

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5527

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Project #: X5527

Outfall: Outfall 006 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: September 3 - 5, 2014

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:

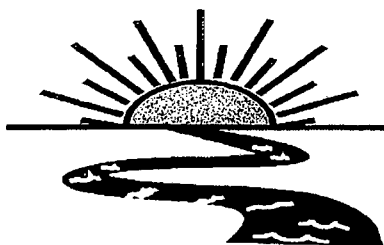
For *Pimephales promelas*:

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 - 75.0%.
3. Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 10.14%.

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 -56.0%.
3. Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 20.53%.

This report contains a total of 33 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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**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 X5527

**Test Dates: September 3 - 5, 2014
Report Date: September 17, 2014**

Prepared for:
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El Dorado, AR 71731

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ADEQ #88-0630

BAL
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Project X5527

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ADEQ #88-0630
Project X5527

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.

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 dilution water hardness and were approximately seven days old at 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.

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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 acute 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 September 2, 2014. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 1.5^o 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^o 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^o 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 LC₅₀ values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

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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 values for the minnow and daphnid tests was 75.0 and 56.0 percent effluent, respectively (p=.05). The 48-hour LC₅₀ values could not be calculated 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	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	97.5
22.0	92.5	92.5
32.0	90.0	92.5
45.0	67.5	95.0
56.0	85.0	90.0
75.0	82.5	65.0
100.0	62.5	60.0

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.

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4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on September 2, 2014, was found to be lethally toxic to the fathead minnow test organisms and 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 ($p=.05$).

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Project X5527

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

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

Laboratory Use Only:

Company: El Dorado Chemical Company		Phone: (870) 863-1484		Analysis:							Project Number: X5527			
Address: 4500 Norwest Ave., El Dorado, AR 71731		Fax: (870) 863-7499		Chronic Ceriodaphnia	Chronic minnow	Acute minnow (fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Temp. upon arrival: 1.5°C Therm #29 EGB 9/8/14			
Permit #: AR0000752/AFIN 70-00040		Purchase Order:									Lab Control Number:		Preservative: (below) ICE	
Sampler's Signature/Printed Name/Affiliation: <i>David SARTAIN / EACC</i>														
Date Start Date End	Time Start Time End	C	G	# and type of container	Sample Identification									
9-2-14 - 9-2-14	1430 - 1620	X		6 half gallons	006			X	X			C9599 ICE		
Relinquished by/Affiliation: <i>D. S. Sartain / EACC</i>				Date: 9-3-14	Time: 1020	Received by/Affiliation: <i>J. B. [Signature]</i>				Date: 9-3-14	Time: 1020			
Relinquished by/Affiliation:				Date:	Time:	Received by/Affiliation:				Date:	Time:			
Relinquished by/Affiliation: <i>J. B. [Signature]</i>				Date: 9-3-14	Time: 1220	Received by/Affiliation: <i>Chris P. [Signature]</i>				Date: 9/8/14	Time: 1020			
Method of Shipment: <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other Tracking # _____														
Comments:														
COC Rev. 3.0														

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5527

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 006

Technicians: EGB/AH/RC

Test initiated: Date 9/3/14 Time 1430

Test terminated: Date 9/5/14 Time 1330

Dissolved Oxygen Meter: Model # YSI 55D Serial #06E2089 AU

pH Meter: Model #Orion 230A+ Serial #105253

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	Alkalinity	Tech
C9599	9.7/109.83	2/25 13.2 96.3%	10.01	NO	1.0	N/A	180.0	280	AH
↓	9.1/110.43	4/25 13.8 94.5%	↓	↓	↓	↓	↓	↓	↓

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	3647	NA	NA	NA	NA	7.24	44.0	36.0	EGB

Test Species Information

Test Species Info.	Species: <u>Daphnia</u> ID#: <u>894 J6</u>	Species: <u>Paramecia</u> ID#: <u>894 B2814</u>	Species: ID#:	Species: ID#:
Age	24h	7 days		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	VCT: Algae	Artemia		
Amount	Fed 2 hrs prior to test	initiation		
Aeration?	NA	NA		
Amount				
Condition of survivors	Good RC 9/5/14	Good RC 9/5/14		

Comments:

pH before aeration → 6.8
pH after aeration → 7.0

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

Project# X5527

Test started: Date 9/3/14 Time 1430

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1450

Sample Description ADLo

Test Species D. pulex ID# BAJ J6

Technician: Ohour DA 24hour RC 48hour RC 72hour RC 96hour RC

Time: Ohour 1130 24hour 1430 48hour 1450 72hour RC 96hour RC

Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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	NA	8	7	7			8.2	8.1	8.0			7.1	7.3	7.2			166.0	170.0	179.5			
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
22	A		8	7	7			8.1	8.0	7.9			7.0	7.1	7.1			280	285	291			
	B		8	7	7																		
	C		8	7	7																		
	D		8	8	8																		
	E		8	8	8																		
Chemistry tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC			

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

Project# X5527
 Client El Dorado Chemical

Test started: Date 9/3/14 Time 1430
 Test ended: Date 9/5/14 Time 1450
 Test Species D. pulex ID# BAU J6

Sample Description 0060
 Technician: Ohour AM 24hour RC 48hour RC 72hour RC 96hour RC
 Time: Ohour 1430 24hour 1430 48hour 1450 72hour RC 96hour RC
 Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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	A	Na	8	8	8			8.1	8.0	7.9			7.0	7.0	7.1			327	313	334	337		
	B		8	8	6																		
	C		8	8	8																		
	D		8	8	7																		
	E		8	8	8																		
45	A		8	7	7			8.1	8.0	7.9			7.0	7.0	7.1			387	394	399	393		
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	7																		
	E		8	8	8																		
Chemistry Tech prerenewal/postrenewal							RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC	RC

ACUTE2 Rev 1.0

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

Project# X5527

Test started: Date 9/3/14 Time 1430

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1450

Sample Description 0060

Test Species D. pulex ID# BR/J6

Technician: Ohour PN 24hour RC 48hour RC 72hour RC 96hour RC

Time: Ohour 1430 24hour 1430 48hour 1450 72hour RC 96hour RC

Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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		
			50	A	Na	8	8	6			8.1	7.9	7.9			7.0	7.2	7.1			445	443	433	447
	B		8	8	8																			
	C		8	7	7																			
	D		8	7	7																			
	E		8	8	8																			
75	A		8	5	5			8.1	7.9	7.8			7.0	7.2	7.0			530	518	544	530			
	B		8	8	6																			
	C		8	6	3																			
	D		8	8	6																			
	E		8	8	6																			
Chemistry Tech prerenewal/postrenewal									RC	RC	RC			RC	RC	RC			RC	RC	RC			

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

Project# X5527

Test started: Date 9/3/14 Time 1430

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1450

Sample Description 0060

Test Species D. pulex ID# BA/JG

Technician: Ohour AM 24hour RC 48hour RC 72hour RC 96hour RC

Time: Ohour 1430 24hour 1430 48hour 1450 72hour RC 96hour RC

Temperature (°C): Ohour 20.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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		Na																				
100	A		8	6	4			8.1	7.8	7.9			7.0	6.9	6.9			6.6	6.7	6.5		
	B		8	7	5																	
	C		8	6	4																	
	D		8	8	7																	
	E		8	7	4																	
	F		8																			
	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC		

ACUTE2 Rev 1.0

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

Project# X5527

Test started: Date 9/3/14 Time 1450

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1330

Sample Description 000

Test Species P. promelas ID# BAU182814

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

Time: Ohour 1450 24hour 1346 48hour 1330 72hour RC 96hour RC

Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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	Na	8	8	8			8.2	7.5 8.1	7.7			7.1	7.0 7.3	7.0			166.9	183.0 179.5	186.4		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22	A		8	8	8			8.1	7.4 8.0	7.7			7.0	6.9 7.1	7.0			280	312 289	314		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	6																	
Chemistry Tech prerenewal/postrenewal								RC	RC RC	RC			RC	RC RC	RC			RC	RC RC	RC		

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

Project# X5527

Test started: Date 9/3/14 Time 1450

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1330

Sample Description 000

Test Species P. promelas ID# BAL 82814

Technician: RC 0hour RC 24hour RC 48hour RC 72hour RC 96hour RC

Time: RC 0hour 151450 24hour 1540 48hour 1330 72hour RC 96hour RC

Temperature (°C): 0hour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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	A	Na	8	8	7			8.1	7.4 8.0	7.7			7.0	6.9 7.2	7.0			327	331 336	338		
	B		8	8	8																	
	C		8	8	6																	
	D		8	7	7																	
	E		8	8	8																	
45	A		8	8	7			8.1	7.4 8.0	7.8			7.0	6.8 7.2	7.0			387	401 399	400		
	B		8	8	7																	
	C		8	6	6																	
	D		8	4	3																	
	E		8	4	4																	
Chemistry Tech prerenewal/postrenewal							RC	RC	RC				RC	RC	RC			RC	RC	RC		

ACUTE2 Rev 1.0

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

Project# X5527

Test started: Date 9/3/14 Time 1450

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1330

Sample Description 000

Test Species P. promelas ID# 0AL/82814

Technician: 0hour RC 24hour RC 48hour RC 72hour RC 96hour RC

Time: 0hour 1450 24hour 1340 48hour 1330 72hour RC 96hour RC

Temperature (°C): 0hour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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	A	NA	8	7	7			8.1	7.3 7.9	7.7			7.0	6.8 7.2	7.0			445	440 453	456		
	B		8	7	6																	
	C		8	6	6																	
	D		8	8	7																	
	E		8	8	8																	
75	A		8	7	7			8.1	7.3 7.9	7.5			7.0	6.8 7.2	6.9			530	510 544	548		
	B		8	6	6																	
	C		8	7	7																	
	D		8	8	5																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal							RC	RC	RC				RC	RC	RC			RC	RC	RC		

ACUTE2 Rev 1.0

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

Project# X5527

Test started: Date 9/3/14 Time 1450

Client El Dorado Chemical

Test ended: Date 9/5/14 Time 1330

Sample Description 000

Test Species P. promelas ID# BAU 82814

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

Time: Ohour 1450 24hour 1340 48hour 1330 72hour RC 96hour RC

Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

Test Dilution %	Replicate	Test Salinity Na	# 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																
100	A		8	6	5			8.1	7.3	7.8	7.5			7.0	6.8	7.2	6.9			662	674	671	679															
	B		8	4	4																																	
	C		8	7	5																																	
	D		8	6	5																																	
	E		8	6	6																																	
	D		8																																			
	B		8																																			
	C		8																																			
	D		8																																			
	E		8																																			
Chemistry Tech prerenewal/postrenewal							RC	RC	RC	RC					RC	RC	RC	RC			RC	RC	RC															

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

X5527
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Start Date: 9/3/2014	Test ID: X5527DP	Sample ID: ARO000752-006
End Date: 9/5/2014	Lab ID: ADEQ880630	Sample Type: EFF2-Industrial
Sample Date: 9/2/2014	Protocol: EPAAW02-EPA/821/R-02-01	Test Species: CD-Ceriodaphnia dubia

Comments:

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

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				CV%	N	1-Tailed		
			Mean	Min	Max	t-Stat			Critical	MSD	
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5				
22	0.9250	0.9487	1.2829	1.2094	1.3931	7.841	5	0.836	2.409	0.2115	
32	0.9250	0.9487	1.2872	1.0472	1.3931	12.116	5	0.788	2.409	0.2115	
45	0.9500	0.9744	1.3196	1.2094	1.3931	7.623	5	0.418	2.409	0.2115	
56	0.9000	0.9231	1.2504	1.0472	1.3931	11.683	5	1.206	2.409	0.2115	
*75	0.6500	0.6667	0.9425	0.6591	1.0472	17.926	5	4.712	2.409	0.2115	
*100	0.6000	0.6154	0.8955	0.7854	1.2094	20.529	5	5.248	2.409	0.2115	

Auxiliary Tests	Statistic	Critical	Skew	Kurt						
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.95731	0.934	-0.1376	0.12224						
Bartlett's Test indicates equal variances (p = 0.70)	3.84674	16.8119								
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	56	75	64.8074	1.78571	0.12546	0.13141	0.17851	0.01928	1.3E-05	6, 28
Treatments vs D-Control										

Acute Fish Test-48 Hr Survival

X5527
Page 29 of 33

Start Date: 9/3/2014 Test ID: X5527PP Sample ID: AR0000752-006
 End Date: 9/5/2014 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 9/2/2014 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	0.8750	0.7500
32	0.8750	1.0000	0.7500	0.8750	1.0000
45	0.8750	0.8750	0.7500	0.3750	0.5000
56	0.8750	0.7500	0.7500	0.8750	1.0000
75	0.8750	0.7500	0.8750	0.6250	1.0000
100	0.6250	0.5000	0.6250	0.6250	0.7500

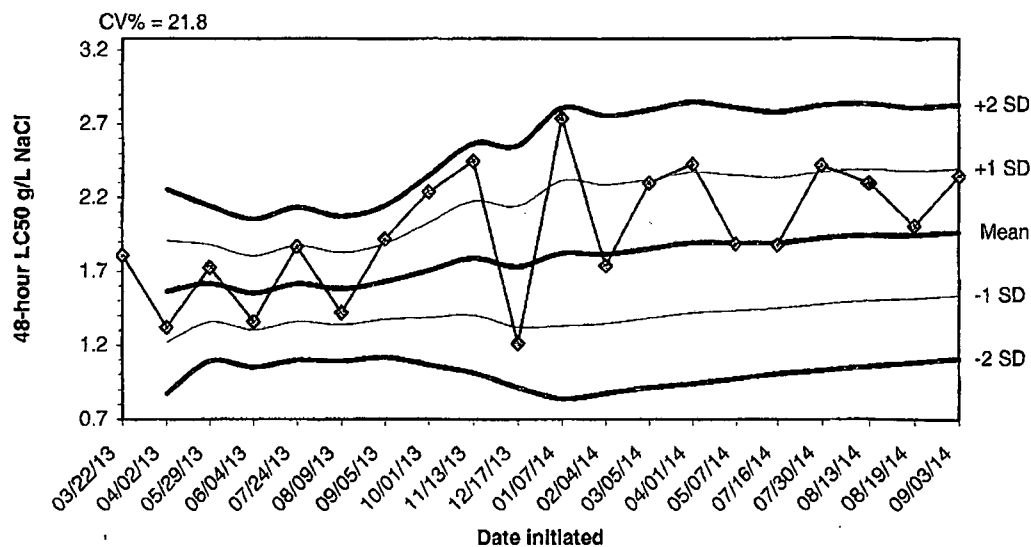
Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50 16.00	
32	0.9000	0.9000	1.2504	1.0472	1.3931	11.683	5	20.00 16.00	
*45	0.6750	0.6750	0.9821	0.6591	1.2094	25.488	5	15.00 16.00	
56	0.8500	0.8500	1.1813	1.0472	1.3931	12.150	5	17.50 16.00	
75	0.8250	0.8250	1.1542	0.9117	1.3931	15.823	5	17.50 16.00	
*100	0.6250	0.6250	0.9136	0.7854	1.0472	10.135	5	15.00 16.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.96368	0.934	-0.301	-0.3195
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	75	100	86.6025	1.33333
Treatments vs D-Control				

45.0% is an anomaly
 EGB
 9/17/14

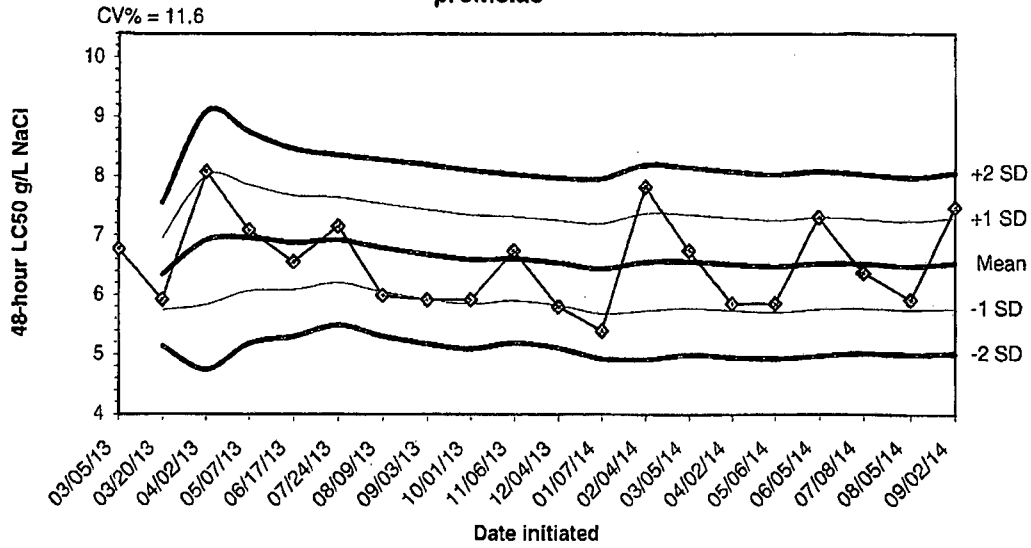
APPENDIX D
QUALITY ASSURANCE CHARTS

2014 48-hour Acute Reference Toxicant Test Results for *Daphnia pulex*



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/22/13	1.8100					
04/02/13	1.3200	1.5650	1.2185	0.8720	1.9115	2.2580
05/29/13	1.7300	1.6200	1.3571	1.0943	1.8829	2.1457
06/04/13	1.3600	1.5550	1.3041	1.0531	1.8059	2.0569
07/24/13	1.8700	1.6180	1.3590	1.1000	1.8770	2.1360
08/09/13	1.4200	1.5850	1.3397	1.0943	1.8303	2.0757
09/05/13	1.9200	1.6329	1.3756	1.1183	1.8901	2.1474
10/01/13	2.2400	1.7088	1.3881	1.0675	2.0294	2.3500
11/13/13	2.4500	1.7911	1.4025	1.0139	2.1797	2.5683
12/17/13	1.2100	1.7330	1.3231	0.9132	2.1429	2.5528
01/07/14	2.7400	1.8245	1.3312	0.8379	2.3179	2.8112
02/04/14	1.7400	1.8175	1.3465	0.8755	2.2885	2.7595
03/05/14	2.3000	1.8546	1.3842	0.9138	2.3250	2.7954
04/01/14	2.4300	1.8957	1.4183	0.9409	2.3731	2.8505
05/07/14	1.8900	1.8953	1.4353	0.9753	2.3554	2.8154
07/16/14	1.8800	1.8944	1.4499	1.0055	2.3388	2.7833
07/30/14	2.4200	1.9253	1.4765	1.0277	2.3741	2.8229
08/13/14	2.3000	1.9461	1.5018	1.0575	2.3904	2.8347
08/19/14	2.0100	1.9495	1.5175	1.0854	2.3815	2.8135
09/03/14	2.3500	1.9695	1.5396	1.1096	2.3994	2.8294

2014 48-hour Acute Reference Toxicant Test Results for *Pimephales promelas*



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/13	6.7700					
03/20/13	5.9200	6.3450	5.7440	5.1429	6.9460	7.5471
04/02/13	8.0700	6.9200	5.8372	4.7544	8.0028	9.0856
05/07/13	7.0900	6.9625	6.0743	5.1861	7.8507	8.7389
06/17/13	6.5600	6.8820	6.0920	5.3020	7.6720	8.4620
07/24/13	7.1600	6.9283	6.2127	5.4971	7.6440	8.3596
08/09/13	6.0000	6.7957	6.0542	5.3126	7.5373	8.2788
09/03/13	5.9200	6.6863	5.9331	5.1800	7.4394	8.1925
10/01/13	5.9200	6.6011	5.8518	5.1024	7.3505	8.0998
11/06/13	6.7500	6.6160	5.9079	5.1999	7.3241	8.0321
12/04/13	5.8100	6.5427	5.8284	5.1140	7.2571	7.9714
01/07/14	5.4000	6.4475	5.6907	4.9339	7.2043	7.9611
02/04/14	7.8200	6.5531	5.7346	4.9161	7.3715	8.1900
03/05/14	6.7500	6.5671	5.7790	4.9909	7.3553	8.1434
04/02/14	5.8600	6.5200	5.7389	4.9578	7.3011	8.0822
05/06/14	5.8600	6.4788	5.7063	4.9339	7.2512	8.0236
06/05/14	7.3100	6.5276	5.7530	4.9784	7.3022	8.0768
07/08/14	6.3700	6.5189	5.7665	5.0141	7.2713	8.0237
08/05/14	5.9200	6.4874	5.7434	4.9994	7.2314	7.9753
09/02/14	7.4800	6.5370	5.7796	5.0222	7.2944	8.0518

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: 9/2/14** **To: 9/2/14**
 From: **To:**

Test Initiated: 9/3/14

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	87.5	87.5	100.0	87.5	100.0	62.5	75.0
	B	100.0	87.5	100.0	100.0	100.0	100.0	87.5
	C	100.0	87.5	100.0	100.0	87.5	75.0	75.0
	D	100.0	100.0	100.0	100.0	87.5	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	87.5
48-hour	A	87.5	87.5	100.0	87.5	75.0	62.5	50.0
	B	100.0	87.5	75.0	100.0	100.0	75.0	62.5
	C	100.0	87.5	100.0	100.0	87.5	37.5	50.0
	D	100.0	100.0	87.5	87.5	87.5	75.0	87.5
	E	100.0	100.0	100.0	100.0	100.0	75.0	50.0
	Mean	97.5	92.5	92.5	95.0	90.0	65.0	60.0

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 LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits:

Method of LC₅₀ calculation:

- 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 006
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: David Sartain
 Analyst: Haughton, Callahan

Sample Collected From: Date 9/2/14 Time 1420
 To: Date 9/2/14 Time 1620
 Test Begin Date 9/3/14 Time 1430
 Test End Date 9/5/14 Time 1450

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		8.2	8.1	8.0	24.8	24.7	24.6	36.0			44.0			7.1	7.3	7.2
22.0		8.1	8.0	7.9	24.8	24.7	24.6							7.0	7.1	7.1
32.0		8.1	8.0	7.9	24.8	24.7	24.6							7.0	7.2	7.1
45.0		8.1	8.0	7.9	24.8	24.7	24.6							7.0	7.2	7.1
56.0		8.1	7.9	7.9	24.8	24.7	24.6							7.0	7.2	7.1
75.0		8.1	7.9	7.8	24.8	24.7	24.6							7.0	7.2	7.0
100.0		8.1	7.8	7.9	24.8	24.7	24.6	28.0			180.0			7.0	7.2	6.9

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 9/2/14 To: 9/2/14
From: To:

Test Initiated: 9/3/14

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	87.5	87.5	75.0
	B	100.0	100.0	100.0	100.0	87.5	75.0	50.0
	C	100.0	100.0	100.0	75.0	75.0	87.5	87.5
	D	100.0	100.0	87.5	50.0	100.0	100.0	75.0
	E	100.0	100.0	100.0	50.0	100.0	100.0	75.0
48-hour	A	100.0	100.0	87.5	87.5	87.5	87.5	62.5
	B	100.0	100.0	100.0	87.5	75.0	75.0	50.0
	C	100.0	100.0	75.0	75.0	75.0	87.5	62.5
	D	100.0	87.5	87.5	37.5	87.5	62.5	62.5
	E	100.0	75.0	100.0	50.0	100.0	100.0	75.0
	Mean	100.0	92.5	90.0	67.5	85.0	82.5	62.5

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.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%) YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits:

Method of LC₅₀ calculation:

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

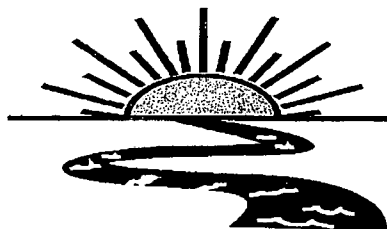
**Biomonitoring
Fathead minnow 48 hour Acute Static Renewal
Chemical Parameters Chart***

Permittee: El Dorado Chemical - Outfall 006
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: David Sartain
 Analyst: Haughton, Callahan
 Sample Collected From: Date 9/2/14 Time 1420
 To: Date 9/2/14 Time 1620
 Test Begin Date 9/3/14 Time 1450
 Test End Date 9/5/14 Time 1330

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	8.2	8.1	7.7	24.8	24.7	24.6	36.0				44.0			7.1	7.3	7.0
22.0	8.1	8.0	7.7	24.8	24.7	24.6								7.0	7.1	7.0
32.0	8.1	8.0	7.7	24.8	24.7	24.6								7.0	7.2	7.0
45.0	8.1	8.0	7.8	24.8	24.7	24.6								7.0	7.2	7.0
56.0	8.1	7.9	7.7	24.8	24.7	24.6								7.0	7.2	7.0
75.0	8.1	7.9	7.5	24.8	24.7	24.6								7.0	7.2	6.9
100.0	8.1	7.8	7.5	24.8	24.7	24.6	28.0				180.0			7.0	7.2	6.9

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

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 Company

Project#: X5527

Chain of Custody Documents Checked by: EGB/9-17-14
Technician/Date

Raw Data Documents Checked by: EGB/9-17-14
Technician/Date

Statistical Analysis Package Checked by: EGB/9-17-14
Quality Manager/Date

Quality Control Data Checked by: EGB/9/17/14
Quality Manager/Date

Report Checked by: EGB/9-17-14
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.

Kevin L. Beapp, BS
Quality Manager

9-17-14
Date

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

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5528

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Project #: X5528

Outfall: Outfall 007 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: September 3 - 5, 2014

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:

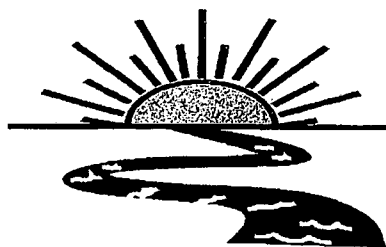
For *Pimephales promelas*:

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 - 19.10%.

This report contains a total of 33 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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**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 X5528

**Test Dates: September 3 - 5, 2014
Report Date: September 17, 2014**

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 X5528

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BAL
ADEQ #88-0630
Project X5528

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 dilution water hardness and were approximately seven days old at 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 X5528

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 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 007 was collected by El Dorado Chemical personnel on September 2, 2014. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 0.4^o 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^o 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 4.1 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^o 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 LC₅₀ values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

BAL
ADEQ #88-0630
Project X5528

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 for survival for both tests was 100.0 percent ($p=.05$).

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

Percent Effluent	Percent Survival	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	100.0
32.0	97.5	97.5
45.0	100.0	92.5
50.0	97.5	95.0
56.0	97.5	97.5
75.0	95.0	82.5
100.0	100.0	82.5

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 X5528

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on September 2, 2014, was not found to be lethally toxic to the fathead minnow test organisms and the *Daphnia pulex* in the 100.0 percent critical dilution after 48 hours of exposure ($p=.05$).

BAL
ADEQ #88-0630
Project X5528

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
1-800-298-1248
FAX: (318) 746-2773

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

Laboratory Use Only:

Company: El Dorado Chemical Company		Phone: (870) 863-1484		Analysis:				Project Number: 15528 Temp. upon arrival: 0.40C Therm # 29 ESB 9/3/14 Preservative: (below) ICE
Address: 4500 Norwest Ave., El Dorado, AR 71731		Fax: (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow(fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform	Lab Control Number:			
Permit #: AR0000752/AFIN 70-00040		Purchase Order:						
Sampler's Signature/Printed Name/Affiliation: <i>Neil H. Davis</i> / DAVIS SARTAN / EDCC								
Date Start Date End	Time Start Time End	C	G			# and type of container	Sample Identification	Lab Control Number:
9.2.14 - 9.2.14	1430 - 1430	X		6 half gallon	007	C9600		
Relinquished by/Affiliation: <i>Neil H. Davis</i> / EDCC				Date: 9-3-14	Time: 1020	Received by/Affiliation: <i>J. B. [Signature]</i>		
Relinquished by/Affiliation:				Date:	Time:	Received by/Affiliation:		
Relinquished by/Affiliation: <i>J. B. [Signature]</i>				Date: 9-3-14	Time: 1220	Received by/Affiliation: <i>Ken J. Burdick</i>		
Method of Shipment: <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input type="checkbox"/> Client <input type="checkbox"/> Other Tracking # _____								
Comments:								
COC Rev. 3.0								

**APPENDIX B
RAW DATA SHEETS**

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

X5528
Page 12 of 33

Project# X5528

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 007

Technicians: EGB/AH/RC

Test initiated: Date 9/3/14 Time 1450

Test terminated: Date 9/5/14 Time 1350

Dissolved Oxygen Meter: Model # YSI 55D Serial #06E2089 AU

pH Meter: Model #Orion 230A+ Serial #105253

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	Alkalinity	Tech
C9600	10.0	7/25/8.2	10.01	NO	1.0	N/A	340.0	28.0	AH
	10.1	4/25/9.18							

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	2047	NA	NA	NA	NA	7.2	44.0	36.0	EGB

Test Species Information

Test Species Info.	Species ID#:	Species ID#:	Species ID#:	Species ID#:
	D. Pulex BAU 16166	P. promelas BAU 82814		
Age	42h	7 days		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	YCT; Algae	Artemia		
Amount	Fed 7 hrs prior to test initiation			
Aeration?				
Amount	NA	NA		
Condition of survivors	Good RC 9/5/14	Good RC 9/5/14		

Comments:

pH before aeration → 6.7

pH after aeration → 7.1

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

Project# X5528

Client El Dorado Chemical

Sample Description 007

Technician: Ohour AH 24hour RC 48hour RC 72hour RC 96hour RC

Time: Ohour 1450 24hour 1445 48hour 1305 72hour RC 96hour RC

Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

Test started: Date 9/3/14 Time 1450

Test ended: Date 9/5/14 Time 1305

Test Species D. pulex ID# BA/I6/K6

Test Dilution %	Replicate	Test Salinity Na	# 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	8	8			8.2	7.8	8.1	8.0			7.2	7.2	7.2			168.5
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32	A		8	8	8			8.1	7.8	8.0	8.0			7.2	7.1	7.2			402	407	408	422
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC	RC	RC			RC	RC	RC			RC	RC	RC	RC

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

Project# X5528

Client El Dorado Chemical

Sample Description 007

Technician: AN 24hour RC 48hour RC 72hour RC 96hour RC

Time: 1450 24hour 1445 48hour 1305 72hour RC 96hour RC

Temperature (°C): 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

Test started: Date 9/3/14 Time 1450

Test ended: Date 9/5/14 Time 1305

Test Species D. pulex ID# BA/TU/16

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		
45	A	Na	8	8	6			8.1	7.9				7.2	7.1				486	486	500				
	B		8	8	8			7.2	8.0	7.9														
	C		8	8	8																			
	D		8	8	8																			
	E		8	8	7																			
50	A		8	8	7			8.1	7.7	8.0	8.0		7.2	7.2				519	513	537				
	B		8	8	8																			
	C		8	8	7																			
	D		8	8	8																			
	E		8	8	8																			
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC				

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

Project# X5528
 client El Dorado Chemical

Test started: Date 9/3/14 Time 1450

Test ended: Date 9/5/14 Time 1305

Sample Description 007
 Technician: Ohour AH 24hour RC 48hour RC 72hour RC 96hour RC
 Time: Ohour 1450 24hour 1445 48hour 1305 72hour RC 96hour RC
 Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

Test Species D. pulex ID# BA/T6/K6

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	A	Na	8	8	8			8.1	7.1 8.0	7.9			7.3	7.2 7.1	7.2			557	549 568	581		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
75	A		8	8	5			8.1	7.8 7.9	8.0			7.3	7.2 7.1	7.2			680	653 682	692		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	5																	
Chemistry Tech prerenewal/postrenewal							RC	RC	RC				RC	RC	RC			RC	RC	RC		

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

Project# X5528
 Client El Dorado Chemical
 Sample Description 007
 Technician: _____
 Time: _____
 Temperature (°C): _____

Test started: Date 9/3/14 Time 1450
 Test ended: Date 9/5/14 Time 1305
 Test Species D. pulex ID# BR/16/K6

Ohour 94 24hour RC 48hour RC 72hour _____ 96hour _____
 Ohour 1450 24hour 1445 48hour 1305 72hour _____ 96hour _____
 Ohour 24.8 24hour 24.7 48hour 24.6 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
100	A	Na	8	8	8			8.1	7.7	7.9			7.2	7.2	7.2			832	781	846	835	
	B		8	8	8																	
	C		8	8	6																	
	D		8	8	6																	
	E		8	8	5																	
	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC		

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

Project# X5528
 Client El Dorado Chemical

Test started: Date 9/3/14 Time 1520
 Test ended: Date 9/5/14 Time 1350
 Test Species P. promelas ID# BRJ 82814

Sample Description 007
 Technician: Ohour RC 24hour RC 48hour RC 72hour 96hour
 Time: Ohour 1520 24hour 1300 48hour 1350 72hour 96hour
 Temperature (°C): Ohour 24.8 24hour 24.7 48hour 24.6 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	A	Na	8	8	8			8.2	7.5 8.1	7.7			7.2	6.9 7.2	7.1			168.5	183.0 174.4	186		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32	A		8	8	8			8.1	7.5 8.0	7.7			7.2	6.9 7.0	7.0			110.2	111 108.4	119		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	7																	
Chemistry Tech prerenewal/postrenewal							RC	RC	RC				RC	RC	RC			RC	RC	RC		

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

Project# X5528

Test started: Date 9/3/14 Time 1520

Client El Dorado Chemical

Test ended: Date 9/15/14 Time 1350

Sample Description 007

Test Species P. promelas ID# BAU 82814

Technician: 0hour RC 24hour RC 48hour RC 72hour RC 96hour RC
 Time: 0hour 1520 24hour 1300 48hour 1350 72hour RC 96hour RC
 Temperature (°C): 0hour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

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
45	A	Na	8	8	8			8.1	7.4 8.0	7.6			7.2	7.9 7.1	7.0			486	492 495	500		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
50	A		8	8	8			8.1	7.4 8.0	7.7			7.2	7.4 7.1	7.0			519	531 538	533		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC RC				RC	RC RC	RC			RC	RC RC	RC		

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

Project# X5528
 Client El Dorado Chemical

Test started: Date 9/3/14 Time 1520
 Test ended: Date 9/5/14 Time 1350

Sample Description 007
 Technician: 0hour RC 24hour RC 48hour RC 72hour RC 96hour RC
 Time: 0hour 1520 24hour 1300 48hour 1350 72hour RC 96hour RC
 Temperature (°C): 0hour 24.8 24hour 24.7 48hour 24.6 72hour RC 96hour RC

Test Species P. promelas ID# BA182814

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
100	A	Na	8	8	8			8.1	7.3 7.8	7.6			7.2	7.1 7.2	7.0			832	847 846	863		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
	F		8	8	8																	
	D		8																			
	B		8																			
	C		8																			
	D		8																			
	F		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC	RC			RC	RC	RC			RC	RC	RC		

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

X5528

Page 22 of 33

Start Date: 9/3/2014 Test ID: X5528CD Sample ID: AR0000752-007
 End Date: 9/5/2014 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 9/2/2014 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	1.0000	1.0000	1.0000
32	1.0000	0.8750	1.0000	1.0000	1.0000
45	0.7500	1.0000	1.0000	1.0000	0.8750
50	0.8750	1.0000	0.8750	1.0000	1.0000
56	1.0000	1.0000	1.0000	0.8750	1.0000
75	0.6250	1.0000	1.0000	0.8750	0.6250
100	1.0000	1.0000	0.7500	0.7500	0.6250

Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
45	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50	16.00
50	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
56	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
75	0.8250	0.8250	1.1638	0.9117	1.3931	20.795	5	20.00	16.00
100	0.8250	0.8250	1.1585	0.9117	1.3931	19.095	5	20.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.92596	0.934	-0.2263	-0.2683
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				

Acute Fish Test-48 Hr Survival

X5528

Page 23 of 33

Start Date: 9/3/2014 Test ID: X5528PP Sample ID: AR0000752-007
 End Date: 9/5/2014 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 9/2/2014 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
32	1.0000	1.0000	1.0000	1.0000	0.8750
45	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	0.8750	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	0.8750
75	1.0000	1.0000	0.8750	0.8750	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

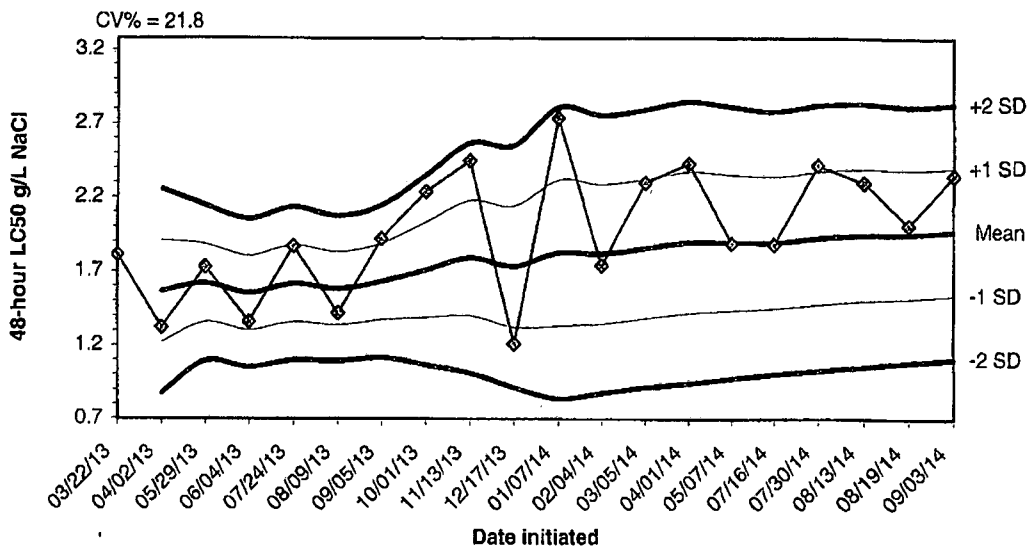
Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
50	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
56	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
75	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	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).	0.74527	0.934	-1.5211	1.67424
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				

EGB
9/17/14

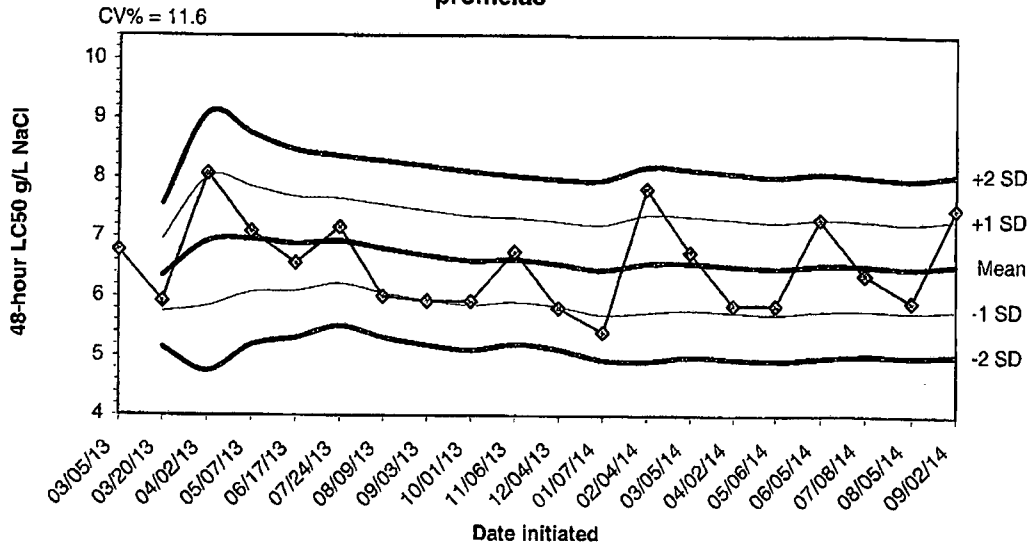
APPENDIX D
QUALITY ASSURANCE CHARTS

2014 48-hour Acute Reference Toxicant Test Results for *Daphnia pulex*



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/22/13	1.8100					
04/02/13	1.3200	1.5650	1.2185	0.8720	1.9115	2.2580
05/29/13	1.7300	1.6200	1.3571	1.0943	1.8829	2.1457
06/04/13	1.3600	1.5550	1.3041	1.0531	1.8059	2.0569
07/24/13	1.8700	1.6180	1.3590	1.1000	1.8770	2.1360
08/09/13	1.4200	1.5850	1.3397	1.0943	1.8303	2.0757
09/05/13	1.9200	1.6329	1.3756	1.1183	1.8901	2.1474
10/01/13	2.2400	1.7088	1.3881	1.0675	2.0294	2.3500
11/13/13	2.4500	1.7911	1.4025	1.0139	2.1797	2.5683
12/17/13	1.2100	1.7330	1.3231	0.9132	2.1429	2.5528
01/07/14	2.7400	1.8245	1.3312	0.8379	2.3179	2.8112
02/04/14	1.7400	1.8175	1.3465	0.8755	2.2885	2.7595
03/05/14	2.3000	1.8546	1.3842	0.9138	2.3250	2.7954
04/01/14	2.4300	1.8957	1.4183	0.9409	2.3731	2.8505
05/07/14	1.8900	1.8953	1.4353	0.9753	2.3554	2.8154
07/16/14	1.8800	1.8944	1.4499	1.0055	2.3388	2.7833
07/30/14	2.4200	1.9253	1.4765	1.0277	2.3741	2.8229
08/13/14	2.3000	1.9461	1.5018	1.0575	2.3904	2.8347
08/19/14	2.0100	1.9495	1.5175	1.0854	2.3815	2.8135
09/03/14	2.3500	1.9695	1.5396	1.1096	2.3994	2.8294

2014 48-hour Acute Reference Toxicant Test Results for *Pimephales promelas*



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/13	6.7700					
03/20/13	5.9200	6.3450	5.7440	5.1429	6.9460	7.5471
04/02/13	8.0700	6.9200	5.8372	4.7544	8.0028	9.0856
05/07/13	7.0900	6.9625	6.0743	5.1861	7.8507	8.7389
06/17/13	6.5600	6.8820	6.0920	5.3020	7.6720	8.4620
07/24/13	7.1600	6.9283	6.2127	5.4971	7.6440	8.3596
08/09/13	6.0000	6.7957	6.0542	5.3126	7.5373	8.2788
09/03/13	6.0000	6.6863	5.9331	5.1800	7.4394	8.1925
10/01/13	5.9200	6.6011	5.8518	5.1024	7.3505	8.0998
11/06/13	6.7500	6.6160	5.9079	5.1999	7.3241	8.0321
12/04/13	5.8100	6.5427	5.8284	5.1140	7.2571	7.9714
01/07/14	5.4000	6.4475	5.6907	4.9339	7.2043	7.9611
02/04/14	7.8200	6.5531	5.7346	4.9161	7.3715	8.1900
03/05/14	6.7500	6.5671	5.7790	4.9909	7.3553	8.1434
04/02/14	5.8600	6.5200	5.7389	4.9578	7.3011	8.0822
05/06/14	5.8600	6.4788	5.7063	4.9339	7.2512	8.0236
06/05/14	7.3100	6.5276	5.7530	4.9784	7.3022	8.0768
07/08/14	6.3700	6.5189	5.7665	5.0141	7.2713	8.0237
08/05/14	5.9200	6.4874	5.7434	4.9994	7.2314	7.9753
09/02/14	7.4800	6.5370	5.7796	5.0222	7.2944	8.0518

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: 9/2/14** **To: 9/2/14**
From: **To:**

Test Initiated: 9/3/14

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	75.0	87.5	100.0	62.5	100.0
	B	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	87.5	100.0	100.0	75.0
	D	100.0	100.0	100.0	100.0	87.5	87.5	75.0
	E	100.0	100.0	87.5	100.0	100.0	62.5	62.5
	Mean	100.0	97.5	92.5	95.0	97.5	82.5	82.5

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.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)** YES NO

2. Enter percent effluent corresponding to the LC₅₀ below:

LC₅₀ = N/A % effluent

95 % confidence limits: N/A

Method of LC₅₀ calculation: N/A

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: Houghton, Callahan

Sample Collected From: Date 9/2/14 Time 1430
 To: Date 9/2/14 Time 1630
 Test Begin Date 9/3/14 Time 1450
 Test End Date 9/5/14 Time 1305

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
	Dilut./Time	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs
0	8.2	8.1	8.0	24.8	24.7	24.6	36.0			44.0			7.2	7.2	7.2
32.0	8.1	8.0	8.0	24.8	24.7	24.6							7.2	7.0	7.2
45.0	8.1	8.0	7.9	24.8	24.7	24.6							7.2	7.1	7.2
50.0	8.1	8.0	8.0	24.8	24.7	24.6							7.2	7.1	7.2
56.0	8.1	8.0	7.9	24.8	24.7	24.6							7.3	7.1	7.2
75.0	8.1	7.9	8.0	24.8	24.7	24.6							7.3	7.1	7.2
100.0	8.1	7.8	7.9	24.8	24.7	24.6	28.0			340.0			7.2	7.2	7.2

*This Form is to be submitted with each DMR.
 Alkalinity and hardness to be reported as mg/l CaCO₃

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected **From: 9/2/14** **To: 9/2/14**
From: **To:**

Test Initiated: 9/3/14

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	87.5	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	87.5	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	87.5	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	E	100.0	87.5	100.0	100.0	87.5	100.0	100.0
	Mean	100.0	97.5	100.0	97.5	97.5	95.0	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 LC₅₀ below:

LC₅₀ = N/A% effluent

95 % confidence limits: N/A

Method of LC₅₀ calculation: N/A

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 007
 NPDES Number: AR0000752/ AFIN 70-00040
 Contact: David Sartain
 Analyst: Houghton, Callahan

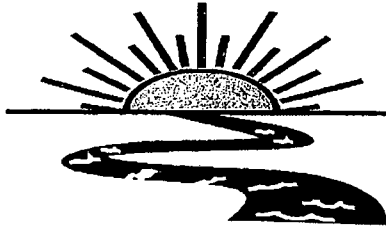
Sample Collected From: Date 9/2/14 Time 1430
 To: Date 9/2/14 Time 1630
 Test Begin Date 9/3/14 Time 1520
 Test End Date 9/5/14 Time 1350

Parameter Dilut./Time	D.O.			Temperature			Alkalinity			Hardness			pH		
	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.2	8.1	7.7	24.8	24.7	24.6	36.0			44.0			7.2	7.2	7.1
32.0	8.1	8.0	7.7	24.8	24.7	24.6							7.2	7.0	7.0
45.0	8.1	8.0	7.6	24.8	24.7	24.6							7.2	7.1	7.0
50.0	8.1	8.0	7.7	24.8	24.7	24.6							7.2	7.1	7.0
56.0	8.1	8.0	7.6	24.8	24.7	24.6							7.3	7.1	7.1
75.0	8.1	7.9	7.6	24.8	24.7	24.6							7.3	7.1	7.0
100.0	8.1	7.8	7.6	24.8	24.7	24.6	28.0			340.0			7.2	7.2	7.0

*This Form is to be submitted with each DMR.

Alkalinity and hardness to be reported as mg/l CaCO₃

APPENDIX F
REPORT QUALITY ASSURANCE FORM



Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1248
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: Eldorado Chemical Company

Project#: X5528

Chain of Custody Documents Checked by: EGB/9-17-14
Technician/Date

Raw Data Documents Checked by: EGB/9-17-14
Technician/Date

Statistical Analysis Package Checked by: EGB/9-17-14
Quality Manager/Date

Quality Control Data Checked by: EGB/9-17-14
Quality Manager/Date

Report Checked by: EGB/9-17-14
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 D. Bruapp, BS
Quality Manager

9-17-14
Date

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Page 1 of 2

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document here

From: (870) 863-1403
David Sartain
El Dorado Chemical Company
4500 NW Ave

Origin ID: ELDA

FedEx[®]
Express



J142214092303uv

Ship Date: 23OCT14
ActWgt: 0.5 LB
CAD: 5887030/INET3550

El Dorado, AR 71730

Delivery Address Bar Code



SHIP TO: (870) 863-1484

BILL SENDER

Water Enforcement Branch
ADEQ - AR Dept of Environ. Quality
5301 NORTSHORE DR

Ref #
Invoice #
PO #
Dept #

NORTH LITTLE ROCK, AR 72118

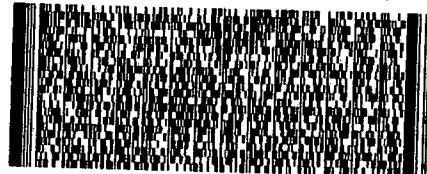
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0201

MON - 27 OCT 10:30A
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