

July 22, 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 June 30, 2015.

Enclosed you will find the Discharge Monitoring Reports ending June 30, 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:

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Jun-15

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	'Corrective Action or Other Narrative
Outfall 006/Zinc Monthly Average (420 ug/L)	115.62 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 /Zinc Daily Max (420 ug/L)	231.99 ug/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Monthly Average (18 ug/L)	3.8 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (18 ug/L)	7.62 ug/L Daily Max.	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 TDS Monthly Average (460 mg/L)	291 mg/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Daily Max (460 mg/L)	436.5 mg/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / Zinc Monthly Average (420 ug/L)	115.62 ug/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / Zinc Daily Max (420 ug/L)	231.99 ug/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (980 mg/L)	291 mg/L Monthly Average	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007 / TDS Daily Max (980 mg/L)	436.5 mg/L Daily Max	6/17/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
AM WITH THE INFO THOSE INDIVIDUALS I BELIEVE THE SUBM AWARE THAT TH INFORMATION, INCI U.S.C 1001 AND 33	ER PENALTY OF LAW THA RMATION SUBMITTED HE MMEDIATELY RESPONSIB ITTED INFORMATION IS TO HERE ARE SIGNIFICANT P LUDING THE POSSIBILITY U.S.C. 1319. (Penalties und or maximum imprisonment of	REIN; AND BASED C LE FOR OBTAINING RUE, ACCURATE AN ENALTIES FOR SUB OF FINE AND IMPRI der these statutes may	ON MY INQUIRY OF THE INFORMATION, I D COMPLETE. I AM MITTING FALSE SONMENT. SEE 18 y include fines up to	They Withow 7122115 Signature/Date

### **Bio-Analytical Laboratories' Executive Summary**

Permittee:

El Dorado Chemical Company

P.O. Box 231

El Dorado, AR 71731

Project #:

X5778

Outfall:

Outfall 007 (contaminated storm water)

Permit #:

AR0000752/ AFIN #70-00040

**Contact:** 

Mr. David Sartain

**Test Dates:** 

June 18 - 20, 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-1 Fail
- 2. Report the NOEC for survival, Parameter TOM6C 0.0%.
- 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 0.0%.
- 3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D 7.62%.

Adjusting the pH of the sample to a range of 6.0-9.0 did not reduce the toxicity of the effluent.

This report contains a total of 34 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 007 AT

EL DORADO CHEMICAL COMPANY El Dorado, Arkansas

> NPDES #AR0000752 AFIN #70-00040

EPA Methods 2000.0 and 2021.0

**Project X5778** 

Test Dates: June 18 - 20, 2015 Report Date: June 30, 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

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#### 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<sub>50</sub>, the concentration in which 50 percent of the test organisms died.

#### 2.0 Methods and Materials

#### 2.1 Test Methods

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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 five 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.

### 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 fathead minnow test were 100.0 (pH adjusted), 100.0, 75.0, 56.0, 50.0, 45.0, and 32.0 percent effluent and a reconstituted water control. Due to lack of available neonates, the test concentrations used in the *Daphnia pulex* test were 100.0 (pH adjusted) and 50.0 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 June 17, 2015. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 0.7° 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  $25\pm1^{0}$  Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> 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<sup>R</sup> dual controlled illuminated incubator at a temperature of 25±1° Celsius. An AEMC<sup>R</sup> 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<sub>50</sub> 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 noted in the critical dilution in both tests after 48 hours of exposure (p=.05). The NOEC for survival for the *Daphnia pulex* and the fathead minnow tests was zero percent effluent (p=.05). The 48 hour  $LC_{50}$  values for the *Daphnia pulex* and the fathead minnow test were 25.0 and 37.95 percent effluent, respectively (p=.05). Increasing the pH of the effluent did not reduce the toxicity.

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

Reconstitution	Company of the Compan	dent Sürvival
Test Organism	Pimephales promelas	Daphnia pulex
Control	100.0	95.0
32.0	100.0	
45.0	0.0	
50.0	0.0	0.0
56.0	0.0	
75.0	0.0	
100.0	0.0	
100.0 pH adjusted	27.5	0.0

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.

### 4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 17, 2015, was 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). The 48 hour LC<sub>50</sub> values for the *Daphnia pulex* and the fathead minnow test were 25.0 and 37.95 percent effluent, respectively (p=.05). Increasing the pH of the effluent did not reduce the toxicity.

#### 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**

8240 Spurgin Road Post Office Box 527 Doyline, LA 71023 (318) 745-277 1-800-259-124 Fex: (318) 745-277

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

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APPENDIX B
RAW DATA SHEETS

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X5778 Page 17 of

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Project#	<u> </u>	2118					_			Te	st s	tart		Date	` E	,		TIME				
Client	EDC	<u> </u>								Te	st e	nded	l <b>:</b>	Date	<u> 20 </u>	5		Time	160	Ĵ		
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Test Dilution	Replicate	Test Salinity		# Liv	e Orga	anism	3	7	Diss	olved	Oxyge	en	<u> </u>		рН				C	onduct	tivity	
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	<u>C.</u>		8	5	4								<u> </u>							ļ	<u> </u>	
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	prere	newal/post	renew	a1				O.	A	88	Þ		CP	Elle	ECC	1		CP	AS	ter	<u> </u>	

APPENDIX C STATISTICAL ANALYSES

X5778

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Start Date: 6/18/2015 End Date: 6/20/2015 Sample Date: 6/17/2015

Test ID: X5778DP Lab ID: ADEQ880630

Sample ID: Sample Type: Protocol: EPAAW02-EPA/821/R-02-01 Test Species:

Daphnid Acute Test-48 Hr Survival

AR0000752 EFF2-Industrial DP-Daphnia pulex

Comments:

Conc-% 5 D-Control 1.0000 1.0000 1.0000 0.8750 0.8750 50 0.0000 0.0000 0.0000 0.0000 0.0000 100PH 0.0000 0.0000 0.0000 0.0000 0.0000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical	
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5		'	
*50	0.0000	0.0000	0.1777	. 0.1777	0.1777	0.000	5	15.00	18.00	
*100PH	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	18.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.74482	0.881	-0.7882	1.25641
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)				
Steel's Many-One Rank Test indicates significant differences				
Treatments vs D-Control				

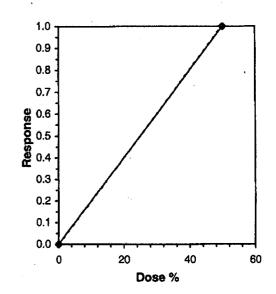
								- Page 22 of 34
		<del> </del>		Dap	hnid Acute T	est-48 Hr Survival		T Ugo LE OI O7
Start Date:	6/18/2015		Test ID:	X5778DP		Sample ID:	AR0000752	
End Date:	6/20/2015		Lab ID:	ADEQ880	630	Sample Type:	EFF2-Industrial	
Sample Date:	6/17/2015		Protocol:	EPAAW02	2-EPA/821/R-	02-01 Test Species:	DP-Daphnia pulex	
Comments:								
Conc-%	1	2	3	4	5		•	
D-Control	1.0000	1.0000	1.0000	0.8750	0.8750			
50	0.0000	0.0000	0.0000	0.0000	0.0000			
100PH	0.0000	0.0000	0.0000	0.0000	0.0000			

	Transform: Arcsin Square Root										
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N		Mean	N-Mean	
	•								0.9500	1.0000	
									0.0000	0.0000	

Auxiliary Tests	Statistic	Critical	Skew Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.74482	0.881	-0.7882 1.25641
Equality of variance cannot be confirmed	•		

				Linea	ar Interpolation	(200 Resamples)
Point	%	SD	95% CL	.(Exp)	Skew	
IC05*	2.500	0.000	2.500	2.500	1.4424	
IC10*	5.000	0.000	5.000	5.000	0.4312	•
IC15*	7.500	0.000	7.500	7.500	-0.3121	1.0 -
IC20*	10.000	0.000	10.000	10.000	-1.8874	۱,
IC25*	12.500	0.000	12.500	12.500	0.3435	0.9
IC40*	20.000	0.000	20.000	20.000	#DIV/0!	0.8
IC50*	(25.000)	0.000	25.000	25.000	#DIV/0i	0.7

<sup>\*</sup> indicates IC estimate less than the lowest concentration



	<del>'''</del>	·		A	cute Fish T	est-48 Hr Survival	Page 23 of 34
Start Date:	6/18/2015		Test ID:	X5778DP		Sample ID:	AR0000752
End Date:	6/20/2015		Lab ID:	ADEQ880	630	Sample Type:	EFF2-Industrial
Sample Date:	6/17/2015		Protocol:	EPAAW02	2-EPA/821/F	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		
32	1.0000	1.0000	1.0000	1.0000	1.0000	:	
45	0.0000	0.0000	0.0000	0.0000	0.0000	•	
50	0.0000	0.0000	0.0000	0.0000	0.0000	•	
56	0.0000	0.0000	0.0000	0.0000	0.0000		
75	0.0000	0.0000	0.0000	0.0000	0.0000	· •	
100	0.0000	0.0000	0.0000	0.0000	0.0000		
	0.1250	0.2500	0.5000	0.2500	0.2500		

_			Tra	ansform:	Arcsin Sc	quare Roo	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			<u> </u>	
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00		
*45	0.0000	0.0000	0.1777	0.1777	0,1777	0.000	5	15.00	16.00		
*50	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00	•	
*56	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00		
*75	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00		
*100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00	•	
*100 PH	0.2750	0.2750	0.5435	0.3614	0.7854	28.036	5	15.00	16.00		
							,				

Auxiliary Tests	Statistic	Critical	Skew Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.35834	0.94	1.87793 20.6156
Equality of variance cannot be confirmed			

Hypothesis Test (1-tail, 0.05)
Steel's Many-One Rank Test indicates significant differences
Treatments vs D-Control

A CONTRACTOR OF THE PARTY OF TH	*							•		
	ı						,	X5778		
	·····			Ac	cute Fish	Test-48 H	r Survival	Page 2	<del>1 of 3</del>	4
Start Date:	6/18/2015		Test ID:	X5778DP			Sample ID:	AR0000752		
End Date:	6/20/2015		Lab ID:	ADEQ880	630		Sample Type:	EFF2-Industrial		
Sample Date:	6/17/2015		Protocol:	EPAAW02	2-EPA/821	/R-02-01	Test Species:	PP-Pimephales promelas		
Comments:										
Conc-%	11	2	3	4	5					
D-Control		1.0000		1.0000	1.0000					
32		1.0000		1.0000	1.0000					
45	0.0000	0.0000		0.0000	0.0000					
50		0.0000		0.0000	0.0000					
56		0.0000		0.0000	0.0000					
75		0.0000		0.0000	0.0000			÷ '		
100		0.0000		0.0000	0.0000					
100 PH	0.1250	0.2500	0.5000	0.2500	0.2500		•			
			Tr	ansform:	Arcsin Sc	uare Roc	ot	Numbe	r T	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Nu	umber
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		0	40
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		0	40
45	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5		0	40
50		0.0000	0.1777	0.1777	0.1777	0.000	5		0	40
56	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5		0	40
75	0.0000	0.0000		0.1777	0.1777	0.000	5		0	40
100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	. 4	0	40

Auxiliary Tests	Statistic	Critical	Skew Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.58789	0.881	1.23334 7.52822

0.7854

Equality of variance cannot be confirmed

0.2750

0.2750

0.5435

0.3614

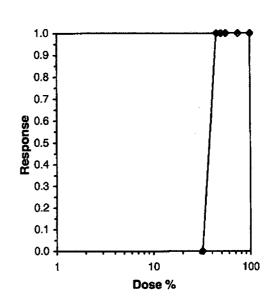
### **Graphical Method**

28.036

Trim Level 0.0% EC50 37.947

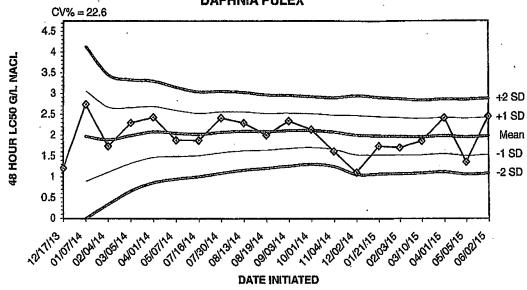
100 PH

37.947



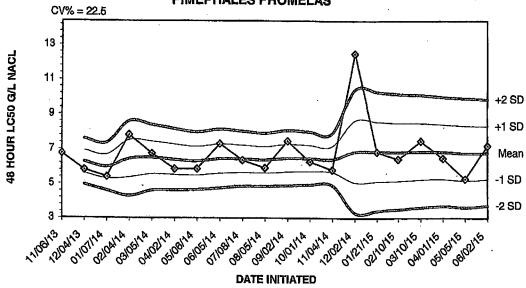
# APPENDIX D QUALITY ASSURANCE CHARTS

### 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. <del>1</del> 011	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. <b>137</b> 1	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 <u>Daphnia pulex</u> Survival

Permittee: El Dorado Chemical - Outfall 007

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 6/17/15

To: 6/17/15

From:

To:

Test Initiated: 6/18/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

**Dilution Series Results - Percent Survival** 

ווע	ution Ser	tes Kesi			irvivai		
TIME OF READING	REP	0	50.0	100.0 pH adj			
24-hour	A	100.0	0.0	100.0			
	В	100.0	0.0	100.0			
	С	100.0	0.0	100.0			
	D	100.0	0.0	100.0			
	E	100.0	0.0	100.0			
48-hour	A	100.0	0.0	0.0			
	В	100.0	0.0	0.0			
	С	100.0	0.0	0.0			
	D	87.5	0.0	0.0			
	E	87.5	0.0	0.0			
•	Mean	95.0	0.0	0.0			

- 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<sub>50</sub> below:

 $LC_{50} = 25.0\%$  effluent

95 % confidence limits: N/A

Method of LC<sub>50</sub> calculation: Graphical

- 3. If you answered NO to 1.a) enter (P) otherwise enter (F) F
- 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, Rose

Sample Collected

From:

Date 6/17/15

Time 1750

To:

Date 6/17/15 Date 6/18/15 Time 1950 Time 1658

Test Begin Test End

Date 6/20/15

Time 1540

		IGIEL				Date (	7 201 XU	THE IO							
Parameter		D:0.			remperatur	e		Alkalinity		and the fact of the second	Hardness				
ST 1	Ohrs.	24hrs	48hrs	Ohrs .	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.0	8.0	7.6	24.9	25.0	25.2	32.0			56.0			7.5	7.5	7.2
50.0	8.1	7.9		24.9	25.0								5.5	7.1	
100.0 pH adj	8.2	8.0	7.5	24.9	25.0	25.2	0.0			536.0			8.6 ·	8.1	8.0
	,														
															:

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and Hardness tested on control and unadjusted effluent. Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>.

### Acute Forms <u>Pimephales promelas</u> Survival

Permittee: El Dorado Chemical - Outfall 007

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 6/17/15

To: 6/17/15

From:

To:

Test Initiated: 6/18/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

#### Dilution Series Results - Percent Survival

	Dii	unon Se	1103 1103	ures - T C	1 cent S	at vivai		بروستون	
TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0	100.0 pH adj
24-hour	A	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	В	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
	C	100.0	100.0	0.0	0.0	0.0	0.0	0.0	62.5
	D	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
	E	100.0	100.0	0.0	0.0	0.0	0.0	0.0	62.5
48-hour	A	100.0	100.0	0.0	0.0	0.0	0.0	0.0	12.5
	В	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	С	100.0	100.0	0.0	0.0	0.0	0.0	0.0	50.0
,	D	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	E	100.0	100.0	0.0	0.0	0.0	0.0	0.0	25.0
	Mean	100.0	100.0	0.0	0.0	0.0	0.0	0.0	27.5

- 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%) 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:

 $LC_{50} = 37.95\%$  effluent

95 % confidence limits: N/A

Method of LC<sub>50</sub> calculation: Graphical

- 3. If you answered NO to 1.a) enter (P) otherwise enter (F) F
- 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 Fathead Minnow 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

Sample Collected

From:

Date 6/17/15

Time 1750

To:

Date 6/17/15 Date 6/18/15 Time 1950 Time 1700

Test Begin

Test End

Date 6/20/15

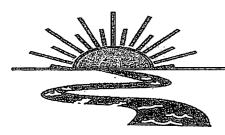
Time 1600

	X COL DIE	<u> </u>			22 0000		Time 200	<u> </u>	_					
	D:0:			l'emperatur	e ,		Alkalinity			Hardness			pH	
Ohrs.	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs	24hrs	-48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs
8.0	8.0	7.7	24.8	25.2	25.2	32.0			56.0			7.5	7.5	7.2
8.0	8.0	7.7	24.8	25.2	25.2							5.6	5.7	6.9
8.1	7.6		24.8	25.2								4.7	5.0	
8.1	7.6		24.8	25.2								5.5	4.6	
8.2	7.5		24.8	25.2								4.6	4.7	
8.2	7.4		24.8	25.2								4.4	4.4	
8.2	7.3		24.8	25.2		0.0			536.0			4.3	4.3	
8.2	8.0	7.5	24.8	25.2	25.2							8.6	8.1	7.2
	8.0 8.0 8.1 8.1 8.2 8.2	D:G.  Ohrs. 24hrs  8.0 8.0  8.0 8.0  8.1 7.6  8.1 7.6  8.2 7.5  8.2 7.4  8.2 7.3	DiG:       Ohrs     24hrs     48hrs       8.0     8.0     7.7       8.0     8.0     7.7       8.1     7.6       8.1     7.6       8.2     7.5       8.2     7.4       8.2     7.3	D:O:         Ohrs.       24hrs       48hrs       Ohrs         8.0       8.0       7.7       24.8         8.0       8.0       7.7       24.8         8.1       7.6       24.8         8.1       7.6       24.8         8.2       7.5       24.8         8.2       7.4       24.8         8.2       7.3       24.8	Diff         Temperature           0hrs.         24hrs         48hrs         0hrs         24hrs           8.0         8.0         7.7         24.8         25.2           8.0         8.0         7.7         24.8         25.2           8.1         7.6         24.8         25.2           8.1         7.6         24.8         25.2           8.2         7.5         24.8         25.2           8.2         7.4         24.8         25.2           8.2         7.3         24.8         25.2	DsG         Temperature           0hrs         24hrs         48hrs         0hrs         24hrs         48hrs           8.0         8.0         7.7         24.8         25.2         25.2           8.0         8.0         7.7         24.8         25.2         25.2           8.1         7.6         24.8         25.2         25.2           8.1         7.6         24.8         25.2         25.2           8.2         7.5         24.8         25.2         25.2           8.2         7.4         24.8         25.2         25.2           8.2         7.3         24.8         25.2         25.2	Display         Temperature           0hrs         24hrs         48hrs         0hrs         24hrs         48hrs         0hrs           8.0         8.0         7.7         24.8         25.2         25.2         32.0           8.0         8.0         7.7         24.8         25.2         25.2         25.2           8.1         7.6         24.8         25.2         25.2         25.2         25.2           8.2         7.5         24.8         25.2	Disc.         Temperature         Alkalinity           0hrs         24hrs         48hrs         0hrs         24hrs         48hrs         0hrs         24hrs           8.0         8.0         7.7         24.8         25.2         25.2         32.0           8.1         7.6         24.8         25.2         25.2         25.2           8.1         7.6         24.8         25.2         25.2         25.2           8.2         7.5         24.8         25.2         25.2         25.2         25.2           8.2         7.4         24.8         25.2         0.0         25.2         25.2           8.2         7.3         24.8         25.2         0.0         25.2	DiG:         Temperature         Alkalimity           9hrs         24hrs         48hrs         9hrs         24hrs         48hrs         25.2         32.0         9         9         48hrs         25.2         9         9         9         9         9         9         9         9         9         9	Diff.         Temperature         Alkalinity           9hrs.         24hrs         48hrs         9hrs         24hrs         48hrs         9hrs           8.0         8.0         7.7         24.8         25.2         25.2         32.0         56.0           8.0         8.0         7.7         24.8         25.2         25.2             8.1         7.6         24.8         25.2              8.1         7.6         24.8         25.2              8.2         7.5         24.8         25.2              8.2         7.4         24.8         25.2              8.2         7.3         24.8         25.2	Discription   Discription	Diff   Diff	Diff:         Temperature         Alkalinity         Hardness           6hrs         24hrs         48hrs         6hrs         24hrs         56.0         7.5         5.6         8.1         7.5         24.8         25.2	DiG:         Temperature         Alkalinity         Hardness         pH           6hrs         24hrs         48hrs         9hrs         24hrs         9hrs         24hrs         48hrs         9hrs         24hrs         24hrs         24hrs         25hrs         24hrs         25hrs         24hrs         25hrs         24hrs         25hrs         24hrs         25hrs         24hrs         25hrs         25hrs         24hrs         25h

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>.

# 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: EL Dorado Chemical - 007
Project#: X S77 &
Chain of Custody Documents Checked by: RC 6/32/15  Technician/Date
Raw Data Documents Checked by: RC 6/23/15
Technician/Date
Statistical Analysis Package Checked by: EGB 6 10 2015
Quality Manager/Date
Quality Control Data Checked by: E6B 610 15
Quality Manager/Date
Report Checked by: CGB 6 4 35 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.

**Quality Manager** 

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

Report Rev. 3.0

#### **Bio-Analytical Laboratories' Executive Summary**

Permittee: El Dorado Chemical Company

P.O. Box 231 '

El Dorado, AR 71731

Project #: X5777

Outfall: Outfall 006 (contaminated storm water)

**Permit #:** AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain Test Dates: June 18 - 20, 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 0.00%.

This report contains a total of 31 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 X5777

Test Dates: June 18 - 20, 2015 Report Date: June 30, 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

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2.2 Test Organisms	4
2.3 Dilution Water	5
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2.6 Sample Preparation	5
2.7 Monitoring of the Tests	5
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#### 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<sub>50</sub>, 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 and were approximately six 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 fathead minnow test were 100.0, 75.0, 56.0, 45.0, 32.0 and 22.0 percent effluent and a reconstituted water control. Due to lack of available neonates, the test concentrations used in the *Daphnia pulex* test were 100.0 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 June 17, 2015. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 1.6° 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  $25\pm1^{0}$  Celsius. The total residual chlorine level (SM4500-Cl D 1997) was measured with a Capital Controls<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> 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<sup>R</sup> dual controlled illuminated incubator at a temperature of 25±1° Celsius. An AEMC<sup>R</sup> 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<sub>50</sub> 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 either test after 48 hours of exposure (p=.05). The NOEC value for the tests was 100.0 percent effluent (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

<del></del>	its of the 48-hour Active De	ercendStravivalls
Test Organism	Pimephales promelas	Daphnia pulex
Control	100.0	100.0
22.0	97.5	100.0
32.0	100.0	
45.0	100.0	
56.0	100.0	
75.0	100.0	
100.0	100.0	100.0

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.

#### 4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 17, 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). The 48-hour  $LC_{50}$  values could not be calculated because greater than 50.0 percent survival occurred in the effluent dilutions (p=.05).

#### 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 (818) 746-277 1-800-269-124 Fax: (318) 748-277

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

20														Lal	ooratory Use Only:	
Company: El Dorado Ch	nemical Compa	ny		Phone: (870) 863-1484			Ana	alysis	:		-				Project Number:	
Address: 4500 Norwest	t Ave., El Dorac	lo, AR	7173	Fax: 1 (870) 863-7499			Chronic	Chroni	Acute 1	Acute 1	Acute Mysid	Acute (	Fecal C		X5717	
Permit #: AR0000752/A	AFIN 70-00040			Purchase Order:			c Ceriodaphnia	Chronic minnow	ninnow(	Acute Daphnia species	Mysid	Acute Ceriodaphnia	Fecal Coliform		Temp. upon arrival:	
Sampler's Sig	grature/Printed	Name	Affil	iation: NUD SARTA	w /El	OCC	aphnia	æ	Acute minnow(fresh/marine	species		hnia		<u>-</u>	Them a	8/1
Date Start Date End	Time Start Time End	С	G	# and type of container	Sample Identific	cation			Ē					Lab Control Number:	(below)	
06-17-15	06-17-15	V		6 half gallon	006				X	X				cuale	ICE	
														<u></u>		
		ļ		•												
						,										
Relinquished	by/Affiliation:	1			Date:	Time:	Rec	ceive	l by/A	ffilia	tion:	,		Date; /	Time:	
SL	10	12		CC.	6-18-15	11:04		Spf	un K	limit	b M			6/8/15	11:04	
Relinquished	by/Affiliation:	_			Date:	Time:	Rec	ceived	l by/A	ffilja	tion:			Date:	Time:	
Jhn	J. Ava	lun			6/18/1E	1320	6	21	<u>.</u>	H	E	) Dil	D	6/18/15	1320	
Relinquished	by/Affiliation:	/			Date:	Time:	Rec	ceived	l by/A	ffilia	tion:		/ /	Date:	Time:	
Method of Sh Comments:	nipment:	_ Lab		_BusFed Ex	DHL _	UPS		Clien	ıt	Otl	ner	Trac	king #			
COC Rev. 3.0	)												•			

APPENDIX B
RAW DATA SHEETS

Project#	X5777						<del></del>
Client: <u>EDCC/El</u>	Dorado Che	emical Co	mpany				
Address: 4500 N	orthwest Av	e El Dor	ado AR	71731			
NPDES# <u>AR0000752</u>	Outfall	006					
Technicians: <u>EG</u>	B/RC/CR/BJ						
Test initiated:	<u>ما</u> Date	118/15	Time_	1645	_		
Test terminated Dissolved Oxyge pH Meter: Conductivity Me Amperometric Ti	n Meter: Model ter: Model trator: Mod	odel # Y #Orion 2 # Contro	SI550A 30A+ ol Co. cher-Po	Seria Seria rter Se	1 #01 1 #12	5253 2175539	
ID# D.O. M	erate? Total inutes/ Residual inal Chlorine		Ammonia (NH3) mg/L	Salinity	Hard- ness	Alkal- inity	Tech
and %) D. &	.O(mg/L (mg/L)				10090	100,0%	<b>70.0</b>
CIIBO 80010 X	115178	NO	1.0	N/A	172.0	20.0	EGB
V 14.5	94.0%				1		
	l Dilutio	on Water	Inform	nation			<u></u>
Dilution Water ID#	(mg/L&%) M	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH Har		Tech
Soft H20 3746	N/A	N/A	NIA	NA	0.8 56	0 32.0	ECE
	Tog t	Chagias	Trform	tion			
	[ ]) a ( ;;;	Species			<del>'''''''''''''''''''''''''''''''''''''</del>	T .	
Test Species Info.	ID#: BALL-N3	ID#: BA	7 001312	Species: ID#:		Species: ID#:	
Age	<24 hrs	200	WS_	85 CO	22/15		
Test Container Size Test volume	30 ml	200	)m, 1	<u> </u>		-	
Feeding: Type		rior to					
Amount	nitiatio						
Aeration?	NIA	NIF	9			<u> </u>	
Amount		1	11 000	<u> </u>	1 -	<u> </u>	
Condition of survivors	9000		ECE	copac	1/15		
Comments: Ini	tial pH=	-63				•	

Project#_		D711								Te	st s	tart	ed:	Date	<u> (18/10</u>	ıs,		Time				
Client	EDC	<u>C</u>			_		<u> </u>				st e		:	Date.	100	[15	•	Time	/53	30,	light	\$
maabaiaia	scription_ n: re (°C):	Ohour Isl	186	24ho 24ho 24ho	ure( ur]L ur ()	55 5.0	48h 48h 48h	our lour)		Te 72 72 72 72	st S hour hour hour	peci	\$	P 6hou 6hou 6hou	ır	les 	<u> </u>	Time	#8n	Let	4245 30-No	31
Test Dilution	Replicate	Test Salinity		# Liv	e Org	anism	\$	7	Diss	olved	Oxyge	n			Ħq				C	onduct	ivity	
90		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
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	B		8	8	8																	
·	C.		8	8	8																**	;
	D		8	8	8									<u> </u>				ļ				
	邑		8	8	8												<u> </u>					
		<i></i>												4					1			
22.0	A	-	8	8	8			જ્ર.ઇ	180	7.6			7.1	1	13		<u> </u>	213	204	27.		
	В		8	8	8									ध्य								
	C		8	8	8							ļ			,		ļ					
	D		8	8	8												<u> </u>				<u> </u>	
	E		8	8	8									<u> </u>					<u> </u>			
		nemistry i	aco	and the same			an engage to the											ļ			of 6,000 approved.	
		newal/post		al				CP.	EVE	SP	<b>&gt;</b>		ce	LE CO	Els	<u> </u>		CR	To	ECK	}	

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Client	FOCC	۰				······	<del></del> .				st e				•	15		Time	152	D <sub>818</sub>	ыlя		
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Test Dilution	Replicate	Test Salinity		# Liv	e Org	anism	s	;	Diss	olved	Oxyge	n			Hq				C	onduct	ivity		
90		NA	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
6,00]	A		8	8	8			1.8	2.6	7.7	; <b>,</b>		7.0	1,69	7.0			689	125	<i>30</i> c			
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	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8									<u> </u>									
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APPENDIX C STATISTICAL ANALYSES

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				Dap	hnid Acute T	est-48 Hr Survival		1 age 20 01 31
Start Date:	6/18/2015		Test ID:	X5777DP		Sample ID:	AR0000752	
End Date:	6/20/2015		Lab ID:	ADEQ880	630	Sample Type:	EFF2-Industrial	
Sample Date:	6/17/2015		Protocol:	EPAAW02	2-EPA/821/R-	02-01 Test Species:	DP-Daphnia pulex	
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			
100	1.0000	1.0000	1.0000	1.0000	1.0000			

			Tr	ansform:	Arcsin So	uare Root	Ī	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	18.00	
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	18.00	*

Auxiliary Tests			,		Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates nor	mal distribu	tion (p > 0	).05)		1	0.881		
Equality of variance cannot be co	nfirmed	••	1					
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU				
Steel's Many-One Rank Test	100	>100		1		-		
Treatments vs D-Control								•

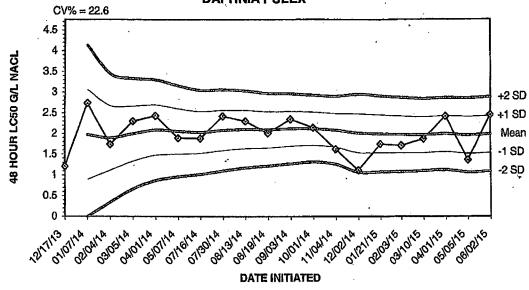
			•	•							X5777
				. A	cute Fish	Test-48	dr Surviv	/al			Page 21 of 31
Start Date:	6/18/2015		Test ID:	X5777PP			Sample I	D:	AR000075	2	
End Date:	6/20/2015		Lab ID:	ADEQ880	630		Sample 1	Туре:	EFF2-Indu	ıstrial	
Sample Date:	6/17/2015		Protocol:	EPAAW0	2-EPA/821	I/R-02-01	Test Spe	ecies:	PP-Pimep	hales prom	elas
Comments:							•		<u>.</u>		
Conc-%	1	2	3	4	5						
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000						
22	1.0000	0.8750	1.0000	1.0000	1.0000	^					
32	1.0000	1.0000	1.0000	1.0000	1.0000			•			
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						
		•			-			. 5.			
1				ransform:				Rank	1-Tailed		
Conc-%		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	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00		
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	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 nor	n-normal dis	stribution (	p <= 0.05)		0.38831	0.934	-4.1486	23.0852
Equality of variance cannot be co	nfirmed	•	•		•			
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU		<del> </del>		
Steel's Many-One Rank Test	100	>100		1				
Treatments vs D-Control								

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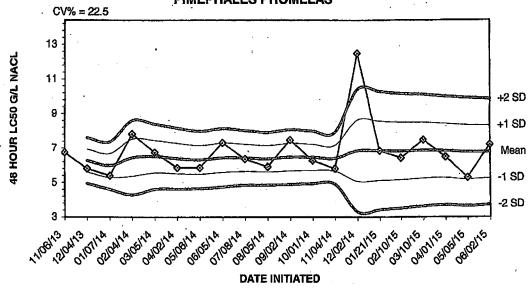
APPENDIX D
QUALITY ASSURANCE CHARTS

# 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			T		
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 <u>Daphnia pulex</u> Survival

Permittee: El Dorado Chemical - Outfall 006

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 6/17/15

To: 6/17/15

From:

To:

Test Initiated: 6/18/15

**Dilution Water Used:** 

Receiving Water

X Reconstituted Water

#### **Dilution Series Results - Percent Survival**

	unon Sei	ICS IXCSC	1103 - 1 CI	CCHE Su	TARACTI	 	
TIME OF READING	REP	0	22.0	100.0			
24-hour	A	100.0	100.0	100.0			_
	В	100.0	100.0	100.0			
•	С	100.0	100.0	100.0			
	D	100.0	100.0	100.0			
	E	100.0	100.0	100.0			
48-hour	A	100.0	100.0	100.0			÷
	В	100.0	100.0	100.0			
	С	100.0	100.0	100.0			
	D	100.0	100.0	100.0			
	E	100.0	100.0	100.0			
	Mean	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<sub>50</sub> 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** 

Sample Collected

From:

Date 6/17/15

Time 1730

To:

Date 6/17/15 Date 6/18/15 Time 1930 Time 1620

Test Begin Test End

Date 6/20/15

Time 1530

		Test Ell	u			Date	0/20/13	Time 155	0						
Parameter		D.O.			Femperatur	•		Alkalinity			Hardness			pН	
Dilut/Time	Ohrs.	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.0	7.9	7.6	24.9	25.0	25.2	32.0	15		56.0			7.3	7.2	7.3
22.0	8.0	8.0	7.6	24.9	25.0	25.2							7.1 ·	7.1	7.3
100.0	7.8	7.6	7.7	24.9	25.0	25.2	20.0			172.0			7.0	6.9	7.0
							-								
				-						·				-	
•															
	-	2													

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

# Acute Forms <u>Pimephales promelas</u> Survival

Permittee: El Dorado Chemical - Outfall 006

NPDES Permit Number: AR0000752/ AFIN 70-00040

**Composite Collected** 

From: 6/17/15

To: 6/17/15

From:

To:

Test Initiated: 6/18/15

**Dilution Water Used:** 

**Receiving Water** 

X Reconstituted Water

#### **Dilution Series Results - Percent Survival**

	unon Sci	ics icst	1113 - 1 61	Cent Su	1 VI VOLI			muser secreptions
TIME OF READING	REP	0	22.0	32.0	45.0	56.0	<sup>2</sup> 75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	В	100.0	87.5	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
	В	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	С	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	97.5	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:

 $LC_{50} =$ 

N/A% effluent

95 % confidence limits:

Method of LC<sub>50</sub> 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 Fathead minnow 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** 

Sample Collected

From:

Date 6/17/15

Time 1730

To:

Date 6/17/15

Time 1930 Time 1645

Test Begin Test End Date 6/18/15 Date 6/20/15

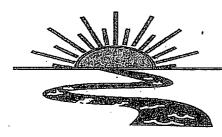
Time 1550 -

Parameter		D:0.			Lemperatur	В		Alkalinity		i de la compania del compania del compania de la compania del compania de la compania del compania de la compania de la compania de la compania de la compania del compani	Hardness			рН	
Dilut/Time	Ohrs.	24hrs	48hrs	Ohrs	24hrs	48hrs	0hrs	24hrs	48hrs	Ohrs	24hrs	48hrs	Ohrs	24hrs	48hrs
0	8.0	7.9	7.6	24.8	25.2	25.2	32.0			56.0	я		7.3	7.2	7.2
22.0	8.0	8.0	7.6	24.8	25.2	25.2							7.1	7.1	7.2
32.0	7.9	7.9	7.5	24.8	25.2	25.2		•					7.1	7.1	7.2
45.0	7.9	7.9	7.7	24.8	25.2	25.2							7.0	7.1	7.2
56.0	7.8	7.7	7.5	24.8	25.2	25.2						, ,	7.0	7.1	7.1
75.0	7.8	7.8	7.5	24.8	25.2	25.2							7.0	7.1	7.2
100.0	7.8	7.6	7.4	24.8	25.2	25.2	20.0			172.0			7.0	6.9	7.0

<sup>\*</sup>This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

# 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: El Dorado Chemical - 006
Project#: X S777
Chain of Custody Documents Checked by: RC 6/32/15 Technician/Date
Raw Data Documents Checked by: Rc 6/33/15  Technician/Date
Statistical Analysis Package Checked by: EGB 4 2015  Quality Manager/Date
Quality Control Data Checked by: EGD W 10 15  Quality Manager/Date
Report Checked by: E66 0 30 5  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.

No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

Report Rev. 3.0

**Quality Manager** 

(870) 863-1400

ELDORADO, AR 71730 UNITED STATES US

SHIP DATE: 22JUL15 ACTWGT: 4.00 LB CAD: 5887030/INET3670

**BILL SENDER** 

TO ADEQ -WATER ENFORCEMENT BRANCH ADEQ -WATER ENFORCEMENT BRANCH 5301 NORTHSHORE DRIVE

**NORTH LITTLE ROCK AR 72118** 

(501) 682-0744 INV: PO:





7741 1086 5221

THU - 23 JUL 10:30A **PRIORITY OVERNIGHT** 

X2 LITA

72118 LIT AR-US

