



November 18, 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 October 31, 2015.

Enclosed you will find the Discharge Monitoring Reports ending October 31, 2015.

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

Sincerely,

A handwritten signature in cursive script that reads "Edward L Pearson". The signature is written in black ink and has a long horizontal flourish extending to the right.

Edward L Pearson

Environmental Technician

Enclosures

NON-COMPLIANCE REPORT

Facility Name: EI Dorado Chemical Company

Permit Number: AR0000752

AFIN:

70-00040

Month / Year: Oct-15

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006 / Lead Monthly Average (36 ug/L)	3.8 ug/L Monthly Average	10/24/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (36 ug/L)	7.62 ug/L Daily Max.	10/24/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 TDS Monthly Average (400 mg/L)	291 mg/L Monthly Average	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / TDS Monthly Average (520 mg/L)	291 mg/L Monthly Average	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007 / TDS Daily Max (520 mg/L)	436.5 mg/L Daily Max	10/23/2015	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
<p>I CERTIFY THAT UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C 1001 AND 33 U.S.C. 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)</p>				<p style="text-align: right;"><i>Shay Withers</i> 11/18/15</p> <p>Signature / Date</p>

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X5869

Bio-Analytical Laboratories' Executive Summary

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

Project #: X5869

Outfall: Outfall 006 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: October 25 - 27, 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:

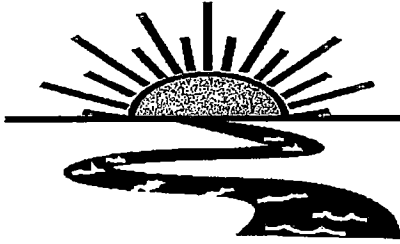
For *Pimephales promelas*:

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 - 6.06%.

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 - 11.68%.

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 X5869

**Test Dates: October 25 - 27, 2015
Report Date: November 10, 2015**

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

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

BAL
ADEQ #88-0630
Project X5869

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BAL
ADEQ #88-0630
Project X5869

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 LC₅₀, 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 five 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.

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ADEQ #88-0630
Project X5869

2.3 Dilution Water

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

2.4 Test Concentrations

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

2.5 Sample Collection

One sample of Outfall 006 was collected by El Dorado Chemical personnel on October 24, 2015, at 2000 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was -0.9° 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 $25 \pm 1^{\circ}$ 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 $25 \pm 1^{\circ}$ Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

2.8 Data Analysis

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

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Project X5869

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 fathead and *Daphnia pulex* test was 100.0 percent effluent (p=.05). The 48-hour LC₅₀ values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration. See Appendix C- Statistical Analyses, for more information.

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

Percent Effluent	Percent Survival	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	95.0
22.0	95.0	92.5
32.0	90.0	87.5
45.0	95.0	85.0
56.0	100.0	90.0
75.0	95.0	80.0
100.0	97.5	95.0

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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ADEQ #88-0630
Project X5869

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 24, 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 ($p=.05$).

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ADEQ #88-0630
Project X5869

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 (318) 745-2772
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 Doyline, LA 71023 Fax: (318) 745-2773

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

Laboratory Use Only:

Company: El Dorado Chemical Company						Phone: (870) 863-1484						Analysis: Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform						Project Number: X5869					
Address: 4500 Norwest Ave., El Dorado, AR 71731						Fax: (870) 863-7499						Temp. upon arrival: -0.9°C											
Permit #: AR0000752/AFIN 70-00040						Purchase Order:						Therm 29, EGB 10/25/15											
Sampler's Signature/Printed Name/Affiliation: Wes Morgan - EDCC												Lab Control Number:						Preservative: (below)					
Date Start Date End		Time Start Time End		C G		# and type of container		Sample Identification				Lab Control Number:											
10/23/15		2000		0		6 half gallons		006				C11595											
10/24/15		2000																					
Relinquished by/Affiliation: Wes Morgan EDCC						Date: 10/25/15		Time: 0930		Received by/Affiliation: J. B. [Signature]						Date: 10/25/15		Time: 0930					
Relinquished by/Affiliation:						Date:		Time:		Received by/Affiliation:						Date:		Time:					
Relinquished by/Affiliation: J. B. [Signature]						Date: 10/25/15		Time: 1200		Received by/Affiliation: Owen St. [Signature]						Date: 10/25/15		Time: 1200					
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 <input type="checkbox"/> Tracking #												Comments:						COC Rev. 3.0					

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5869

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 006

Technicians: EGB/RC/CR

Test initiated: Date 10/25/15 Time 1330

Test terminated: Date 10/27/15 Time 1540

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV

pH Meter: Model #Orion 230A+ Serial #015253

Conductivity Meter: Model # Control Co. Serial #122175539

Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/Final D.O.(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
11545 11545	7.7 92.1%	NO	<0.01	NO	0.5	N/A	176.0	20.0	EGB
	7.7 91.2%	NO							CR

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3782	N/A	N/A	N/A	N/A	7.2	40.0	32.0	EGB

Test Species Information

Test Species Info.	Species: <u>D. pulex</u> ID#: <u>A1a, C1a</u>	Species: <u>P. promelas</u> ID#: <u>102015</u>	Species: ID#:	Species: ID#:
Age	<u><24 hrs</u>	<u>~5 days</u>		
Test Container Size	<u>30 ml</u>	<u>250 ml</u>		
Test volume	<u>20 ml</u>	<u>200 ml</u>		
Feeding: Type Amount	<u>Algae/YCT before initiation</u>			
Aeration? Amount	<u>N/A</u>	<u>N/A</u>		
Condition of survivors	<u>Good 10/27/15 RC</u>	<u>Good RC 10/27/15</u>		

Comments: Initial pH = 6.22

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

Project# X5869

Test started: Date 10/25/15 Time 1410

Client EDCC

Test ended: Date 10/27/15 Time 1540

Sample Description 006

Test Species D. pulex ID# Aia, Cla

Technician: 0hour EB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1410 24hour 1425 48hour 1540 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.2 48hour 25.6 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%		N/A																				
0.3%FT	A		8	8	8			8.1	8.4 8.3	8.1			7.3	7.4 7.3	7.4			174.1	209 165	232		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	6	6																	
22.0	A		8	6	6			8.0	8.3 8.2	8.1			6.9	7.2 6.9	7.3			282	303 277	271		
	B		8	8	8																	
	C		8	8	8																	
	D		8	7	7																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EB CR / CR RC					EB CR / CR RC					EB CR / CR RC									

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

Project# X5869

Test started: Date 10/05/15 Time 1410

Client EDCC

Test ended: Date 10/27/15 Time 1540

Sample Description 006

Test Species D.pulex ID# A1a, C1a

Technician: 0hour EBB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1410 24hour 1425 48hour 1540 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.2 48hour 25.6 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
9.0		N/A																				
32.0	A		8	8	8			7.9	8.3 8.1	8.0			6.8	7.0 6.8	7.3			334	349 327	318		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	6																	
	E		8	7	5																	
45.0	A		8	7	7			7.8	8.2 8.0	8.0			6.8	7.1 6.7	7.2			397	405 395	327		
	B		8	8	6																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	5																	
Chemistry Tech prerenewal/postrenewal			EBB CR RC					EBB CR RC					EBB CR RC									

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

Project# X5869

Test started: Date 10/25/15 Time 1410

Client EDCC

Test ended: Date 10/27/15 Time 1540

Sample Description 006

Test Species D. pulex ID# A1a, C1a

Technician: EPB 24hour CP 48hour RC

72hour _____ 96hour _____

Time: 1410 24hour *25 H25 48hour 540

72hour _____ 96hour _____

Temperature (°C): 05.4 24hour 25.2 48hour 25.5

72hour _____ 96hour _____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0%		N/A																				
56.0	A	}	8	8	8			7.8	8.1 7.9	7.7			6.6	7.1 6.4	7.1			458	459 450	380		
	B		8	7	7																	
	C		8	8	7																	
	D		8	8	7																	
	E		8	7	7																	
75.0	A	}	8	8	8			7.7	8.1 7.7	7.8			6.5	7.0 6.5	7.0			548	552 540	485		
	B		8	7	7																	
	C		8	7	7																	
	D		8	7	5																	
	E		8	8	5																	
Chemistry Tech prerenewal/postrenewal			EPB CP CP RC					EPB CP CP RC					EPB CP CP RC									

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

Project# X5869

Test started: Date 10/05/13 Time 1410

Client EDCC

Test ended: Date 10/27/15 Time 1540

Sample Description 006

Test Species D. pulex ID# A1a, C1a

Technician: Ohour EDB 24hour OR 48hour RC 72hour _____ 96hour _____

Time: Ohour 1410 24hour 1425 48hour 1540 72hour _____ 96hour _____

Temperature (°C): Ohour 25.4 24hour 25.2 48hour 25.6 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		
100.0	A	N/A	8	8	7			7.4	8.1 7.4	7.7			6.3	6.9 6.2	6.7			6.7	6.7 6.4	8.05				
	B		8	8	8																			
	C		8	8	8																			
	D		8	8	7																			
	E		8	8	8																			
100.0 pH Adj	A		8																					
	B		8																					
	C		8																					
	D		8																					
	E		8																					
Chemistry Tech prerenewal/postrenewal			EDB OR RC					EDB OR RC					EDB OR RC											

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

Project# X5869

Test started: Date 10/25/15 Time 1330

Client EDCC

Test ended: Date 10/27/15 Time 1505

Sample Description 006

Test Species P. promelas ID# 102015

Technician: 0hour EBB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1500 24hour 1250 48hour 1505 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.7 48hour 25.6 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%		N/A																				
0.5%FT	A		8	8	8			8.1	7.9 6.3	7.7			7.3	7.1 7.3	7.1			174.1	182.0 165.1	200		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.0	7.7 6.2	7.6			6.9	7.0 6.9	7.0			282	298 277	325		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EBB	CR	RC			EBB	CR	RC			EBB	CR	RC							

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

Project# X5869

Test started: Date 10/25/13 Time 1330

Client EDCC

Test ended: Date 10/27/13 Time 1505

Sample Description 006

Test Species P. promelas ID# 102015

Technician: 0hour EWB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1330 24hour 1250 48hour 1503 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.7 48hour 25.6 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
<u>90</u>		<u>N/A</u>																				
<u>32.0</u>	<u>A</u>		<u>8</u>	<u>7</u>	<u>7</u>			<u>7.9</u>	<u>7.7</u>	<u>7.5</u>			<u>6.8</u>	<u>7.0</u>	<u>7.0</u>			<u>334</u>	<u>324</u>	<u>327</u>	<u>382</u>	
	<u>B</u>		<u>8</u>	<u>8</u>	<u>6</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>7</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
<u>45.0</u>	<u>A</u>		<u>8</u>	<u>8</u>	<u>8</u>			<u>7.8</u>	<u>7.6</u>	<u>7.6</u>			<u>6.8</u>	<u>7.0</u>	<u>6.9</u>			<u>397</u>	<u>383</u>	<u>395</u>	<u>460</u>	
	<u>B</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>7</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>7</u>																	
Chemistry Tech prerenewal/postrenewal								<u>EWB</u>	<u>CR</u>	<u>RC</u>			<u>EWB</u>	<u>CR</u>	<u>RC</u>			<u>EWB</u>	<u>CR</u>	<u>RC</u>		

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

Project# X58109

Test started: Date 10/25/15 Time 1330

Client EOCC

Test ended: Date 10/27/15 Time 1505

Sample Description 006

Test Species P. promelas ID# 102015

Technician: 0hour ES 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1330 24hour 1350 48hour 1505 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.7 48hour 25.6 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%		N/A																				
56.0	A		8	8	8			7.8	7.9	7.4			6.6	6.9	6.9			458	440	450	524	
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			7.7	7.7	7.4			6.5	6.9	6.7			548	530	540	627	
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	6																	
Chemistry Tech prerenewal/postrenewal			ES/CR/RC					ES/CR/RC					ES/CR/RC									

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

Project# X5869

Test started: Date 10/25/15 Time 1330

Client EDCC

Test ended: Date 10/27/15 Time 1505

Sample Description 006

Test Species P. promelas ID# 102015

Technician: 0hour ESB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1330 24hour 1250 48hour 1505 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.7 48hour 25.6 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
0.0		N/A																				
100.0	A	}	8	8	8			7.4	7.4	7.2			6.3	6.5	6.6			674	647	640	758	
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
100.0 PR Adj	A	}	8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal			ESB CR RC					ESB CR RC					ESB CR RC									

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date: 10/25/2015 Test ID: X5869DP Sample ID: AR0000752/006
 End Date: 10/27/2015 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 10/24/2015 Protocol: EPAAW02-EPA/821/R-02-01 Test Species: DP-Daphnia pulex

Comments:

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

Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	0.9500	1.0000	1.3239	1.0472	1.3931	11.684	5		
22	0.9250	0.9737	1.2872	1.0472	1.3931	12.116	5	25.50	16.00
32	0.8750	0.9211	1.2276	0.9117	1.3931	18.862	5	24.50	16.00
45	0.8500	0.8947	1.1909	0.9117	1.3931	17.846	5	22.50	16.00
56	0.9000	0.9474	1.2462	1.2094	1.3931	6.591	5	22.00	16.00
75	0.8000	0.8421	1.1271	0.9117	1.3931	18.667	5	20.00	16.00
100	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5	26.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.05$)	0.93248	0.934	-0.4976	-0.7653
Bartlett's Test indicates equal variances ($p = 0.45$)	5.75136	16.8119		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

X5869 PP^{EtG}_{10/28}

X5869

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Acute Fish Test-48 Hr Survival

Start Date: 10/25/2015 Test ID: X5870PP Sample ID: AR0000752/006
 End Date: 10/27/2015 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 10/24/2015 Protocol: EPAAW02-EPA/821/R-02-01 Test Species: PP-Pimephales promelas

Comments:

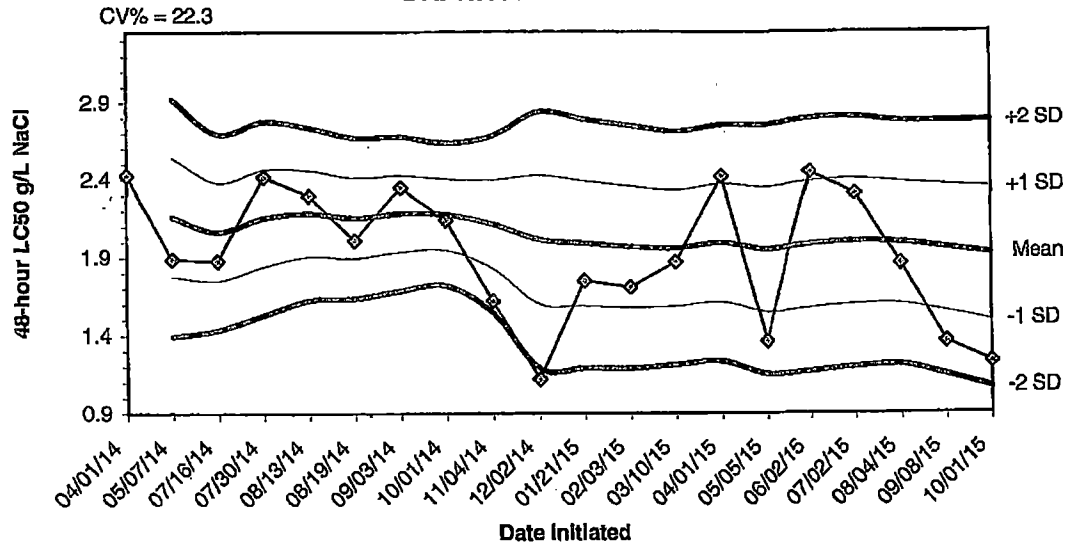
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	1.0000	0.8750	1.0000	0.8750	1.0000
32	0.8750	0.7500	1.0000	0.8750	1.0000
45	1.0000	1.0000	1.0000	0.8750	0.8750
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	0.7500
100	1.0000	0.8750	1.0000	1.0000	1.0000

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		
22	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
32	0.9000	0.9000	1.2504	1.0472	1.3931	11.683	5	20.00	16.00
45	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00
100	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.89011	0.934	-1.136	1.44269
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				

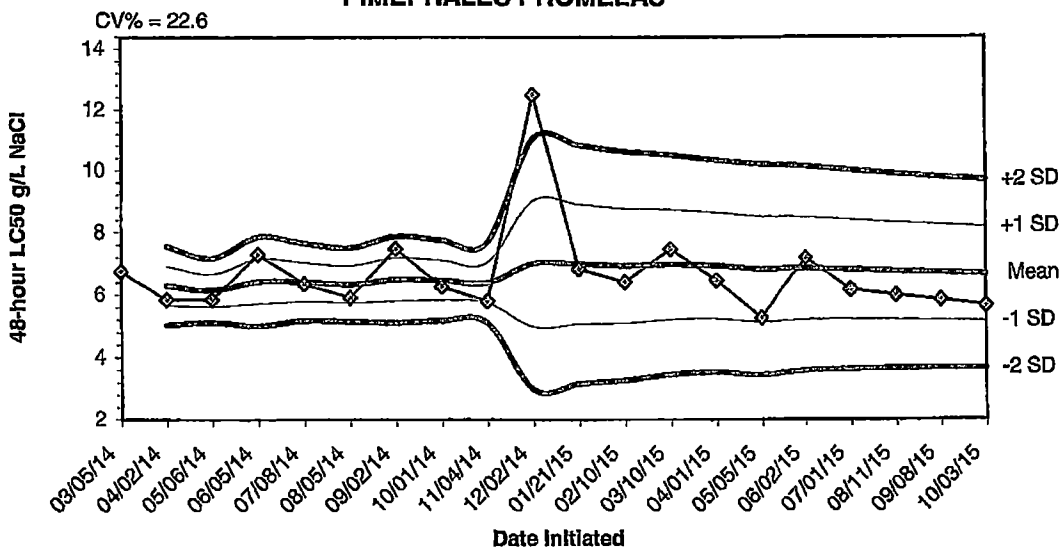
APPENDIX D
QUALITY ASSURANCE CHARTS

**2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
DAPHNIA PULEX**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/01/14	2.4300					
05/07/14	1.8900	2.1600	1.7782	1.3963	2.5418	2.9237
07/16/14	1.8800	2.0667	1.7520	1.4373	2.3814	2.6961
07/30/14	2.4200	2.1550	1.8432	1.5314	2.4668	2.7786
08/13/14	2.3000	2.1840	1.9063	1.6286	2.4617	2.7994
08/19/14	2.0100	2.1550	1.8966	1.6383	2.4134	2.6717
09/03/14	2.3500	2.1829	1.9358	1.6887	2.4300	2.6771
10/01/14	2.1400	2.1775	1.9482	1.7190	2.4068	2.6360
11/04/14	1.6200	2.1156	1.8318	1.5480	2.3993	2.6831
12/02/14	1.1200	2.0160	1.6028	1.1897	2.4292	2.8423
01/21/15	1.7500	1.9918	1.5917	1.1917	2.3919	2.7920
02/03/15	1.7100	1.9683	1.5783	1.1883	2.3584	2.7484
03/10/15	1.8700	1.9608	1.5863	1.2119	2.3352	2.7096
04/01/15	2.4200	1.9936	1.6135	1.2334	2.3737	2.7538
05/05/15	1.3600	1.9513	1.5502	1.1491	2.3525	2.7536
06/02/15	2.4500	1.9825	1.5754	1.1683	2.3896	2.7967
07/02/15	2.3100	2.0018	1.5997	1.1976	2.4039	2.8059
08/04/15	1.8600	1.9939	1.6024	1.2109	2.3854	2.7769
09/08/15	1.3600	1.9605	1.5532	1.1459	2.3679	2.7752
10/01/15	1.2300	1.9240	1.4952	1.0664	2.3528	2.7816

**2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/14	6.7500					
04/02/14	5.8600	6.3050	5.6757	5.0463	6.9343	7.5637
05/06/14	5.8600	6.1567	5.6428	5.1290	6.6705	7.1844
06/05/14	7.3100	6.4450	5.7319	5.0187	7.1581	7.8713
07/08/14	6.3700	6.4300	5.8115	5.1930	7.0485	7.6670
08/05/14	5.9200	6.3450	5.7539	5.1628	6.9361	7.5272
09/02/14	7.4800	6.5071	5.8178	5.1285	7.1965	7.8858
10/01/14	6.2800	6.4788	5.8355	5.1923	7.1220	7.7652
11/04/14	5.8100	6.4044	5.7628	5.1211	7.0461	7.6878
12/02/14	12.5000	7.0140	4.9937	2.9734	9.0343	11.0546
01/21/15	6.8500	6.9991	5.0818	3.1646	8.9163	10.8336
02/10/15	6.4200	6.9508	5.1152	3.2795	8.7865	10.6221
03/10/15	7.4800	6.9915	5.2279	3.4643	8.7552	10.5188
04/01/15	6.4800	6.9550	5.2551	3.5551	8.6549	10.3549
05/05/15	5.2900	6.8440	5.1504	3.4568	8.5376	10.2312
06/02/15	7.2000	6.8663	5.2277	3.5891	8.5048	10.1434
07/01/15	6.1800	6.8259	5.2306	3.6354	8.4211	10.0164
08/11/15	6.0000	6.7800	5.2202	3.6604	8.3398	9.8996
09/08/15	5.8600	6.7316	5.2011	3.6706	8.2621	9.7925
10/03/15	5.6700	6.6785	5.1700	3.6616	8.1870	9.6954

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: 10/23/15 To: 10/24/15
From: To:

Test Initiated: 10/25/15

Dilution Water Used: Receiving Water 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	75.0	100.0	87.5	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	87.5	87.5	100.0
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	D	100.0	87.5	100.0	100.0	100.0	87.5	100.0
	E	75.0	100.0	87.5	100.0	87.5	100.0	100.0
48-hour	A	100.0	75.0	100.0	87.5	100.0	100.0	87.5
	B	100.0	100.0	100.0	75.0	87.5	87.5	100.0
	C	100.0	100.0	100.0	100.0	87.5	87.5	100.0
	D	100.0	87.5	75.0	100.0	87.5	62.5	87.5
	E	75.0	100.0	62.5	62.5	87.5	62.5	100.0
	Mean	95.0	92.5	87.5	85.0	90.0	80.0	95.0

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

2. Enter percent effluent corresponding to the LC_{50} below:

LC_{50} = N/A% effluent

95 % confidence limits:

Method of LC_{50} calculation:

3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

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

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

**Sample Collected From: Date 10/23/15 Time 2000
 To: Date 10/24/15 Time 2000
Test Begin Date 10/25/15 Time 1410
Test End Date 10/27/15 Time 1540**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.1	8.3	8.1	25.4	25.2	25.6	32.0			40.0			7.3	7.3	7.4
22.0	8.0	8.2	8.1	25.4	25.2	25.6							6.9	6.9	7.3
32.0	7.9	8.1	8.0	25.4	25.2	25.6							6.8	6.8	7.3
45.0	7.8	8.0	8.0	25.4	25.2	25.6							6.8	6.7	7.2
56.0	7.8	7.9	7.7	25.4	25.2	25.6							6.6	6.6	7.1
75.0	7.7	7.7	7.8	25.4	25.2	25.6							6.5	6.5	7.0
100.0	7.4	7.4	7.7	25.4	25.2	25.6	20.0			176.0			6.3	6.2	6.7

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

Acute Forms
Pimephales promelas (Fathead minnow) Survival

Permittee: El Dorado Chemical - Outfall 006

NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 10/23/15 To: 10/24/15
From: To:

Test Initiated: 10/25/15

Dilution Water Used: Receiving Water 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	87.5	100.0	100.0	100.0	100.0
	B	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	87.5	100.0	100.0	100.0	100.0
	B	100.0	87.5	75.0	100.0	100.0	100.0	87.5
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	87.5	87.5	87.5	100.0	100.0	100.0
	E	100.0	100.0	100.0	87.5	100.0	75.0	100.0
	Mean	100.0	95.0	90.0	95.0	100.0	95.0	97.5

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 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) 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

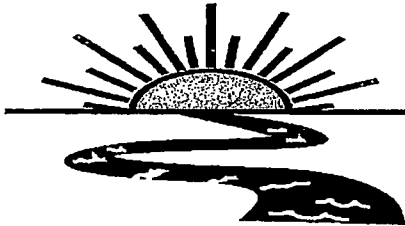
**Biomonitoring
Fathead minnow 48 hour Acute Static Renewal
Chemical Parameters Chart***

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

Sample Collected From: Date 10/23/15 Time 2000
 To: Date 10/24/15 Time 2000
 Test Begin Date 10/25/15 Time 1330
 Test End Date 10/27/15 Time 1505

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		8.1	8.3	7.7	25.4	25.7	25.6	32.0			40.0			7.3	7.3	7.1
22.0		8.0	8.2	7.6	25.4	25.7	25.6							6.9	6.9	7.0
32.0		7.9	8.1	7.5	25.4	25.7	25.6							6.8	6.8	7.0
45.0		7.8	8.0	7.6	25.4	25.7	25.6							6.8	6.7	6.9
56.0		7.8	7.9	7.4	25.4	25.7	25.6							6.6	6.6	6.9
75.0		7.7	7.7	7.4	25.4	25.7	25.6							6.5	6.5	6.7
100.0		7.4	7.4	7.2	25.4	25.7	25.6	20.0			176.0			6.3	6.2	6.6

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



Bio-Analytical Laboratories

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Doyline, LA 71023

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

REPORT QUALITY ASSURANCE FORM

Client: EL Dorado Chemical - 006

Project#: X 5869

Chain of Custody Documents Checked by: RC 11/2/15
Technician/Date

Raw Data Documents Checked by: RC 11/2/15
Technician/Date

Statistical Analysis Package Checked by: EOB 10/28/15
Quality Manager/Date

Quality Control Data Checked by: EOB 11/3/15
Quality Manager/Date

Report Checked by: EOB 11/10/15
Quality Manager/Date

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

Erin H. Baupp, BS 11/10/15
Quality Manager 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 X5870

Bio-Analytical Laboratories' Executive Summary

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

Project #: X5870

Outfall: Outfall 007 (contaminated storm water)

Permit #: AR0000752/ AFIN #70-00040

Contact: Mr. David Sartain

Test Dates: October 25 - 27, 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:

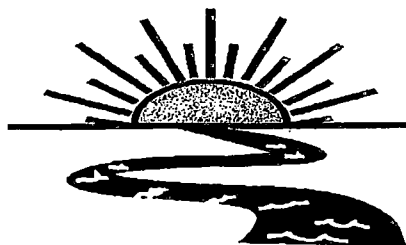
For *Pimephales promelas*:

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 - 6.06%.

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 - 11.68%.

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 X5870

**Test Dates: October 25 - 27, 2015
Report Date: November 10, 2015**

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

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

BAL
ADEQ #88-0630
Project X5870

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BAL
ADEQ #88-0630
Project X5870

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 and were approximately five 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.

BAL
ADEQ #88-0630
Project X5870

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 October 24, 2015, at 2000 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was -0.9° 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 $25 \pm 1^{\circ}$ 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 $25 \pm 1^{\circ}$ 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 X5870

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 fathead and *Daphnia pulex* test 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

Percent Effluent	Percent Survival	
	<i>Pimephales promelas</i>	<i>Daphnia pulex</i>
Control	100.0	97.5
22.0	100.0	100.0
32.0	100.0	90.0
45.0	95.0	95.0
56.0	92.5	92.5
75.0	95.0	97.5
100.0	97.5	90.0

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

BAL
ADEQ #88-0630
Project X5870

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on October 24, 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 ($p=.05$).

BAL
ADEQ #88-0630
Project X5870

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) 746-2772
1-800-258-1246
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: X5870	
Address: 4500 Norwest Ave., El Dorado, AR 71731				Fax: (870) 863-7499				Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysis Acute Ceriodaphnia Fecal Coliform	Lab Control Number:	Temp. upon arrival: - 0.9°C Thermog EGB 10/25/15		Preservative: (below) ICE	
Permit #: AR0000752/AFIN 70-00040				Purchase Order:						C115910			
Sampler's Signature/Printed Name/Affiliation: [Signature] Les Morgan - EPCC													
Date Start Date End	Time Start Time End	C	G	# and type of container	Sample Identification								
10/23/15 10/24/15	2000 2000			6 half gallons	007				X	X			
Relinquished by/Affiliation:				Date:	Time:	Received by/Affiliation:				Date:	Time:		
[Signature] EPCC				10/25/15	0930	[Signature]				10/25/15	1000		
Relinquished by/Affiliation:				Date:	Time:	Received by/Affiliation:				Date:	Time:		
[Signature]				10/25/15	1200	[Signature]				10/25/15	1200		
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# X5870

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/RC/CR

Test initiated: Date 10/25/15 Time 1345

Test terminated: Date 10/27/15 Time 1545

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV

pH Meter: Model #Orion 230A+ Serial #015253

Conductivity Meter: Model # Control Co. Serial #80277924

Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/Final D.O.(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
C11E96	7.7 93%	NO	<0.01	NO	0.5	N/A	10670 568.0	10070 28.0	EGB
	6.5 70.5%	Y/10/75 EGB/CR							CR

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3782	N/A				7.2	40.0	32.0	EGB

Test Species Information

Test Species Info.	Species: <u>D. pulex</u> ID#: <u>A19, C1A</u>	Species: <u>P. promelas</u> ID#: <u>102015</u>	Species: ID#:	Species: ID#:
Age	<24 hours	~5 days		
Test Container Size	30 ml	250 ml		
Test volume	20 ml	200 ml		
Feeding: Type	Algae/YCT	Artemia		
Amount	before initiation			
Aeration?	N/A	N/A		
Amount				
Condition of survivors	Good rc 10/27/15	Fair rc 10/27/15		

Comments: Initial pH = 6.52

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

Project# X5870

Test started: Date 10/25/15 Time 1430

Client EDCC

Test ended: Date 10/27/15 Time 1545

Sample Description 007

Test Species D. pulex ID# Aiq Cia

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

Time: Ohour 1430 24hour 1504 48hour 1545 72hour _____ 96hour _____

Temperature (°C): Ohour 25.4 24hour 25.1 48hour 25.6 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%		N/A																				
0 _{soft}	A	N/A	8	8	8			8.2	8.2 8.4	8.0			7.3	7.2 7.3	7.4			1745	201 1640	228		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
22.0/1.5 ♀	E		8	8	7																	
32.0	A		8	8	8			7.9	8.1 8.0	8.0			6.9	7.4 7.1	7.3			618	650 620	428		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EPB CR CR RC					EPB CR CR RC					EPB CR CR RC									

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

Project# X5870

Test started: Date 10/25/15 Time 1430

Client EDCC

Test ended: Date 10/27/15 Time 1545

Sample Description 007

Test Species D. pulex ID# A1a, C1a

Technician: 0hour ELB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1430 24hour 1506 48hour 1545 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.1 48hour 25.6 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
<u>40</u>		<u>NIA</u>																				
<u>45.0</u>	<u>A</u>	}	<u>8</u>	<u>7</u>	<u>6</u>			<u>7.8</u>	<u>8.1</u>	<u>7.9</u>			<u>6.9</u>	<u>7.4</u>	<u>7.3</u>			<u>784</u>	<u>800</u>	<u>793</u>	<u>430</u>	
	<u>B</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>6</u>																	
<u>50.0</u>	<u>A</u>	}	<u>8</u>	<u>7</u>	<u>7</u>			<u>7.8</u>	<u>8.0</u>	<u>7.9</u>			<u>6.9</u>	<u>7.4</u>	<u>7.3</u>			<u>834</u>	<u>871</u>	<u>855</u>	<u>625</u>	
	<u>B</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>7</u>																	
Chemistry Techn prerenewal/postrenewal								<u>ELB</u> <u>CR</u> <u>RC</u>					<u>ELB</u> <u>CR</u> <u>RC</u>					<u>ELB</u> <u>CR</u> <u>RC</u>				

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

Project# X5870

Test started: Date 10/25/15

Time 1430

Client EDCC

Test ended: Date 10/27/15

Time 1545

Sample Description 007

Test Species D. PULPX

ID# A19, C1a

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

Time: Ohour 1430 24hour 1500 48hour 1545 72hour _____ 96hour _____

Temperature (°C): Ohour 25.4 24hour 25.1 48hour 25.6 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
40		N/A																				
56.0	A	}	8	8	8			7.7	7.9 7.8	7.8			6.9	7.4 7.0	7.4			916	955 917	653		
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	8 ^{RC}																	
	E		8	8	8																	
75.0	A	}	8	8	8			7.8	7.9 7.7	7.8			6.8	7.4 7.0	7.2			1139	1170 1145	975		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8 ^{RC}																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								ELB CR RC					ELB CR RC				ELB CR RC					

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

Project# X5870

Test started: Date 10/5/15 Time 1430

client EDCC

Test ended: Date 10/7/15 Time 1545

Sample Description 007

Test Species D. pulex ID# A1a, C1a

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

Time: Ohour 1430 24hour 1506 48hour 1545 72hour _____ 96hour _____

Temperature (°C): Ohour 25.4 24hour 25.1 48hour 25.6 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
100.0	A	N/A	8	6	6			7.5	8.0 7.6	7.7			6.7	7.4 7.0	7.2			1444	1398 1376	1706		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	7	7																	
pH adj 100.0	A	N/A	8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal			ELB CR RC					ELB CR RC					ELB CR RC									

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

Project# X5870

Test started: Date 10/25/15 Time 1345

Client EDCC

Test ended: Date 10/27/15 Time 1520

Sample Description 007

Test Species P. promelas ID# 102015

Technician: 0hour EDB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1345 24hour 1200 48hour 1520 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.6 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
0/0		N/A																				
0 _{soft}	A	}	8	8	8			8.2	7.8 8.4	7.6			7.3	7.2 7.3	7.0			1745	1855 180	203		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
RC 10/1/15 7	E		8	8	8																	
32.0	A	}	8	8	8			7.9	7.6 8.0	7.5			6.9	7.2 7.1	6.9			618	600 620	126		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EDB CR RC					EDB CR RC					EDB CR RC									

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

Project# X5870

Test started: Date 10/25/15 Time 1345

Client EDCC

Test ended: Date 10/27/15 Time 1520

Sample Description 007

Test Species P. promelas ID# 102015

Technician: 0hour ELB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1345 24hour 1200 48hour 1520 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.6 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
<u>40</u>		<u>N/A</u>																				
<u>45.0</u>	<u>A</u>	<u>(</u>	<u>8</u>	<u>8</u>	<u>8</u>			<u>7.8</u>	<u>7.5</u>	<u>7.3</u>			<u>6.9</u>	<u>7.2</u>	<u>7.0</u>			<u>784</u>	<u>750</u>	<u>926</u>		
	<u>B</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
<u>50.0</u>	<u>A</u>	<u>(</u>	<u>8</u>	<u>8</u>	<u>8</u>			<u>7.8</u>	<u>7.5</u>	<u>7.3</u>			<u>6.9</u>	<u>7.2</u>	<u>7.0</u>			<u>834</u>	<u>805</u>	<u>999</u>		
	<u>B</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>C</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>D</u>		<u>8</u>	<u>8</u>	<u>8</u>																	
	<u>E</u>		<u>8</u>	<u>8</u>	<u>6</u>																	
Chemistry Tech prerenewal/postrenewal			<u>ELB</u> <u>CR</u> <u>CR</u> <u>RC</u>					<u>ELB</u> <u>CR</u> <u>CR</u> <u>RC</u>					<u>ELB</u> <u>CR</u> <u>CR</u> <u>RC</u>									

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

Project# X5870

Test started: Date 10/25/15 Time 1345

Client EDCC

Test ended: Date 10/27/15 Time 1520

Sample Description 007

Test Species P. promelas ID# 102015

Technician: 0hour EB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1345 24hour 1260 48hour 1320 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.6 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
40		N/A																				
56.0	A	}	8	8	8			7.7	7.5 7.8	7.2			6.9	7.1 7.0	7.0			834	870 917	1070		
	B		8	8	8													818	916			
	C		8	6	6																	
	D		8	8	8																	
	E		8	8	7																	
75.0	A	}	8	8	8			7.8	7.4 7.7	7.1			6.8	7.1 7.0	7.0			918	1089 1145	1328		
	B		8	8	6													805	1139			
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
chemistry tech prerenewal/postrenewal			EB CR / CR RC					EB CR / CR RC					EB CR / CR RC									

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

Project# X5870

Test started: Date 10/25/15 Time 1345

Client EDCC

Test ended: Date 10/27/15 Time 1520

Sample Description 007

Test Species P. promelas ID# 102015

Technician: 0hour EB 24hour CR 48hour RC 72hour _____ 96hour _____

Time: 0hour 1345 24hour 1200 48hour 1520 72hour _____ 96hour _____

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.0 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					
100.0	A	N/A	8	8	8			7.5	7.1	7.1			6.7	7.0	7.0			139	139	139			1632	1632	1632		
	B		8	8	8													1444	1444	1444							
	C		8	8	8																						
	D		8	8	7																						
	E		8	8	8																						
pH adj 100.0	A	N/A	8																								
	B		8																								
	C		8																								
	D		8																								
	E		8																								
Chemistry Tech prerenewal/postrenewal			EB CR CR RC					EB CR CR RC					EB CR CR RC														

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date: 10/25/2015 Test ID: X5870DP Sample ID: AR0000752/007
 End Date: 10/27/2015 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 10/24/2015 Protocol: EPAAW02-EPA/821/R-02-01 Test Species: DP-Daphnia pulex
 Comments:

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

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5		
32	1.0000	1.0256	1.3931	1.3931	1.3931	0.000	5	30.00	16.00
45	0.9000	0.9231	1.2547	1.0472	1.3931	15.099	5	24.00	16.00
50	0.9500	0.9744	1.3196	1.2094	1.3931	7.623	5	25.00	16.00
56	0.9250	0.9487	1.2872	1.0472	1.3931	12.116	5	24.50	16.00
75	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	27.50	16.00
100	0.9000	0.9231	1.2504	1.0472	1.3931	11.683	5	22.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.9057	0.934	-0.6986	-0.4393
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

Start Date: 10/25/2015 Test ID: X5870PP Sample ID: AR0000752/007
 End Date: 10/27/2015 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial
 Sample Date: 10/24/2015 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	1.0000
45	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	0.7500
56	1.0000	1.0000	0.7500	1.0000	0.8750
75	1.0000	0.7500	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	0.8750	1.0000

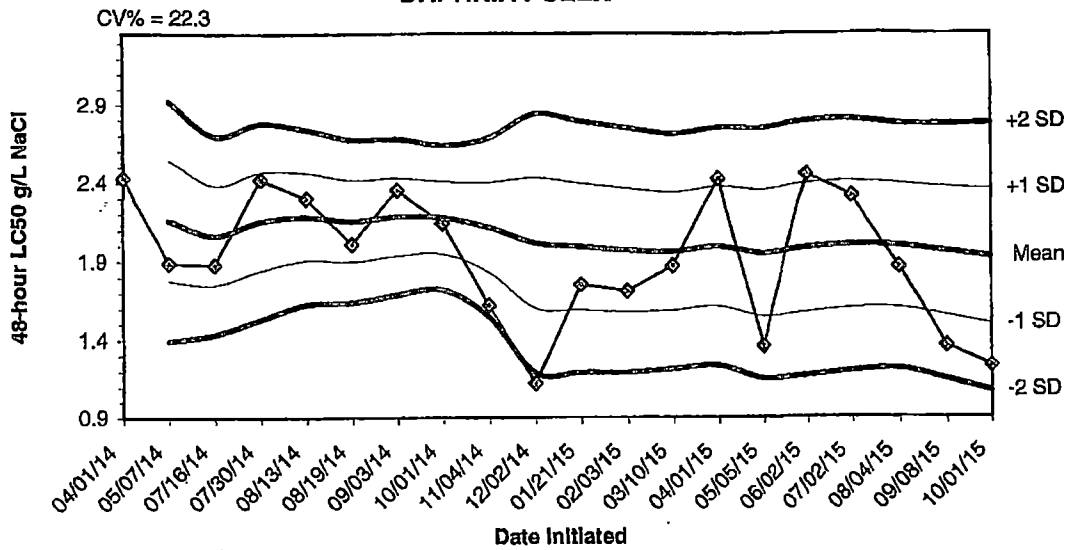
Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50
50	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00
56	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50
75	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00
100	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.05$)	0.73847	0.934	-1.8628	3.27478
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
10/28/15

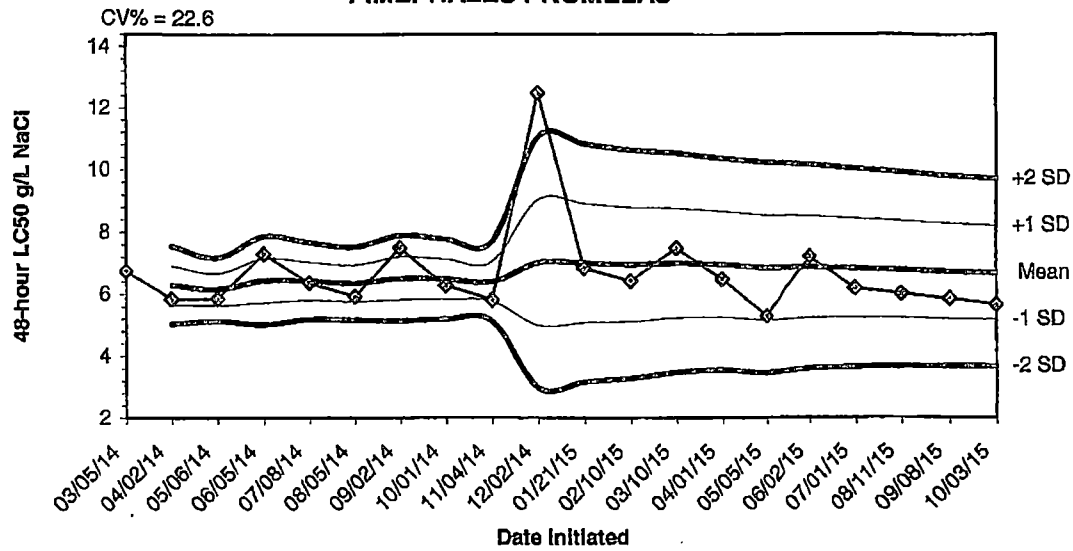
APPENDIX D
QUALITY ASSURANCE CHARTS

**2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
DAPHNIA PULEX**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/01/14	2.4300					
05/07/14	1.8900	2.1600	1.7782	1.3963	2.5418	2.9237
07/16/14	1.8800	2.0667	1.7520	1.4373	2.3814	2.6961
07/30/14	2.4200	2.1550	1.8432	1.5314	2.4668	2.7786
08/13/14	2.3000	2.1840	1.9063	1.6286	2.4617	2.7394
08/19/14	2.0100	2.1550	1.8966	1.6383	2.4134	2.6717
09/03/14	2.3500	2.1829	1.9358	1.6887	2.4300	2.6771
10/01/14	2.1400	2.1775	1.9482	1.7190	2.4068	2.6360
11/04/14	1.6200	2.1156	1.8318	1.5480	2.3993	2.6831
12/02/14	1.1200	2.0160	1.6028	1.1897	2.4292	2.8423
01/21/15	1.7500	1.9918	1.5917	1.1917	2.3919	2.7920
02/03/15	1.7100	1.9683	1.5783	1.1883	2.3584	2.7484
03/10/15	1.8700	1.9808	1.5863	1.2119	2.3352	2.7096
04/01/15	2.4200	1.9936	1.6135	1.2334	2.3737	2.7538
05/05/15	1.3600	1.9513	1.5502	1.1491	2.3525	2.7536
06/02/15	2.4500	1.9825	1.5754	1.1683	2.3896	2.7967
07/02/15	2.3100	2.0018	1.5997	1.1976	2.4039	2.8059
08/04/15	1.8600	1.9939	1.6024	1.2109	2.3854	2.7769
09/08/15	1.3600	1.9605	1.5532	1.1459	2.3679	2.7752
10/01/15	1.2300	1.9240	1.4952	1.0664	2.3528	2.7816

**2015 48 HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
03/05/14	6.7500					
04/02/14	5.8600	6.3050	5.6757	5.0463	6.9343	7.5637
05/06/14	5.8600	6.1567	5.6428	5.1290	6.6705	7.1844
06/05/14	7.3100	6.4450	5.7319	5.0187	7.1581	7.8713
07/08/14	6.3700	6.4300	5.8115	5.1930	7.0485	7.6670
08/05/14	5.9200	6.3450	5.7539	5.1628	6.9361	7.5272
09/02/14	7.4800	6.5071	5.8178	5.1285	7.1965	7.8858
10/01/14	6.2800	6.4788	5.8355	5.1923	7.1220	7.7652
11/04/14	5.8100	6.4044	5.7628	5.1211	7.0461	7.6878
12/02/14	12.5000	7.0140	4.9937	2.9734	9.0343	11.0546
01/21/15	6.8500	6.9991	5.0818	3.1646	8.9163	10.8336
02/10/15	6.4200	6.9508	5.1152	3.2795	8.7865	10.6221
03/10/15	7.4800	6.9915	5.2279	3.4643	8.7552	10.5188
04/01/15	6.4800	6.9550	5.2551	3.5551	8.6549	10.3549
05/05/15	5.2900	6.8440	5.1504	3.4568	8.5376	10.2312
06/02/15	7.2000	6.8663	5.2277	3.5891	8.5048	10.1434
07/01/15	6.1800	6.8259	5.2306	3.6354	8.4211	10.0164
08/11/15	6.0000	6.7800	5.2202	3.6604	8.3398	9.8996
09/08/15	5.8600	6.7316	5.2011	3.6706	8.2621	9.7925
10/03/15	5.6700	6.6785	5.1700	3.6616	8.1870	9.6954

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: 10/23/15 To: 10/24/15

From: To:

Test Initiated: 10/25/15

Dilution Water Used: Receiving Water 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	87.5	87.5	100.0	100.0	75.0
	B	100.0	100.0	100.0	100.0	100.0	87.5	10.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	87.5
	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	87.5
48-hour	A	100.0	100.0	75.0	87.5	100.0	100.0	75.0
	B	100.0	100.0	100.0	100.0	87.5	87.5	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	87.5
	D	100.0	100.0	100.0	100.0	75.0	100.0	100.0
	E	87.5	100.0	75.0	87.5	100.0	100.0	87.5
	Mean	97.5	100.0	90.0	95.0	92.5	97.5	90.0

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

2. Enter percent effluent corresponding to the LC_{50} below:

LC_{50} = N/A % effluent

95 % confidence limits:

Method of LC_{50} calculation:

3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
 4. Enter response to item 3 on DMR Form, parameter TEM3D
 5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
 6. Enter response to item 5 on DMR Form, parameter TFM3D

Acute Forms
Pimephales promelas (Fathead minnow) Survival

Permittee: El Dorado Chemical - Outfall 007

NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected From: 10/23/15 To: 10/24/15

From: To:

Test Initiated: 10/25/15

Dilution Water Used: Receiving Water 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	75.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	75.0
	C	100.0	100.0	100.0	100.0	75.0	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	75.0	87.5	100.0	100.0
	Mean	100.0	100.0	100.0	95.0	92.5	95.0	97.5

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:

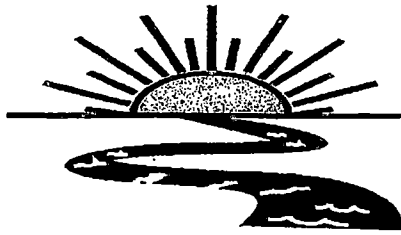
LC₅₀ = N/A % effluent

95 % confidence limits:

Method of LC₅₀ 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

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#: X5870

Chain of Custody Documents Checked by: RC 11/2/15
Technician/Date

Raw Data Documents Checked by: RC 11/2/15
Technician/Date

Statistical Analysis Package Checked by: EGB 10/28/15
Quality Manager/Date

Quality Control Data Checked by: EGB 11/3/15
Quality Manager/Date

Report Checked by: EGB 11/10/15
Quality Manager/Date

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

Erin H. Baggett, BS
Quality Manager

11/10/15
Date

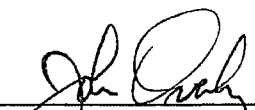
No part of this work may be altered in any form or by any means without written permission from Bio-Analytical Laboratories.

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

This report contains the analytical results and supporting information for samples submitted on October 5, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.



John Overbey
Laboratory Director

This document has been distributed to the following:

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dsartain@edc-ark.com

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lmorgan@edc-ark.com

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

SAMPLE INFORMATION

Project Description:

Three (3) water sample(s) received on October 5, 2015
Tri-Weekly - Permit AR0000752
P.O. No. 357042

Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Sampled Date/Time</u>	<u>Notes</u>
194840-1	Outfall 010	05-Oct-2015 1000	
194840-2	Outfall 010	05-Oct-2015 1000	
194840-3	Outfall 003	05-Oct-2015 1030	

Qualifiers:

D Result is from a secondary dilution factor

References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

ANALYTICAL RESULTS

AIC No. 194840-1

Sample Identification: Outfall 010 05-Oct-2015 1000

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 06-Oct-2015 0936 by 93	0.23 Analyzed: 06-Oct-2015 1906 by 308	0.1	mg/l Batch: W53453	
Carbonaceous BOD 5-day SM 5210 B 2001 Prep: 07-Oct-2015 0824 by 271	< 2 Analyzed: 12-Oct-2015 0936 by 271	2	mg/l Batch: W53467	
Total Suspended Solids USGS 3765 Prep: 06-Oct-2015 1408 by 271	15 Analyzed: 07-Oct-2015 1154 by 271	4	mg/l Batch: W53462	
Phosphorus EPA 200.7 Prep: 05-Oct-2015 1640 by 313	0.097 Analyzed: 06-Oct-2015 1030 by 317	0.02	mg/l Batch: S39867	
Nitrate as N EPA 300.0 Prep: 05-Oct-2015 1524 by 07	9.7 Analyzed: 05-Oct-2015 1627 by 07	0.5	mg/l Batch: C18138	D Dil: 10

AIC No. 194840-2

Sample Identification: Outfall 010 05-Oct-2015 1000

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Fecal Coliform SM 9222 D 1997	2.0 Analyzed: 05-Oct-2015 1538 by 21	1	/100ml Batch: M5440	

AIC No. 194840-3

Sample Identification: Outfall 003 05-Oct-2015 1030

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 06-Oct-2015 0936 by 93	3.1 Analyzed: 06-Oct-2015 1944 by 308	0.5	mg/l Batch: W53453	D Dil: 5

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

DUPLICATE RESULTS

Analyte	AIC No.	Result	RPD	RPD Limit	Preparation Date	Analysis Date	Dil	Qual
Total Suspended Solids	194822-1	8.0 mg/l			06Oct15 1408 by 271	07Oct15 1154 by 271		
	Batch: W53462 Duplicate	8.8 mg/l	9.52	20.0	06Oct15 1409 by 271	07Oct15 1154 by 271		
Total Suspended Solids	194823-1	16 mg/l			06Oct15 1408 by 271	07Oct15 1154 by 271		
	Batch: W53462 Duplicate	16 mg/l	2.47	20.0	06Oct15 1409 by 271	07Oct15 1154 by 271		
Carbonaceous BOD 5-day	194840-1	< 2 mg/l			07Oct15 0824 by 271	12Oct15 0936 by 271		
	Batch: W53467 Duplicate	< 2 mg/l	0.00	20.0	07Oct15 1703 by 271	12Oct15 0938 by 271		

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	102	80.0-120			W53453	06Oct15 0939 by 93	06Oct15 1841 by 308		
Carbonaceous BOD 5-day	200 mg/l	98.1	84.5-115			W53467	07Oct15 1703 by 271	12Oct15 0935 by 271		
Phosphorus	5 mg/l	99.5	85.0-115			S39867	05Oct15 1553 by 313	06Oct15 1006 by 317		
Nitrate as N	4 mg/l	98.6	90.0-110			C18138	05Oct15 1321 by 07	05Oct15 1354 by 07		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	194824-1	1 mg/l	102	80.0-120	W53453	06Oct15 0939 by 93	06Oct15 1844 by 308		
	194824-1	1 mg/l	102	80.0-120	W53453	06Oct15 0939 by 93	06Oct15 1846 by 308		
	Relative Percent Difference:		0.0892	25.0	W53453				
Phosphorus	194788-1	5 mg/l	102	75.0-125	S39867	05Oct15 1553 by 313	06Oct15 1009 by 317		
	194788-1	5 mg/l	94.9	75.0-125	S39867	05Oct15 1553 by 313	06Oct15 1012 by 317		
	Relative Percent Difference:		3.18	20.0	S39867				
Nitrate as N	194836-1	4 mg/l	103	80.0-120	C18138	05Oct15 1321 by 07	05Oct15 1512 by 07		
	194836-1	4 mg/l	104	80.0-120	C18138	05Oct15 1321 by 07	05Oct15 1537 by 07		
	Relative Percent Difference:		1.01	10.0	C18138				

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53453-1	06Oct15 0939 by 93	06Oct15 1839 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W53467-1	07Oct15 1703 by 271	12Oct15 0934 by 271	
Total Suspended Solids	< 4 mg/l	4	4	W53462-1	06Oct15 1409 by 271	07Oct15 1154 by 271	
Phosphorus	< 0.02 mg/l	0.02	0.02	S39867-1	05Oct15 1553 by 313	06Oct15 1003 by 317	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C18138-1	05Oct15 1321 by 07	05Oct15 1329 by 07	
Fecal Coliform	< 1 /100ml	1	1	M5440-1		05Oct15 1539 by 21	

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 194840		
Project Reference: Tri-Weekly - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus	NH3N								AIC PROPOSAL NO:	
Project Manager: Mr. Eddie Pearson			W	S														
Sampled By: <i>Edward L Pearson</i>			G	C	A	S											Received Temperature C 0.1	
AIC No.	Sample Identification	Date/Time Collected	R	O	T	O											Remarks	
1	Outfall 010	10-05-15 1000		X	X													
2	Outfall 010	10-05-15 1000	X		X					X								
1	Outfall 010	10-05-15 1000		X	X						X							
3	Outfall 003	10-05-15 1030	X		X													
Container Type									P	P	P						Field pH calibration on _____ @ _____	
Preservative									NO	T	S						Buffer: _____	
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2			V = VOA vials N = Nitric acid pH2			H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate						
Turnaround Time Requested: (Please circle) <u>NORMAL</u> or EXPEDITED IN _____ DAYS								Relinquished By: <i>Edward L Pearson</i>		Date/Time 10-05-15 1200		Received By:		Date/Time				
Expedited results requested by: _____								Relinquished By:		Date/Time		Received in Lab By: <i>D Bm</i>		Date/Time 10-5-15 1420				
Who should AIC contact with questions: Phone 870-312-1397 Fax: Report Attention to: Mr. Eddie Pearson Report Address to: 4500 North West Avenue El Dorado, AR 71730 epearson@edc-ark.com								Comments:										



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

This report contains the analytical results and supporting information for samples submitted on October 26, 2015. Attached please find a copy of the Chain of Custody and/or other documents received. Note that any remaining sample will be discarded two weeks from the original report date unless other arrangements are made.

This report is intended for the sole use of the client listed above. Assessment of the data requires access to the entire document.

This report has been reviewed by the Laboratory Director or a qualified designee.

A handwritten signature in cursive script that reads 'Steve Bradford'. The signature is written in black ink and is positioned above a horizontal line.

Steve Bradford
Deputy Laboratory Director

This document has been distributed to the following:

PDF cc: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

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

El Dorado Chemical Company
ATTN: Ms. Vee Ann Poole
vapoole@edc-ark.com



El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

SAMPLE INFORMATION

Project Description:

Two (2) water sample(s) received on October 26, 2015
006 Weekly / 007 Weekly
P.O. No. 357042

Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Sampled Date/Time</u>	<u>Notes</u>
195545-1	006	23-Oct-2015 2000	
195545-2	007	23-Oct-2015 2015	

Qualifiers:

D Result is from a secondary dilution factor

References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
"Standard Methods for the Examination of Water and Wastewaters", (SM).
"American Society for Testing and Materials" (ASTM).
"Association of Analytical Chemists" (AOAC).

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

ANALYTICAL RESULTS

AIC No. 195545-1

Sample Identification: 006 23-Oct-2015 2000

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Total Dissolved Solids SM 2540 C 1997 Prep: 27-Oct-2015 1544 by 271	400 Analyzed: 28-Oct-2015 1559 by 271	10	mg/l Batch: W53720	
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 27-Oct-2015 0947 by 93	10 Analyzed: 27-Oct-2015 1911 by 93	1	mg/l Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765 Prep: 27-Oct-2015 1418 by 271	790 Analyzed: 28-Oct-2015 1204 by 271	20	mg/l Batch: W53718	
Oil and Grease EPA 1664A Prep: 28-Oct-2015 0837 by 280	< 5 Analyzed: 28-Oct-2015 1123 by 280	5	mg/l Batch: B9735	

AIC No. 195545-2

Sample Identification: 007 23-Oct-2015 2015

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Total Dissolved Solids SM 2540 C 1997 Prep: 27-Oct-2015 1544 by 271	520 Analyzed: 28-Oct-2015 1559 by 271	10	mg/l Batch: W53720	
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 27-Oct-2015 0947 by 93	6.6 Analyzed: 27-Oct-2015 1916 by 93	1	mg/l Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765 Prep: 27-Oct-2015 1418 by 271	110 Analyzed: 28-Oct-2015 1204 by 271	4	mg/l Batch: W53718	
Oil and Grease EPA 1664A Prep: 28-Oct-2015 0837 by 280	< 5 Analyzed: 28-Oct-2015 1123 by 280	5	mg/l Batch: B9735	

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

DUPLICATE RESULTS

Analyte	AIC No.	Result	RPD	RPD		Preparation Date	Analysis Date	Dil	Qual
				RPD	Limit				
Total Suspended Solids	195528-1	48 mg/l				27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718 Duplicate	48 mg/l	1.67	20.0		27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Suspended Solids	195533-3	94 mg/l				27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718 Duplicate	95 mg/l	0.847	20.0		27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Dissolved Solids	195575-1	440 mg/l				27Oct15 1544 by 271	28Oct15 1559 by 271		
	Batch: W53720 Duplicate	450 mg/l	1.78	10.0		27Oct15 1545 by 271	28Oct15 1559 by 271		
Total Dissolved Solids	195575-2	430 mg/l				27Oct15 1544 by 271	28Oct15 1559 by 271		
	Batch: W53720 Duplicate	420 mg/l	3.29	10.0		27Oct15 1545 by 271	28Oct15 1559 by 271		

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W53715	27Oct15 0948 by 93	27Oct15 1857 by 93		
Oil and Grease	40 mg/l	104	78.0-114			B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		
	40 mg/l	104	78.0-114	0.962	20.0	B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
Ammonia as N with Distillation	195542-1	1 mg/l	101	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1900 by 93			
	195542-1	1 mg/l	102	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1902 by 93			
Relative Percent Difference:				0.623	25.0	W53715				

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample	QC			
Total Dissolved Solids	< 10 mg/l	10	10	W53720-1		27Oct15 1545 by 271	28Oct15 1559 by 271	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53715-1		27Oct15 0948 by 93	27Oct15 1855 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W53718-1		27Oct15 1425 by 271	28Oct15 1204 by 271	
Oil and Grease	< 5 mg/l	5	5	B9735-1		28Oct15 0837 by 280	28Oct15 1123 by 280	

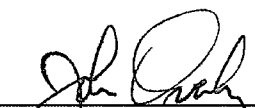


El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

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This report has been reviewed by the Laboratory Director or a qualified designee.



John Overbey
Laboratory Director

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dsartain@edc-ark.com

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ATTN: Mr. Eddie Pearson
epearson@edc-ark.com

El Dorado Chemical Company
ATTN: Ms. Vee Ann Poole
vapoole@edc-ark.com

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

SAMPLE INFORMATION

Project Description:

Four (4) water sample(s) received on October 26, 2015
006
P.O. No. 357042

Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Sampled Date/Time</u>	<u>Notes</u>
195543-1	006-1, -2, -3, -4	24-Oct-2015 1800	

Qualifiers:

D Result is from a secondary dilution factor

Case Narrative:

A proportional composite of four (4) samples was prepared.

References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
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El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

ANALYTICAL RESULTS

AIC No. 195543-1

Sample Identification: 006-1, -2, -3, -4 24-Oct-2015 1800

Analyte		Result	RL	Units	Qualifier
Zinc		1.2	0.004	mg/l	D
EPA 200.7	Prep: 27-Oct-2015 1047 by 235	Analyzed: 27-Oct-2015 1552 by 317		Batch: S39998	Dil: 2
Cadmium		1.3	0.2	ug/l	
EPA 200.8	Prep: 27-Oct-2015 1047 by 235	Analyzed: 27-Oct-2015 1532 by 235		Batch: S39998	
Lead		36	0.5	ug/l	
EPA 200.8	Prep: 27-Oct-2015 1047 by 235	Analyzed: 27-Oct-2015 1532 by 235		Batch: S39998	

El Dorado Chemical Company
 4500 North West Avenue
 El Dorado, AR 71730

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Cadmium	0.05 mg/l	103	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Lead	0.05 mg/l	101	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Zinc	0.05 mg/l	104	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Cadmium	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:		0.317	20.0	S39998				
Lead	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:		0.125	20.0	S39998				
Zinc	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	102	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:		1.36	20.0	S39998				

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Cadmium	< 0.0002 mg/l	0.0002	0.0002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	
Lead	< 0.0005 mg/l	0.0005	0.0005	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	
Zinc	< 0.002 mg/l	0.002	0.002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: <u>El Parado Chemical Company</u>			PO No.		NO OF BOTTLES	ANALYSES REQUESTED												AIC CONTROL NO: <u>195543</u>				
Project Reference: <u>006</u>			MATRIX			Cd, Pb, Zn													AIC PROPOSAL NO:			
Project Manager: <u>Eddie Pearson</u>			GRA	COMP	WATER		SOIL													Carrier: <u>RUSH</u>		
Sampled By: <u>Les Morgan</u>																		Received Temperature C <u>8.1</u>				
AIC No.	Sample Identification	Date/Time Collected	G	P	A	S													Remarks			
1	006-1	10/23/15 2000	X		X		1	X														
1	006-2	10/23/15 2200	X		X		1	X														
1	006-3	10/24/15 1100	X		X		1	X														
1	006-4	10/24/15 1800	X		X		1	X														
Container Type															Field pH calibration							
Preservative															on _____ @ _____							
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2			V = VOA vials N = Nitric acid pH2			H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate			A=(NH ₄) ₂ SO ₄ , NH ₄ OH							
Turnaround Time Requested: (Please circle) <u>NORMAL</u> or EXPEDITED IN _____ DAYS							Relinquished By: <u>Les Morgan</u>			Date/Time			Received By:			Date/Time						
Expedited results requested by: _____							Relinquished By:			Date/Time			Received in Lab By: <u>J. Bru</u>			Date/Time <u>10-26-15</u> <u>1450</u>						
Who should AIC contact with questions: Phone: _____ Fax: _____							Comments: <u>Please sample as follows: 006-1 equals 100.0%, 006-2 equals 64.74%, 006-3 equals 57.14%, 006-4 equals 28.57%</u>															
Report Attention to: Report Address to:																						
Email Address:																						


Please report as composite of 006

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

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John Overbey
Laboratory Director

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El Dorado Chemical Company
ATTN: Ms. Vee Ann Poole
vapoole@edc-ark.com

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

SAMPLE INFORMATION

Project Description:

Four (4) water sample(s) received on October 26, 2015
007
P.O. No. 357042

Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Sampled Date/Time</u>	<u>Notes</u>
195539-1	007-1, 2, 3, 4	24-Oct-2015 1815	

Case Narrative:

A proportional composite of four (4) samples was prepared.

References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
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El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

ANALYTICAL RESULTS

AIC No. 195539-1

Sample Identification: 007-1, 2, 3, 4 24-Oct-2015 1815

<u>Analyte</u>		<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Lead		2.4	0.5	ug/l	
EPA 200.8	Prep: 27-Oct-2015 1047 by 235	Analyzed: 27-Oct-2015 1526 by 235		Batch: S39998	
Zinc		83	2	ug/l	
EPA 200.8	Prep: 27-Oct-2015 1047 by 235	Analyzed: 27-Oct-2015 1526 by 235		Batch: S39998	

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Lead	0.05 mg/l	101	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		
Zinc	0.05 mg/l	104	85.0-115			S39998	27Oct15 1048 by 235	27Oct15 1336 by 235		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Lead	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:		0.125	20.0	S39998				
Zinc	195445-1	0.05 mg/l	100	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1342 by 235		
	195445-1	0.05 mg/l	102	75.0-125	S39998	27Oct15 1048 by 235	27Oct15 1347 by 235		
	Relative Percent Difference:		1.36	20.0	S39998				

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Lead	< 0.0005 mg/l	0.0005	0.0005	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	
Zinc	< 0.002 mg/l	0.002	0.002	S39998-1	27Oct15 1048 by 235	27Oct15 1321 by 235	

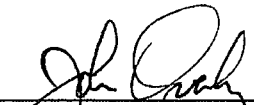


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John Overbey
Laboratory Director

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ATTN: Ms. Vee Ann Poole
vapoole@edc-ark.com



El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

SAMPLE INFORMATION

Project Description:

Two (2) water sample(s) received on October 26, 2015
AR0000752
006/007 Stormwater Outfall
P.O. No. 357042

Receipt Details:

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.

Each sample container was checked for proper labeling, including date and time sampled. Sample containers were reviewed for proper type, adequate volume, integrity, temperature, preservation, and holding times. Any exceptions are noted below:

Sample Identification:

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Sampled Date/Time</u>	<u>Notes</u>
195547-1	Outfall 006	26-Oct-2015 0815	
195547-2	Outfall 007	26-Oct-2015 0830	

Qualifiers:

D Result is from a secondary dilution factor

References:

"Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79-020 (Mar 1983) with updates and supplements EPA/600/5-91-010 (Jun 1991), EPA/600/R-92-129 (Aug 1992) and EPA/600/R-93-100 (Aug 1993).
"Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)", Third Edition.
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"Association of Analytical Chemists" (AOAC).

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

ANALYTICAL RESULTS

AIC No. 195547-1

Sample Identification: Outfall 006 26-Oct-2015 0815

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 27-Oct-2015 0947 by 93	12 Analyzed: 27-Oct-2015 1919 by 93	0.1	mg/l Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765 Prep: 27-Oct-2015 1418 by 271	320 Analyzed: 28-Oct-2015 1204 by 271	10	mg/l Batch: W53718	
Oil and Grease EPA 1664A Prep: 28-Oct-2015 0837 by 280	< 5 Analyzed: 28-Oct-2015 1123 by 280	5	mg/l Batch: B9735	

AIC No. 195547-2

Sample Identification: Outfall 007 26-Oct-2015 0830

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
Ammonia as N with Distillation SM 4500-NH3 B,G 1997 Prep: 27-Oct-2015 0947 by 93	11 Analyzed: 27-Oct-2015 1921 by 93	0.1	mg/l Batch: W53715	D Dil: 10
Total Suspended Solids USGS 3765 Prep: 27-Oct-2015 1418 by 271	14 Analyzed: 28-Oct-2015 1204 by 271	4	mg/l Batch: W53718	
Oil and Grease EPA 1664A Prep: 28-Oct-2015 0837 by 280	< 5 Analyzed: 28-Oct-2015 1123 by 280	5	mg/l Batch: B9735	

El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

DUPLICATE RESULTS

Analyte	AIC No.	Result	RPD	RPD		Preparation Date	Analysis Date	Dil	Qual
				Limit					
Total Suspended Solids	195528-1	48 mg/l				27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718 Duplicate	48 mg/l	1.67	20.0		27Oct15 1425 by 271	28Oct15 1204 by 271		
Total Suspended Solids	195533-3	94 mg/l				27Oct15 1418 by 271	28Oct15 1204 by 271		
	Batch: W53718 Duplicate	95 mg/l	0.847	20.0		27Oct15 1425 by 271	28Oct15 1204 by 271		

LABORATORY CONTROL SAMPLE RESULTS

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	1 mg/l	111	80.0-120			W53715	27Oct15 0948 by 93	27Oct15 1857 by 93		
Oil and Grease	40 mg/l	104	78.0-114			B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		
	40 mg/l	104	78.0-114	0.962	20.0	B9735	28Oct15 0837 by 280	28Oct15 1123 by 280		

MATRIX SPIKE SAMPLE RESULTS

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	195542-1	1 mg/l	101	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1900 by 93		
	195542-1	1 mg/l	102	80.0-120	W53715	27Oct15 0948 by 93	27Oct15 1902 by 93		
Relative Percent Difference:			0.623	25.0	W53715				

LABORATORY BLANK RESULTS

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W53715-1	27Oct15 0948 by 93	27Oct15 1855 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W53718-1	27Oct15 1425 by 271	28Oct15 1204 by 271	
Oil and Grease	< 5 mg/l	5	5	B9735-1	28Oct15 0837 by 280	28Oct15 1123 by 280	

ORIGIN ID:ELDA (870) 863-1400
EDDIE PEARSON
ELDORADO CHEMICAL COMPANY
4500 NORTH WEST AVE

SHIP DATE: 19NOV15
ACTWGT: 4.00 LB
CAD: 5887030/INET3670

ELDORADO, AR 71730
UNITED STATES US

BILL SENDER

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

539J23F5631D0

NORTH LITTLE ROCK AR 72118

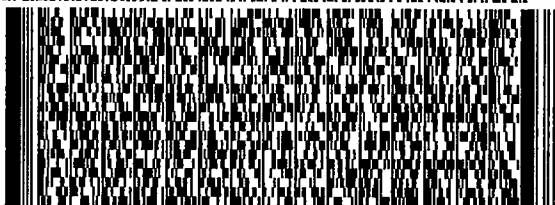
(501) 682-0744

REF:

INV:

PO:

DEPT:



11201150110140

TRK#
0201

7750 1876 1456

FRI - 20 NOV 9:00A
FIRST OVERNIGHT

X1 LITA

72118

AR-US

LIT



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.