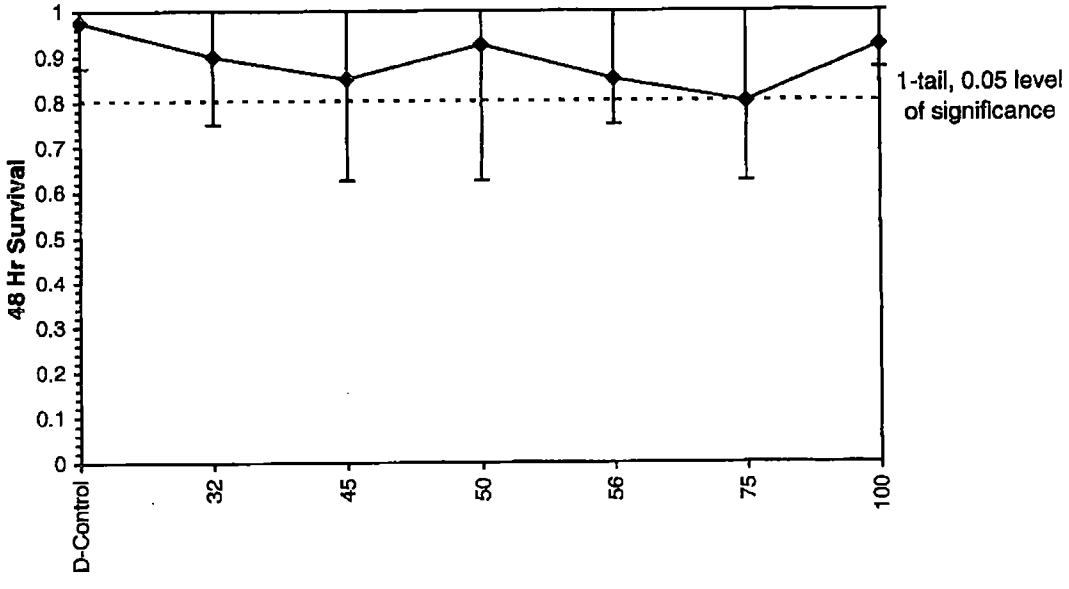
Start Date:	5/9/2015	Test ID:	X5738DP	Sample ID:	AR0000752007
End Date:	5/11/2015	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	5/8/2015	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	1.0000	1.0000
32	0.8750	1.0000	1.0000	0.7500	0.8750
45	1.0000	1.0000	0.8750	0.6250	0.7500
50	0.6250	1.0000	1.0000	1.0000	1.0000
56	1.0000	0.7500	0.7500	0.8750	0.8750
75	0.6250	0.8750	0.7500	0.7500	1.0000
100	0.8750	0.8750	1.0000	0.8750	1.0000

			Transform: Arcsin Square Root					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5			
32	0.9000	0.9231	1.2504	1.0472	1.3931	11.683	5	1.032	2.409	0.2473
45	0.8500	0.8718	1.1909	0.9117	1.3931	17.846	5	1.612	2.409	0.2473
50	0.9250	0.9487	1.2968	0.9117	1.3931	16.600	5	0.580	2.409	0.2473
56	0.8500	0.8718	1.1813	1.0472	1.3931	12.150	5	1.705	2.409	0.2473
75	0.8000	0.8205	1.1217	0.9117	1.3931	16.470	5	2.285	2.409	0.2473
100	0.9250	0.9487	1.2829	1.2094	1.3931	7.841	5	0.716	2.409	0.2473

Auxiliary Tests					Statistic		Critical		Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)					0.9715		0.934		-0.4942	0.12307
Bartlett's Test indicates equal variances (p = 0.52)					5.16507		16.8119			
Hypothesis Test (1-tail, 0.05)	**NOEC**	**LOEC**	**ChV**	**TU**	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test	100	>100		1	0.15317	0.16044	0.03214	0.02635	0.32589	6, 28
Treatments vs D-Control										

Dose-Response Plot

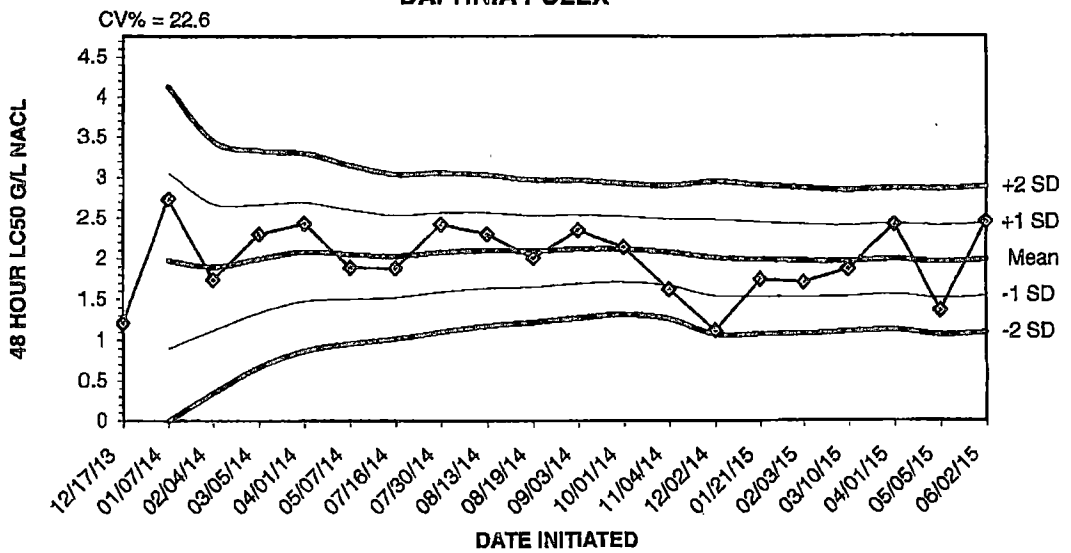


ToxCalc v5.0.23

Reviewed by: ECB 5/14/15

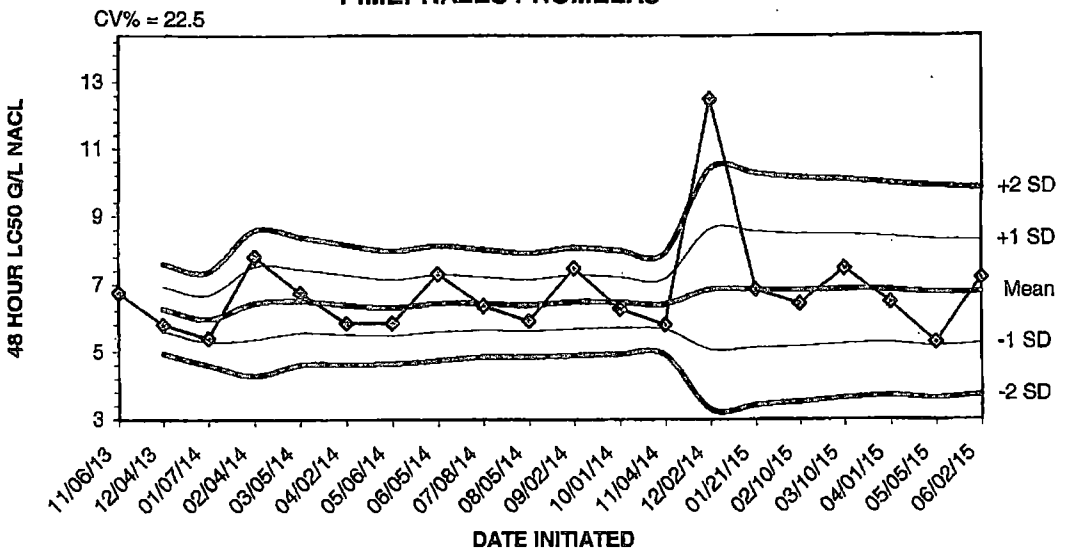
APPENDIX D
QUALITY ASSURANCE CHARTS

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/17/13	1.2100					
01/07/14	2.7400	1.9750	0.8931	0.0000	3.0569	4.1387
02/04/14	1.7400	1.8967	1.1197	0.3428	2.6736	3.4505
03/05/14	2.3000	1.9975	1.3318	0.6662	2.6632	3.3288
04/01/14	2.4300	2.0840	1.4759	0.8679	2.6921	3.3001
05/07/14	1.8900	2.0517	1.5021	0.9525	2.6013	3.1509
07/16/14	1.8800	2.0271	1.5213	1.0154	2.5330	3.0389
07/30/14	2.4200	2.0763	1.5877	1.0992	2.5648	3.0533
08/13/14	2.3000	2.1011	1.6381	1.1751	2.5641	3.0271
08/19/14	2.0100	2.0920	1.6545	1.2170	2.5295	2.9670
09/03/14	2.3500	2.1155	1.6932	1.2709	2.5377	2.9600
10/01/14	2.1400	2.1175	1.7148	1.3121	2.5202	2.9229
11/04/14	1.6200	2.0792	1.6698	1.2603	2.4887	2.8982
12/02/14	1.1200	2.0107	1.5411	1.0716	2.4803	2.9499
01/21/15	1.7500	1.9933	1.5359	1.0784	2.4508	2.9083
02/03/15	1.7100	1.9756	1.5280	1.0804	2.4232	2.8708
03/10/15	1.8700	1.9694	1.5353	1.1011	2.4036	2.8377
04/01/15	2.4200	1.9944	1.5601	1.1257	2.4288	2.8632
05/05/15	1.3600	1.9611	1.5145	1.0680	2.4076	2.8541
06/02/15	2.4500	1.9855	1.5374	1.0892	2.4336	2.8818

2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
11/06/13	6.7500					
12/04/13	5.8100	6.2800	5.6153	4.9506	6.9447	7.6094
01/07/14	5.4000	5.9867	5.2945	4.6024	6.6788	7.3709
02/04/14	7.8200	6.4450	5.3681	4.2913	7.5219	8.5987
03/05/14	6.7500	6.5060	5.5635	4.6210	7.4485	8.3910
04/02/14	5.8600	6.3983	5.5150	4.6317	7.2816	8.1649
05/06/14	5.8600	6.3214	5.4898	4.6582	7.1530	7.9847
06/05/14	7.3100	6.4450	5.5995	4.7539	7.2905	8.1361
07/08/14	6.3700	6.4367	5.6453	4.8540	7.2280	8.0193
08/05/14	5.9200	6.3850	5.6212	4.8575	7.1488	7.9125
09/02/14	7.4800	6.4845	5.6883	4.8921	7.2808	8.0770
10/01/14	6.2800	6.4675	5.7060	4.9446	7.2290	7.9904
11/04/14	5.8100	6.4169	5.6654	4.9139	7.1684	7.9200
12/02/14	12.5000	6.8514	5.0725	3.2936	8.6303	10.4092
01/21/15	6.8500	6.8513	5.1371	3.4230	8.5655	10.2797
02/10/15	6.4200	6.8244	5.1648	3.5052	8.4839	10.1435
03/10/15	7.4800	6.8629	5.2482	3.6335	8.4777	10.0924
04/01/15	6.4800	6.8417	5.2726	3.7035	8.4108	9.9799
05/05/15	5.2900	6.7600	5.1941	3.6282	8.3259	9.8918
06/02/15	7.2000	6.7820	5.2547	3.7274	8.3093	9.8366

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 5/08/15** **To: 5/08/15**
From: **To:**
Test Initiated: 5/09/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0
24-hour	A	100.0	87.5	100.0	100.0	100.0	100.0	87.5
	B	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	C	87.5	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	87.5	100.0	100.0	87.5	87.5	100.0
	E	100.0	87.5	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	87.5	100.0	62.5	100.0	62.5	87.5
	B	100.0	100.0	100.0	100.0	75.0	87.5	87.5
	C	87.5	100.0	87.5	100.0	75.0	75.0	100.0
	D	100.0	75.0	62.5	100.0	87.5	75.0	87.5
	E	100.0	87.5	75.0	100.0	87.5	100.0	100.0
	Mean	97.5	90.0	85.0	92.5	85.0	80.0	92.5

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **YES** **X** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = % effluent
95 % confidence limits: %
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F): P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs, Callahan, Rose
Sample Collected **From:** **Date 5/08/15** **Time 0700**
To: **Date 5/08/15** **Time 0900**
Test Begin **Date 5/09/15** **Time 1919**
Test End **Date 5/11/15** **Time 1745**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.3	8.4	8.7	24.3	24.3	24.4	40.0			28.0			7.6	7.7	7.7
32.0	8.2	8.3	8.7	24.3	24.3	24.4							7.3	7.3	7.5
45.0	8.1	8.2	8.5	24.3	24.3	24.4							7.1	7.1	7.5
50.0	8.1	8.2	8.5	24.3	24.3	24.4							7.1	7.1	7.6
56.0	8.2	8.2	8.5	24.3	24.3	24.4							7.0	7.0	7.4
75.0	8.2	8.2	8.4	24.3	24.3	24.4							6.9	6.9	7.3
100.0	8.2	8.1	8.4	24.3	24.3	24.4	12.0			196.0			6.7	6.7	7.3

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 5/08/15** **To: 5/08/15**
From: **To:**
Test Initiated: 5/08/15
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **YES** **X** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = % effluent
95 % confidence limits: %
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F): P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: David Sartain
Analyst: Briggs, Callahan, Rose
Sample Collected **From:** **Date 5/08/15** **Time 0700**
To: **Date 5/08/15** **Time 0900**
Test Begin **Date 5/08/15** **Time 1715**
Test End **Date 5/10/15** **Time 1541**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.3	8.6	8.1	24.4	24.4	24.4	40.0			28.0			7.6	7.7	7.7
32.0	8.2	8.3	8.7	24.4	24.4	24.4							7.3	7.3	7.5
45.0	8.1	8.2	8.5	24.4	24.4	24.4							7.1	7.1	7.5
50.0	8.1	8.2	8.5	24.4	24.4	24.4							7.1	7.1	7.6
56.0	8.2	8.2	8.5	24.4	24.4	24.4							7.0	7.0	7.4
75.0	8.2	8.2	8.4	24.4	24.4	24.4							6.9	6.9	7.3
100.0	8.2	8.1	8.4	24.4	24.4	24.4	12.0			196.0			6.7	6.7	7.3

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: EDCC-007

Project#: X5738

Chain of Custody Documents Checked by: RG 6/8/15
Technician/Date

Raw Data Documents Checked by: RG 6/8/15
Technician/Date

Statistical Analysis Package Checked by: EGB 5/14/15
Quality Manager/Date

Quality Control Data Checked by: EGB 5/31/15
Quality Manager/Date

Report Checked by: EGB 6/15/15
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Ernest J. Bruppa BS
Quality Manager

6/15/15
Date

Report Rev. 3.0

May 15, 2015

Test Results of
Second Quarter
Acute 48 hour Non-Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 190226-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

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

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Acute 48 hour Non-Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*
Outfall 010 - El Dorado, AR
Client NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

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 appropriate laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead Minnow) Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION

John Overbey
Laboratory Director

PDF cc: El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
epearson@edc-ark.com

Table of Contents

I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from May 6, 2015 at 1840 to May 8, 2015 at 1645.

The *Pimephales promelas* test was conducted from May 4, 2015 at 1840 to May 6, 2015 at 1645.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas*.

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
Daphnia pulex	Control Survival >= 90%	100	PASS
Pimephales promelas	Control Survival >= 90%	100	PASS

III. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements: 48-hour renewal definitive toxicity test using:
   Daphnia pulex
   Pimephales promelas

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
   May 7
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.0	8.4
pH (standard units)	6.3	6.8
Alkalinity (mg/l as CaCO3)	5.0	4.5
Hardness (mg/l as CaCO3)	41	40
Conductivity (umhos/cm)	380	440
Residual Chlorine (mg/l)	0.060	<0.05

2. Dilution Water Samples: Synthetic Soft Water #4210
   a. Dates Collected/Prepared: April 30 through May 14, 2015
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	7.7	8.0
pH (standard units)	7.4	7.8
Alkalinity (mg/l as CaCO3)	30	30
Hardness (mg/l as CaCO3)	44	44
Conductivity (umhos/cm)	130	170
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods
1. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.
   a. Endpoints:
      Death; the criteria employed to establish death are:
      i. No movement
      ii. No reaction to gentle prodding

Criteria	*Pimephales promelas*	*Daphnia pulex*
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	May 4, 2015 at 1840	May 6, 2015 at 1840
Test Terminated	May 6, 2015 at 1645	May 8, 2015 at 1645
Feeding	None required	None required
Age of Test Organisms	8 days	<24 hours

2. Chemical Methods Employed:

Analysis	Method
Dissolved oxygen (mg/l)	SM 4500-O C
pH (standard units)	SM 4500-H+ B
Alkalinity (mg/l as CaCO3)	SM 2320 B
Hardness (mg/l as CaCO3)	EPA 200.7
Conductivity (umhos/cm)	EPA 120.1
Residual Chlorine (mg/l)	SM 4500-CL- F
Temperature (deg.C)	EPA 170.1

D. Test Organisms
1. Scientific Name
Daphnia pulex
Pimephales promelas

2. Acclimation of test organisms:
Daphnia pulex
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.
Pimephales promelas
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

E. Quality Assurance
1. Toxicity Tests
a. Reference Toxicant: Sodium Chloride
b. Date of test:
Daphnia pulex: April 2, 2015 at 1530 to April 4, 2015 at 1415
Pimephales promelas: April 1, 2015 at 1630 to April 3, 2015 at 1605
c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
Daphnia pulex	2.26 g/l	1.35-2.47 g/l
Pimephales promelas	6.50 g/l	5.20-9.11 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	NA	1.34
Hardness	100	2.24
pH	101	0.134
Conductivity	93.2	0.733

F. Organism History
Daphnia pulex
Date: May 6, 2015 at 1840
Age: <24 hours
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C
Pimephales promelas (Fathead minnow)
Date: May 4, 2015 at 1840
Age: 8 days
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C

IV. Results Summary

Daphnia pulex and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 7%, 10%, 13%, 17%, 23%. The low-flow concentration was 17%. Test results were based on survival.

Daphnia pulex

The *Daphnia pulex* test was conducted from May 6, 2015 at 1840 to May 8, 2015 at 1645.

Statistical analyses:

NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	100	100
10%	100	100
13%	100	100
17%	100	100
23%	100	97.5

Pimephales promelas

The *Pimephales promelas* test was conducted from May 4, 2015 at 1840 to May 6, 2015 at 1645.

Statistical analyses:

NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	97.5	97.5
10%	97.5	97.5
13%	100	100
17%	100	100
23%	100	100

Appendix: A1

Daphnia pulex
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 30 ml

Age of organisms: <24 hours
Volume of test solution: 25 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
10%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
23%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	7		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix: A1

Pimephales promelas
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 500 ml

Age of organisms: 8 days
Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	97.5	5.73
	rep. B	7	7		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
10%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	7	7		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
23%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix A2: Statistics

Daphnia pulex

		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	7%	1	1.00000	1.39310
2	7%	2	1.00000	1.39310
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	1.00000	1.39310
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	1.00000	1.39310
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	1.00000	1.39310
6	23%	1	1.00000	1.39310
6	23%	2	1.00000	1.39310
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	0.87500	1.20940

Appendix A2: Statistics

Daphnia pulex

Shapiro - Wilk's Test for Normality	Transform: Arc Sin(Square Root(Y))
D = 0.027	
W = 0.4161	
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	7%	27.50	16.00	5.00	
3	10%	27.50	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	27.50	16.00	5.00	
6	23%	25.00	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas

		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	7%	1	1.00000	1.39310
2	7%	2	0.87500	1.20940
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	1.00000	1.39310
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	0.87500	1.20940
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	1.00000	1.39310
6	23%	1	1.00000	1.39310
6	23%	2	1.00000	1.39310
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	1.00000	1.39310

Appendix A2: Statistics

Pimephales promelas

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0.05399		
W = 0.5466		
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).

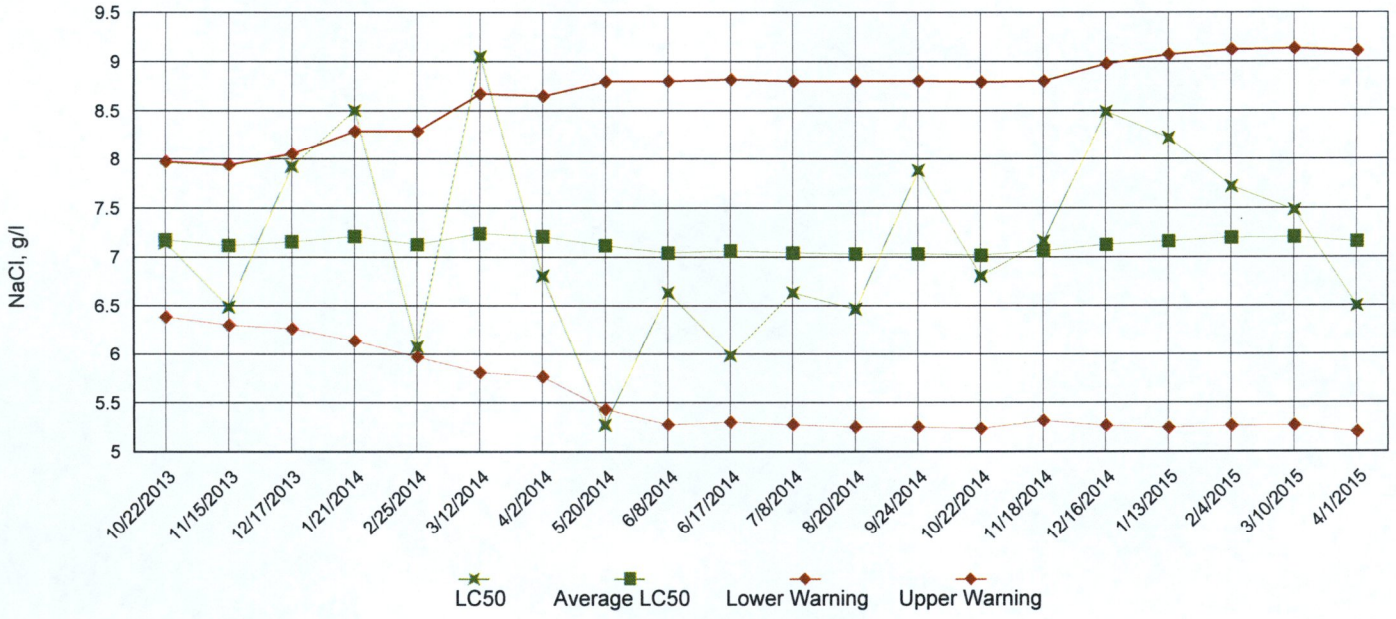
Steel's Many-One Rank Test					Transform: Arc Sin(Square Root(Y))
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	7%	25.00	16.00	5.00	
3	10%	25.00	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	27.50	16.00	5.00	
6	23%	27.50	16.00	5.00	

Critical values are 1 tailed (k=5)

Appendix: A3

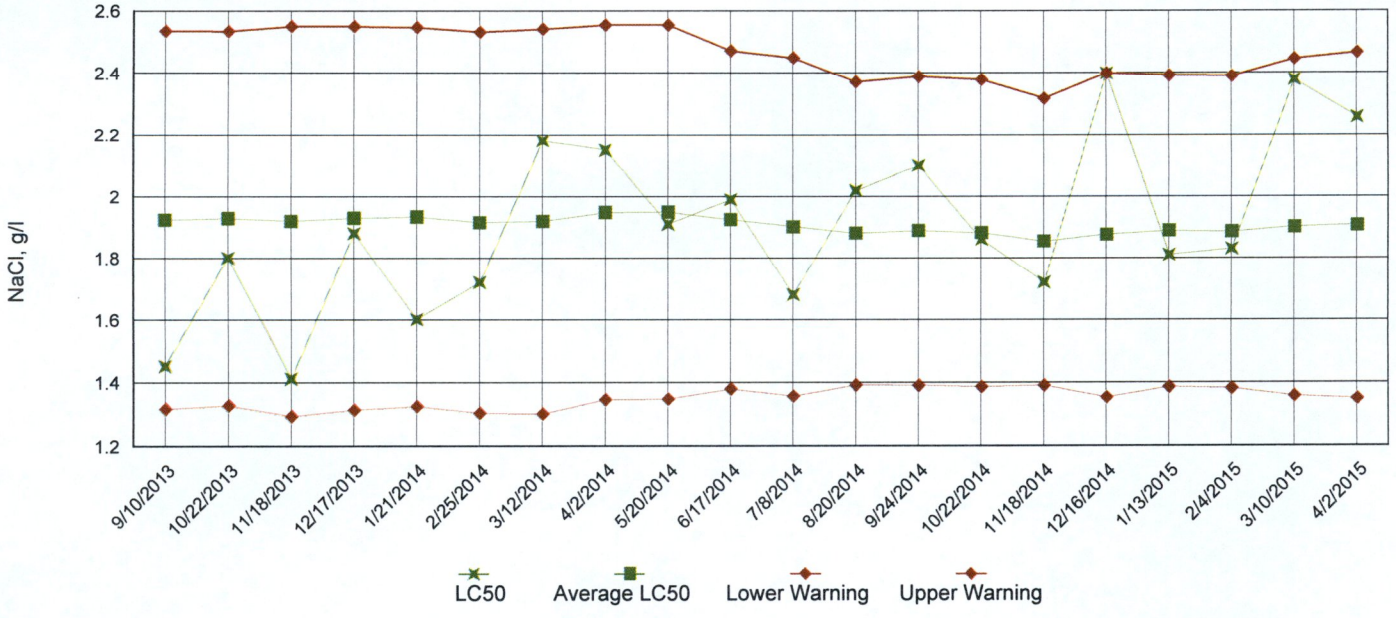
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for
Pimephales promelas
and
Daphnia pulex

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.7	7.7	7.6	7.7	7.8	7.8
DO, mg/l	Final 1*	8.0	8.2	8.2	8.0	8.5	8.2
DO, mg/l	Final 2*	7.1	7.1	7.4	7.3	7.4	7.4
pH, su	Initial	7.4	7.3	7.2	7.3	7.2	7.2
pH, su	Final 1*	7.8	7.8	7.7	7.7	7.8	7.7
pH, su	Final 2*	7.2	7.2	7.2	7.3	7.2	7.2
Alkalinity, mg/l		30	NA	NA	NA	28	NA
Hardness, mg/l		44	NA	NA	NA	44	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	8.0	8.3	8.3	8.4	8.4	8.3
DO, mg/l	Final 1*	8.4	8.4	8.5	8.4	8.6	NA
DO, mg/l	Final 2*	7.0	7.2	7.1	6.9	7.3	7.1
pH, su	Initial	7.8	7.8	7.6	7.8	7.7	7.7
pH, su	Final 1*	7.8	7.8	7.7	7.7	7.7	NA
pH, su	Final 2*	7.4	7.4	7.4	7.4	7.3	7.3
Alkalinity, mg/l		30	NA	NA	NA	30	NA
Hardness, mg/l		44	NA	NA	NA	46	NA
Conductivity, umho/cm		170	190	200	200	220	230
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

*1 data from *Pimephales promelas*
*2 data from *Daphnia pulex*

Appendix: B

Daphnia pulex Survival Data

Permitee:	El Dorado Chemical Company	Critical Dilution:	17%
NPDES No:	AR0000752	Sample Source:	Outfall 010
Contact:	Mr. Eddie Pearson	Species Age:	<24 hours
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 304, 310, 314
Dilution Water:	Synthetic Soft Water #4210		
Test Initiated:	May 6, 2015 at 1840		
Test Terminated:	May 8, 2015 at 1645		

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	87.5

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: _____ Yes X No
b) 1/2 Low Flow (NA): _____ Yes _____ No

Pass/Fail #TEM3D. 0

NOEL *Daphnia pulex* lethality #TOM3D: 23%

Coefficient of variation for *Daphnia pulex* survival #TQM3D: 0

Enter percent effluent corresponding to LC-50 below.
LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on April 2, 2015 at 1530 to April 4, 2015 at 1415:
LC-50 effluent: 2.26 g/l
Warning Limits: 1.35 to 2.47 g/l

Appendix: B

Daphnia pulex Chemical Parameters Chart

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4210
Test Initiated: May 6, 2015 at 1840
Test Terminated: May 8, 2015 at 1645

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: <24 hours
Analysts: 280, 304, 310, 314

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.7	7.7	7.6	7.7	7.8	7.8
DO, mg/l	Final	7.1	7.1	7.4	7.3	7.4	7.4
pH, su	Initial	7.4	7.3	7.2	7.3	7.2	7.2
pH, su	Final	7.2	7.2	7.2	7.3	7.2	7.2
Alkalinity, mg/l		30	NA	NA	NA	28	NA
Hardness, mg/l		44	NA	NA	NA	44	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	8.0	8.3	8.3	8.4	8.4	8.3
DO, mg/l	Final	7.0	7.2	7.1	6.9	7.3	7.1
pH, su	Initial	7.8	7.8	7.6	7.8	7.7	7.7
pH, su	Final	7.4	7.4	7.4	7.4	7.3	7.3
Alkalinity, mg/l		30	NA	NA	NA	30	NA
Hardness, mg/l		44	NA	NA	NA	46	NA
Conductivity, umho/cm		170	190	200	200	220	230
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Appendix: B

Pimephales promelas Survival Data

Permitee:	El Dorado Chemical Company	Critical Dilution:	17%
NPDES No:	AR0000752	Sample Source:	Outfall 010
Contact:	Mr. Eddie Pearson	Species Age:	8 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 304, 310, 314
Dilution Water:	Synthetic Soft Water #4210		
Test Initiated:	May 4, 2015 at 1840		
Test Terminated:	May 6, 2015 at 1645		

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	87.5	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	87.5	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	87.5	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	87.5	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: _____ Yes X No
b) 1/2 Low Flow (NA): _____ Yes _____ No

Pass/Fail #TEM6C. 0

NOEL *Pimephales promelas* lethality #TOM6C: 23%

Coefficient of variation for *Pimephales promelas* survival #TQM6C: 0

Enter percent effluent corresponding to LC-50 below.

LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on April 1, 2015 at 1630 to April 3, 2015 at 1605:

LC-50 effluent: 6.50 g/l
Warning Limits: 5.20 to 9.11 g/l

Appendix: B

Pimephales promelas Chemical Parameters Chart

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4210
Test Initiated: May 4, 2015 at 1840
Test Terminated: May 6, 2015 at 1645

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: 8 days
Analysts: 280, 304, 310, 314

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.7	7.7	7.6	7.7	7.8	7.8
DO, mg/l	Final	8.0	8.2	8.2	8.0	8.5	8.2
pH, su	Initial	7.4	7.3	7.2	7.3	7.2	7.2
pH, su	Final	7.8	7.8	7.7	7.7	7.8	7.7
Alkalinity, mg/l		30	NA	NA	NA	28	NA
Hardness, mg/l		44	NA	NA	NA	44	NA
Conductivity, umho/cm		130	150	150	160	170	180
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	8.0	8.3	8.3	8.4	8.4	8.3
DO, mg/l	Final	8.4	8.4	8.5	8.4	8.6	NA
pH, su	Initial	7.8	7.8	7.6	7.8	7.7	7.7
pH, su	Final	7.8	7.8	7.7	7.7	7.7	NA
Alkalinity, mg/l		30	NA	NA	NA	30	NA
Hardness, mg/l		44	NA	NA	NA	46	NA
Conductivity, umho/cm		170	190	200	200	220	230
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Outfall 010 Akzonn 752
Project Manager: Edward L Pearson
Sampled by: Edward L Pearson

PO No.

MATRIX

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	Acute	Acute												
1	Outfall 010	05-06-15 1000		X	✓			2	X	X												
		Container Type							P	P												
		Preservative							N_a	NO												

ANALYSES REQUESTED

AIC CONTROL NO: 190226
AIC PROPOSAL NO:
Carrier: Sad Star
Received Temperature C: 0.1
Remarks

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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone: _____ Fax:
Report Attention to:
Report Address to:
Email Address:

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-06-15 1100		
Relinquished By:	Date/Time	Received in Lab By: D Brown	Date/Time 5-6-15 1755

Comments: 1002 Permit Requirements - Whole effluent Lethality
Acute Pimephales promelas Acute Daphnia pulex

2014

FORM 0060

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: El Dorado Chemical Company
Project Reference: Outfall 010 AR0000752
Project Manager: Edward L Pearson
Sampled By: Edward L Pearson

PO No.

SAMPLE MATRIX: WATER, SOIL

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Acute	Acute
2	Outfall 010	05-07-15 1000		X	X		2	X	X
		Container Type						P	P
		Preservative						No	No

AIC CONTROL NO: 190226
AIC PROPOSAL NO:
Carrier:
Received on Ice (4°C)? YES NO
Remarks 0.5°C
Field pH calibration on _____ @ _____
Buffer:

G = Glass, NO = none; P = Plastic, S = Sulfuric acid pH2; V = VOA vials, N = Nitric acid pH2; H = HCl to pH2, B = NaOH to pH12; T = Sodium Thiosulfate, Z = Zinc acetate

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions: _____
Phone: _____ Fax: _____
Report Attention to: _____
Report Address to:

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-07-15 1100		
Relinquished By:	Date/Time	Received in Lab By: D. BROWN	Date/Time 5-7-15 1725

Comments: 2002 Permits Requirements whole effluent Lethality
Acute Pimephales promelas Acute Daphnia Pulex

5/01

FORM 0060

May 15, 2015

Test Results of
Second Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 190138-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

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

AMERICAN INTERPLEX CORPORATION
LABORATORIES

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 010 - El Dorado, AR
NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

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 2.1 % effluent, which is above the critical dilution of 1.6 %. The NOEC for growth occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. **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 2.1 % effluent, which is above the critical dilution of 1.6 %. 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%	100	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.330	PASS
Control Growth CV < or = 40%	6.84	PASS
Growth Minimum Significant Difference 12 to 30%	12.9	PASS
Critical Dilution CV < or = 40%	7.42	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	17.3	PASS
Control CV < or = 40% per Surviving Female	8.64	PASS
Reproduction Minimum Significant Difference 13 to 47%	12.2	BELOW
Critical Dilution CV < or = 40%	5.91	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements:
   Test Methods 1000.0 and 1002.0
3. Receiving Stream:

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.3	7.3	7.0
pH (standard units)	6.1	6.1	6.3
Alkalinity (mg/l as CaCO3)	6.3	5.0	5.0
Hardness (mg/l as CaCO3)	42	41	41
Conductivity (umhos/cm)	390	390	380
Residual Chlorine (mg/l)	0.050	0.080	0.060
Ammonia as N (mg/l)	9.7	9.2	8.8

2. Dilution Water Samples: Synthetic Soft Water #4207
   a. Dates Prepared: April 23 through May 7, 2015
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.3	7.9	7.4
pH (standard units)	7.3	7.4	7.6
Alkalinity (mg/l as CaCO3)	30	30	30
Hardness (mg/l as CaCO3)	44	44	44
Conductivity (umhos/cm)	140	140	130
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:	May 5, 2015 at 1305
Date & Time Test Terminated:	May 12, 2015 at 1320
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:	May 5, 2015 at 1510
Date & Time Test Terminated:	May 12, 2015 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 April 7, 2015 at 1040 to April 14, 2015 at 0910
The results were as follows: (Control No. 189181-1.)
Survival LC-50: 3291 mg/l
Growth IC-25: 2407 mg/l
Growth PMSD: 21.1

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on April 7, 2015 at 1115 to April 14, 2015 at 1100
The results were as follows: (Control No. 189181-2.)
Survival LC-50: 1616 mg/l
Growth IC-25: 1387 mg/l
Growth PMSD: 12.3

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	1.34
Hardness	EPA 200.7	100	2.24
pH	SM 4500-H+ B	101	0.134
Conductivity	EPA 120.1	93.2	0.733

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: May 5, 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: May 5, 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

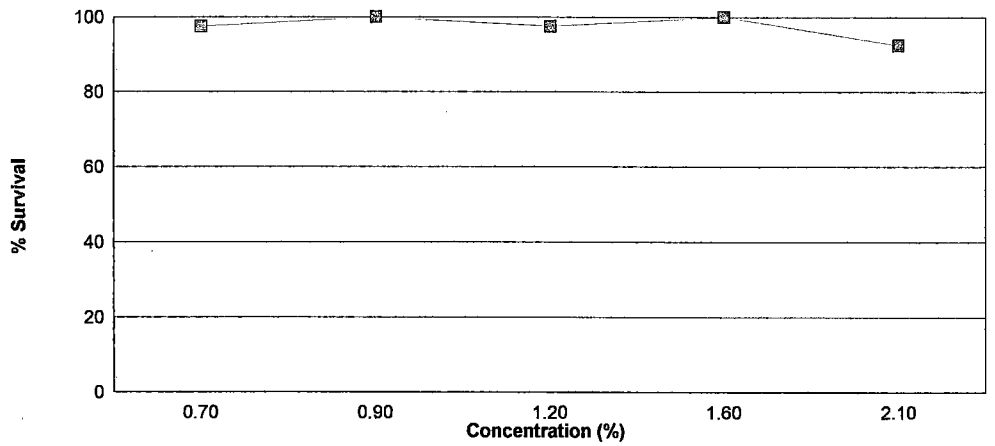
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on May 5, 2015 at 1305 and continued through May 12, 2015 at 1320. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC growth = 2.1 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.330
0.7 %	97.5	0.328
0.9 %	100	0.337
1.2 %	97.5	0.305
1.6 %	100	0.291
2.1 %	92.5	0.322

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

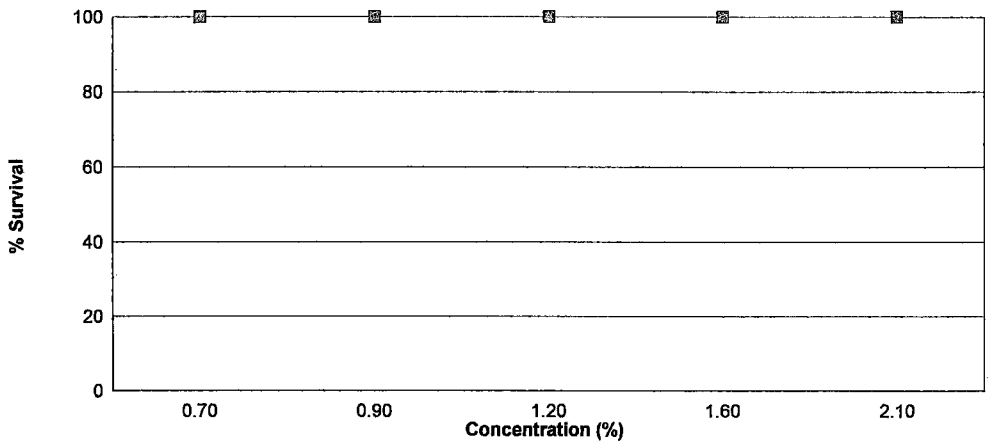
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on May 5, 2015 at 1510 and continued through May 12, 2015 at 1350. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC reproduction = 2.1 % effluent



Summary of the 7-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	17.3
0.7 %	100	18.6
0.9 %	100	17.6
1.2 %	100	18.6
1.6 %	100	19.2
2.1 %	100	17.7

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: May 5, 2015 at 1305
Date and Time Test Terminated: May 12, 2015 at 1320

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
0.7 %	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
0.9 %	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
1.2 %	A	8	8	7	7	7	7	7
	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
1.6 %	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
2.1 %	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	7	7	5	5	5	5	5

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: May 5, 2015 at 1305
Test Terminated: May 12, 2015 at 1320

Drying Started: May 11, 2015 at 1130
Drying Ended: May 13, 2015 at 1420

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.93515	.93764	0.00249	8	0.311
	B	.93168	.93439	0.00271	8	0.339
	C	.93946	.94207	0.00261	8	0.326
	D	.93552	.93844	0.00292	8	0.365
	E	.93322	.93571	0.00249	8	0.311
0.7 %	A	.93488	.93786	0.00298	8	0.372
	B	.93122	.93417	0.00295	8	0.369
	C	.93410	.93663	0.00253	8	0.316
	D	.93614	.93854	0.00240	8	0.300
	E	.93640	.93865	0.00225	8	0.281
0.9 %	A	.93293	.93565	0.00272	8	0.340
	B	.93193	.93456	0.00263	8	0.329
	C	.92581	.92841	0.00260	8	0.325
	D	.92858	.93139	0.00281	8	0.351
	E	.92897	.93167	0.00270	8	0.338
1.2 %	A	.93560	.93788	0.00228	8	0.285
	B	.92893	.93143	0.00250	8	0.312
	C	.93415	.93656	0.00241	8	0.301
	D	.93326	.93585	0.00259	8	0.324
	E	.93293	.93537	0.00244	8	0.305
1.6 %	A	.93148	.93374	0.00226	8	0.282
	B	.93213	.93445	0.00232	8	0.290
	C	.93191	.93428	0.00237	8	0.296
	D	.93113	.93372	0.00259	8	0.324
	E	.92848	.93060	0.00212	8	0.265
2.1 %	A	.93025	.93282	0.00257	8	0.321
	B	.93313	.93601	0.00288	8	0.360
	C	.93155	.93431	0.00276	8	0.345
	D	.93637	.93907	0.00270	8	0.338
	E	.93686	.93884	0.00198	8	0.248

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 5, 2015 at 1510
Date and Time Test Terminated: May 12, 2015 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	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	4	4	3	4	5	4	4	4	4	40	10	4.00
5	6	5	6	5	6	6	7	6	7	6	60	10	6.00
6	0	0	7	0	0	7	0	7	0	0	21	10	2.10
7	8	7	0	7	7	0	8	0	9	6	52	10	5.20
8													
TOTAL	18	16	17	15	17	18	19	17	20	16	173	10	17.3

Concentration: 0.7 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	0	4	4	0	4	4	0	4	4	28	10	2.80
5	7	5	6	7	5	6	6	5	7	6	60	10	6.00
6	0	8	4	0	6	0	0	6	8	0	32	10	3.20
7	7	8	0	8	9	8	8	7	0	11	66	10	6.60
8													
TOTAL	18	21	14	19	20	18	18	18	19	21	186	10	18.6

Concentration: 0.9 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	0	4	4	4	4	5	4	4	4	4	37	10	3.70
5	5	6	8	7	7	6	7	6	6	7	65	10	6.50
6	7	7	7	0	0	6	9	0	0	0	36	10	3.60
7	0	0	0	6	7	0	0	8	7	10	38	10	3.80
8													
TOTAL	12	17	19	17	18	17	20	18	17	21	176	10	17.6

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 5, 2015 at 1510
Date and Time Test Terminated: May 12, 2015 at 1350

Concentration: 1.2 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	0	4	4	0	6	4	4	4	4	34	10	3.40
5	6	4	5	7	5	6	6	8	5	7	59	10	5.90
6	0	8	10	0	7	0	0	0	9	0	34	10	3.40
7	9	0	0	10	6	7	8	10	0	9	59	10	5.90
8													
TOTAL	19	12	19	21	18	19	18	22	18	20	186	10	18.6

Concentration: 1.6 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	4	4	0	4	5	4	4	4	4	37	10	3.70
5	7	7	6	5	8	6	7	6	7	6	65	10	6.50
6	0	0	0	6	0	0	0	0	7	10	23	10	2.30
7	9	9	10	8	8	7	9	7	0	0	67	10	6.70
8													
TOTAL	20	20	20	19	20	18	20	17	18	20	192	10	19.2

Concentration: 2.1 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	0	4	4	4	3	4	4	4	4	35	10	3.50
5	7	5	6	7	5	7	7	5	7	6	62	10	6.20
6	0	8	0	0	0	0	0	0	0	0	8	10	0.800
7	10	0	7	7	8	9	9	8	7	7	72	10	7.20
8													
TOTAL	21	13	17	18	17	19	20	17	18	17	177	10	17.7

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	0.7 %	1	1.00000	1.39310
2	0.7 %	2	1.00000	1.39310
2	0.7 %	3	1.00000	1.39310
2	0.7 %	4	0.87500	1.20940
2	0.7 %	5	1.00000	1.39310
3	0.9 %	1	1.00000	1.39310
3	0.9 %	2	1.00000	1.39310
3	0.9 %	3	1.00000	1.39310
3	0.9 %	4	1.00000	1.39310
3	0.9 %	5	1.00000	1.39310
4	1.2 %	1	0.87500	1.20940
4	1.2 %	2	1.00000	1.39310
4	1.2 %	3	1.00000	1.39310
4	1.2 %	4	1.00000	1.39310
4	1.2 %	5	1.00000	1.39310
5	1.6 %	1	1.00000	1.39310
5	1.6 %	2	1.00000	1.39310
5	1.6 %	3	1.00000	1.39310
5	1.6 %	4	1.00000	1.39310
5	1.6 %	5	1.00000	1.39310
6	2.1 %	1	1.00000	1.39310
6	2.1 %	2	1.00000	1.39310
6	2.1 %	3	1.00000	1.39310
6	2.1 %	4	1.00000	1.39310
6	2.1 %	5	0.62500	0.91174

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0.2394		
W = 0.6406		
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	0.7 %	25.00	16.00	5.00	
3	0.9 %	27.50	16.00	5.00	
4	1.2 %	25.00	16.00	5.00	
5	1.6 %	27.50	16.00	5.00	
6	2.1 %	25.00	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 = 0.01961		
W = 0.9612		
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 = 10.53		
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	0.00736	0.001472	1.801
Within (Error)	24	0.01961	0.0008171	
Total	29	0.02697		

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	0.3304	0.3304		
2	0.7 %	0.3276	0.3276	0.1549	
3	0.9 %	0.3366	0.3366	-0.3429	
4	1.2 %	0.3054	0.3054	1.383	
5	1.6 %	0.2914	0.2914	2.157	
6	2.1 %	0.3224	0.3224	0.4425	

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	0.7 %	5	0.04267	12.9	0.0028
3	0.9 %	5	0.04267	12.9	-0.0062
4	1.2 %	5	0.04267	12.9	0.025
5	1.6 %	5	0.04267	12.9	0.039
6	2.1 %	5	0.04267	12.9	0.008

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.7 %	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
0.9 %	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
1.2 %	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
1.6 %	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
2.1 %	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	0.7 %	10	0	
2	0.9 %	10	0	
3	1.2 %	10	0	
4	1.6 %	10	0	
5	2.1 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality		No Transformation
D = 0.1927		
D* = 1.512		
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	0.7 %	129.50	75.00	10.00	
3	0.9 %	115.00	75.00	10.00	
4	1.2 %	131.00	75.00	10.00	
5	1.6 %	139.00	75.00	10.00	
6	2.1 %	115.00	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	27.33	5.466	1.3
Within (Error)	54	227	4.204	
Total	59	254.3		

Critical F = 3.38 (alpha = 0.01, df = 5,54)
2.38 (alpha = 0.05, df = 5,54)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Dunnett's Test - Table 1 of 2 — No Transformation

Ho:Control<Treatment

Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05
1	Control	17.3	17.3		
2	0.7 %	18.6	18.6	-1.418	
3	0.9 %	17.6	17.6	-0.3272	
4	1.2 %	18.6	18.6	-1.418	
5	1.6 %	19.2	19.2	-2.072	
6	2.1 %	17.7	17.7	-0.4362	

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	0.7 %	10	2.118	12.2	-1.3
3	0.9 %	10	2.118	12.2	-0.3
4	1.2 %	10	2.118	12.2	-1.3
5	1.6 %	10	2.118	12.2	-1.9
6	2.1 %	10	2.118	12.2	-0.4

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 5, 2015 at 1256
Date and Time Test Terminated: May 12, 2015 at 1350

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.3	8.5	7.9	7.6	7.4	7.9	7.5
	Final *1	7.7	7.1	7.8	7.4	8.2	7.5	6.5
	Final *2	8.0	7.6	7.4	7.7	8.0	7.4	7.6
pH, units	Initial	7.3	7.4	7.4	7.4	7.6	7.6	7.4
	Final *1	7.3	7.5	7.6	7.5	7.6	7.6	7.1
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.4
Alkalinity, mg CaCO3/l		30	NA	30	NA	30	NA	NA
Hardness, mg CaCO3/l		44	NA	44	NA	44	NA	NA
Conductivity, umhos/cm		140	140	140	130	130	140	130
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 0.7 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.3	8.4	7.8	7.3	7.6	7.7	7.3
	Final *1	7.4	7.0	8.1	7.1	7.7	7.4	6.8
	Final *2	7.8	7.2	7.3	7.5	8.0	7.4	7.4
pH, units	Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
	Final *1	7.2	7.6	7.6	7.4	7.6	7.6	7.1
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.5

Effluent Conc.: 0.9 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.3	8.4	7.8	7.1	7.8	7.7	7.3
	Final *1	7.4	7.0	7.8	7.2	7.8	7.5	6.7
	Final *2	7.9	7.6	7.2	7.6	7.9	7.3	7.2
pH, units	Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
	Final *1	7.2	7.7	7.6	7.4	7.6	7.6	7.1
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.5

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 5, 2015 at 1256
Date and Time Test Terminated: May 12, 2015 at 1350

Effluent Conc.: 1.2 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	8.5	7.8	7.6	7.8	7.9	7.5
	Final *1	7.6	7.1	7.8	7.7	7.9	7.7	6.6
	Final *2	8.0	7.8	7.4	7.7	8.1	7.5	7.5
pH, units	Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
	Final *1	7.2	7.6	7.6	7.6	7.6	7.7	7.1
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.5

Effluent Conc.: 1.6 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.2	8.5	7.4	7.5	7.7	7.9	7.6
	Final *1	8.2	7.3	7.8	7.5	8.0	7.7	6.9
	Final *2	8.0	7.7	7.5	7.7	8.1	7.4	7.4
pH, units	Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
	Final *1	7.2	7.6	7.6	7.5	7.6	7.7	7.2
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.6
Alkalinity, mg CaCO3/l		32	NA	32	NA	31	NA	NA
Hardness, mg CaCO3/l		47	NA	44	NA	46	NA	NA
Conductivity, umhos/cm		140	140	140	140	140	150	140
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

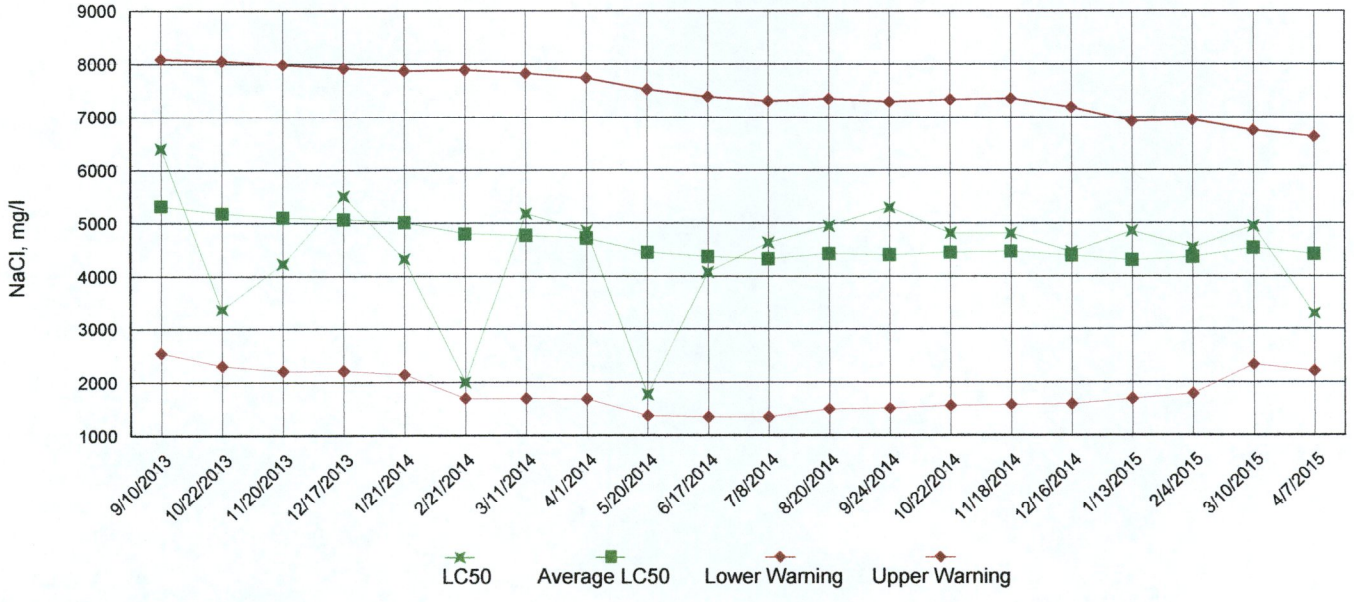
Effluent Conc.: 2.1 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.3	8.7	7.5	7.4	7.5	7.8	7.3
	Final *1	7.5	7.1	7.9	7.2	7.8	7.3	6.9
	Final *2	7.9	7.6	7.2	7.7	7.9	7.4	7.5
pH, units	Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
	Final *1	7.2	7.6	7.6	7.4	7.6	7.6	7.2
	Final *2	7.6	7.6	7.4	7.6	7.7	7.5	7.6

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

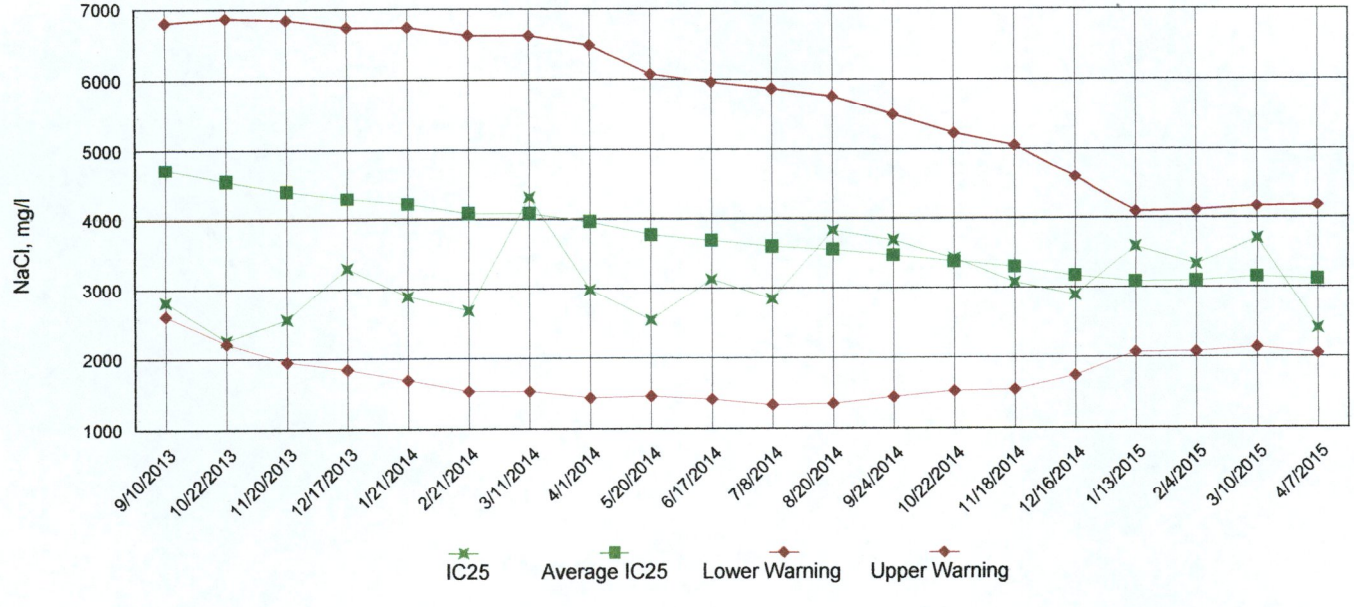
Appendix A4: Test 1000.0

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

LC50 Survival Data



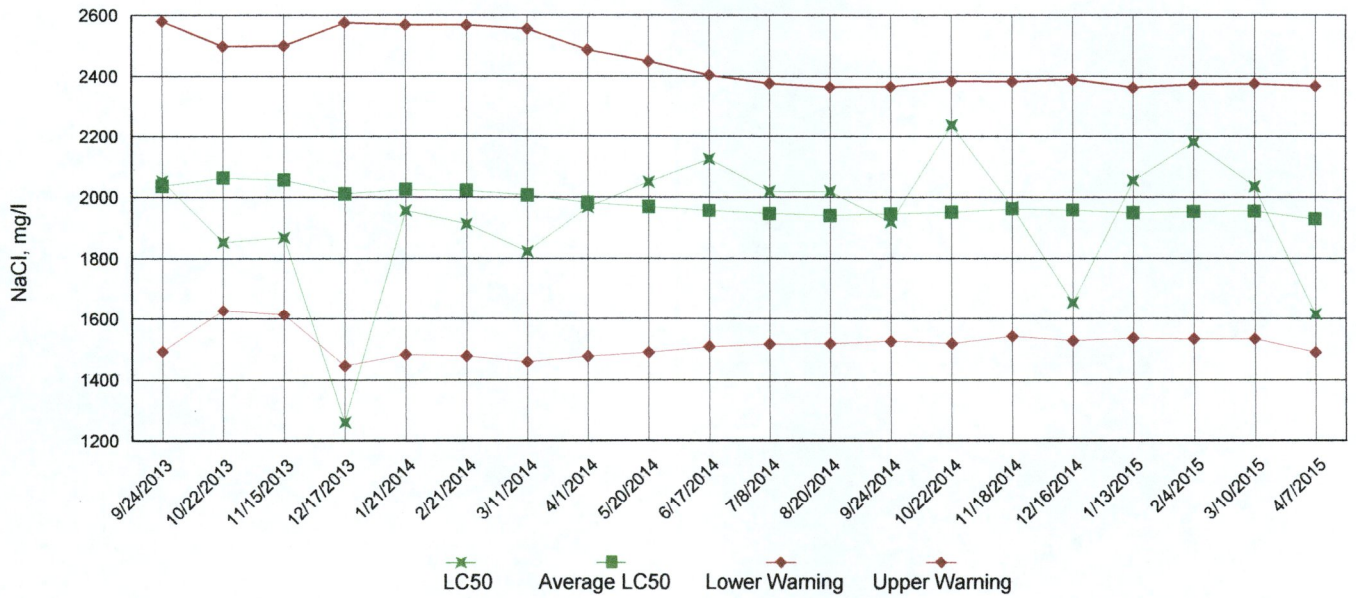
IC25 Growth Data



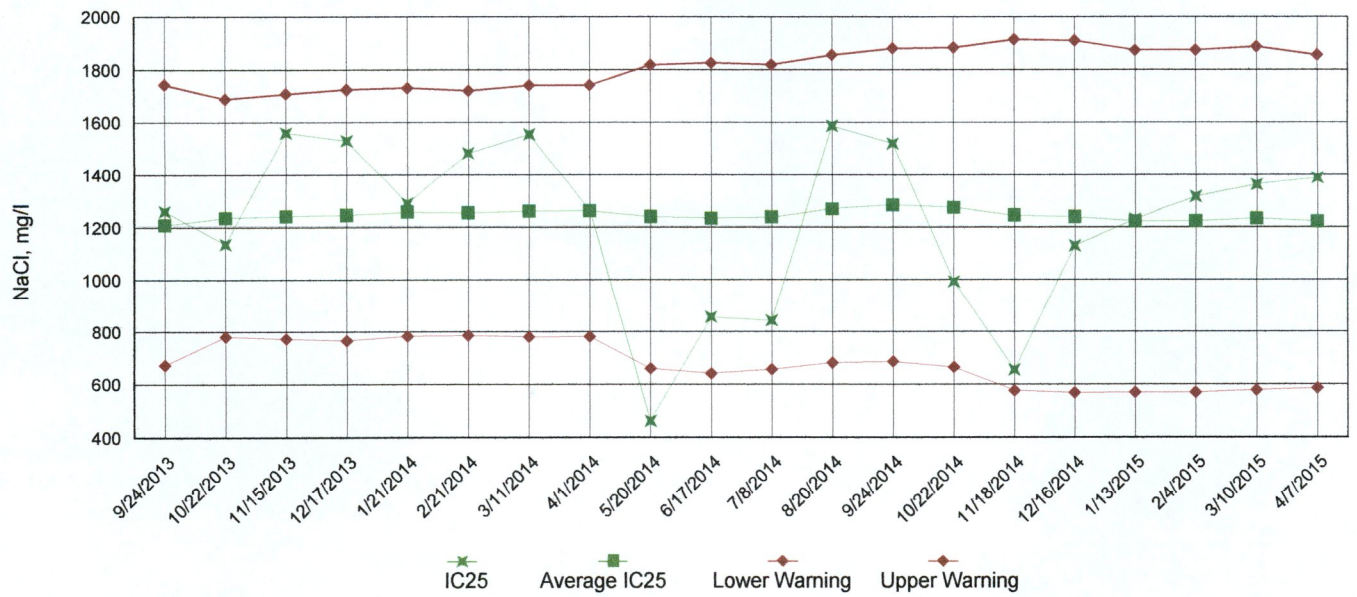
Appendix A4: Test 1002.0

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: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: May 5, 2015 at 1305
Date and Time Test Terminated: May 12, 2015 at 1320
Dilution water used: Synthetic Soft Water #4207

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	100	100	100	100	100	100	100	0.00
0.7 %	100	100	100	87.5	100	100	100	97.5	5.73
0.9 %	100	100	100	100	100	100	100	100	0.00
1.2 %	87.5	100	100	100	100	100	100	97.5	5.73
1.6 %	100	100	100	100	100	100	100	100	0.00
2.1 %	100	100	100	100	62.5	97.5	97.5	92.5	18.1

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers A	B	C	D	E	Mean dry weight, mg	CV%
Control	0.311	0.339	0.326	0.365	0.311	0.33	6.84
0.7 %	0.372	0.369	0.316	0.300	0.281	0.328	12.5
0.9 %	0.340	0.329	0.325	0.351	0.338	0.337	3.02
1.2 %	0.285	0.312	0.301	0.324	0.305	0.305	4.70
1.6 %	0.282	0.290	0.296	0.324	0.265	0.291	7.42
2.1 %	0.321	0.360	0.345	0.338	0.248	0.322	13.6

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	(1.6 %)	____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	(1.6 %)	____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: 2.1 % (TOP6C)

6. LOEC Pimephales Lethality: 2.1 % (TXP6C)

7. NOEC Pimephales Sublethality: 2.1 % (TPP6C)

8. LOEC Pimephales Sublethality: 2.1 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 7.42 (TQP6C)

Appendix B: Test 1000.0

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

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: May 5, 2015 TIME: 1305
Test Terminated: DATE: May 12, 2015 TIME: 1320

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.5	7.9	7.6	7.4	7.9	7.5
Final	7.7	7.1	7.8	7.4	8.2	7.5	6.5
pH Initial	7.3	7.4	7.4	7.4	7.6	7.6	7.4
Final	7.3	7.5	7.6	7.5	7.6	7.6	7.1
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	140	140	140	130	130	140	130
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.4	7.8	7.3	7.6	7.7	7.3
Final	7.4	7.0	8.1	7.1	7.7	7.4	6.8
pH Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
Final	7.2	7.6	7.6	7.4	7.6	7.6	7.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	130	140	150	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.4	7.8	7.1	7.8	7.7	7.3
Final	7.4	7.0	7.8	7.2	7.8	7.5	6.7
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.2	7.7	7.6	7.4	7.6	7.6	7.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	140	140	140	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.5	7.8	7.6	7.8	7.9	7.5
Final	7.6	7.1	7.8	7.7	7.9	7.7	6.6
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.2	7.6	7.6	7.6	7.6	7.7	7.1
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	130	140	140	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.5	7.4	7.5	7.7	7.9	7.6
Final	8.2	7.3	7.8	7.5	8.0	7.7	6.9
pH Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
Final	7.2	7.6	7.6	7.5	7.6	7.7	7.2
Alkalinity	32	NA	32	NA	31	NA	NA
Hardness	47	NA	44	NA	46	NA	NA
Conductivity	140	140	140	140	140	150	140
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.7	7.5	7.4	7.5	7.8	7.3
Final	7.5	7.1	7.9	7.2	7.8	7.3	6.9
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.2	7.6	7.6	7.4	7.6	7.6	7.2
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	140	140	150	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: May 5, 2015 at 1510
Date and Time Test Terminated: May 12, 2015 at 1350
Dilution water used: Synthetic Soft Water #4207

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	100	100	100	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

		Percent Effluent				
Replicates	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
A	18	18	12	19	20	21
B	16	21	17	12	20	13
C	17	14	19	19	20	17
D	15	19	17	21	19	18
E	17	20	18	18	20	17
F	18	18	17	19	18	19
G	19	18	20	18	20	20
H	17	18	18	22	17	17
I	20	19	17	18	18	18
J	16	21	21	20	20	17
Mean per Adult	17.3	18.6	17.6	18.6	19.2	17.7
Mean per Surviving Adult	17.3	18.6	17.6	18.6	19.2	17.7
CV %	8.64	10.8	13.7	14.4	5.91	12.2

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 (1.6 %) _____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 (1.6 %) _____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: 2.1 % (TOP3B)

6. LOEC Ceriodaphnia Lethality: 2.1 % (TXP3B)

7. NOEC Ceriodaphnia Sublethality: 2.1 % (TPP3B)

8. LOEC Ceriodaphnia Sublethality: 2.1 % (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: 8.64 (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: May 5, 2015 TIME: 1510
Test Terminated: DATE: May 12, 2015 TIME: 1350

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.5	7.9	7.6	7.4	7.9	7.5
Final	8.0	7.6	7.4	7.7	8.0	7.4	7.6
pH Initial	7.3	7.4	7.4	7.4	7.6	7.6	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.4
Alkalinity	30	NA	30	NA	30	NA	NA
Hardness	44	NA	44	NA	44	NA	NA
Conductivity	140	140	140	130	130	140	130
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.4	7.8	7.3	7.6	7.7	7.3
Final	7.8	7.2	7.3	7.5	8.0	7.4	7.4
pH Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	130	140	150	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.4	7.8	7.1	7.8	7.7	7.3
Final	7.9	7.6	7.2	7.6	7.9	7.3	7.2
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	140	140	140	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.5	7.8	7.6	7.8	7.9	7.5
Final	8.0	7.8	7.4	7.7	8.1	7.5	7.5
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	130	140	140	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.2	8.5	7.4	7.5	7.7	7.9	7.6
Final	8.0	7.7	7.5	7.7	8.1	7.4	7.4
pH Initial	7.3	7.3	7.4	7.4	7.5	7.7	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.6
Alkalinity	32	NA	32	NA	31	NA	NA
Hardness	47	NA	44	NA	46	NA	NA
Conductivity	140	140	140	140	140	150	140
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.3	8.7	7.5	7.4	7.5	7.8	7.3
Final	7.9	7.6	7.2	7.7	7.9	7.4	7.5
pH Initial	7.3	7.3	7.4	7.4	7.6	7.7	7.4
Final	7.6	7.6	7.4	7.6	7.7	7.5	7.6
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	140	140	140	140	140	150	140
Chlorine	NA	NA	NA	NA	NA	NA	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH												
1	010	05-04-15 1030		X	X			1	X												
		Container Type							P												
		Preservative							NO												

AIC CONTROL NO: 190138
AIC PROPOSAL NO:
Carrier: Gold Star
Received Temperature C: 1.3
Remarks

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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ___ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-04-15 1130		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		Faye Hopkins	5-4-15 1530

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC CONTROL NO: 190138
AIC PROPOSAL NO:
Carrier: Gold Star
Received Temperature C: 0.1

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL		NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
2	010	05-06-15 1100		X	X			1	X	
		Container Type							P	Field pH calibration
		Preservative							NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1387 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-06-15 1100		
Relinquished By:	Date/Time	Received in Lab By: D. Brown	Date/Time 5-6-15 1755

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC CONTROL NO: 190138
AIC PROPOSAL NO:
Carrier: Gold Star
Received Temperature C: 2.0

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
3	010	05-08-15 1030		X	X		1	X	
		Container Type						P	Field pH calibration
		Preservative						NO	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 A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-08-15 1130		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		R Brown	5-8-15 1345

Comments:

FORM 0060

From: (870) 863-1400 Origin ID: ELDA
Eddie Pearson
ELDORADO CHEMICAL COMPANY
4500 NORTH WEST AVE

ELDORADO, AR 71730

J1512150223O3uv

SHIP TO: (501) 682-0744 BILL SENDER
WATER ENFORCEMENT BRANCH
ADEQ - AR DEPT OF ENVIR QUAL
5301 Northshore Drive

NORTH LITTLE ROCK, AR 72118

Ship Date: 24JUN15
Act/Vgt: 2.0 LB
CAD: 5887030/INET3610

Delivery Address Bar Code

Ref #
Invoice #
PO #
Dept #

THU - 25 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7739 0295 6878**

X2 LITA

72118
AR-US
LIT

537J1/8A0E/EE4B

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