



CHEMICAL COMPANY

December 19, 2013

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 November 30, 2013.

Enclosed you will find the Discharge Monitoring Reports ending November 30, 2013. The DMR's for Outfall 010-A were entered on the blank DMR forms provided by Amy Schluterman, ADEQ Water Enforcement.

If you have any questions regarding this report, please contact Larken Pennington at (870) 863-1125.

Sincerely,

A handwritten signature in cursive script that reads "Gregory Withrow".

Greg Withrow  
General Manager

Enclosures

## NON-COMPLIANCE REPORT

**Facility Name:** El Dorado Chemical Company

**Permit Number:** AR0000752

**AFIN:**

70-00040

**Month / Year:** Nov-13

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 001 / TDS Monthly Average (250.0 mg/L)	237.0 mg/L Monthly Average	11/13/2013	Unknown	
Outfall 002 / NH3-N Monthly Average (16.2 mg/L)	12 mg/L Monthly Average	11/22/2013	Heavy rainfall in a short period of time caused Outfall 002 to discharge.	Discharges from Outfall 002 consist of an overflow from the stabilization/pretreatment basin within the wastewater treatment process during periods of excessive rainfall. The background concentrations from the creek upstream of Outfall 002 could have influenced the results.
Outfall 002 / Lead Monthly Average and Daily Max (23.8 ug/L)	3.8 ug/L Monthly Average / 7.82 ug/L Daily Max	11/22/2013	Heavy rainfall in a short period of time caused Outfall 002 to discharge.	Discharges from Outfall 002 consist of an overflow from the stabilization/pretreatment basin within the wastewater treatment process during periods of excessive rainfall. The background concentrations from the creek upstream of Outfall 002 could have influenced the results.
Outfall 002 / Copper Monthly Average (24.4 ug/L)	12.2 ug/L Monthly Average	11/22/2013	Heavy rainfall in a short period of time caused Outfall 002 to discharge.	Discharges from Outfall 002 consist of an overflow from the stabilization/pretreatment basin within the wastewater treatment process during periods of excessive rainfall. The background concentrations from the creek upstream of Outfall 002 could have influenced the results.
<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><i>Sheryl Withrow</i> 12/18/13</p>	
			Signature / Date	



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

**ANALYTICAL RESULTS**

**AIC No. 172116-1**  
**Sample Identification: 010 10/31-13 955 - 11-1-13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>1.8</b>	<b>0.1</b>	<b>mg/l</b>	
Prep: 04-Nov-2013 0925 by 93	Analyzed: 05-Nov-2013 1818 by 93		Batch: W45492	
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>&lt; 2</b>	<b>2</b>	<b>mg/l</b>	
Prep: 01-Nov-2013 1514 by 285	Analyzed: 06-Nov-2013 1039 by 285		Batch: W45468	
<b>Total Suspended Solids</b> USGS 3765	<b>14</b>	<b>4</b>	<b>mg/l</b>	
Prep: 05-Nov-2013 1306 by 285	Analyzed: 06-Nov-2013 0834 by 285		Batch: W45515	
<b>Phosphorus</b> EPA 200.7	<b>0.12</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 04-Nov-2013 1022 by 271	Analyzed: 05-Nov-2013 1743 by 305		Batch: S35706	
<b>Nitrate as N</b> EPA 300.0	<b>12</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 01-Nov-2013 1555 by 07	Analyzed: 01-Nov-2013 2037 by 07		Batch: C16174	Dil: 10

**AIC No. 172116-2**  
**Sample Identification: 010 10/31-13 955 - 11-1-13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 01-Nov-2013 1513 by 295		Batch: M4089	

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 El Dorado, AR 71730

**DUPLICATE RESULTS**

Analyte	AIC No.	Result	RPD	RPD	Preparation Date	Analysis Date	Dil	Qual
				Limit				
Carbonaceous BOD 5-day	172073-2	< 2 mg/l	0.00	20.0	01Nov13 0809 by 285	06Nov13 1005 by 285		
	Batch: W45468 Duplicate	< 2 mg/l			01Nov13 0809 by 285	06Nov13 1007 by 285		
Total Suspended Solids	172080-1	< 4 mg/l	0.00	20.0	05Nov13 1306 by 285	06Nov13 0834 by 285		
	Batch: W45515 Duplicate	< 4 mg/l			05Nov13 1306 by 285	06Nov13 0834 by 285		
Total Suspended Solids	172083-1	5.2 mg/l	7.41	20.0	05Nov13 1306 by 285	06Nov13 0834 by 285		
	Batch: W45515 Duplicate	5.6 mg/l			05Nov13 1306 by 285	06Nov13 0834 by 285		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike		Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
	Amount	%								
Ammonia as N with Distillation	1 mg/l	99.1	80.0-120			W45492	04Nov13 0925 by 93	05Nov13 1809 by 93		
Carbonaceous BOD 5-day	200 mg/l	85.1	84.5-115			W45468	01Nov13 0809 by 285	06Nov13 1004 by 285		
Phosphorus	5 mg/l	103	85.0-115			S35706	04Nov13 1022 by 271	05Nov13 1731 by 305		
Nitrate as N	4 mg/l	97.5	90.0-110			C16174	01Nov13 1107 by 07	01Nov13 1143 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
		Amount	%							
Ammonia as N with Distillation	172121-1	1 mg/l	99.4	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1813 by 93			
	172121-1	1 mg/l	89.0	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1814 by 93			
	Relative Percent Difference:			7.91	25.0	W45492				
Phosphorus	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1735 by 305			
	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1739 by 305			
	Relative Percent Difference:			0.00	20.0	S35706				
Nitrate as N	172074-1	4 mg/l	101	80.0-120	C16174	01Nov13 1107 by 07	01Nov13 1210 by 07			
	172074-1	4 mg/l	99.6	80.0-120	C16174	01Nov13 1107 by 07	01Nov13 1237 by 07			
	Relative Percent Difference:			1.20	10.0	C16174				

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC			Qual
				Sample	Preparation Date	Analysis Date	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45492-1	04Nov13 0925 by 93	05Nov13 1807 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45468-1	01Nov13 0809 by 285	06Nov13 1003 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45515-1	05Nov13 1306 by 285	06Nov13 0834 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35706-1	04Nov13 1022 by 271	05Nov13 1728 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16174-1	01Nov13 1107 by 07	01Nov13 1116 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4089-1		01Nov13 1513 by 295	





CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 17216		
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus										
Project Manager: Ms. Larken Pennington			W	A	S													Carrier: Gold Star
Sampled By: Larken Pennington			G	R	A													Received Temperature C
AIC No.	Sample Identification	Date/Time Collected	P	O	M	E	R											Remarks
1	010	10/31/13-11/14/13 955-955		X		X												
2	010	11/1/13 955	X			X				X								
1	010	10/31/13-11/1/13 955-955		X		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) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: Larken Pennington			Date/Time: 11/1/13 1200			Received By:			Date/Time:				
Expedited results requested by: _____					Relinquished By:			Date/Time:			Received in Lab By: Larken Pennington			Date/Time: 11-1-13 1330				
Who should AIC contact with questions: Phone 870-312-1752 Fax: Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com					Comments:													

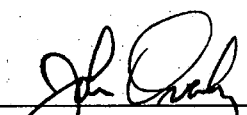


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 1, 2013. 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.



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John Overbey  
Laboratory Director

This document has been distributed to the following:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
ATTN: Mr. David Sartain  
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GBMc & Associates, Inc.  
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agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 1, 2013  
Daily - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172116-1	010 10/31-13 955 - 11-1-13 955	01-Nov-2013 0955	
172116-2	010 10/31-13 955 - 11-1-13 955	01-Nov-2013 0955	

**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", 21st edition.
- "American Society for Testing and Materials" (ASTM).
- "Association of Analytical Chemists" (AOAC).



El Dorado Chemical Company  
4500 North West Avenue  
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**ANALYTICAL RESULTS**

**AIC No. 172145-1**

**Sample Identification: 010 11/1/13 955 11/2/13 955**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>3.2</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 04-Nov-2013 0925 by 93	Analyzed: 05-Nov-2013 1950 by 93		Batch: W45492	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>2.2</b>	<b>2</b>	<b>mg/l</b>	
Prep: 03-Nov-2013 1600 by 285	Analyzed: 08-Nov-2013 0859 by 285		Batch: W45491	
<b>Total Suspended Solids</b> USGS 3765	<b>18</b>	<b>4</b>	<b>mg/l</b>	
Prep: 05-Nov-2013 1554 by 285	Analyzed: 06-Nov-2013 1224 by 285		Batch: W45521	
<b>Phosphorus</b> EPA 200.7	<b>0.14</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 04-Nov-2013 1022 by 271	Analyzed: 05-Nov-2013 2028 by 305		Batch: S35706	

**AIC No. 172145-2**

**Sample Identification: 010 11/2/13 955**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 02-Nov-2013 1300 by 295		Batch: M4090	



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
Carbonaceous BOD 5-day	172147-1	3.7 mg/l			03Nov13 1600 by 285	08Nov13 0851 by 285		
	Batch: W45491 Duplicate	3.5 mg/l	4.72	20.0	03Nov13 1600 by 285	08Nov13 0853 by 285		
Total Suspended Solids	172120-1	< 4 mg/l			05Nov13 1554 by 285	06Nov13 1224 by 285		
	Batch: W45521 Duplicate	< 4 mg/l	0.00	20.0	05Nov13 1555 by 285	06Nov13 1224 by 285		
Total Suspended Solids	172121-1	13 mg/l			05Nov13 1554 by 285	06Nov13 1224 by 285		
	Batch: W45521 Duplicate	12 mg/l	9.84	20.0	05Nov13 1555 by 285	06Nov13 1224 by 285		

**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	99.1	80.0-120			W45492	04Nov13 0925 by 93	05Nov13 1809 by 93		
Carbonaceous BOD 5-day	200 mg/l	94.4	84.5-115			W45491	03Nov13 1600 by 285	08Nov13 0850 by 285		
Phosphorus	5 mg/l	103	85.0-115			S35706	04Nov13 1022 by 271	05Nov13 1731 by 305		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172121-1	1 mg/l	99.4	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1813 by 93		
	172121-1	1 mg/l	89.0	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1814 by 93		
	Relative Percent Difference:			7.91	25.0	W45492			
Phosphorus	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1735 by 305		
	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1739 by 305		
	Relative Percent Difference:			0.00	20.0	S35706			

**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	W45492-1	04Nov13 0925 by 93	05Nov13 1807 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45491-1	03Nov13 1600 by 285	08Nov13 0849 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45521-1	05Nov13 1555 by 285	06Nov13 1224 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35706-1	04Nov13 1022 by 271	05Nov13 1728 by 305	
Fecal Coliform	< 1 /100ml	1	1	M4090-1		02Nov13 1300 by 295	



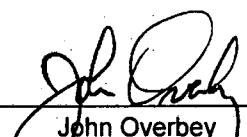


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 2, 2013. 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

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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 2, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with shipping documentation.

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>
172145-1	010 11/1/13 955 11/2/13 955	02-Nov-2013 0955	
172145-2	010 11/2/13 955	02-Nov-2013 0955	

**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", 21st edition.
- "American Society for Testing and Materials" (ASTM).
- "Association of Analytical Chemists" (AOAC).





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 4500 North West Avenue  
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**ANALYTICAL RESULTS**

**AIC No. 172166-1**

**Sample Identification: 010 11/3/13 955 - 11/4/13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>4.2</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 05-Nov-2013 1004 by 93	Analyzed: 05-Nov-2013 1953 by 93		Batch: W45512	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>2.1</b>	<b>2</b>	<b>mg/l</b>	
Prep: 06-Nov-2013 0811 by 285	Analyzed: 11-Nov-2013 1051 by 285		Batch: W45526	
<b>Total Suspended Solids</b> USGS 3765	<b>19</b>	<b>4</b>	<b>mg/l</b>	
Prep: 06-Nov-2013 1349 by 285	Analyzed: 07-Nov-2013 1144 by 285		Batch: W45533	
<b>Phosphorus</b> EPA 200.7	<b>0.16</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 05-Nov-2013 1013 by 271	Analyzed: 06-Nov-2013 1520 by 305		Batch: S35716	
<b>Nitrate as N</b> EPA 300.0	<b>17</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 04-Nov-2013 1535 by 07	Analyzed: 04-Nov-2013 1808 by 07		Batch: C16180	Dil: 10

**AIC No. 172166-2**

**Sample Identification: 010 11/4/13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>36</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 04-Nov-2013 1545 by 21		Batch: M4092	

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					
Carbonaceous BOD 5-day	172166-1	2.1 mg/l				06Nov13 0811 by 285	11Nov13 1051 by 285		
	Batch: W45526 Duplicate	2.2 mg/l	4.69	20.0		06Nov13 0811 by 285	11Nov13 1052 by 285		
Total Suspended Solids	172164-1	8.8 mg/l				06Nov13 1349 by 285	07Nov13 1144 by 285		
	Batch: W45533 Duplicate	8.0 mg/l	9.52	20.0		06Nov13 1350 by 285	07Nov13 1144 by 285		
Total Suspended Solids	172149-2	42 mg/l				06Nov13 1349 by 285	07Nov13 1144 by 285		
	Batch: W45533 Duplicate	45 mg/l	6.45	20.0		06Nov13 1350 by 285	07Nov13 1144 by 285		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike		Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
	Amount	%								
Ammonia as N with Distillation	1 mg/l	92.0	80.0-120			W45512	05Nov13 1005 by 93	05Nov13 1855 by 93		
Carbonaceous BOD 5-day	200 mg/l	104	84.5-115			W45526	06Nov13 0811 by 285	11Nov13 1049 by 285		
Phosphorus	5 mg/l	105	85.0-115			S35716	05Nov13 1013 by 271	06Nov13 1506 by 305		
Nitrate as N	4 mg/l	98.3	90.0-110			C16180	04Nov13 1535 by 07	04Nov13 1614 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Ammonia as N with Distillation	172166-1	1 mg/l	-	80.0-120	W45512	05Nov13 1005 by 93	05Nov13 1954 by 93	5	X
	172166-1	1 mg/l	-	80.0-120	W45512	05Nov13 1005 by 93	05Nov13 1956 by 93	5	X
	Relative Percent Difference:			8.00	25.0	W45512			
Phosphorus	172167-1	5 mg/l	105	75.0-125	S35716	05Nov13 1013 by 271	06Nov13 1509 by 305		
	172167-1	5 mg/l	104	75.0-125	S35716	05Nov13 1013 by 271	06Nov13 1513 by 305		
	Relative Percent Difference:			0.381	20.0	S35716			
Nitrate as N	172166-1	4 mg/l	104	80.0-120	C16180	04Nov13 1535 by 07	04Nov13 1657 by 07		
	172166-1	4 mg/l	107	80.0-120	C16180	04Nov13 1535 by 07	04Nov13 1741 by 07		
	Relative Percent Difference:			1.85	10.0	C16180			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample				
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45512-1		05Nov13 1005 by 93	05Nov13 1853 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45526-1		06Nov13 0811 by 285	11Nov13 1048 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45533-1		06Nov13 1350 by 285	07Nov13 1144 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35716-1		05Nov13 1013 by 271	06Nov13 1503 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16180-1		04Nov13 1535 by 07	04Nov13 1547 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4092-1			04Nov13 1546 by 295	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172136		
Project: Daily			MATRIX			1	X	1	X	1	X	1	X	1	X	1	X	AIC PROPOSAL NO:
Reference: Weekly - Permit AR0000752					Carrier: Gold Star													
Project Manager: Ms. Larken Pennington					1		1		1		1		1		1		Received Temperature C 0.4	
Sampled By: Larken Pennington					1		1		1		1		1		1		Remarks	
AIC No.	Sample Identification	Date/Time Collected	GRA B	COMP	WATER	SOIL												
	<del>010</del>	<del>11</del>	X		X													
	<del>010</del>	<del>11</del>	X		X													
1	010	11/3/13-11/4/13 955-955		X	X													
2	010	11/4/13 955 am	X		X													
1	010	11/3/13-11/4/13 955-955		X	X													
Container Type								P	P	P	P	P						Field pH calibration on _____ @ _____
Preservative								S	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) NORMAL or EXPEDITED IN _____ DAYS Expedited results requested by: _____ Who should AIC contact with questions: Phone 870-312-1752 Fax: Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com							Relinquished By: Larken Pennington		Date/Time: 11/4/13 10:30 am		Received By:		Date/Time:					
							Relinquished By:		Date/Time:		Received in Lab By: Larken Pennington		Date/Time: 11-4-13 1400					
Comments:																		

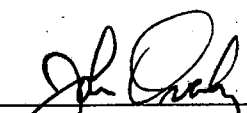


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 4, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
ATTN: Mr. David Sartain  
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GBMc & Associates, Inc.  
ATTN: Mr. Russell McLaren  
rmclaren@gbmcassoc.com

GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 4, 2013  
Daily - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172166-1	010 11/3/13 955 - 11/4/13 955	04-Nov-2013 0955	
172166-2	010 11/4/13 955	04-Nov-2013 0955	

**Qualifiers:**

- D Result is from a secondary dilution factor
- X Spiking level is invalid due to the high concentration of analyte in the spiked sample

**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", 21st edition.  
"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. 172146-1

Sample Identification: 010 11/2/13 955 - 11/3/13 955

Analyte	Result	RL	Units	Qualifier
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>4.0</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 04-Nov-2013 0925 by 93	Analyzed: 05-Nov-2013 1951 by 93		Batch: W45492	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>3.1</b>	<b>2</b>	<b>mg/l</b>	
Prep: 04-Nov-2013 1503 by 285	Analyzed: 09-Nov-2013 1347 by 285		Batch: W45500	
<b>Total Suspended Solids</b> USGS 3765	<b>16</b>	<b>4</b>	<b>mg/l</b>	
Prep: 05-Nov-2013 1554 by 285	Analyzed: 06-Nov-2013 1224 by 285		Batch: W45521	
<b>Phosphorus</b> EPA 200.7	<b>0.12</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 04-Nov-2013 1022 by 271	Analyzed: 05-Nov-2013 2032 by 305		Batch: S35706	

AIC No. 172146-2

Sample Identification: 010 11/3/13 955

Analyte	Result	RL	Units	Qualifier
<b>Fecal Coliform</b> SM 9222 D 1997	<b>86</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 03-Nov-2013 1400 by 295		Batch: M4091	



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
Carbonaceous BOD 5-day	172139-1	24 mg/l			04Nov13 1503 by 285	09Nov13 1337 by 285		
	Batch: W45500 Duplicate	23 mg/l	2.28	20.0	04Nov13 1503 by 285	09Nov13 1338 by 285		
Total Suspended Solids	172120-1	< 4 mg/l			05Nov13 1554 by 285	06Nov13 1224 by 285		
	Batch: W45521 Duplicate	< 4 mg/l	0.00	20.0	05Nov13 1555 by 285	06Nov13 1224 by 285		
Total Suspended Solids	172121-1	13 mg/l			05Nov13 1554 by 285	06Nov13 1224 by 285		
	Batch: W45521 Duplicate	12 mg/l	9.84	20.0	05Nov13 1555 by 285	06Nov13 1224 by 285		

**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	99.1	80.0-120			W45492	04Nov13 0925 by 93	05Nov13 1809 by 93		
Carbonaceous BOD 5-day	200 mg/l	112	84.5-115			W45500	04Nov13 1503 by 285	09Nov13 1355 by 285		
Phosphorus	5 mg/l	103	85.0-115			S35706	04Nov13 1022 by 271	05Nov13 1731 by 305		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172121-1	1 mg/l	99.4	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1813 by 93		
	172121-1	1 mg/l	89.0	80.0-120	W45492	04Nov13 0925 by 93	05Nov13 1814 by 93		
	Relative Percent Difference:			7.91	25.0	W45492			
Phosphorus	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1735 by 305		
	172116-1	5 mg/l	102	75.0-125	S35706	04Nov13 1022 by 271	05Nov13 1739 by 305		
	Relative Percent Difference:			0.00	20.0	S35706			

**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	W45492-1	04Nov13 0925 by 93	05Nov13 1807 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45500-1	04Nov13 1503 by 285	09Nov13 1334 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45521-1	05Nov13 1555 by 285	06Nov13 1224 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35706-1	04Nov13 1022 by 271	05Nov13 1728 by 305	
Fecal Coliform	< 1 /100ml	1	1	M4091-1		03Nov13 1400 by 295	







El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 3, 2013. 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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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 3, 2013  
Daily - 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>
172146-1	010 11/2/13 955 - 11/3/13 955	03-Nov-2013 0955	
172146-2	010 11/3/13 955	03-Nov-2013 0955	

**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", 21st edition.  
"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. 172205-1**

**Sample Identification: 010 11/4/13 955 - 11/5/13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997 Prep: 05-Nov-2013 1505 by 93	<b>4.4</b> Analyzed: 05-Nov-2013 1958 by 93	<b>0.5</b>	<b>mg/l</b> Batch: W45512	<b>D</b> Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001 Prep: 06-Nov-2013 0811 by 285	<b>2.5</b> Analyzed: 11-Nov-2013 1110 by 285	<b>2</b>	<b>mg/l</b> Batch: W45526	
<b>Total Suspended Solids</b> USGS 3765 Prep: 06-Nov-2013 1349 by 285	<b>18</b> Analyzed: 07-Nov-2013 1144 by 285	<b>4</b>	<b>mg/l</b> Batch: W45533	
<b>Phosphorus</b> EPA 200.7 Prep: 05-Nov-2013 1408 by 271	<b>0.14</b> Analyzed: 06-Nov-2013 1614 by 305	<b>0.02</b>	<b>mg/l</b> Batch: S35716	

**AIC No. 172205-2**

**Sample Identification: 010 11/5/13 955**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Total Dissolved Solids</b> SM 2540 C 1997 Prep: 05-Nov-2013 1439 by 302	<b>260</b> Analyzed: 06-Nov-2013 1619 by 302	<b>10</b>	<b>mg/l</b> Batch: W45519	
<b>Chloride</b> EPA 300.0 Prep: 05-Nov-2013 1623 by 07	<b>20</b> Analyzed: 05-Nov-2013 2029 by 07	<b>0.2</b>	<b>mg/l</b> Batch: C16186	
<b>Sulfate</b> EPA 300.0 Prep: 05-Nov-2013 1623 by 07	<b>32</b> Analyzed: 05-Nov-2013 2029 by 07	<b>0.2</b>	<b>mg/l</b> Batch: C16186	
<b>Oil and Grease</b> EPA 1664A Prep: 06-Nov-2013 1350 by 295	<b>&lt; 5</b> Analyzed: 06-Nov-2013 1632 by 295	<b>5</b>	<b>mg/l</b> Batch: B8636	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>13</b> Analyzed: 05-Nov-2013 1336 by 21	<b>1</b>	<b>/100ml</b> Batch: M4099	

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 Dissolved Solids	172204-2	270 mg/l	0.730	10.0		05Nov13 1439 by 302	06Nov13 1619 by 302		
	Batch: W45519 Duplicate	280 mg/l				05Nov13 1440 by 302	06Nov13 1619 by 302		
Carbonaceous BOD 5-day	172166-1	2.1 mg/l	4.69	20.0		06Nov13 0811 by 285	11Nov13 1051 by 285		
	Batch: W45526 Duplicate	2.2 mg/l				06Nov13 0811 by 285	11Nov13 1052 by 285		
Total Suspended Solids	172164-1	8.8 mg/l	9.52	20.0		06Nov13 1349 by 285	07Nov13 1144 by 285		
	Batch: W45533 Duplicate	8.0 mg/l				06Nov13 1350 by 285	07Nov13 1144 by 285		
Total Suspended Solids	172149-2	42 mg/l	6.45	20.0		06Nov13 1349 by 285	07Nov13 1144 by 285		
	Batch: W45533 Duplicate	45 mg/l				06Nov13 1350 by 285	07Nov13 1144 by 285		

**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	92.0	80.0-120			W45512	05Nov13 1005 by 93	05Nov13 1855 by 93		
Carbonaceous BOD 5-day	200 mg/l	104	84.5-115			W45526	06Nov13 0811 by 285	11Nov13 1049 by 285		
Phosphorus	5 mg/l	105	85.0-115			S35716	05Nov13 1013 by 271	06Nov13 1506 by 305		
Chloride	20 mg/l	98.4	90.0-110			C16186	05Nov13 1334 by 07	05Nov13 1654 by 07		
Sulfate	20 mg/l	103	90.0-110			C16186	05Nov13 1334 by 07	05Nov13 1654 by 07		
Oil and Grease	40 mg/l	96.5	78.0-114	5.32	20.0	B8636	06Nov13 1350 by 295	06Nov13 1632 by 295		
	40 mg/l	91.5	78.0-114			B8636	06Nov13 1350 by 295	06Nov13 1632 by 295		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172166-1	1 mg/l	-	80.0-120	W45512	05Nov13 1005 by 93	05Nov13 1954 by 93	5	X
	172166-1	1 mg/l	-	80.0-120	W45512	05Nov13 1005 by 93	05Nov13 1956 by 93	5	X
	Relative Percent Difference:		8.00	25.0	W45512				
Phosphorus	172167-1	5 mg/l	105	75.0-125	S35716	05Nov13 1013 by 271	06Nov13 1509 by 305		
	172167-1	5 mg/l	104	75.0-125	S35716	05Nov13 1013 by 271	06Nov13 1513 by 305		
	Relative Percent Difference:		0.381	20.0	S35716				
Chloride	172180-1	20 mg/l	101	80.0-120	C16186	05Nov13 1334 by 07	05Nov13 1721 by 07		
	172180-1	20 mg/l	99.9	80.0-120	C16186	05Nov13 1334 by 07	05Nov13 1748 by 07		
	Relative Percent Difference:		0.839	10.0	C16186				
Sulfate	172180-1	20 mg/l	104	80.0-120	C16186	05Nov13 1334 by 07	05Nov13 1721 by 07		
	172180-1	20 mg/l	104	80.0-120	C16186	05Nov13 1334 by 07	05Nov13 1748 by 07		
	Relative Percent Difference:		0.0264	10.0	C16186				



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

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Total Dissolved Solids	< 10 mg/l	10	10	W45519-1	05Nov13 1440 by 302	06Nov13 1619 by 302	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45512-1	05Nov13 1005 by 93	05Nov13 1853 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45526-1	06Nov13 0811 by 285	11Nov13 1048 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45533-1	06Nov13 1350 by 285	07Nov13 1144 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35716-1	05Nov13 1013 by 271	06Nov13 1503 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16186-1	05Nov13 1334 by 07	05Nov13 1627 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16186-1	05Nov13 1334 by 07	05Nov13 1627 by 07	
Oil and Grease	< 2 mg/l	2	5	B8636-1	06Nov13 1350 by 295	06Nov13 1632 by 295	
Fecal Coliform	< 1 /100ml	1	1	M4099-1		05Nov13 1336 by 295	





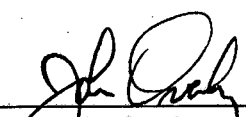


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 5, 2013. 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

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agallagher@gbmcassoc.com





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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 5, 2013  
Daily / Weekly - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172205-1	010 11/4/13 955 - 11/5/13 955	05-Nov-2013 0955	
172205-2	010 11/5/13 955	05-Nov-2013 0955	

**Qualifiers:**

- D Result is from a secondary dilution factor
- X Spiking level is invalid due to the high concentration of analyte in the spiked sample

**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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- "American Society for Testing and Materials" (ASTM).
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El Dorado Chemical Company  
 4500 North West Avenue  
 El Dorado, AR 71730

**ANALYTICAL RESULTS**

**AIC No. 172264-1**

**Sample Identification:** Outfall 010 11/5/13 955 11/6/13 955

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>4.2</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 07-Nov-2013 0911 by 93	Analyzed: 08-Nov-2013 1137 by 93		Batch: W45548	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>2.2</b>	<b>2</b>	<b>mg/l</b>	
Prep: 07-Nov-2013 0910 by 285	Analyzed: 12-Nov-2013 1119 by 285		Batch: W45547	
<b>Total Suspended Solids</b> USGS 3765	<b>14</b>	<b>4</b>	<b>mg/l</b>	
Prep: 08-Nov-2013 1052 by 308	Analyzed: 08-Nov-2013 1603 by 308		Batch: W45570	
<b>Phosphorus</b> EPA 200.7	<b>0.15</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 07-Nov-2013 1013 by 311	Analyzed: 07-Nov-2013 1849 by 305		Batch: S35732	
<b>Nitrate as N</b> EPA 300.0	<b>16</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 06-Nov-2013 1650 by 302	Analyzed: 06-Nov-2013 1928 by 302		Batch: C16190	Dil: 10

**AIC No. 172264-2**

**Sample Identification:** Outfall 010 11/6/13 955

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>9.0</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 06-Nov-2013 1430 by 21		Batch: M4103	



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
Carbonaceous BOD 5-day	172264-1	2.2 mg/l			07Nov13 0910 by 285	12Nov13 1119 by 285		
	Batch: W45547 Duplicate	2.0 mg/l	5.71	20.0	07Nov13 0910 by 285	12Nov13 1120 by 285		
Total Suspended Solids	172265-1	7.2 mg/l			08Nov13 1052 by 308	08Nov13 1603 by 308		
	Batch: W45570 Duplicate	6.0 mg/l	18.2	20.0	08Nov13 1052 by 308	08Nov13 1603 by 308		
Total Suspended Solids	172266-1	< 4 mg/l			08Nov13 1052 by 308	08Nov13 1603 by 308		
	Batch: W45570 Duplicate	< 4 mg/l	0.00	20.0	08Nov13 1052 by 308	08Nov13 1603 by 308		

**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	98.4	80.0-120			W45548	07Nov13 0913 by 93	08Nov13 1038 by 93		
Carbonaceous BOD 5-day	200 mg/l	103	84.5-115			W45547	07Nov13 0910 by 285	12Nov13 1117 by 285		
Phosphorus	5 mg/l	107	85.0-115			S35732	07Nov13 1013 by 311	07Nov13 1804 by 305		
Nitrate as N	4 mg/l	98.6	90.0-110			C16190	06Nov13 0937 by 07	06Nov13 1032 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172264-1	1 mg/l	116	80.0-120	W45548	07Nov13 0913 by 93	08Nov13 1139 by 93	5	D
	172264-1	1 mg/l	96.1	80.0-120	W45548	07Nov13 0913 by 93	08Nov13 1140 by 93	5	D
	Relative Percent Difference:			3.73	25.0	W45548			
Phosphorus	172265-1	5 mg/l	107	75.0-125	S35732	07Nov13 1013 by 311	07Nov13 1807 by 305		
	172265-1	5 mg/l	107	75.0-125	S35732	07Nov13 1013 by 311	07Nov13 1811 by 305		
	Relative Percent Difference:			0.137	20.0	S35732			
Nitrate as N	172216-1	4 mg/l	97.1	80.0-120	C16190	06Nov13 0937 by 07	06Nov13 1059 by 07		
	172216-1	4 mg/l	96.2	80.0-120	C16190	06Nov13 0937 by 07	06Nov13 1125 by 07		
	Relative Percent Difference:			1.01	10.0	C16190			

**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	W45548-1	07Nov13 0913 by 93	08Nov13 1036 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45547-1	07Nov13 0910 by 285	12Nov13 1116 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45570-1	08Nov13 1052 by 308	08Nov13 1603 by 308	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35732-1	07Nov13 1013 by 311	07Nov13 1800 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16190-1	06Nov13 0937 by 07	06Nov13 1005 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4103-1		06Nov13 1430 by 295	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172264				
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphoru											AIC PROPOSAL NO:	
Project Manager: Ms. Larken Pennington			W	S																
Sampled By: Larken Pennington			G	C	A	S												Received Temperature C 1.2		
AIC No.	Sample Identification	Date/Time Collected	R	O	T	E	R											Remarks		
①	010	11/5/13-11/6/13 955-955		X	X				1	X									DO AS, outfall 010	
②	010	11/6/13 955	X		X				1		X								↓ ↓ ↓	
①	010	11/5/13-11/6/13 955-955		X	X				1			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) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: Larken Pennington			Date/Time: 11/6/13 10:00			Received By:			Date/Time:						
Expedited results requested by: _____					Relinquished By:			Date/Time:			Received in Lab By: [Signature]			Date/Time: 11/6/13 1315						
Who should AIC contact with questions: Phone 870-312-1752 Fax:					Comments:															
Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																				



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172264			
Project Reference: Monthly - Permit AR0000752			MATRIX													AIC PROPOSAL NO:			
Project Manager: Ms. Larken Pennington			WATER	SOIL	BOTTLES	Hg.LL	Cr <sup>6</sup>	CN.T	Metals: See Comments									Carrier: Gold Star	
Sampled By: <i>Larken Pennington</i>																		GRA	COMP
AIC No.	Sample Identification	Date/Time Collected																	Remarks
1	010	11/5/13-11/6/13 955-953	X	X	1	X													
1	010	11/5/13-11/6/13 955-955		X	1		X												
2	010	11/6/13 955	X	X	1			X											
1	010	11/5/13-11/6/13 955-955		X	1				X										
Container Type						G	P	P	P	P									Field pH calibration
Preservative						NO	A	B	N	NO									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 <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> , NH <sub>4</sub> OH						
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS					Relinquished By: <i>Larken Pennington</i>			Date/Time: 11/6/13 (0:00)			Received By:			Date/Time:					
Expedited results requested by: _____					Relinquished By:			Date/Time:			Received in Lab By: <i>[Signature]</i>			Date/Time: 11-6-13 1315					
Who should AIC contact with questions: Phone 870-312-1752 Fax: Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com					Comments: Total Recoverable Metals = Ag.LL, Cd.LL, Cr <sup>6</sup> , Cu.LL, Ni, Pb.LL, Se.LL, Zn														



El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 6, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

El Dorado Chemical Company  
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GBMc & Associates, Inc.  
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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 6, 2013  
Daily - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in two (2) ice chests.  
Ice chest #1 was delivered with a custody seal intact and signed  
Ice chest #2 was delivered with a custody seal intact and signed

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>
172264-1	Outfall 010 11/5/13 955 11/6/13 955	06-Nov-2013 0955	
172264-2	Outfall 010 11/6/13 955	06-Nov-2013 0955	

**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", 21st edition.  
"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. 172371-1

Sample Identification: Outfall 010 11/7/13 2:20pm

<u>Analyte</u>		<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Total Dissolved Solids</b> SM 2540 C 1997	Prep: 11-Nov-2013 1457 by 302	<b>240</b> Analyzed: 12-Nov-2013 1646 by 285	<b>10</b>	<b>mg/l</b> Batch: W45597	
<b>Chloride</b> EPA 300.0	Prep: 08-Nov-2013 1630 by 07	<b>19</b> Analyzed: 08-Nov-2013 1947 by 07	<b>0.2</b>	<b>mg/l</b> Batch: C16199	
<b>Sulfate</b> EPA 300.0	Prep: 08-Nov-2013 1630 by 07	<b>29</b> Analyzed: 08-Nov-2013 1947 by 07	<b>0.2</b>	<b>mg/l</b> Batch: C16199	
<b>Oil and Grease</b> EPA 1664A	Prep: 11-Nov-2013 1311 by 295	<b>&lt; 5</b> Analyzed: 12-Nov-2013 0847 by 295	<b>5</b>	<b>mg/l</b> Batch: B8646	
<b>Fecal Coliform</b> SM 9222 D 1997		<b>24</b> Analyzed: 07-Nov-2013 1819 by 21	<b>1</b>	<b>/100ml</b> Batch: M4104	



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

**DUPLICATE RESULTS**

Analyte	AIC No.	Result	RPD		Preparation Date	Analysis Date	Dil	Qual
			RPD	Limit				
Oil and Grease	172405-2	< 5 mg/l			11Nov13 1311 by 295	12Nov13 0847 by 295		
	Batch: B8646 Duplicate	< 5 mg/l	0.00	20.0	11Nov13 1544 by 295	12Nov13 0847 by 295		
Total Dissolved Solids	172371-1	240 mg/l			11Nov13 1457 by 302	12Nov13 1646 by 285		
	Batch: W45597 Duplicate	240 mg/l	3.76	10.0	11Nov13 1457 by 302	12Nov13 1646 by 285		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike		Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
	Amount	%								
Chloride	20 mg/l	98.4	90.0-110			C16199	08Nov13 1630 by 07	08Nov13 1800 by 07		
Sulfate	20 mg/l	99.4	90.0-110			C16199	08Nov13 1630 by 07	08Nov13 1800 by 07		
Oil and Grease	40 mg/l	100	78.0-114			B8646	11Nov13 1311 by 295	12Nov13 0847 by 295		
	40 mg/l	110	78.0-114	9.98	20.0	B8646	11Nov13 1311 by 295	12Nov13 0847 by 295		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Chloride	172371-1	20 mg/l	96.0	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1827 by 07		
	172371-1	20 mg/l	93.3	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1854 by 07		
	Relative Percent Difference:			2.65	10.0	C16199			
Sulfate	172371-1	20 mg/l	96.4	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1827 by 07		
	172371-1	20 mg/l	94.8	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1854 by 07		
	Relative Percent Difference:			1.42	10.0	C16199			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample	Preparation Date			
Total Dissolved Solids	< 10 mg/l	10	10	W45597-1	11Nov13 1457 by 302	12Nov13 1646 by 285		
Chloride	< 0.2 mg/l	0.2	0.2	C16199-1	08Nov13 1630 by 07	08Nov13 1733 by 07		
Sulfate	< 0.2 mg/l	0.2	0.2	C16199-1	08Nov13 1630 by 07	08Nov13 1733 by 07		
Oil and Grease	< 5 mg/l	5	5	B8646-1	11Nov13 1311 by 295	12Nov13 0847 by 295		
Fecal Coliform	< 1 /100ml	1	1	M4104-1		07Nov13 1421 by 295		



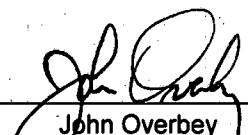


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for the sample submitted on November 7, 2013. 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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lpennington@edc-ark.com

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GBMc & Associates, Inc.  
ATTN: Mr. Russell McLaren  
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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

One (1) water sample(s) received on November 7, 2013  
Weekly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with shipping documentation.

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>
172371-1	Outfall 010 11/7/13 2:20pm	07-Nov-2013 1420	

**Case Narrative:**

There were no qualifiers for this data and all samples met quality control criteria.

**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", 21st edition.
- "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. 172340-1

Sample Identification: 010 11/6/13-11/6/13 9:50am-1:50pm

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>4.4</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 07-Nov-2013 1505 by 93	Analyzed: 08-Nov-2013 1142 by 93		Batch: W45548	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>&lt; 2</b>	<b>2</b>	<b>mg/l</b>	
Prep: 08-Nov-2013 0844 by 285	Analyzed: 13-Nov-2013 1049 by 285		Batch: W45566	
<b>Total Suspended Solids</b> USGS 3765	<b>12</b>	<b>4</b>	<b>mg/l</b>	
Prep: 08-Nov-2013 1450 by 308	Analyzed: 11-Nov-2013 1053 by 308		Batch: W45575	
<b>Phosphorus</b> EPA 200.7	<b>0.18</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 07-Nov-2013 1527 by 311	Analyzed: 08-Nov-2013 1858 by 305		Batch: S35735	

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				
Carbonaceous BOD 5-day	172340-1	< 2 mg/l			08Nov13 0844 by 285	13Nov13 1049 by 285		
	Batch: W45566 Duplicate	< 2 mg/l	0.00	20.0	08Nov13 0845 by 285	13Nov13 1051 by 285		
Total Suspended Solids	172321-3	6.8 mg/l			08Nov13 1450 by 308	11Nov13 1053 by 308		
	Batch: W45575 Duplicate	6.8 mg/l	0.00	20.0	08Nov13 1450 by 308	11Nov13 1053 by 308		
Total Suspended Solids	172322-3	5.2 mg/l			08Nov13 1450 by 308	11Nov13 1053 by 308		
	Batch: W45575 Duplicate	5.6 mg/l	7.41	20.0	08Nov13 1450 by 308	11Nov13 1053 by 308		

**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	98.4	80.0-120			W45548	07Nov13 0913 by 93	08Nov13 1038 by 93		
Carbonaceous BOD 5-day	200 mg/l	111	84.5-115			W45566	08Nov13 0845 by 285	13Nov13 1047 by 285		
Phosphorus	5 mg/l	102	85.0-115			S35735	07Nov13 1502 by 311	08Nov13 1505 by 305		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172264-1	1 mg/l	116	80.0-120	W45548	07Nov13 0913 by 93	08Nov13 1139 by 93	5	D
	172264-1	1 mg/l	96.1	80.0-120	W45548	07Nov13 0913 by 93	08Nov13 1140 by 93	5	D
	Relative Percent Difference:		3.73	25.0	W45548				
Phosphorus	172323-1	5 mg/l	103	75.0-125	S35735	07Nov13 1502 by 311	08Nov13 1508 by 305		
	172323-1	5 mg/l	104	75.0-125	S35735	07Nov13 1502 by 311	08Nov13 1511 by 305		
	Relative Percent Difference:		0.259	20.0	S35735				

**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	W45548-1	07Nov13 0913 by 93	08Nov13 1036 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45566-1	08Nov13 0845 by 285	13Nov13 1046 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45575-1	08Nov13 1450 by 308	11Nov13 1053 by 308	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35735-1	07Nov13 1502 by 311	08Nov13 1502 by 305	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172340						
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS	Coli. F	NH3N, Total Phosphorus													AIC PROPOSAL NO:	
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R				S O I L													
Sampled By: Larken Pennington						Received Temperature C 1.4																
AIC No.	Sample Identification	Date/Time Collected																			Remarks	
1	010	11/6/13-11/6/13 9:30 am - 1:50 pm		X	X																	
	010		X		X						X											Coli F not received
1	010	11/6/13-11/6/13 9:50 am - 1:50 pm		X	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) NORMAL or EXPEDITED IN ___ DAYS						Relinquished By: Larken Pennington		Date/Time: 11/7/13 10:00 am		Received By:		Date/Time:										
Expedited results requested by: _____						Relinquished By:		Date/Time:		Received in Lab By: [Signature]		Date/Time: 11-7-13 1300										
Who should AIC contact with questions: Phone 870-312-1752 Fax: Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com						Comments:																



El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for the sample submitted on November 7, 2013. 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.

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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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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com





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

**SAMPLE INFORMATION**

**Project Description:**

One (1) water sample(s) received on November 7, 2013  
Daily-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>
172340-1	010 11/6/13-11/6/13 9:50am-1:50pm	06-Nov-2013 1350	

**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", 21st edition.  
"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. 172413-1

Sample Identification: Outfall 010 11/7/13 2:20pm 11/7/13 8:00pm

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>4.0</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 11-Nov-2013 1003 by 93	Analyzed: 12-Nov-2013 1622 by 302		Batch: W45588	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>3.2</b>	<b>2</b>	<b>mg/l</b>	
Prep: 08-Nov-2013 1509 by 285	Analyzed: 13-Nov-2013 1147 by 285		Batch: W45566	
<b>Total Suspended Solids</b> USGS 3765	<b>16</b>	<b>4</b>	<b>mg/l</b>	
Prep: 12-Nov-2013 1331 by 285	Analyzed: 13-Nov-2013 0835 by 285		Batch: W45608	
<b>Phosphorus</b> EPA 200.7	<b>0.17</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 11-Nov-2013 1059 by 311	Analyzed: 11-Nov-2013 2014 by 305		Batch: S35749	
<b>Nitrate as N</b> EPA 300.0	<b>16</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 08-Nov-2013 1630 by 07	Analyzed: 08-Nov-2013 2041 by 07		Batch: C16199	Dil: 10

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
Carbonaceous BOD 5-day	172340-1	< 2 mg/l			08Nov13 0844 by 285	13Nov13 1049 by 285		
	Batch: W45566 Duplicate	< 2 mg/l	0.00	20.0	08Nov13 0845 by 285	13Nov13 1051 by 285		
Total Suspended Solids	172375-1	< 4 mg/l			12Nov13 1331 by 285	13Nov13 0835 by 285		
	Batch: W45608 Duplicate	< 4 mg/l	0.00	20.0	12Nov13 1331 by 285	13Nov13 0835 by 285		
Total Suspended Solids	172377-2	84 mg/l			12Nov13 1331 by 285	13Nov13 0835 by 285		
	Batch: W45608 Duplicate	90 mg/l	6.90	20.0	12Nov13 1331 by 285	13Nov13 0835 by 285		

**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			W45588	11Nov13 1004 by 93	12Nov13 1444 by 302		
Carbonaceous BOD 5-day	200 mg/l	111	84.5-115			W45566	08Nov13 0845 by 285	13Nov13 1047 by 285		
Phosphorus	5 mg/l	104	85.0-115			S35749	11Nov13 1035 by 311	11Nov13 1849 by 305		
Nitrate as N	4 mg/l	97.8	90.0-110			C16199	08Nov13 1630 by 07	08Nov13 1800 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
Ammonia as N with Distillation	172413-1	1 mg/l	117	80.0-120	W45588	11Nov13 1004 by 93	12Nov13 1624 by 302	5	D	
	172413-1	1 mg/l	104	80.0-120	W45588	11Nov13 1004 by 93	12Nov13 1625 by 302	5	D	
	Relative Percent Difference:			2.48	25.0	W45588				D
Phosphorus	172403-2	5 mg/l	102	75.0-125	S35749	11Nov13 1035 by 311	11Nov13 1853 by 305			
	172403-2	5 mg/l	102	75.0-125	S35749	11Nov13 1035 by 311	11Nov13 1858 by 305			
	Relative Percent Difference:			0.163	20.0	S35749				
Nitrate as N	172371-1	4 mg/l	96.0	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1827 by 07			
	172371-1	4 mg/l	93.4	80.0-120	C16199	08Nov13 1630 by 07	08Nov13 1854 by 07			
	Relative Percent Difference:			1.99	10.0	C16199				

**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	W45588-1	11Nov13 1004 by 93	12Nov13 1442 by 302	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45566-1	08Nov13 0845 by 285	13Nov13 1046 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45608-1	12Nov13 1331 by 285	13Nov13 0835 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35749-1	11Nov13 1035 by 311	11Nov13 1845 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16199-1	08Nov13 1630 by 07	08Nov13 1733 by 07	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

172413

PAGE 1 OF 1

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 1723911/BA3		
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphoru									AIC PROPOSAL NO:	
Project Manager: Ms. Larken Pennington			W	A													S	O
Sampled By: <i>Larken Pennington</i>			G	R	A	C	O	M	P	Received Temperature C 0.6°C		Remarks						
AIC No.	Sample Identification	Date/Time Collected	B	P	R	L												
①	010	11/7/13 - 11/7/13 2:20 pm - 8:20 pm		X	X					1	X							TO AS: OUTFALL 010 NO SAMPLE Received
	010		X		X					1		X						TO AS: OUTFALL 010
①	010	11/7/13 - 11/7/13 2:20 pm - 8:20 pm		X	X					1			X					TO AS: OUTFALL 010
										Field pH calibration								
Container Type										P	P	P	Buffer:					
Preservative										NO	T	S						
G = Glass			P = Plastic			V = VOA vials			H = HCl to pH2			T = Sodium Thiosulfate						
NO = none			S = Sulfuric acid pH2			N = Nitric acid pH2			B = NaOH to pH12			Z = Zinc acetate						
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS						Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/8/13 12:20 am		Received By:		Date/Time:						
Expedited results requested by: _____						Relinquished By:		Date/Time:		Received in Lab By: <i>Jimmy Day</i>		Date/Time: 11/8/13 1315						
Who should AIC contact with questions: Phone 870-312-1752 Fax:						Comments:												
Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																		

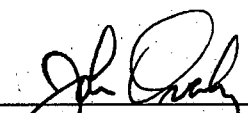


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for the sample submitted on November 8, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
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dsartain@edc-ark.com

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rmclaren@gbmcassoc.com

GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

One (1) water sample(s) received on November 8, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172413-1	Outfall 010 11/7/13 2:20pm	11/7/13 8:00pm	07-Nov-2013 2000

**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", 21st edition.
- "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. 172558-1**

**Sample Identification:** Outfall 010 11/14/13 6:00pm 11/15/13 9:45am

Analyte	Result	RL	Units	Qualifier
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>2.8</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 15-Nov-2013 1507 by 93	Analyzed: 15-Nov-2013 1850 by 93		Batch: W45654	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>6.5</b>	<b>2</b>	<b>mg/l</b>	
Prep: 15-Nov-2013 1452 by 285	Analyzed: 20-Nov-2013 0950 by 285		Batch: W45651	
<b>Total Suspended Solids</b> USGS 3765	<b>10</b>	<b>4</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 0931 by 285	Analyzed: 18-Nov-2013 1355 by 285		Batch: W45666	
<b>Phosphorus</b> EPA 200.7	<b>0.22</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 0943 by 271	Analyzed: 18-Nov-2013 1637 by 305		Batch: S35787	
<b>Nitrate as N</b> EPA 300.0	<b>16</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 15-Nov-2013 1529 by 07	Analyzed: 15-Nov-2013 1904 by 07		Batch: C16222	Dil: 10

**AIC No. 172558-2**

**Sample Identification:** Outfall 010 11/15/13 9:45am

Analyte	Result	RL	Units	Qualifier
<b>Total Dissolved Solids</b> SM 2540 C 1997	<b>260</b>	<b>10</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1407 by 285	Analyzed: 19-Nov-2013 1330 by 285		Batch: W45673	
<b>Chloride</b> EPA 300.0	<b>21</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 15-Nov-2013 1529 by 07	Analyzed: 15-Nov-2013 2118 by 07		Batch: C16222	
<b>Sulfate</b> EPA 300.0	<b>32</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 15-Nov-2013 1529 by 07	Analyzed: 15-Nov-2013 2118 by 07		Batch: C16222	
<b>Oil and Grease</b> EPA 1664A	<b>&lt; 5</b>	<b>5</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1020 by 295	Analyzed: 19-Nov-2013 1531 by 301		Batch: B8658	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 15-Nov-2013 1541 by 295		Batch: M4123	



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
Oil and Grease	172570-2	< 5 mg/l			18Nov13 1020 by 295	19Nov13 1531 by 301		
	Batch: B8658 Duplicate	< 5 mg/l	0.00	20.0	18Nov13 1705 by 295	19Nov13 1531 by 301		
Oil and Grease	172576-2	< 5 mg/l			18Nov13 1020 by 295	19Nov13 1531 by 301		
	Batch: B8658 Duplicate	< 5 mg/l	0.00	20.0	18Nov13 1705 by 295	19Nov13 1531 by 301		
Carbonaceous BOD 5-day	172540-1	12 mg/l			15Nov13 0905 by 285	20Nov13 0941 by 285		
	Batch: W45651 Duplicate	10 mg/l	10.3	20.0	15Nov13 0831 by 285	20Nov13 0944 by 285		
Total Suspended Solids	172531-1	< 4 mg/l			18Nov13 0931 by 285	18Nov13 1355 by 285		
	Batch: W45666 Duplicate	< 4 mg/l	0.00	20.0	18Nov13 0932 by 285	18Nov13 1355 by 285		
Total Suspended Solids	172540-7	3200 mg/l			18Nov13 0931 by 285	18Nov13 1355 by 285		
	Batch: W45666 Duplicate	3200 mg/l	0.312	20.0	18Nov13 0932 by 285	18Nov13 1355 by 285		
Total Dissolved Solids	172558-2	260 mg/l			18Nov13 1407 by 285	19Nov13 1330 by 285		
	Batch: W45673 Duplicate	250 mg/l	4.26	10.0	18Nov13 1407 by 285	19Nov13 1330 by 285		
Total Dissolved Solids	172589-2	860 mg/l			18Nov13 1538 by 302	19Nov13 1330 by 285		
	Batch: W45673 Duplicate	860 mg/l	0.697	10.0	18Nov13 1538 by 302	19Nov13 1330 by 285		

**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	98.8	80.0-120			W45654	15Nov13 1012 by 93	15Nov13 1802 by 93		
Carbonaceous BOD 5-day	200 mg/l	88.1	84.5-115			W45651	15Nov13 0831 by 285	20Nov13 0935 by 285		
Phosphorus	5 mg/l	106	85.0-115			S35787	18Nov13 0943 by 271	18Nov13 1629 by 305		
Chloride	20 mg/l	104	90.0-110			C16222	15Nov13 1533 by 07	15Nov13 1650 by 07		
Nitrate as N	4 mg/l	101	90.0-110			C16222	15Nov13 1533 by 07	15Nov13 1650 by 07		
Sulfate	20 mg/l	105	90.0-110			C16222	15Nov13 1533 by 07	15Nov13 1650 by 07		
Oil and Grease	40 mg/l	105	78.0-114			B8658	18Nov13 1020 by 295	19Nov13 1531 by 301		
	40 mg/l	112	78.0-114	6.45	20.0	B8658	18Nov13 1020 by 295	19Nov13 1531 by 301		





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

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172531-1	1 mg/l	91.4	80.0-120	W45654	15Nov13 1012 by 93	15Nov13 1806 by 93		
	172531-1	1 mg/l	102	80.0-120	W45654	15Nov13 1012 by 93	15Nov13 1808 by 93		
	Relative Percent Difference:		7.60	25.0	W45654				
Phosphorus	172558-1	5 mg/l	104	75.0-125	S35787	18Nov13 0943 by 271	18Nov13 1632 by 305		
	172558-1	5 mg/l	104	75.0-125	S35787	18Nov13 0943 by 271	18Nov13 1635 by 305		
	Relative Percent Difference:		0.0466	20.0	S35787				
Chloride	172552-1	20 mg/l	106	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1716 by 07		
	172552-1	20 mg/l	103	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1743 by 07		
	Relative Percent Difference:		2.40	10.0	C16222				
Nitrate as N	172552-1	4 mg/l	103	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1716 by 07		
	172552-1	4 mg/l	99.7	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1743 by 07		
	Relative Percent Difference:		2.48	10.0	C16222				
Sulfate	172552-1	20 mg/l	107	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1716 by 07		
	172552-1	20 mg/l	104	80.0-120	C16222	15Nov13 1533 by 07	15Nov13 1743 by 07		
	Relative Percent Difference:		2.51	10.0	C16222				

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Total Dissolved Solids	< 10 mg/l	10	10	W45673-1	18Nov13 1407 by 285	19Nov13 1330 by 285	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45654-1	15Nov13 1012 by 93	15Nov13 1801 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45651-1	15Nov13 0831 by 285	20Nov13 0934 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45666-1	18Nov13 0932 by 285	18Nov13 1355 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35787-1	18Nov13 0943 by 271	18Nov13 1626 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16222-1	15Nov13 1533 by 07	15Nov13 1623 by 07	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16222-1	15Nov13 1533 by 07	15Nov13 1623 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16222-1	15Nov13 1533 by 07	15Nov13 1623 by 07	
Oil and Grease	< 2 mg/l	2	5	B8658-1	18Nov13 1020 by 295	19Nov13 1531 by 301	
Fecal Coliform	< 1 /100ml	1	1	M4123-1		15Nov13 1541 by 295	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172558							
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli: F	NH3N, Total Phosphorus													AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			W	S																			Carrier: Gold Star
Sampled By: Larken Pennington			A	O																	Received Temperature C: 16°C		
AIC No.	Sample Identification	Date/Time Collected	G	C	A	S															Remarks		
	010	11/14/13-11/15/13 6:00pm-9:45am		X	X																	LOAS, OUTFALL 010	
	010	11/15/13 9:45am	X		X						X												
	010	11/14/13-11/15/13 6:00pm-9:45am		X	X							X											
Container Type																					Field pH calibration on _____ @ _____		
Preservative																						Buffer:	
G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate			NO = none S = Sulfuric acid pH2 N = Nitric acid pH2			B = NaOH to pH12			Z = Zinc acetate														
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS										Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/15/13 10:00am		Received By: _____		Date/Time: _____							
Expedited results requested by: _____										Relinquished By: _____		Date/Time: _____		Received in Lab By: <i>J. Pennington</i>		Date/Time: 11/15/13 1330							
Who should AIC contact with questions: _____										Comments: _____													
Phone 870-312-1752 Fax: _____																							
Report Attention to: Ms. Larken Pennington																							
Report Address to: Post Office Box 231																							
El Dorado, AR 71731																							
Lpennington@edc-ark.com																							

①  
②  
①



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172558						
Project Reference: Weekly - Permit AR0000752			MATRIX			OG (2 / Week)	TDS, Cl, SO4 (2 / Week)													AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R	S O I L	NO OF BOTTLES	OG (2 / Week)	TDS, Cl, SO4 (2 / Week)												Carrier: Gold Star	
Sampled By: Larken Pennington																					Received Temperature C: 16°C	
AIC No.	Sample Identification	Date/Time Collected																			Remarks	
②	010	11/15/13 9:45am	X		X		1	X														(to ps) OUTFALL 010
②	010	11/15/13 9:45am	X		X		1	X														L L L
Container Type								P	P												Field pH calibration on _____ @ _____	
Preservative								S	NO												Buffer:	
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2			V = VOA vials N = Nitric acid pH2			H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate										
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS						Relinquished By: Larken Pennington		Date/Time: 11/15/13 10:00 am		Received By:		Date/Time:										
Expedited results requested by: _____						Relinquished By:		Date/Time:		Received in Lab By: Jimmy Day		Date/Time: 11/15/13 1330										
Who should AIC contact with questions: Ms. Larken Pennington						Comments:																
Phone 870-312-1752 Fax:						Report Attention to: Ms. Larken Pennington						Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com										

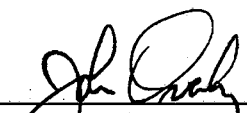


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 15, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

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ATTN: Mr. Russell McLaren  
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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 15, 2013  
Daily-Permit AR0000752  
Weekly--Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172558-1	Outfall 010 11/14/13 6:00pm	11/15/13 9:45am	15-Nov-2013 0945
172558-2	Outfall 010 11/15/13 9:45am		15-Nov-2013 0945

**Qualifiers:**

D Result is from a secondary dilution factor

**Case Narrative:**

During the 5-day incubation period for CBOD analysis, the incubation temperature exceeded the method requirement of 20°C +/- 1°C for approximately 24 hours.

**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", 21st edition.
- "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. 172593-1**

**Sample Identification:** Outfall 010 11/15/13 9:45-1:00pm-4:00pm - 11/16/13 9:45am

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>3.0</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 18-Nov-2013 1155 by 93	Analyzed: 19-Nov-2013 2027 by 93		Batch: W45669	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>3.7</b>	<b>2</b>	<b>mg/l</b>	
Prep: 16-Nov-2013 1400 by 93	Analyzed: 21-Nov-2013 1030 by 93		Batch: W45670	
<b>Total Suspended Solids</b> USGS 3765	<b>17</b>	<b>4</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1517 by 285	Analyzed: 19-Nov-2013 0906 by 285		Batch: W45675	
<b>Phosphorus</b> EPA 200.7	<b>0.16</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1357 by 305	Analyzed: 18-Nov-2013 1721 by 305		Batch: S35787	
<b>Nitrate as N</b> EPA 300.0	<b>16</b>	<b>0.5</b>	<b>mg/l</b>	<b>DH</b>
Prep: 18-Nov-2013 1317 by 07	Analyzed: 18-Nov-2013 1722 by 07		Batch: C16224	Dil: 10

**AIC No. 172593-2**

**Sample Identification:** Outfall 010 11/16/13 9:45

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Total Dissolved Solids</b> SM 2540 C 1997	<b>280</b>	<b>10</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1538 by 302	Analyzed: 19-Nov-2013 1330 by 285		Batch: W45673	
<b>Chloride</b> EPA 300.0	<b>21</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1317 by 07	Analyzed: 18-Nov-2013 1748 by 07		Batch: C16224	
<b>Sulfate</b> EPA 300.0	<b>32</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1317 by 07	Analyzed: 18-Nov-2013 1748 by 07		Batch: C16224	
<b>Oil and Grease</b> EPA 1664A	<b>&lt; 5</b>	<b>5</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1543 by 301	Analyzed: 20-Nov-2013 0950 by 301		Batch: B8660	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 16-Nov-2013 1330 by 295		Batch: M4126	



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
Carbonaceous BOD 5-day	172596-1	3.7 mg/l			16Nov13 1400 by 93	21Nov13 1012 by 93		
	Batch: W45670 Duplicate	3.7 mg/l	0.545	20.0	16Nov13 1400 by 93	21Nov13 1014 by 93		
Total Dissolved Solids	172558-2	260 mg/l			18Nov13 1407 by 285	19Nov13 1330 by 285		
	Batch: W45673 Duplicate	250 mg/l	4.26	10.0	18Nov13 1407 by 285	19Nov13 1330 by 285		
Total Dissolved Solids	172589-2	860 mg/l			18Nov13 1538 by 302	19Nov13 1330 by 285		
	Batch: W45673 Duplicate	860 mg/l	0.697	10.0	18Nov13 1538 by 302	19Nov13 1330 by 285		
Total Suspended Solids	172563-1	55 mg/l			18Nov13 1517 by 285	19Nov13 0906 by 285		
	Batch: W45675 Duplicate	58 mg/l	4.95	20.0	18Nov13 1517 by 285	19Nov13 0906 by 285		
Total Suspended Solids	172564-1	15 mg/l			18Nov13 1517 by 285	19Nov13 0906 by 285		
	Batch: W45675 Duplicate	14 mg/l	2.74	20.0	18Nov13 1517 by 285	19Nov13 0906 by 285		

**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	116	80.0-120			W45669	18Nov13 1155 by 93	19Nov13 1855 by 93		
Carbonaceous BOD 5-day	200 mg/l	113	84.5-115			W45670	16Nov13 1400 by 93	21Nov13 1011 by 93		
Phosphorus	5 mg/l	106	85.0-115			S35787	18Nov13 0943 by 271	18Nov13 1629 by 305		
Chloride	20 mg/l	99.3	90.0-110			C16224	18Nov13 1112 by 07	18Nov13 1200 by 07		
Nitrate as N	4 mg/l	96.7	90.0-110			C16224	18Nov13 1112 by 07	18Nov13 1200 by 07		
Sulfate	20 mg/l	103	90.0-110			C16224	18Nov13 1112 by 07	18Nov13 1200 by 07		
	40 mg/l	85.0	78.0-114			B8660	19Nov13 1543 by 301	20Nov13 0950 by 301		
Oil and Grease	40 mg/l	93.5	78.0-114	9.52	20.0	B8660	19Nov13 1543 by 301	20Nov13 0950 by 301		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172589-1	1 mg/l	93.4	80.0-120	W45669	18Nov13 1155 by 93	19Nov13 1859 by 93		
	172589-1	1 mg/l	99.1	80.0-120	W45669	18Nov13 1155 by 93	19Nov13 1901 by 93		
	Relative Percent Difference:		3.23	25.0	W45669				
Phosphorus	172558-1	5 mg/l	104	75.0-125	S35787	18Nov13 0943 by 271	18Nov13 1632 by 305		
	172558-1	5 mg/l	104	75.0-125	S35787	18Nov13 0943 by 271	18Nov13 1635 by 305		
	Relative Percent Difference:		0.0466	20.0	S35787				
Chloride	172594-2	20 mg/l	97.5	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1227 by 07		
	172594-2	20 mg/l	98.0	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1253 by 07		
	Relative Percent Difference:		0.423	10.0	C16224				
Nitrate as N	172594-2	4 mg/l	99.5	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1227 by 07		
	172594-2	4 mg/l	98.3	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1253 by 07		
	Relative Percent Difference:		1.26	10.0	C16224				
Sulfate	172594-2	20 mg/l	100	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1227 by 07		
	172594-2	20 mg/l	101	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1253 by 07		
	Relative Percent Difference:		0.194	10.0	C16224				



El Dorado Chemical Company  
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 El Dorado, AR 71730

**LABORATORY BLANK RESULTS**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>PQL</u>	<u>QC Sample</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Qual</u>
Total Dissolved Solids	< 10 mg/l	10	10	W45673-1	18Nov13 1407 by 285	19Nov13 1330 by 285	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45669-1	18Nov13 1155 by 93	19Nov13 1854 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45670-1	16Nov13 1400 by 93	21Nov13 1010 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W45675-1	18Nov13 1517 by 285	19Nov13 0906 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35787-1	18Nov13 0943 by 271	18Nov13 1626 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16224-1	18Nov13 1112 by 07	18Nov13 1133 by 07	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16224-1	18Nov13 1112 by 07	18Nov13 1133 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16224-1	18Nov13 1112 by 07	18Nov13 1133 by 07	
Oil and Grease	< 2 mg/l	2	5	B8660-1	19Nov13 1543 by 301	20Nov13 0950 by 301	
Fecal Coliform	< 1 /100ml	1	1	M4126-1		16Nov13 1330 by 295	







CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172593							
Project Reference: Weekly - Permit AR0000752			MATRIX			OG (2/Week)	TDS, Cl, SO4-(2/Week)														AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R			S O I L	NO	OG	TDS, Cl, SO4											Carrier: Gold Star	
Sampled By: <i>Larken Pennington</i>						Received Temperature C 20																	
AIC No.	Sample Identification	Date/Time Collected																			Remarks		
2	010	11/16/13 9:45	X		X			1	X														
2	010	11/16/13 9:45	X		X			1		X													
		Container Type						P P														Field pH calibration on _____ @ _____	
		Preservative						S NO														Buffer:	
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2			V = VOA vials N = Nitric acid pH2			H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate											
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS							Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/16/13 10:20 am		Received By:		Date/Time										
Expedited results requested by: _____							Relinquished By:		Date/Time:		Received in Lab By: <i>Shawn Worn</i>		Date/Time: 11-16-13 (1725)										
Who should AIC contact with questions: Phone 870-312-1752 Fax:							Comments:																
Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																							

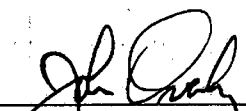


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 16, 2013. 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

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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 16, 2013  
Daily / Weekly - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172593-1	Outfall 010 11/15/13 9:45-1:00pm-4:00pm - 11/16/13 9:45am	16-Nov-2013 0945	
172593-2	Outfall 010 11/16/13 9:45	16-Nov-2013 0945	

**Qualifiers:**

- D Result is from a secondary dilution factor
- H Analytical holding time exceeded regulatory requirements

**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", 21st edition.  
"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. 172598-1**

**Sample Identification: Outfall 010 11/16/13 945 - 11/17/13 945**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>2.4</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 18-Nov-2013 1408 by 93	Analyzed: 19-Nov-2013 2029 by 93		Batch: W45669	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.0</b>	<b>2</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1445 by 285	Analyzed: 23-Nov-2013 0839 by 285		Batch: W45674	
<b>Total Suspended Solids</b> USGS 3765	<b>17</b>	<b>4</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 0925 by 285	Analyzed: 19-Nov-2013 1203 by 285		Batch: W45682	
<b>Phosphorus</b> EPA 200.7	<b>0.18</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1519 by 305	Analyzed: 19-Nov-2013 1018 by 305		Batch: S35794	
<b>Nitrate as N</b> EPA 300.0	<b>17</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 18-Nov-2013 1317 by 07	Analyzed: 18-Nov-2013 1936 by 07		Batch: C16224	Dil: 10

**AIC No. 172598-2**

**Sample Identification: Outfall 010 11/17/13 945**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 17-Nov-2013 1330 by 295		Batch: M4127	

El Dorado Chemical Company  
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El Dorado, AR 71730

**DUPLICATE RESULTS**

Analyte	AIC No.	Result	RPD	RPD Limit	Preparation Date	Analysis Date	Dil	Qual
Carbonaceous BOD 5-day	172597-1	< 2 mg/l			18Nov13 1445 by 285	23Nov13 0836 by 285		
	Batch: W45674 Duplicate	< 2 mg/l	0.00	20.0	18Nov13 1446 by 285	23Nov13 0838 by 285		
Total Suspended Solids	172594-1	< 4 mg/l			19Nov13 0925 by 285	19Nov13 1203 by 285		
	Batch: W45682 Duplicate	< 4 mg/l	0.00	20.0	19Nov13 0925 by 285	19Nov13 1203 by 285		
Total Suspended Solids	172595-1	< 4 mg/l			19Nov13 0925 by 285	19Nov13 1203 by 285		
	Batch: W45682 Duplicate	< 4 mg/l	0.00	20.0	19Nov13 0925 by 285	19Nov13 1203 by 285		

**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	116	80.0-120			W45669	18Nov13 1155 by 93	19Nov13 1855 by 93		
Carbonaceous BOD 5-day	200 mg/l	102	84.5-115			W45674	18Nov13 1446 by 285	23Nov13 0835 by 285		
Phosphorus	5 mg/l	106	85.0-115			S35794	18Nov13 1519 by 305	19Nov13 1008 by 305		
Nitrate as N	4 mg/l	96.7	90.0-110			C16224	18Nov13 1112 by 07	18Nov13 1200 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172589-1	1 mg/l	93.4	80.0-120	W45669	18Nov13 1155 by 93	19Nov13 1859 by 93		
	172589-1	1 mg/l	99.1	80.0-120	W45669	18Nov13 1155 by 93	19Nov13 1901 by 93		
	Relative Percent Difference:			3.23	25.0	W45669			
Phosphorus	172597-1	5 mg/l	107	75.0-125	S35794	18Nov13 1519 by 305	19Nov13 1010 by 305		
	172597-1	5 mg/l	107	75.0-125	S35794	18Nov13 1519 by 305	19Nov13 1013 by 305		
	Relative Percent Difference:			0.100	20.0	S35794			
Nitrate as N	172594-2	4 mg/l	99.5	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1227 by 07		
	172594-2	4 mg/l	98.3	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1253 by 07		
	Relative Percent Difference:			1.26	10.0	C16224			

**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	W45669-1	18Nov13 1155 by 93	19Nov13 1854 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45674-1	18Nov13 1446 by 285	23Nov13 0834 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45682-1	19Nov13 0925 by 285	19Nov13 1203 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35794-1	18Nov13 1519 by 305	19Nov13 1005 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16224-1	18Nov13 1112 by 07	18Nov13 1133 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4127-1		17Nov13 1330 by 295	





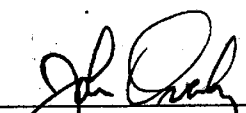
November 25, 2013  
Control No. 172598  
Page 1 of 4

El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 17, 2013. 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.

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4500 North West Avenue  
El Dorado, AR 71730

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 17, 2013  
Daily - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172598-1	Outfall 010 11/16/13 945 - 11/17/13 945	17-Nov-2013 0945	
172598-2	Outfall 010 11/17/13 945	17-Nov-2013 0945	

**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).
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El Dorado, AR 71730

**ANALYTICAL RESULTS**

AIC No. 172616-1

Sample Identification: 010 11/17/13 9:45am 11/18/13 8:20am

Analyte	Result	RL	Units	Qualifier
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>2.8</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 19-Nov-2013 0954 by 93	Analyzed: 19-Nov-2013 2034 by 93		Batch: W45683	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.6</b>	<b>2</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1539 by 285	Analyzed: 23-Nov-2013 0857 by 285		Batch: W45674	
<b>Total Suspended Solids</b> USGS 3765	<b>18</b>	<b>4</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 0925 by 285	Analyzed: 19-Nov-2013 1203 by 285		Batch: W45682	
<b>Phosphorus</b> EPA 200.7	<b>0.18</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 18-Nov-2013 1519 by 305	Analyzed: 19-Nov-2013 1045 by 305		Batch: S35794	
<b>Nitrate as N</b> EPA 300.0	<b>16</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 18-Nov-2013 1442 by 07	Analyzed: 18-Nov-2013 2003 by 07		Batch: C16224	Dil: 10

AIC No. 172616-2

Sample Identification: 010 11/18/13 8:20am

Analyte	Result	RL	Units	Qualifier
<b>Fecal Coliform</b> SM 9222 D 1997	<b>23</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 18-Nov-2013 1512 by 21		Batch: M4128	



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					
Carbonaceous BOD 5-day	172597-1	< 2 mg/l	0.00	20.0		18Nov13 1445 by 285	23Nov13 0836 by 285		
	Batch: W45674	Duplicate				< 2 mg/l	18Nov13 1446 by 285		
Total Suspended Solids	172594-1	< 4 mg/l	0.00	20.0		19Nov13 0925 by 285	19Nov13 1203 by 285		
	Batch: W45682	Duplicate				< 4 mg/l	19Nov13 0925 by 285		
Total Suspended Solids	172595-1	< 4 mg/l	0.00	20.0		19Nov13 0925 by 285	19Nov13 1203 by 285		
	Batch: W45682	Duplicate				< 4 mg/l	19Nov13 0925 by 285		

**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	91.3	80.0-120			W45683	19Nov13 0954 by 93	19Nov13 1931 by 93		
Carbonaceous BOD 5-day	200 mg/l	102	84.5-115			W45674	18Nov13 1446 by 285	23Nov13 0835 by 285		
Phosphorus	5 mg/l	106	85.0-115			S35794	18Nov13 1519 by 305	19Nov13 1008 by 305		
Nitrate as N	4 mg/l	96.7	90.0-110			C16224	18Nov13 1112 by 07	18Nov13 1200 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
Ammonia as N with Distillation	172614-1	1 mg/l	93.3	80.0-120	W45683	19Nov13 0954 by 93	19Nov13 2030 by 93	5	D	
	172614-1	1 mg/l	92.6	80.0-120	W45683	19Nov13 0954 by 93	19Nov13 2032 by 93	5	D	
	Relative Percent Difference:			0.380	25.0	W45683				
	Relative Percent Difference:			0.380	25.0	W45683				
Phosphorus	172597-1	5 mg/l	107	75.0-125	S35794	18Nov13 1519 by 305	19Nov13 1010 by 305			
	172597-1	5 mg/l	107	75.0-125	S35794	18Nov13 1519 by 305	19Nov13 1013 by 305			
	Relative Percent Difference:			0.100	20.0	S35794				
	Relative Percent Difference:			0.100	20.0	S35794				
Nitrate as N	172594-2	4 mg/l	99.5	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1227 by 07			
	172594-2	4 mg/l	98.3	80.0-120	C16224	18Nov13 1112 by 07	18Nov13 1253 by 07			
	Relative Percent Difference:			1.26	10.0	C16224				
	Relative Percent Difference:			1.26	10.0	C16224				

**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	W45683-1	19Nov13 0954 by 93	19Nov13 1929 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45674-1	18Nov13 1446 by 285	23Nov13 0834 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45682-1	19Nov13 0925 by 285	19Nov13 1203 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35794-1	18Nov13 1519 by 305	19Nov13 1005 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16224-1	18Nov13 1112 by 07	18Nov13 1133 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4128-1		18Nov13 1512 by 295	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172616								
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus													AIC PROPOSAL NO:			
Project Manager: Ms. Larken Pennington			W	A	S																		Carrier: Gold Star	
Sampled By: Larken Pennington			G	C																Received Temperature C: 3.1				
AIC No.	Sample Identification	Date/Time Collected	A	B	P	R	L													Remarks				
1	010	11/17/13-11/18/13 9:15am-8:20am			X	X																		
2	010	11/18/13 8:20am	X			X					X													
3	010	11/17/13-11/18/13 9:15am-8:20am			X	X							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						Buffer:						
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: Larken Pennington					Date/Time: 11/18/13 12:00 am					Received By:					Date/Time:				
Expedited results requested by: _____					Relinquished By: [Signature]					Date/Time:					Received in Lab By: [Signature]					Date/Time: 11-18-13 13:11				
Who should AIC contact with questions: Phone 870-312-1752 Fax:					Report Attention to: Ms. Larken Pennington					Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com					Comments: 11-18-13									

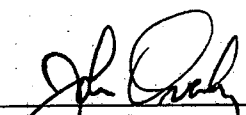


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 18, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
ATTN: Mr. David Sartain  
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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 18, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172616-1	010 11/17/13 9:45am 11/18/13 8:20am	18-Nov-2013 0820	
172616-2	010 11/18/13 8:20am	18-Nov-2013 0820	

**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", 21st edition.  
"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. 172679-1**

**Sample Identification: 010 11-18-13 1130am 11-19-13 945am**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>2.5</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 19-Nov-2013 1504 by 93	Analyzed: 19-Nov-2013 2035 by 93		Batch: W45683	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.1</b>	<b>2</b>	<b>mg/l</b>	
Prep: 20-Nov-2013 1038 by 285	Analyzed: 25-Nov-2013 0948 by 285		Batch: W45701	
<b>Total Suspended Solids</b> USGS 3765	<b>20</b>	<b>4</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1557 by 285	Analyzed: 20-Nov-2013 1406 by 285		Batch: W45688	
<b>Phosphorus</b> EPA 200.7	<b>0.18</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1616 by 311	Analyzed: 20-Nov-2013 1126 by 305		Batch: S35802	

**AIC No. 172679-2**

**Sample Identification: 010 11-19-13 945am**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Total Dissolved Solids</b> SM 2540 C 1997	<b>260</b>	<b>10</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1523 by 285	Analyzed: 20-Nov-2013 1552 by 285		Batch: W45686	
<b>Chloride</b> EPA 300.0	<b>22</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1645 by 07	Analyzed: 19-Nov-2013 1813 by 07		Batch: C16229	
<b>Sulfate</b> EPA 300.0	<b>31</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 19-Nov-2013 1645 by 07	Analyzed: 19-Nov-2013 1813 by 07		Batch: C16229	
<b>Oil and Grease</b> EPA 1664A	<b>&lt; 5</b>	<b>5</b>	<b>mg/l</b>	
Prep: 22-Nov-2013 1004 by 301	Analyzed: 22-Nov-2013 1447 by 301		Batch: B8666	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 19-Nov-2013 1519 by 21		Batch: M4131	



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
Oil and Grease	172715-2	< 5 mg/l			22Nov13 1004 by 301	22Nov13 1447 by 301		
	Batch: B8666 Duplicate	< 5 mg/l	0.00	20.0	22Nov13 1005 by 301	22Nov13 1447 by 301		
Total Dissolved Solids	172636-1	1700 mg/l			19Nov13 1457 by 285	20Nov13 1552 by 285		
	Batch: W45686 Duplicate	1700 mg/l	0.954	10.0	19Nov13 1457 by 285	20Nov13 1552 by 285		
Total Dissolved Solids	172676-1	580 mg/l			19Nov13 1523 by 285	20Nov13 1552 by 285		
	Batch: W45686 Duplicate	590 mg/l	1.36	10.0	19Nov13 1523 by 285	20Nov13 1552 by 285		
Total Suspended Solids	172617-1	< 4 mg/l			19Nov13 1557 by 285	20Nov13 1406 by 285		
	Batch: W45688 Duplicate	< 4 mg/l	0.00	20.0	19Nov13 1557 by 285	20Nov13 1406 by 285		
Total Suspended Solids	172623-1	6.8 mg/l			19Nov13 1557 by 285	20Nov13 1406 by 285		
	Batch: W45688 Duplicate	5.6 mg/l	19.4	20.0	19Nov13 1557 by 285	20Nov13 1406 by 285		
Carbonaceous BOD 5-day	172672-1	7.4 mg/l			20Nov13 1038 by 285	25Nov13 0940 by 285		
	Batch: W45701 Duplicate	7.4 mg/l	3.17	20.0	20Nov13 1038 by 285	25Nov13 0942 by 285		

**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	91.3	80.0-120			W45683	19Nov13 0954 by 93	19Nov13 1931 by 93		
Carbonaceous BOD 5-day	200 mg/l	112	84.5-115			W45701	20Nov13 1038 by 285	25Nov13 0939 by 285		
Phosphorus	5 mg/l	106	85.0-115			S35802	19Nov13 1616 by 311	20Nov13 1022 by 305		
Chloride	20 mg/l	99.2	90.0-110			C16229	19Nov13 1423 by 07	19Nov13 1500 by 07		
Sulfate	20 mg/l	98.5	90.0-110			C16229	19Nov13 1423 by 07	19Nov13 1500 by 07		
Oil and Grease	40 mg/l	90.5	78.0-114			B8666	22Nov13 0844 by 295	22Nov13 0918 by 295		
	40 mg/l	92.0	78.0-114	1.64	20.0	B8666	22Nov13 0844 by 295	22Nov13 0918 by 295		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
Ammonia as N with Distillation	172614-1	1 mg/l	93.3	80.0-120	W45683	19Nov13 0954 by 93	19Nov13 2030 by 93	5	D	
	172614-1	1 mg/l	92.6	80.0-120	W45683	19Nov13 0954 by 93	19Nov13 2032 by 93	5	D	
	Relative Percent Difference:		0.380	25.0	W45683					D
	Relative Percent Difference:		0.485	20.0	S35802					
Phosphorus	172663-1	5 mg/l	104	75.0-125	S35802	19Nov13 1616 by 311	20Nov13 1025 by 305			
	172663-1	5 mg/l	105	75.0-125	S35802	19Nov13 1616 by 311	20Nov13 1027 by 305			
	Relative Percent Difference:		0.485	20.0	S35802					
	Relative Percent Difference:		1.12	10.0	C16229					
Chloride	172647-3	20 mg/l	103	80.0-120	C16229	19Nov13 1423 by 07	19Nov13 1526 by 07			
	172647-3	20 mg/l	102	80.0-120	C16229	19Nov13 1423 by 07	19Nov13 1552 by 07			
	Relative Percent Difference:		1.12	10.0	C16229					
	Relative Percent Difference:		0.763	10.0	C16229					
Sulfate	172647-3	20 mg/l	106	80.0-120	C16229	19Nov13 1423 by 07	19Nov13 1526 by 07			
	172647-3	20 mg/l	105	80.0-120	C16229	19Nov13 1423 by 07	19Nov13 1552 by 07			
	Relative Percent Difference:		0.763	10.0	C16229					
	Relative Percent Difference:		0.763	10.0	C16229					





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

**LABORATORY BLANK RESULTS**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>PQL</u>	<u>QC Sample</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Qual</u>
Total Dissolved Solids	< 10 mg/l	10	10	W45686-1	19Nov13 1457 by 285	20Nov13 1552 by 285	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45683-1	19Nov13 0954 by 93	19Nov13 1929 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45701-1	20Nov13 1038 by 285	25Nov13 0938 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45688-1	19Nov13 1557 by 285	20Nov13 1406 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35802-1	19Nov13 1616 by 311	20Nov13 1019 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16229-1	19Nov13 1423 by 07	19Nov13 1434 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16229-1	19Nov13 1423 by 07	19Nov13 1434 by 07	
Oil and Grease	< 2 mg/l	2	2	B8666-1	22Nov13 0844 by 295	22Nov13 0918 by 295	
Fecal Coliform	< 1 /100ml	1	1	M4131-1		19Nov13 1339 by 21	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172679		
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO <sub>3</sub> N	Coli. F	NH <sub>3</sub> N, Total Phosphorus										AIC PROPOSAL NO:
Project Manager: Ms. Larken Pennington			W	A														S
Sampled By: <i>SARTAIN</i>			G	C	A	S	O	I	L								Received Temperature C 2.9	
AIC No.	Sample Identification	Date/Time Collected	R	O	T	O												Remarks
1	010	11-18-13/11-19-13 1130am-9:45am		X	X					1	X							
2	010	11-19-13 9:45am	X		X					1		X						
1	010	11-18-13/11-19-13 1130am-9:45am		X	X					1			X					
Container Type											P	P	P					Field pH calibration on _____ @ _____
Preservative											NO	T	S					Buffer:
G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate			NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate															
Turnaround Time Requested: (Please circle) <b>NORMAL</b> or EXPEDITED IN _____ DAYS					Relinquished By: <i>[Signature]</i>		Date/Time: 11-19-13 10:15AM		Received By: <i>[Signature]</i>		Date/Time: 11-19-13 1400							
Expedited results requested by: _____					Relinquished By: _____		Date/Time: _____		Received in Lab By: <i>[Signature]</i>		Date/Time: 11-19-13 1400							
Who should AIC contact with questions: Ms. Larken Pennington					Comments:													
Phone 870-312-1752 Fax: _____																		
Report Attention to: Ms. Larken Pennington																		
Report Address to: Post Office Box 231																		
El Dorado, AR 71731																		
Lpennington@edc-ark.com																		





November 25, 2013

Control No. 172679

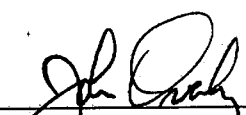
Page 1 of 5

El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 19, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

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GBMc & Associates, Inc.  
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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 19, 2013  
Daily, Weekly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172679-1	010 11-18-13 1130am	11-19-13 945am	19-Nov-2013 0945
172679-2	010 11-19-13 945am		19-Nov-2013 0945

**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", 21st edition.  
"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. 172723-1**
**Sample Identification: 010 11-19-13 0945 11-20-13 0945**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Chromium, Hexavalent</b> SM 3500-Cr B 2009 Prep: 21-Nov-2013 1559 by 308	<b>&lt; 0.007</b> Analyzed: 22-Nov-2013 0820 by 308	<b>0.007</b>	<b>mg/l</b> Batch: W45721	
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997 Prep: 21-Nov-2013 0921 by 93	<b>2.7</b> Analyzed: 21-Nov-2013 1833 by 93	<b>0.5</b>	<b>mg/l</b> Batch: W45715	<b>D</b> Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001 Prep: 21-Nov-2013 0920 by 285	<b>3.2</b> Analyzed: 26-Nov-2013 0931 by 285	<b>2</b>	<b>mg/l</b> Batch: W45714	
<b>Total Suspended Solids</b> USGS 3765 Prep: 20-Nov-2013 1611 by 285	<b>26</b> Analyzed: 21-Nov-2013 1017 by 285	<b>4</b>	<b>mg/l</b> Batch: W45704	
<b>Phosphorus</b> EPA 200.7 Prep: 20-Nov-2013 1617 by 305	<b>0.19</b> Analyzed: 21-Nov-2013 1058 by 235	<b>0.02</b>	<b>mg/l</b> Batch: S35809	
<b>Mercury, low level</b> EPA 245.7 Prep: 21-Nov-2013 0913 by 311	<b>0.0053</b> Analyzed: 21-Nov-2013 1200 by 311	<b>0.0050</b>	<b>ug/l</b> Batch: S35815	
<b>Nitrate as N</b> EPA 300.0 Prep: 20-Nov-2013 1611 by 07	<b>15</b> Analyzed: 20-Nov-2013 2033 by 07	<b>0.5</b>	<b>mg/l</b> Batch: C16234	<b>D</b> Dil: 10
<b>Total Recoverable Trivalent Chromium</b> Calculation Prep: 21-Nov-2013 0824 by 271	<b>&lt; 0.007</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.007</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Cadmium</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>0.00021</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.0001</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Copper</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>0.0061</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.001</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Lead</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>0.0021</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.001</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Nickel</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>&lt; 0.01</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.01</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Selenium</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>&lt; 0.002</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.002</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Silver</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>&lt; 0.0002</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.0002</b>	<b>mg/l</b> Batch: S35813	
<b>Total Recoverable Zinc</b> EPA 200.8 Prep: 21-Nov-2013 0824 by 271	<b>0.38</b> Analyzed: 22-Nov-2013 1301 by 305	<b>0.002</b>	<b>mg/l</b> Batch: S35813	

**AIC No. 172723-2**
**Sample Identification: 010 11-20-13 0945am**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Total Cyanide</b> SM 4500-CN C,E 1999 Prep: 21-Nov-2013 1336 by 308	<b>&lt; 0.01</b> Analyzed: 21-Nov-2013 2001 by 93	<b>0.01</b>	<b>mg/l</b> Batch: W45719	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>18</b> Analyzed: 20-Nov-2013 1444 by 21	<b>3</b>	<b>/100ml</b> Batch: M4132	<b>D</b> Dil: 2.5



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

**DUPLICATE RESULTS**

<u>Analyte</u>		<u>AIC No.</u>	<u>Result</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Dil</u>	<u>Qual</u>
Total Suspended Solids		172688-1	5.2 mg/l			20Nov13 1611 by 285	21Nov13 1017 by 285		
	Batch: W45704	Duplicate	5.2 mg/l	0.00	20.0	20Nov13 1612 by 285	21Nov13 1017 by 285		
Total Suspended Solids		172698-1	< 4 mg/l			20Nov13 1611 by 285	21Nov13 1017 by 285		
	Batch: W45704	Duplicate	< 4 mg/l	0.00	20.0	20Nov13 1612 by 285	21Nov13 1017 by 285		
Carbonaceous BOD 5-day		172720-1	< 2 mg/l			21Nov13 0920 by 285	26Nov13 0926 by 285		
	Batch: W45714	Duplicate	< 2 mg/l	0.00	20.0	21Nov13 0920 by 285	26Nov13 0928 by 285		

**LABORATORY CONTROL SAMPLE RESULTS**

<u>Analyte</u>	<u>Spike Amount</u>	<u>%</u>	<u>Limits</u>	<u>RPD</u>	<u>Limit</u>	<u>Batch</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Dil</u>	<u>Qual</u>
Chromium, Hexavalent	0.05 mg/l	110	80.0-120			W45721	21Nov13 1559 by 308	22Nov13 0820 by 308		
Total Cyanide	0.1 mg/l	93.5	85.0-115			W45719	21Nov13 1336 by 308	21Nov13 1950 by 93		
Ammonia as N with Distillation	1 mg/l	101	80.0-120			W45715	21Nov13 0921 by 93	21Nov13 1742 by 93		
Carbonaceous BOD 5-day	200 mg/l	91.9	84.5-115			W45714	21Nov13 0920 by 285	26Nov13 0925 by 285		
Phosphorus	5 mg/l	109	85.0-115			S35809	20Nov13 1117 by 271	21Nov13 0955 by 235		
Mercury, low level	0.01 ug/l	94.8	76.0-113			S35815	21Nov13 0913 by 311	21Nov13 1135 by 311		
Nitrate as N	4 mg/l	104	90.0-110			C16234	20Nov13 1612 by 07	20Nov13 1800 by 07		
Total Recoverable Cadmium	0.05 mg/l	94.8	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Copper	0.05 mg/l	97.6	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Lead	0.05 mg/l	99.6	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Nickel	0.05 mg/l	98.1	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Selenium	0.05 mg/l	99.8	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Silver	0.02 mg/l	98.6	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		
Total Recoverable Zinc	0.05 mg/l	97.1	85.0-115			S35813	21Nov13 0825 by 271	22Nov13 1245 by 305		

El Dorado Chemical Company  
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**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Chromium, Hexavalent	172724-1	0.05 mg/l	110	76.5-146	W45721	22Nov13 0820 by 308	22Nov13 0820 by 308		
	172724-1	0.05 mg/l	112	76.5-146	W45721	22Nov13 0820 by 308	22Nov13 0820 by 308		
	Relative Percent Difference:		2.16	25.0	W45721				
Total Cyanide	172670-2	0.1 mg/l	88.7	75.0-125	W45719	21Nov13 1336 by 308	21Nov13 1954 by 93		
	172670-2	0.1 mg/l	90.0	75.0-125	W45719	21Nov13 1336 by 308	21Nov13 1956 by 93		
	Relative Percent Difference:		1.45	20.0	W45719				
Ammonia as N with Distillation	172734-1	1 mg/l	101	80.0-120	W45715	21Nov13 0921 by 93	21Nov13 1745 by 93		
	172734-1	1 mg/l	89.4	80.0-120	W45715	21Nov13 0921 by 93	21Nov13 1747 by 93		
	Relative Percent Difference:		11.2	25.0	W45715				
Phosphorus	172703-1	5 mg/l	101	75.0-125	S35809	20Nov13 1117 by 271	21Nov13 0959 by 235		
	172703-1	5 mg/l	103	75.0-125	S35809	20Nov13 1117 by 271	21Nov13 1002 by 235		
	Relative Percent Difference:		0.523	20.0	S35809				
Mercury, low level	172706-1	0.01 ug/l	101	63.0-111	S35815	21Nov13 0913 by 311	21Nov13 1140 by 311		
	172706-1	0.01 ug/l	94.2	63.0-111	S35815	21Nov13 0913 by 311	21Nov13 1145 by 311		
	Relative Percent Difference:		3.66	18.0	S35815				
Nitrate as N	172711-1	4 mg/l	101	80.0-120	C16234	20Nov13 1612 by 07	21Nov13 1133 by 07		
	172711-1	4 mg/l	101	80.0-120	C16234	20Nov13 1612 by 07	21Nov13 1200 by 07		
	Relative Percent Difference:		0.148	10.0	C16234				
Total Recoverable Cadmium	172723-1	0.05 mg/l	95.6	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	96.4	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		0.869	20.0	S35813				
Total Recoverable Copper	172723-1	0.05 mg/l	98.1	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	99.5	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		1.36	20.0	S35813				
Total Recoverable Lead	172723-1	0.05 mg/l	104	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	105	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		0.846	20.0	S35813				
Total Recoverable Nickel	172723-1	0.05 mg/l	96.9	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	97.9	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		0.986	20.0	S35813				
Total Recoverable Selenium	172723-1	0.05 mg/l	96.6	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	97.1	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		0.493	20.0	S35813				
Total Recoverable Silver	172723-1	0.02 mg/l	94.1	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.02 mg/l	94.4	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		0.281	20.0	S35813				
Total Recoverable Zinc	172723-1	0.05 mg/l	90.0	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1250 by 305		
	172723-1	0.05 mg/l	93.0	75.0-125	S35813	21Nov13 0825 by 271	22Nov13 1256 by 305		
	Relative Percent Difference:		1.23	20.0	S35813				





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

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Chromium, Hexavalent	< 0.007 mg/l	0.007	0.007	W45721-1	21Nov13 1559 by 308	22Nov13 0820 by 308	
Total Cyanide	< 0.01 mg/l	0.01	0.01	W45719-1	21Nov13 1336 by 308	21Nov13 1948 by 93	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45715-1	21Nov13 0921 by 93	21Nov13 1740 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45714-1	21Nov13 0920 by 285	26Nov13 0924 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45704-1	20Nov13 1612 by 285	21Nov13 1017 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35809-1	20Nov13 1117 by 271	21Nov13 0952 by 235	
Mercury, low level	< 0.0018 ug/l	0.0018	0.0050	S35815-1	21Nov13 0913 by 311	21Nov13 1120 by 311	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16234-1	20Nov13 1612 by 07	20Nov13 1721 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4132-1		20Nov13 1342 by 21	
Total Recoverable Cadmium	< 0.0001 mg/l	0.0001	0.0001	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Copper	< 0.001 mg/l	0.001	0.001	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Lead	< 0.001 mg/l	0.001	0.001	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Nickel	< 0.01 mg/l	0.01	0.01	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Selenium	< 0.002 mg/l	0.002	0.002	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Silver	< 0.0002 mg/l	0.0002	0.0002	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	
Total Recoverable Zinc	< 0.002 mg/l	0.002	0.002	S35813-1	21Nov13 0825 by 271	22Nov13 1240 by 305	





CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172723												
Project Reference: Monthly - Permit AR0000752			MATRIX			Hg.LL	Cr <sup>6</sup>	CN.T	Metals: See Comments								AIC PROPOSAL NO:											
Project Manager: Ms. Larken Pennington			WATER	SOIL																							Carrier: Gold Star	
Sampled By: SARTAIN																	GRA	COMP										
AIC No.	Sample Identification	Date/Time Collected																										
1	010	11-19-13 / 11-20-13 0945 - 0945		X																								
1	010	11-19-13 / 11-20-13 0945 - 0945		X							X																	
2	010	0945 AM 11-20-13	X									X																
✓	010	11-19-13 / 11-20-13 0945 - 0945		X									X															
Container Type																	Field pH calibration on _____ @ _____											
Preservative																	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		A = (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> , NH <sub>4</sub> OH																	
Turnaround Time Requested: (Please circle) <u>NORMAL</u> or EXPEDITED IN _____ DAYS					Relinquished By: <i>[Signature]</i>		Date/Time: 11-20-13 0945		Received By: <i>[Signature]</i>		Date/Time: 11-20-13 1345																	
Expedited results requested by: _____					Relinquished By: _____		Date/Time: _____		Received in Lab By: <i>[Signature]</i>		Date/Time: 11-20-13 1345																	
Who should AIC contact with questions: Phone 870-312-1752 Fax: _____ Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com					Comments: Total Recoverable Metals = Ag.LL, Cd.LL, Cr <sup>3</sup> , Cu.LL, Ni, Pb.LL, Se.LL, Zn																							



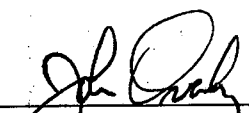
November 26, 2013  
Control No. 172723  
Page 1 of 6

El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 20, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
ATTN: Mr. David Sartain  
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El Dorado Chemical Company  
4500 North West Avenue  
El Dorado, AR 71730

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 20, 2013  
Daily, Monthly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in two (2) ice chests.  
Ice chest #1 was delivered with a custody seal intact and signed  
Ice chest #2 was delivered with a custody seal intact and signed

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>
172723-1	010 11-19-13 0945 11-20-13 0945	20-Nov-2013 0945	
172723-2	010 11-20-13 0945am	20-Nov-2013 0945	

**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", 21st edition.  
"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. 172781-1**

**Sample Identification: 010 11-21-13 0930**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997      Prep: 22-Nov-2013 0949 by 93	<b>&lt; 0.1</b> Analyzed: 25-Nov-2013 1458 by 308	<b>0.1</b> Analyzed: 25-Nov-2013 1458 by 308	<b>mg/l</b> Batch: W45737	
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001      Prep: 22-Nov-2013 1158 by 285	<b>5.2</b> Analyzed: 27-Nov-2013 0921 by 285	<b>2</b> Analyzed: 27-Nov-2013 0921 by 285	<b>mg/l</b> Batch: W45740	
<b>Total Suspended Solids</b> USGS 3765      Prep: 22-Nov-2013 0947 by 285	<b>21</b> Analyzed: 22-Nov-2013 1326 by 285	<b>4</b> Analyzed: 22-Nov-2013 1326 by 285	<b>mg/l</b> Batch: W45736	
<b>Phosphorus</b> EPA 200.7      Prep: 21-Nov-2013 1555 by 271	<b>0.22</b> Analyzed: 22-Nov-2013 1006 by 305	<b>0.02</b> Analyzed: 22-Nov-2013 1006 by 305	<b>mg/l</b> Batch: S35821	

**AIC No. 172781-2**

**Sample Identification: 010 11-21-13 0930**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Total Dissolved Solids</b> SM 2540 C 1997      Prep: 21-Nov-2013 1619 by 302	<b>240</b> Analyzed: 22-Nov-2013 1607 by 302	<b>10</b> Analyzed: 22-Nov-2013 1607 by 302	<b>mg/l</b> Batch: W45724	
<b>Chloride</b> EPA 300.0      Prep: 21-Nov-2013 1805 by 07	<b>21</b> Analyzed: 22-Nov-2013 0641 by 07	<b>0.2</b> Analyzed: 22-Nov-2013 0641 by 07	<b>mg/l</b> Batch: C16240	
<b>Sulfate</b> EPA 300.0      Prep: 21-Nov-2013 1805 by 07	<b>31</b> Analyzed: 22-Nov-2013 0641 by 07	<b>0.2</b> Analyzed: 22-Nov-2013 0641 by 07	<b>mg/l</b> Batch: C16240	
<b>Oil and Grease</b> EPA 1664A      Prep: 25-Nov-2013 0910 by 295	<b>&lt; 5</b> Analyzed: 25-Nov-2013 1510 by 295	<b>5</b> Analyzed: 25-Nov-2013 1510 by 295	<b>mg/l</b> Batch: B8669	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>70</b> Analyzed: 21-Nov-2013 1443 by 21	<b>10</b> Analyzed: 21-Nov-2013 1443 by 21	<b>/100ml</b> Batch: M4133	<b>D</b> Dil: 10



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 Dissolved Solids	172742-1	240 mg/l			21Nov13 1619 by 302	22Nov13 1607 by 285		
	Batch: W45724 Duplicate	250 mg/l	4.92	10.0	21Nov13 1619 by 302	22Nov13 1607 by 302		
Total Dissolved Solids	172743-1	< 10 mg/l			21Nov13 1619 by 302	22Nov13 1607 by 285		
	Batch: W45724 Duplicate	< 10 mg/l	0.00	10.0	21Nov13 1619 by 302	22Nov13 1607 by 302		
Total Suspended Solids	172752-1	530 mg/l			22Nov13 0947 by 285	22Nov13 1326 by 285		
	Batch: W45736 Duplicate	520 mg/l	1.14	20.0	22Nov13 0948 by 285	22Nov13 1326 by 285		
Total Suspended Solids	172760-1	< 4 mg/l			22Nov13 0947 by 285	22Nov13 1326 by 285		
	Batch: W45736 Duplicate	< 4 mg/l	0.00	20.0	22Nov13 0948 by 285	22Nov13 1326 by 285		
Carbonaceous BOD 5-day	172767-1	6.1 mg/l			22Nov13 1158 by 285	27Nov13 0909 by 285		
	Batch: W45740 Duplicate	6.1 mg/l	1.15	20.0	22Nov13 1158 by 285	27Nov13 0911 by 285		

**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	109	80.0-120			W45737	22Nov13 0950 by 93	25Nov13 1437 by 308		
Carbonaceous BOD 5-day	200 mg/l	104	84.5-115			W45740	22Nov13 1158 by 285	27Nov13 0908 by 285		
Phosphorus	5 mg/l	107	85.0-115			S35821	21Nov13 1555 by 271	22Nov13 0936 by 305		
Chloride	20 mg/l	101	90.0-110			C16240	21Nov13 1806 by 07	21Nov13 1843 by 07		
Sulfate	20 mg/l	102	90.0-110			C16240	21Nov13 1806 by 07	21Nov13 1843 by 07		
Oil and Grease	40 mg/l	89.5	78.0-114			B8669	25Nov13 0910 by 295	25Nov13 1510 by 295		
	40 mg/l	106	78.0-114	16.9	20.0	B8669	25Nov13 0910 by 295	25Nov13 1510 by 295		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172769-1	1 mg/l	90.8	80.0-120	W45737	22Nov13 0950 by 93	25Nov13 1441 by 308		
	172769-1	1 mg/l	97.2	80.0-120	W45737	22Nov13 0950 by 93	25Nov13 1443 by 308		
	Relative Percent Difference:		3.69		25.0	W45737			
Phosphorus	172769-1	5 mg/l	104	75.0-125	S35821	21Nov13 1555 by 271	22Nov13 0939 by 305		
	172769-1	5 mg/l	104	75.0-125	S35821	21Nov13 1555 by 271	22Nov13 0941 by 305		
	Relative Percent Difference:		0.107		20.0	S35821			
Chloride	172787-1	20 mg/l	98.6	80.0-120	C16240	21Nov13 1806 by 07	21Nov13 1909 by 07		
	172787-1	20 mg/l	101	80.0-120	C16240	21Nov13 1806 by 07	21Nov13 1935 by 07		
	Relative Percent Difference:		1.64		10.0	C16240			
Sulfate	172787-1	20 mg/l	100	80.0-120	C16240	21Nov13 1806 by 07	21Nov13 1909 by 07		
	172787-1	20 mg/l	104	80.0-120	C16240	21Nov13 1806 by 07	21Nov13 1935 by 07		
	Relative Percent Difference:		2.61		10.0	C16240			



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

**LABORATORY BLANK RESULTS**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>PQL</u>	<u>QC Sample</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Qual</u>
Total Dissolved Solids	< 10 mg/l	10	10	W45724-1	21Nov13 1619 by 302	22Nov13 1607 by 302	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45737-1	22Nov13 0950 by 93	25Nov13 1436 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45740-1	22Nov13 1158 by 285	27Nov13 0906 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45736-1	22Nov13 0948 by 285	22Nov13 1326 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35821-1	21Nov13 1555 by 271	22Nov13 0933 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16240-1	21Nov13 1806 by 07	21Nov13 1817 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16240-1	21Nov13 1806 by 07	21Nov13 1817 by 07	
Oil and Grease	< 2 mg/l	2	5	B8669-1	25Nov13 0910 by 295	25Nov13 1510 by 295	
Fecal Coliform	< 1 /100ml	1	1	M4133-1		21Nov13 1336 by 21	







CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172791						
Project Reference: Weekly - Permit AR0000752			MATRIX			OG (2 / Week)	TDS, Cl, SO4 (2 / Week)													AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			W	A	S																Carrier: Gold Star	
Sampled By: SARTAIN			G	C	A	S													Received Temperature C 12			
AIC No.	Sample Identification	Date/Time Collected	R	O	T	E	R	L											Remarks			
2	010	11-21-13 0930	X		X					1	X											
2	010	11-21-13 0930	X		X					1		X										
Container Type											P	P							Field pH calibration on _____ @ _____			
Preservative											S	NO							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>[Signature]</i>		Date/Time: 11-21-13 1002AM		Received By: <i>[Signature]</i>		Date/Time: 11-21-13 1345						
Expedited results requested by: _____										Relinquished By: _____		Date/Time: _____		Received in Lab By: <i>[Signature]</i>		Date/Time: 11-21-13 1345						
Who should AIC contact with questions: Ms. Larken Pennington										Comments: _____												
Phone 870-312-1752 Fax: _____																						
Report Attention to: Ms. Larken Pennington																						
Report Address to: Post Office Box 231																						
El Dorado, AR 71731																						
Lpennington@edc-ark.com																						



El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 21, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 21, 2013  
Daily, Weekly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172781-1	010 11-21-13 0930	21-Nov-2013 0930	
172781-2	010 11-21-13 0930	21-Nov-2013 0930	

**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", 21st edition.

"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. 172838-1**

**Sample Identification: 010 11-22-13 0930am**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997      Prep: 22-Nov-2013 1511 by 302	<b>1.8</b> Analyzed: 25-Nov-2013 1509 by 308	<b>0.1</b>	<b>mg/l</b> Batch: W45737	
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001      Prep: 22-Nov-2013 1433 by 285	<b>3.2</b> Analyzed: 27-Nov-2013 0952 by 285	<b>2</b>	<b>mg/l</b> Batch: W45740	
<b>Total Suspended Solids</b> USGS 3765      Prep: 25-Nov-2013 1038 by 285	<b>19</b> Analyzed: 25-Nov-2013 1535 by 285	<b>4</b>	<b>mg/l</b> Batch: W45754	
<b>Phosphorus</b> EPA 200.7      Prep: 25-Nov-2013 0913 by 271	<b>0.18</b> Analyzed: 25-Nov-2013 1619 by 305	<b>0.02</b>	<b>mg/l</b> Batch: S35836	
<b>Nitrate as N</b> EPA 300.0      Prep: 22-Nov-2013 1419 by 07	<b>17</b> Analyzed: 22-Nov-2013 2121 by 07	<b>0.5</b>	<b>mg/l</b> Batch: C16245	<b>D</b> Dil: 10

**AIC No. 172838-2**

**Sample Identification: 010 11-22-13 0930am**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>48</b> Analyzed: 22-Nov-2013 1423 by 21	<b>1</b>	<b>/100ml</b> Batch: M4135	



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
Carbonaceous BOD 5-day	172767-1	6.1 mg/l			22Nov13 1158 by 285	27Nov13 0909 by 285		
	Batch: W45740 Duplicate	6.1 mg/l	1.15	20.0	22Nov13 1158 by 285	27Nov13 0911 by 285		
Total Suspended Solids	172822-1	53 mg/l			25Nov13 1038 by 285	25Nov13 1535 by 285		
	Batch: W45754 Duplicate	53 mg/l	0.755	20.0	25Nov13 1038 by 285	25Nov13 1535 by 285		
Total Suspended Solids	172818-2	8.4 mg/l			25Nov13 1038 by 285	25Nov13 1535 by 285		
	Batch: W45754 Duplicate	8.0 mg/l	4.88	20.0	25Nov13 1038 by 285	25Nov13 1535 by 285		

**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	109	80.0-120			W45737	22Nov13 0950 by 93	25Nov13 1437 by 308		
Carbonaceous BOD 5-day	200 mg/l	104	84.5-115			W45740	22Nov13 1158 by 285	27Nov13 0908 by 285		
Phosphorus	5 mg/l	106	85.0-115			S35836	25Nov13 0913 by 271	25Nov13 1555 by 305		
Nitrate as N	4 mg/l	99.0	90.0-110			C16245	22Nov13 1351 by 07	22Nov13 1453 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172769-1	1 mg/l	90.8	80.0-120	W45737	22Nov13 0950 by 93	25Nov13 1441 by 308		
	172769-1	1 mg/l	97.2	80.0-120	W45737	22Nov13 0950 by 93	25Nov13 1443 by 308		
	Relative Percent Difference:		3.69	25.0	W45737				
Phosphorus	172834-2	5 mg/l	105	75.0-125	S35836	25Nov13 0913 by 271	25Nov13 1559 by 305		
	172834-2	5 mg/l	104	75.0-125	S35836	25Nov13 0913 by 271	25Nov13 1602 by 305		
	Relative Percent Difference:		0.892	20.0	S35836				
Nitrate as N	172798-7	4 mg/l	102	80.0-120	C16245	22Nov13 1351 by 07	22Nov13 1519 by 07		
	172798-7	4 mg/l	101	80.0-120	C16245	22Nov13 1351 by 07	22Nov13 1545 by 07		
	Relative Percent Difference:		0.591	10.0	C16245				

**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	W45737-1	22Nov13 0950 by 93	25Nov13 1436 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45740-1	22Nov13 1158 by 285	27Nov13 0906 by 285	
Total Suspended Solids	< 4 mg/l	4	4	W45754-1	25Nov13 1038 by 285	25Nov13 1535 by 285	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35836-1	25Nov13 0913 by 271	25Nov13 1552 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16245-1	22Nov13 1351 by 07	22Nov13 1402 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4135-1		22Nov13 1339 by 21	



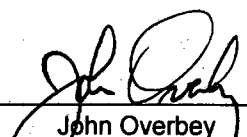


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 22, 2013. 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

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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com





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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 22, 2013  
Daily-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>
172838-1	010 11-22-13 0930am	22-Nov-2013 0930	
172838-2	010 11-22-13 0930am	22-Nov-2013 0930	

**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", 21st edition.  
"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. 172882-1**

**Sample Identification: 010 11-23-13 0930**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>2.2</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 25-Nov-2013 1103 by 308	Analyzed: 25-Nov-2013 2007 by 308		Batch: W45756	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.0</b>	<b>2</b>	<b>mg/l</b>	
Prep: 24-Nov-2013 1156 by 308	Analyzed: 29-Nov-2013 1247 by 93		Batch: W45759	
<b>Total Suspended Solids</b> USGS 3765	<b>30</b>	<b>4</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 0922 by 302	Analyzed: 26-Nov-2013 1212 by 302		Batch: W45773	
<b>Phosphorus</b> EPA 200.7	<b>0.21</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 25-Nov-2013 1634 by 271	Analyzed: 26-Nov-2013 1326 by 235		Batch: S35848	
<b>Nitrate as N</b> EPA 300.0	<b>14</b>	<b>0.5</b>	<b>mg/l</b>	<b>DH</b>
Prep: 25-Nov-2013 1052 by 07	Analyzed: 25-Nov-2013 1507 by 07		Batch: C16250	Dil: 10

**AIC No. 172882-2**

**Sample Identification: 010 11-23-13 0930**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 23-Nov-2013 1330 by 304		Batch: M4136	

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					
Carbonaceous BOD 5-day	172890-1	< 2 mg/l				24Nov13 1156 by 308	29Nov13 1231 by 93		
	Batch: W45759 Duplicate	< 2 mg/l	0.00	20.0		24Nov13 1156 by 308	29Nov13 1233 by 93		
Total Suspended Solids	172858-1	7.2 mg/l				26Nov13 0922 by 302	26Nov13 1212 by 302		
	Batch: W45773 Duplicate	6.8 mg/l	5.71	20.0		26Nov13 0922 by 302	26Nov13 1212 by 302		
Total Suspended Solids	172858-2	< 4 mg/l				26Nov13 0922 by 302	26Nov13 1212 by 302		
	Batch: W45773 Duplicate	< 4 mg/l	0.00	20.0		26Nov13 0922 by 302	26Nov13 1212 by 302		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike		Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
	Amount	%								
Ammonia as N with Distillation	1 mg/l	101	80.0-120			W45756	25Nov13 1104 by 308	25Nov13 1518 by 308		
Carbonaceous BOD 5-day	200 mg/l	110	84.5-115			W45759	24Nov13 1156 by 308	29Nov13 1230 by 93		
Phosphorus	5 mg/l	105	85.0-115			S35848	25Nov13 1635 by 271	26Nov13 1313 by 235		
Nitrate as N	4 mg/l	95.2	90.0-110			C16250	25Nov13 1053 by 07	25Nov13 1322 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Ammonia as N with Distillation	172876-1	1 mg/l	109	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1521 by 308		
	172876-1	1 mg/l	105	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1523 by 308		
	Relative Percent Difference:			2.53	25.0	W45756			
Phosphorus	172881-1	5 mg/l	104	75.0-125	S35848	25Nov13 1635 by 271	26Nov13 1317 by 235		
	172881-1	5 mg/l	102	75.0-125	S35848	25Nov13 1635 by 271	26Nov13 1320 by 235		
	Relative Percent Difference:			1.63	20.0	S35848			
Nitrate as N	172877-1	4 mg/l	98.7	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1348 by 07		
	172877-1	4 mg/l	97.1	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1414 by 07		
	Relative Percent Difference:			1.16	10.0	C16250			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC			Qual
				Sample	Preparation Date	Analysis Date	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45756-1	25Nov13 1104 by 308	25Nov13 1512 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45759-1	24Nov13 1156 by 308	29Nov13 1217 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W45773-1	26Nov13 0922 by 302	26Nov13 1212 by 302	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35848-1	25Nov13 1635 by 271	26Nov13 1310 by 235	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16250-1	25Nov13 1053 by 07	25Nov13 1255 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4136-1		23Nov13 1330 by 310	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172882				
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus												AIC PROPOSAL NO:
Project Manager: Ms. Larken Pennington			W	S																
Sampled By: SALTAIN			G	C	A	S													Received Temperature C: 2	
AIC No.	Sample Identification	Date/Time Collected	A	O	T	O													Remarks	
	010	11-23-13 0930	X	X	X															
	010	11-23-13 0930	X		X					X										
	010	11-23-13 0930		X	X						X									
Container Type																			Field pH calibration	
Preservative									P	P	P								on _____ @ _____	
G = Glass			P = Plastic			V = VOA vials			H = HCl to pH2			T = Sodium Thiosulfate						Buffer:		
NO = none			S = Sulfuric acid pH2			N = Nitric acid pH2:			B = NaOH to pH12			Z = Zinc acetate								
Turnaround Time Requested: (Please circle) <u>NORMAL</u> or EXPEDITED IN _____ DAYS					Relinquished By: <i>[Signature]</i>		Date/Time: 11-23-13 - 1000 AM		Received By: <i>[Signature]</i>		Date/Time: 11-23-13 1230									
Expedited results requested by: _____					Relinquished By: _____		Date/Time: _____		Received in Lab By: <i>[Signature]</i>		Date/Time: 11-23-13 1230									
Who should AIC contact with questions: _____					Comments: _____															
Phone 870-312-1752 Fax: _____																				
Report Attention to: Ms. Larken Pennington																				
Report Address to: Post Office Box 231																				
El Dorado, AR 71731																				
Lpennington@edc-ark.com																				

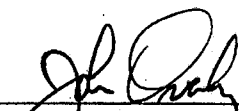


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 23, 2013. 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.

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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 23, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172882-1	010 11-23-13 0930	23-Nov-2013 0930	
172882-2	010 11-23-13 0930	23-Nov-2013 0930	

**Qualifiers:**

- D Result is from a secondary dilution factor
- H Analytical holding time exceeded regulatory requirements

**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", 21st edition.  
"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. 172877-1**

**Sample Identification: 010 11-24-13 0930am**

Analyte	Result	RL	Units	Qualifier
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>5.5</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 25-Nov-2013 1103 by 308	Analyzed: 25-Nov-2013 1553 by 308		Batch: W45756	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.4</b>	<b>2</b>	<b>mg/l</b>	
Prep: 25-Nov-2013 1456 by 285	Analyzed: 30-Nov-2013 1257 by 302		Batch: W45763	
<b>Total Suspended Solids</b> USGS 3765	<b>23</b>	<b>4</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 0922 by 302	Analyzed: 26-Nov-2013 1212 by 302		Batch: W45773	
<b>Phosphorus</b> EPA 200.7	<b>0.22</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 25-Nov-2013 1121 by 305	Analyzed: 26-Nov-2013 1149 by 235		Batch: S35837	
<b>Nitrate as N</b> EPA 300.0	<b>17</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 25-Nov-2013 1052 by 07	Analyzed: 25-Nov-2013 1441 by 07		Batch: C16250	Dil: 10

**AIC No. 172877-2**

**Sample Identification: 010 11-24-13 0930am**

Analyte	Result	RL	Units	Qualifier
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 24-Nov-2013 1330 by 304		Batch: M4137	



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					
Carbonaceous BOD 5-day	172877-1	4.4 mg/l				25Nov13 1456 by 285	30Nov13 1257 by 302		
	Batch: W45763 Duplicate	4.0 mg/l	11.0	20.0		25Nov13 1456 by 285	30Nov13 1259 by 302		
Total Suspended Solids	172858-1	7.2 mg/l				26Nov13 0922 by 302	26Nov13 1212 by 302		
	Batch: W45773 Duplicate	6.8 mg/l	5.71	20.0		26Nov13 0922 by 302	26Nov13 1212 by 302		
Total Suspended Solids	172858-2	< 4 mg/l				26Nov13 0922 by 302	26Nov13 1212 by 302		
	Batch: W45773 Duplicate	< 4 mg/l	0.00	20.0		26Nov13 0922 by 302	26Nov13 1212 by 302		

**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	101	80.0-120			W45756	25Nov13 1104 by 308	25Nov13 1518 by 308		
Carbonaceous BOD 5-day	200 mg/l	93.5	84.5-115			W45763	25Nov13 1456 by 285	30Nov13 1306 by 302		
Phosphorus	5 mg/l	110	85.0-115			S35837	25Nov13 0941 by 305	26Nov13 1024 by 235		
Nitrate as N	4 mg/l	95.2	90.0-110			C16250	25Nov13 1053 by 07	25Nov13 1322 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual	
Ammonia as N with Distillation	172876-1	1 mg/l	109	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1521 by 308			
	172876-1	1 mg/l	105	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1523 by 308			
	Relative Percent Difference:		2.53	25.0		W45756				
Phosphorus	172862-1	5 mg/l	110	75.0-125	S35837	25Nov13 0941 by 305	26Nov13 1027 by 235			
	172862-1	5 mg/l	107	75.0-125	S35837	25Nov13 0941 by 305	26Nov13 1031 by 235			
	Relative Percent Difference:		2.15	20.0		S35837				
Nitrate as N	172877-1	4 mg/l	98.7	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1348 by 07			
	172877-1	4 mg/l	97.1	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1414 by 07			
	Relative Percent Difference:		1.16	10.0		C16250				

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample				
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45756-1		25Nov13 1104 by 308	25Nov13 1512 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45763-1		25Nov13 1456 by 285	30Nov13 1254 by 302	
Total Suspended Solids	< 4 mg/l	4	4	W45773-1		26Nov13 0922 by 302	26Nov13 1212 by 302	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35837-1		25Nov13 0941 by 305	26Nov13 1020 by 235	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16250-1		25Nov13 1053 by 07	25Nov13 1255 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4137-1			24Nov13 1330 by 310	







El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 24, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 24, 2013  
Daily-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>
172877-1	010 11-24-13 0930am	24-Nov-2013 0930	
172877-2	010 11-24-13 0930am	24-Nov-2013 0930	

**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", 21st edition.  
"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. 172916-1**

**Sample Identification: 010 11/24/13-11/25/13 945-945**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997      Prep: 25-Nov-2013 1512 by 302	<b>5.1</b> Analyzed: 25-Nov-2013 2009 by 308	<b>0.5</b>	<b>mg/l</b> Batch: W45756	<b>D</b> Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001      Prep: 25-Nov-2013 1544 by 285	<b>4.0</b> Analyzed: 30-Nov-2013 1328 by 302	<b>2</b>	<b>mg/l</b> Batch: W45763	
<b>Total Suspended Solids</b> USGS 3765      Prep: 26-Nov-2013 0922 by 302	<b>20</b> Analyzed: 26-Nov-2013 1225 by 302	<b>4</b>	<b>mg/l</b> Batch: W45774	
<b>Phosphorus</b> EPA 200.7      Prep: 25-Nov-2013 1634 by 271	<b>0.20</b> Analyzed: 26-Nov-2013 1445 by 235	<b>0.02</b>	<b>mg/l</b> Batch: S35848	
<b>Nitrate as N</b> EPA 300.0      Prep: 25-Nov-2013 1446 by 07	<b>19</b> Analyzed: 25-Nov-2013 1538 by 07	<b>0.5</b>	<b>mg/l</b> Batch: C16250	<b>D</b> Dil: 10

**AIC No. 172916-2**

**Sample Identification: 010 11/25/13 945**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>140</b> Analyzed: 25-Nov-2013 1448 by 21	<b>1</b>	<b>/100ml</b> Batch: M4138	

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
Carbonaceous BOD 5-day	172877-1	4.4 mg/l			25Nov13 1456 by 285	30Nov13 1257 by 302		
	Batch: W45763 Duplicate	4.0 mg/l	11.0	20.0	25Nov13 1456 by 285	30Nov13 1259 by 302		
Total Suspended Solids	172888-1	6.4 mg/l			26Nov13 0922 by 302	26Nov13 1225 by 302		
	Batch: W45774 Duplicate	6.8 mg/l	6.06	20.0	26Nov13 0924 by 302	26Nov13 1225 by 302		
Total Suspended Solids	172889-1	4.4 mg/l			26Nov13 0922 by 302	26Nov13 1225 by 302		
	Batch: W45774 Duplicate	4.4 mg/l	0.00	20.0	26Nov13 0924 by 302	26Nov13 1225 by 302		

**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	101	80.0-120			W45756	25Nov13 1104 by 308	25Nov13 1518 by 308		
Carbonaceous BOD 5-day	200 mg/l	93.5	84.5-115			W45763	25Nov13 1456 by 285	30Nov13 1306 by 302		
Phosphorus	5 mg/l	105	85.0-115			S35848	25Nov13 1635 by 271	26Nov13 1313 by 235		
Nitrate as N	4 mg/l	95.2	90.0-110			C16250	25Nov13 1053 by 07	25Nov13 1322 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172876-1	1 mg/l	109	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1521 by 308		
	172876-1	1 mg/l	105	80.0-120	W45756	25Nov13 1104 by 308	25Nov13 1523 by 308		
	Relative Percent Difference:			2.53	25.0	W45756			
Phosphorus	172881-1	5 mg/l	104	75.0-125	S35848	25Nov13 1635 by 271	26Nov13 1317 by 235		
	172881-1	5 mg/l	102	75.0-125	S35848	25Nov13 1635 by 271	26Nov13 1320 by 235		
	Relative Percent Difference:			1.63	20.0	S35848			
Nitrate as N	172877-1	4 mg/l	98.7	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1348 by 07		
	172877-1	4 mg/l	97.1	80.0-120	C16250	25Nov13 1053 by 07	25Nov13 1414 by 07		
	Relative Percent Difference:			1.16	10.0	C16250			

**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	W45756-1	25Nov13 1104 by 308	25Nov13 1512 by 308	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45763-1	25Nov13 1456 by 285	30Nov13 1254 by 302	
Total Suspended Solids	< 4 mg/l	4	4	W45774-1	26Nov13 0924 by 302	26Nov13 1225 by 302	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35848-1	25Nov13 1635 by 271	26Nov13 1310 by 235	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16250-1	25Nov13 1053 by 07	25Nov13 1255 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4138-1		25Nov13 1448 by 304	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172916							
Project Reference: Daily - Permit AR0000752			MATRIX													AIC PROPOSAL NO:							
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R	S O I L	NO OF BOTTLES	CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus											Carrier: Gold Star		
Sampled By: Larken Pennington																					Received Temperature C: 0.3		
AIC No.	Sample Identification	Date/Time Collected																					Remarks
1	010	11/24/13-11/25/13 9:45-9:45		X	X		1	X															
2	010	11/25/13 9:45	X		X		1		X														
1	010	11/24/13-11/25/13 9:45-9:45		X	X		1				X												
Container Type								P	P	P											Field pH calibration on _____ @ _____		
Preservative								NO	T	S											Buffer:		
G = Glass			P = Plastic			V = VOA vials			H = HCl to pH2			T = Sodium Thiosulfate											
NO = none			S = Sulfuric acid pH2			N = Nitric acid pH2			B = NaOH to pH12			Z = Zinc acetate											
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS							Relinquished By: Larken Pennington		Date/Time: 11/25/13 10:00 am		Received By:		Date/Time:										
Expedited results requested by: _____							Relinquished By:		Date/Time:		Received in Lab By: [Signature]		Date/Time: 11-25-13 1530										
Who should AIC contact with questions: Ms. Larken Pennington							Comments:																
Phone 870-312-1752 Fax:																							
Report Attention to: Ms. Larken Pennington																							
Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																							

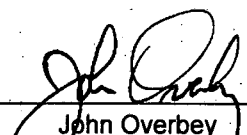


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 25, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 25, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
172916-1	010 11/24/13-11/25/13 945-945	25-Nov-2013 0945	
172916-2	010 11/25/13 945	25-Nov-2013 0945	

**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", 21st edition.
- "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. 172955-1**

**Sample Identification:** Outfall 010 11/25/13 945 11/26/13 945

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>5.9</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 26-Nov-2013 1421 by 302	Analyzed: 26-Nov-2013 1818 by 93		Batch: W45768	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.7</b>	<b>2</b>	<b>mg/l</b>	
Prep: 27-Nov-2013 0859 by 302	Analyzed: 02-Dec-2013 0937 by 302		Batch: W45794	
<b>Total Suspended Solids</b> USGS 3765	<b>13</b>	<b>4</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 1502 by 302	Analyzed: 27-Nov-2013 1019 by 302		Batch: W45783	
<b>Phosphorus</b> EPA 200.7	<b>0.21</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 1532 by 305	Analyzed: 27-Nov-2013 0958 by 305		Batch: S35859	
<b>Nitrate as N</b> EPA 300.0	<b>20</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 26-Nov-2013 1453 by 07	Analyzed: 26-Nov-2013 1500 by 07		Batch: C16254	Dil: 10

**AIC No. 172955-2**

**Sample Identification:** Outfall 010 11/26/13 945

Note: Elevated reporting limit for Fecal Coliform is due to matrix interference from non-Fecal Coliform bacteriological overgrowth.

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Total Dissolved Solids</b> SM 2540 C 1997	<b>220</b>	<b>10</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 1625 by 302	Analyzed: 27-Nov-2013 1730 by 302		Batch: W45775	
<b>Chloride</b> EPA 300.0	<b>18</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 1453 by 07	Analyzed: 26-Nov-2013 1709 by 07		Batch: C16254	
<b>Sulfate</b> EPA 300.0	<b>29</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 26-Nov-2013 1453 by 07	Analyzed: 26-Nov-2013 1709 by 07		Batch: C16254	
<b>Oil and Grease</b> EPA 1664A	<b>&lt; 5</b>	<b>5</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 0923 by 295	Analyzed: 02-Dec-2013 1340 by 295		Batch: B8683	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 10</b>	<b>10</b>	<b>/100ml</b>	<b>D</b>
	Analyzed: 26-Nov-2013 1555 by 21		Batch: M4139	Dil: 10



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
Oil and Grease	172996-2	< 5 mg/l			02Dec13 0923 by 295	02Dec13 1340 by 295		
	Batch: B8683 Duplicate	< 5 mg/l	0.00	20.0	02Dec13 0924 by 295	02Dec13 1340 by 295		
Total Dissolved Solids	172923-1	1600 mg/l			26Nov13 1133 by 302	27Nov13 1730 by 302		
	Batch: W45775 Duplicate	1600 mg/l	1.26	10.0	26Nov13 1133 by 302	27Nov13 1730 by 302		
Total Dissolved Solids	172954-2	300 mg/l			26Nov13 1625 by 302	27Nov13 1730 by 302		
	Batch: W45775 Duplicate	330 mg/l	9.19	10.0	26Nov13 1625 by 302	27Nov13 1730 by 302		
Total Suspended Solids	172930-1	44 mg/l			26Nov13 1502 by 302	27Nov13 1019 by 302		
	Batch: W45783 Duplicate	42 mg/l	4.65	20.0	26Nov13 1502 by 302	27Nov13 1019 by 302		
Total Suspended Solids	172923-2	< 4 mg/l			26Nov13 1502 by 302	27Nov13 1019 by 302		
	Batch: W45783 Duplicate	< 4 mg/l	0.00	20.0	26Nov13 1502 by 302	27Nov13 1019 by 302		
Carbonaceous BOD 5-day	172930-1	210 mg/l			27Nov13 0859 by 302	02Dec13 0922 by 302		
	Batch: W45794 Duplicate	190 mg/l	6.54	20.0	27Nov13 0900 by 302	02Dec13 0924 by 302		

**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	85.2	80.0-120			W45768	26Nov13 0805 by 302	26Nov13 1019 by 302		
Carbonaceous BOD 5-day	200 mg/l	100	84.5-115			W45794	27Nov13 0900 by 302	02Dec13 0920 by 302		
Phosphorus	5 mg/l	107	85.0-115			S35859	26Nov13 1533 by 305	27Nov13 0943 by 305		
Chloride	20 mg/l	101	90.0-110			C16254	26Nov13 1048 by 07	26Nov13 1122 by 07		
Nitrate as N	4 mg/l	100	90.0-110			C16254	26Nov13 1048 by 07	26Nov13 1122 by 07		
Sulfate	20 mg/l	102	90.0-110			C16254	26Nov13 1048 by 07	26Nov13 1122 by 07		
Oil and Grease	40 mg/l	94.5	78.0-114			B8683	02Dec13 0924 by 295	02Dec13 1340 by 295		
	40 mg/l	92.5	78.0-114	2.14	20.0	B8683	02Dec13 0924 by 295	02Dec13 1340 by 295		

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

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172911-1	1 mg/l	89.9	80.0-120	W45768	26Nov13 0805 by 302	26Nov13 1022 by 302		
	172911-1	1 mg/l	97.0	80.0-120	W45768	26Nov13 0805 by 302	26Nov13 1024 by 302		
	Relative Percent Difference:		6.50	25.0	W45768				
Phosphorus	172948-1	5 mg/l	110	75.0-125	S35859	26Nov13 1533 by 305	27Nov13 0945 by 305		
	172948-1	5 mg/l	111	75.0-125	S35859	26Nov13 1533 by 305	27Nov13 0948 by 305		
	Relative Percent Difference:		0.490	20.0	S35859				
Chloride	172923-1	20 mg/l	96.8	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1148 by 07		
	172923-1	20 mg/l	96.8	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1214 by 07		
	Relative Percent Difference:		0.0614	10.0	C16254				
Nitrate as N	172923-1	4 mg/l	96.2	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1148 by 07		
	172923-1	4 mg/l	96.6	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1214 by 07		
	Relative Percent Difference:		0.337	10.0	C16254				
Sulfate	172923-1	20 mg/l	98.1	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1148 by 07		
	172923-1	20 mg/l	98.6	80.0-120	C16254	26Nov13 1048 by 07	26Nov13 1214 by 07		
	Relative Percent Difference:		0.402	10.0	C16254				

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC Sample	Preparation Date	Analysis Date	Qual
Total Dissolved Solids	< 10 mg/l	10	10	W45775-1	26Nov13 1133 by 302	27Nov13 1730 by 302	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45768-1	26Nov13 0805 by 302	26Nov13 1017 by 302	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45794-1	27Nov13 0900 by 302	02Dec13 0919 by 302	
Total Suspended Solids	< 4 mg/l	4	4	W45783-1	26Nov13 1502 by 302	27Nov13 1019 by 302	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35859-1	26Nov13 1533 by 305	27Nov13 0937 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16254-1	26Nov13 1048 by 07	26Nov13 1057 by 07	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16254-1	26Nov13 1048 by 07	26Nov13 1057 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16254-1	26Nov13 1048 by 07	26Nov13 1057 by 07	
Oil and Grease	< 2 mg/l	2	5	B8683-1	02Dec13 0924 by 295	02Dec13 1340 by 295	
Fecal Coliform	< 1 /100ml	1	1	M4139-1		26Nov13 1134 by 21	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 172955		
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus									AIC PROPOSAL NO:	
Project Manager: Ms. Larken Pennington			W	A													S	O
Sampled By: <i>Larken Pennington</i>			G	R	A	M	P										Received Temperature C 2.1°C	
AIC No.	Sample Identification	Date/Time Collected	A	M	P <th> <th> <th> <th> <th> <th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th></th>	<th> <th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th></th>	<th> <th> <th> <th> <th colspan="2">Remarks</th> </th></th></th></th>	<th> <th> <th> <th colspan="2">Remarks</th> </th></th></th>	<th> <th> <th colspan="2">Remarks</th> </th></th>	<th> <th colspan="2">Remarks</th> </th>	<th colspan="2">Remarks</th>	Remarks	
1	010	11/25/13-11/26/13 945-945		X	X												FP AS: OUTFALL 010	
2	010	11/26/13 945	X		X					X							↓ ↓ ↓	
1	010	11/25/13-11/26/13 945-945		X	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) NORMAL or EXPEDITED IN _____ DAYS					Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/26/13 12:05		Received By:		Date/Time:							
Expedited results requested by: _____					Relinquished By:		Date/Time:		Received in Lab By: <i>Jimmy Day</i>		Date/Time: 11/26/13 1320							
Who should AIC contact with questions: Phone 870-312-1752 Fax: Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com					Comments:													



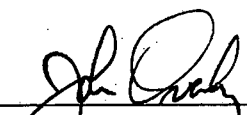


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 26, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 26, 2013  
Daily-Permit AR0000752  
Weekly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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:**

Laboratory ID	Client Sample ID	Sampled Date/Time	Notes
172955-1	Outfall 010 11/25/13 945 11/26/13 945	26-Nov-2013 0945	
172955-2	Outfall 010 11/26/13 945	26-Nov-2013 0945	

**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", 21st edition.
- "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. 173005-1**

**Sample Identification: 010 11/26/13 945 - 11/27/13 945**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>5.6</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 27-Nov-2013 1459 by 93	Analyzed: 29-Nov-2013 1415 by 93		Batch: W45804	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.4</b>	<b>2</b>	<b>mg/l</b>	
Prep: 27-Nov-2013 1431 by 302	Analyzed: 02-Dec-2013 1033 by 302		Batch: W45794	
<b>Total Suspended Solids</b> USGS 3765	<b>19</b>	<b>4</b>	<b>mg/l</b>	
Prep: 03-Dec-2013 1032 by 308	Analyzed: 03-Dec-2013 1556 by 308		Batch: W45831	
<b>Phosphorus</b> EPA 200.7	<b>0.22</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 0837 by 305	Analyzed: 02-Dec-2013 1708 by 305		Batch: S35874	
<b>Nitrate as N</b> EPA 300.0	<b>21</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 27-Nov-2013 1452 by 07	Analyzed: 27-Nov-2013 1731 by 07		Batch: C16261	Dil: 10

**AIC No. 173005-2**

**Sample Identification: 010 11/27/13 945**

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>&lt; 1</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 27-Nov-2013 1500 by 295		Batch: M4143	





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					
Carbonaceous BOD 5-day	172930-1	210 mg/l				27Nov13 0859 by 302	02Dec13 0922 by 302		
	Batch: W45794 Duplicate	190 mg/l	6.54	20.0		27Nov13 0900 by 302	02Dec13 0924 by 302		
Total Suspended Solids	173002-1	7.2 mg/l				03Dec13 1032 by 308	03Dec13 1556 by 308		
	Batch: W45831 Duplicate	7.2 mg/l	0.00	20.0		03Dec13 1032 by 308	03Dec13 1556 by 308		
Total Suspended Solids	173014-3	2900 mg/l				03Dec13 1032 by 308	03Dec13 1556 by 308		
	Batch: W45831 Duplicate	2900 mg/l	0.698	20.0		03Dec13 1032 by 308	03Dec13 1556 by 308		

**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	92.6	80.0-120			W45804	27Nov13 1500 by 93	29Nov13 1330 by 93		
Carbonaceous BOD 5-day	200 mg/l	100	84.5-115			W45794	27Nov13 0900 by 302	02Dec13 0920 by 302		
Phosphorus	5 mg/l	104	85.0-115			S35874	02Dec13 0838 by 305	02Dec13 1615 by 305		
Nitrate as N	4 mg/l	105	90.0-110			C16261	27Nov13 1059 by 07	27Nov13 1355 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike Amount	%	Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
Ammonia as N with Distillation	172973-2	1 mg/l	83.9	80.0-120	W45804	27Nov13 1500 by 93	29Nov13 1333 by 93		
	172973-2	1 mg/l	87.4	80.0-120	W45804	27Nov13 1500 by 93	29Nov13 1335 by 93		
	Relative Percent Difference:			3.26	25.0	W45804			
Phosphorus	173006-2	5 mg/l	104	75.0-125	S35874	02Dec13 0838 by 305	02Dec13 1618 by 305		
	173006-2	5 mg/l	104	75.0-125	S35874	02Dec13 0838 by 305	02Dec13 1621 by 305		
	Relative Percent Difference:			0.391	20.0	S35874			
Nitrate as N	172986-1	4 mg/l	98.8	80.0-120	C16261	27Nov13 1059 by 07	27Nov13 1158 by 07		
	172986-1	4 mg/l	98.4	80.0-120	C16261	27Nov13 1059 by 07	27Nov13 1224 by 07		
	Relative Percent Difference:			0.330	10.0	C16261			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample				
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45804-1		27Nov13 1500 by 93	29Nov13 1328 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45794-1		27Nov13 0900 by 302	02Dec13 0919 by 302	
Total Suspended Solids	< 4 mg/l	4	4	W45831-1		03Dec13 1032 by 308	03Dec13 1556 by 308	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35874-1		02Dec13 0838 by 305	02Dec13 1612 by 305	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16261-1		27Nov13 1059 by 07	27Nov13 1106 by 07	
Fecal Coliform	< 1 /100ml	1	1	M4143-1			27Nov13 1500 by 21	



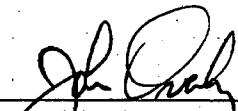


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 27, 2013. 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

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ATTN: Mr. Russell McLaren  
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ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 27, 2013  
Daily - Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
173005-1	010 11/26/13 945 - 11/27/13 945	27-Nov-2013 0945	
173005-2	010 11/27/13 945	27-Nov-2013 0945	

**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", 21st edition.

"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. 173028-1**

**Sample Identification:** Outfall 010 11/27/13 0945 11/28/13 945

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>6.5</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 02-Dec-2013 1023 by 93	Analyzed: 03-Dec-2013 1909 by 93		Batch: W45818	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.4</b>	<b>2</b>	<b>mg/l</b>	
Prep: 29-Nov-2013 1315 by 93	Analyzed: 04-Dec-2013 0857 by 93		Batch: W45810	
<b>Total Suspended Solids</b> USGS 3765	<b>23</b>	<b>4</b>	<b>mg/l</b>	
Prep: 03-Dec-2013 1032 by 308	Analyzed: 03-Dec-2013 1556 by 308		Batch: W45831	
<b>Phosphorus</b> EPA 200.7	<b>0.24</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1047 by 271	Analyzed: 02-Dec-2013 1832 by 305		Batch: S35878	
<b>Nitrate as N</b> EPA 300.0	<b>21</b>	<b>0.5</b>	<b>mg/l</b>	<b>DH</b>
Prep: 02-Dec-2013 1002 by 07	Analyzed: 02-Dec-2013 1413 by 07		Batch: C16264	Dil: 10

**AIC No. 173028-2**

**Sample Identification:** Outfall 010 11/28/13 945

<b>Analyte</b>	<b>Result</b>	<b>RL</b>	<b>Units</b>	<b>Qualifier</b>
<b>Total Dissolved Solids</b> SM 2540 C 1997	<b>240</b>	<b>10</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1640 by 93	Analyzed: 03-Dec-2013 1321 by 93		Batch: W45824	
<b>Chloride</b> EPA 300.0	<b>18</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1002 by 07	Analyzed: 02-Dec-2013 1714 by 07		Batch: C16264	
<b>Sulfate</b> EPA 300.0	<b>29</b>	<b>0.2</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1002 by 07	Analyzed: 02-Dec-2013 1714 by 07		Batch: C16264	
<b>Oil and Grease</b> EPA 1664A	<b>&lt; 5</b>	<b>5</b>	<b>mg/l</b>	
Prep: 03-Dec-2013 0806 by 295	Analyzed: 03-Dec-2013 1315 by 295		Batch: B8686	
<b>Fecal Coliform</b> SM 9222 D 1997	<b>120</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 28-Nov-2013 1400 by 295		Batch: M4144	



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

**DUPLICATE RESULTS**

Analyte	AIC No.	Result	RPD		Preparation Date	Analysis Date	Dil	Qual
			RPD	Limit				
Carbonaceous BOD 5-day	173032-1	< 2 mg/l			29Nov13 1315 by 93	04Dec13 0839 by 93		
	Batch: W45810 Duplicate	< 2 mg/l	0.00	20.0	29Nov13 1315 by 93	04Dec13 0840 by 93		
Total Dissolved Solids	173026-2	310 mg/l			02Dec13 1640 by 93	03Dec13 1321 by 93		
	Batch: W45824 Duplicate	320 mg/l	2.88	10.0	02Dec13 1642 by 93	03Dec13 1321 by 93		
Total Suspended Solids	173002-1	7.2 mg/l			03Dec13 1032 by 308	03Dec13 1556 by 308		
	Batch: W45831 Duplicate	7.2 mg/l	0.00	20.0	03Dec13 1032 by 308	03Dec13 1556 by 308		
Total Suspended Solids	173014-3	2900 mg/l			03Dec13 1032 by 308	03Dec13 1556 by 308		
	Batch: W45831 Duplicate	2900 mg/l	0.698	20.0	03Dec13 1032 by 308	03Dec13 1556 by 308		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike Amount	%	Limits	RPD		Batch	Preparation Date	Analysis Date	Dil	Qual
				RPD	Limit					
Ammonia as N with Distillation	1 mg/l	105	80.0-120			W45818	02Dec13 1024 by 93	03Dec13 1723 by 93		
Carbonaceous BOD 5-day	200 mg/l	96.8	84.5-115			W45810	29Nov13 1315 by 93	04Dec13 0837 by 93		
Phosphorus	5 mg/l	103	85.0-115			S35878	02Dec13 1048 by 271	02Dec13 1823 by 305		
Chloride	20 mg/l	99.7	90.0-110			C16264	02Dec13 1002 by 07	02Dec13 1109 by 07		
Nitrate as N	4 mg/l	96.9	90.0-110			C16264	02Dec13 1002 by 07	02Dec13 1109 by 07		
Sulfate	20 mg/l	99.5	90.0-110			C16264	02Dec13 1002 by 07	02Dec13 1109 by 07		
Oil and Grease	40 mg/l	106	78.0-114			B8686	03Dec13 0806 by 295	03Dec13 1315 by 295		
	40 mg/l	95.0	78.0-114	10.5	20.0	B8686	03Dec13 0806 by 295	03Dec13 1315 by 295		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Ammonia as N with Distillation	173026-1	1 mg/l	106	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1726 by 93		
	173026-1	1 mg/l	107	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1728 by 93		
	Relative Percent Difference:		0.408	25.0	W45818				
Phosphorus	173028-1	5 mg/l	103	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1826 by 305		
	173028-1	5 mg/l	104	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1829 by 305		
	Relative Percent Difference:		0.0653	20.0	S35878				
Chloride	173026-2	20 mg/l	94.1	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1136 by 07		
	173026-2	20 mg/l	95.8	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1203 by 07		
	Relative Percent Difference:		1.43	10.0	C16264				
Nitrate as N	173026-2	4 mg/l	94.2	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1136 by 07		
	173026-2	4 mg/l	95.4	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1203 by 07		
	Relative Percent Difference:		1.23	10.0	C16264				
Sulfate	173026-2	20 mg/l	95.4	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1136 by 07		
	173026-2	20 mg/l	96.3	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1203 by 07		
	Relative Percent Difference:		0.970	10.0	C16264				



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

**LABORATORY BLANK RESULTS**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>PQL</u>	<u>QC Sample</u>	<u>Preparation Date</u>	<u>Analysis Date</u>	<u>Qual</u>
Total Dissolved Solids	< 10 mg/l	10	10	W45824-1	02Dec13 1642 by 93	03Dec13 1321 by 93	
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45818-1	02Dec13 1024 by 93	03Dec13 1721 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45810-1	29Nov13 1315 by 93	04Dec13 0836 by 93	
Total Suspended Solids	< 4 mg/l	4	4	W45831-1	03Dec13 1032 by 308	03Dec13 1556 by 308	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35878-1	02Dec13 1048 by 271	02Dec13 1819 by 305	
Chloride	< 0.2 mg/l	0.2	0.2	C16264-1	02Dec13 1002 by 07	02Dec13 1043 by 07	
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16264-1	02Dec13 1002 by 07	02Dec13 1043 by 07	
Sulfate	< 0.2 mg/l	0.2	0.2	C16264-1	02Dec13 1002 by 07	02Dec13 1043 by 07	
Oil and Grease	< 2 mg/l	2	5	B8686-1	03Dec13 0806 by 295	03Dec13 1315 by 295	
Fecal Coliform	< 1 /100ml	1	1	M4144-1		28Nov13 1400 by 280	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 173028		
Project Reference: Daily - Permit AR0000752			MATRIX													AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			WATER	SOIL												Carrier: Gold Star		
Sampled By: <i>Larken Pennington</i>						GRA B	COMP											Received Temperature C 20
AIC No.	Sample Identification	Date/Time Collected						CBOD, TSS, NO3N	Coli.F	NH3N, Total Phosphorus								
①	010	11/27/13-11/28/13 945-945		X	X													SPAS: OUTFALL 010
②	010	11/28/13 945	X		X		X											
①	010	11/27/13-11/28/13 945-945		X	X			X										
Container Type						P	P	P										Field pH calibration on _____ @ _____
Preservative						NO	T	S										Buffer:
G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate			NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate															
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS					Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/28/13 10:40 am		Received By:		Date/Time:							
Expedited results requested by: _____					Relinquished By:		Date/Time:		Received in Lab By: <i>Shan Worm</i>		Date/Time: 11-28-13 (1305)							
Who should AIC contact with questions: Ms. Larken Pennington					Comments:													
Phone 870-312-1752 Fax:																		
Report Attention to: Ms. Larken Pennington																		
Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																		





CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 173028				
Project Reference: Weekly - Permit AR0000752			MATRIX			OG (2/Week)	TDS, Cl, SO4 (2/Week)												AIC PROPOSAL NO:	
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R	S O I L	NO OF BOTTLES	OG (2/Week)	TDS, Cl, SO4 (2/Week)										Carrier: Gold Star	
Sampled By: <i>Larken Pennington</i>																				
AIC No.	Sample Identification	Date/Time Collected																	Remarks	
②	010	11/28/13 945	X		X		1	X											SO PS: OUTFALL OIG	
②	010	11/28/13 945	X		X		1	X											L L L	
Container Type								P	P										Field pH calibration	
Preservative								S	NO										on _____ @ _____ Buffer:	
G = Glass NO = none			P = Plastic S = Sulfuric acid pH2			V = VOA vials N = Nitric acid pH2			H = HCl to pH2 B = NaOH to pH12			T = Sodium Thiosulfate Z = Zinc acetate								
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN _____ DAYS						Relinquished By: <i>Larken Pennington</i>		Date/Time: 11/28/13 10:00		Received By:		Date/Time:								
Expedited results requested by: _____						Relinquished By:		Date/Time:		Received in Lab By: <i>Shawn Worm</i>		Date/Time: 11-28-13 (1305)								
Who should AIC contact with questions: _____						Comments:														
Phone 870-312-1752 Fax: _____																				
Report Attention to: Ms. Larken Pennington																				
Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																				

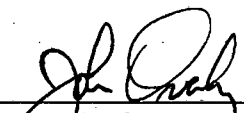


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 28, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 28, 2013  
Daily-Permit AR0000752  
Weekly-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
173028-1	Outfall 010 11/27/13 0945 11/28/13 945	28-Nov-2013 0945	
173028-2	Outfall 010 11/28/13 945	28-Nov-2013 0945	

**Qualifiers:**

- D Result is from a secondary dilution factor
- H Analytical holding time exceeded regulatory requirements

**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", 21st edition.
- "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. 173038-1**

**Sample Identification: 010 11/28/13-11/29/13 945-945**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>6.7</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 02-Dec-2013 1023 by 93	Analyzed: 03-Dec-2013 1910 by 93		Batch: W45818	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.6</b>	<b>2</b>	<b>mg/l</b>	
Prep: 29-Nov-2013 1315 by 93	Analyzed: 04-Dec-2013 0905 by 93		Batch: W45810	
<b>Total Suspended Solids</b> USGS 3765	<b>19</b>	<b>4</b>	<b>mg/l</b>	
Prep: 03-Dec-2013 1305 by 308	Analyzed: 04-Dec-2013 0903 by 308		Batch: W45834	
<b>Phosphorus</b> EPA 200.7	<b>0.24</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1047 by 271	Analyzed: 02-Dec-2013 1906 by 305		Batch: S35878	
<b>Nitrate as N</b> EPA 300.0	<b>21</b>	<b>0.5</b>	<b>mg/l</b>	<b>DH</b>
Prep: 02-Dec-2013 1002 by 07	Analyzed: 02-Dec-2013 1439 by 07		Batch: C16264	Dil: 10

**AIC No. 173038-2**

**Sample Identification: 010 11/29/13 945**

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>58</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 29-Nov-2013 1345 by 295		Batch: M4145	

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

**DUPLICATE RESULTS**

Analyte	AIC No.	Result	RPD		Preparation Date	Analysis Date	Dil	Qual
			RPD	Limit				
Carbonaceous BOD 5-day	173032-1	< 2 mg/l			29Nov13 1315 by 93	04Dec13 0839 by 93		
	Batch: W45810 Duplicate	< 2 mg/l	0.00	20.0	29Nov13 1315 by 93	04Dec13 0840 by 93		
Total Suspended Solids	173036-1	< 4 mg/l			03Dec13 1305 by 308	04Dec13 0903 by 308		
	Batch: W45834 Duplicate	< 4 mg/l	0.00	20.0	03Dec13 1305 by 308	04Dec13 0903 by 308		
Total Suspended Solids	173037-1	< 4 mg/l			03Dec13 1305 by 308	04Dec13 0903 by 308		
	Batch: W45834 Duplicate	< 4 mg/l	0.00	20.0	03Dec13 1305 by 308	04Dec13 0903 by 308		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike Amount	%	Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
Carbonaceous BOD 5-day	200 mg/l	96.8	84.5-115			W45810	29Nov13 1315 by 93	04Dec13 0837 by 93		
Phosphorus	5 mg/l	103	85.0-115			S35878	02Dec13 1048 by 271	02Dec13 1823 by 305		
Nitrate as N	4 mg/l	96.9	90.0-110			C16264	02Dec13 1002 by 07	02Dec13 1109 by 07		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Ammonia as N with Distillation	173026-1	1 mg/l	106	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1726 by 93		
	173026-1	1 mg/l	107	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1728 by 93		
	Relative Percent Difference:		0.408	25.0		W45818			
Phosphorus	173028-1	5 mg/l	103	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1826 by 305		
	173028-1	5 mg/l	104	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1829 by 305		
	Relative Percent Difference:		0.0653	20.0		S35878			
Nitrate as N	173026-2	4 mg/l	94.2	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1136 by 07		
	173026-2	4 mg/l	95.4	80.0-120	C16264	02Dec13 1002 by 07	02Dec13 1203 by 07		
	Relative Percent Difference:		1.23	10.0		C16264			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample	Preparation Date			
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45818-1	02Dec13 1024 by 93	03Dec13 1721 by 93		
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45810-1	29Nov13 1315 by 93	04Dec13 0836 by 93		
Total Suspended Solids	< 4 mg/l	4	4	W45834-1	03Dec13 1305 by 308	04Dec13 0903 by 308		
Phosphorus	< 0.02 mg/l	0.02	0.02	S35878-1	02Dec13 1048 by 271	02Dec13 1819 by 305		
Nitrate as N	< 0.05 mg/l	0.05	0.05	C16264-1	02Dec13 1002 by 07	02Dec13 1043 by 07		
Fecal Coliform	< 1 /100ml	1	1	M4145-1		29Nov13 1345 by 280		



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 173038						
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS, NO3N	Coli. F	NH3N, Total Phosphorus												AIC PROPOSAL NO:		
Project Manager: Ms. Larken Pennington			G R A B	C O M P	W A T E R				S O I L													Carrier: Gold Star
Sampled By: Larken Pennington																						
AIC No.	Sample Identification	Date/Time Collected																			Remarks	
1	010	11/28/13-11/27/13 945-945		X	X			1	X													
2	010	11/29/13 945	X		X			1		X												
1	010	11/28/13-11/24/13 145-945		X	X			1			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) NORMAL or EXPEDITED IN ___ DAYS								Relinquished By: Larken Pennington		Date/Time: 11/29/13 10:00		Received By:		Date/Time:								
Expedited results requested by: _____								Relinquished By:		Date/Time:		Received in Lab By: Shun Worm		Date/Time: 11-29-13 (1310)								
Who should AIC contact with questions: Phone 870-312-1752 Fax:								Comments:														
Report Attention to: Ms. Larken Pennington Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																						



El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 29, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 29, 2013  
Daily-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>
173038-1	010 11/28/13-11/29/13 945-945	29-Nov-2013 0945	
173038-2	010 11/29/13 945	29-Nov-2013 0945	

**Qualifiers:**

- D Result is from a secondary dilution factor
- H Analytical holding time exceeded regulatory requirements

**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", 21st edition.  
"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. 173040-1**

**Sample Identification:** Outfall 010 11/29/13 945 11/30/13 945

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Ammonia as N with Distillation</b> SM 4500-NH3 B,G 1997	<b>7.0</b>	<b>0.5</b>	<b>mg/l</b>	<b>D</b>
Prep: 02-Dec-2013 1023 by 93	Analyzed: 03-Dec-2013 1912 by 93		Batch: W45818	Dil: 5
<b>Carbonaceous BOD 5-day</b> SM 5210 B 2001	<b>4.3</b>	<b>2</b>	<b>mg/l</b>	
Prep: 30-Nov-2013 1423 by 302	Analyzed: 05-Dec-2013 0948 by 271		Batch: W45811	
<b>Total Suspended Solids</b> USGS 3765	<b>15</b>	<b>4</b>	<b>mg/l</b>	
Prep: 03-Dec-2013 1305 by 308	Analyzed: 04-Dec-2013 0903 by 308		Batch: W45834	
<b>Phosphorus</b> EPA 200.7	<b>0.21</b>	<b>0.02</b>	<b>mg/l</b>	
Prep: 02-Dec-2013 1047 by 271	Analyzed: 02-Dec-2013 1912 by 305		Batch: S35878	

**AIC No. 173040-2**

**Sample Identification:** Outfall 010 11/30/13 945

<u>Analyte</u>	<u>Result</u>	<u>RL</u>	<u>Units</u>	<u>Qualifier</u>
<b>Fecal Coliform</b> SM 9222 D 1997	<b>75</b>	<b>1</b>	<b>/100ml</b>	
	Analyzed: 30-Nov-2013 1300 by 295		Batch: M4147	

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					
Carbonaceous BOD 5-day	173045-1	2.7 mg/l				30Nov13 1423 by 302	05Dec13 0935 by 271		
	Batch: W45811 Duplicate	2.4 mg/l	14.2	20.0		30Nov13 1423 by 302	05Dec13 0937 by 285		
Total Suspended Solids	173036-1	< 4 mg/l				03Dec13 1305 by 308	04Dec13 0903 by 308		
	Batch: W45834 Duplicate	< 4 mg/l	0.00	20.0		03Dec13 1305 by 308	04Dec13 0903 by 308		
Total Suspended Solids	173037-1	< 4 mg/l				03Dec13 1305 by 308	04Dec13 0903 by 308		
	Batch: W45834 Duplicate	< 4 mg/l	0.00	20.0		03Dec13 1305 by 308	04Dec13 0903 by 308		

**LABORATORY CONTROL SAMPLE RESULTS**

Analyte	Spike		Limits	RPD	Limit	Batch	Preparation Date	Analysis Date	Dil	Qual
	Amount	%								
Ammonia as N with Distillation	1 mg/l	105	80.0-120			W45818	02Dec13 1024 by 93	03Dec13 1723 by 93		
Carbonaceous BOD 5-day	200 mg/l	100	84.5-115			W45811	30Nov13 1423 by 302	05Dec13 0933 by 271		
Phosphorus	5 mg/l	103	85.0-115			S35878	02Dec13 1048 by 271	02Dec13 1823 by 305		

**MATRIX SPIKE SAMPLE RESULTS**

Analyte	Sample	Spike		Limits	Batch	Preparation Date	Analysis Date	Dil	Qual
		Amount	%						
Ammonia as N with Distillation	173026-1	1 mg/l	106	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1726 by 93		
	173026-1	1 mg/l	107	80.0-120	W45818	02Dec13 1024 by 93	03Dec13 1728 by 93		
	Relative Percent Difference:		0.408	25.0		W45818			
Phosphorus	173028-1	5 mg/l	103	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1826 by 305		
	173028-1	5 mg/l	104	75.0-125	S35878	02Dec13 1048 by 271	02Dec13 1829 by 305		
	Relative Percent Difference:		0.0653	20.0		S35878			

**LABORATORY BLANK RESULTS**

Analyte	Result	RL	PQL	QC		Preparation Date	Analysis Date	Qual
				Sample				
Ammonia as N with Distillation	< 0.1 mg/l	0.1	0.1	W45818-1		02Dec13 1024 by 93	03Dec13 1721 by 93	
Carbonaceous BOD 5-day	< 2 mg/l	2	2	W45811-1		30Nov13 1423 by 302	05Dec13 0932 by 271	
Total Suspended Solids	< 4 mg/l	4	4	W45834-1		03Dec13 1305 by 308	04Dec13 0903 by 308	
Phosphorus	< 0.02 mg/l	0.02	0.02	S35878-1		02Dec13 1048 by 271	02Dec13 1819 by 305	
Fecal Coliform	< 1 /100ml	1	1	M4147-1			30Nov13 1300 by 280	



CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company			PO No.		NO OF BOTTLES	ANALYSES REQUESTED										AIC CONTROL NO: 173040				
Project Reference: Daily - Permit AR0000752			MATRIX			CBOD, TSS	Coll. F	NH3N, Total Phosphoru												
Project Manager: Ms. Larken Pennington			W	A	S															
Sampled By: <i>Larken Pennington</i>			G	C	A	S														Received Temperature C 2°
AIC No.	Sample Identification	Date/Time Collected	R	O	T	O														Remarks
	010	11/29/13-11/30/13 945-945		X	X				1	X										10 PS OUTFALL 010
	010	11/30/13 945	X		X				1		X									1 1 1
	010	11/29/13-11/30/13 945-945		X	X				1			X								
Container Type										P	P	P								Field pH calibration on _____ @ _____
Preservative										NO	T	S								Buffer:
G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate			NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate																	
Turnaround Time Requested: (Please circle) NORMAL or EXPEDITED IN ___ DAYS						Relinquished By: <i>Larken Pennington</i>			Date/Time: 11/30/13 12:00			Received By:			Date/Time:					
Expedited results requested by: _____						Relinquished By:			Date/Time:			Received in Lab By: <i>Shan Wen</i>			Date/Time: 11-30-13 (1245)					
Who should AIC contact with questions: Ms. Larken Pennington						Comments:														
Phone 870-312-1752 Fax:																				
Report Attention to: Ms. Larken Pennington																				
Report Address to: Post Office Box 231 El Dorado, AR 71731 Lpennington@edc-ark.com																				

①  
②  
③

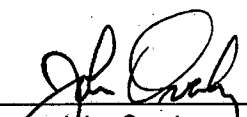


El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

This report contains the analytical results and supporting information for samples submitted on November 30, 2013. 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:

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

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

El Dorado Chemical Company  
ATTN: Mr. Kyle Wimsett  
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rmclaren@gbmcassoc.com

GBMc & Associates, Inc.  
ATTN: Ms. Amanda Gallagher  
agallagher@gbmcassoc.com



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

**SAMPLE INFORMATION**

**Project Description:**

Two (2) water sample(s) received on November 30, 2013  
Daily-Permit AR0000752  
P.O. No. 357042

**Receipt Details:**

A Chain of Custody was provided. The samples were delivered in one (1) ice chest.  
Ice chest #1 was delivered with a custody seal intact and signed

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>
173040-1	Outfall 010 11/29/13 945 11/30/13 945	30-Nov-2013 0945	
173040-2	Outfall 010 11/30/13 945	30-Nov-2013 0945	

**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", 21st edition.

"American Society for Testing and Materials" (ASTM).

"Association of Analytical Chemists" (AOAC).

November 14, 2013

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

Control No. 172174-1

Prepared for:

Ms. Larken Pennington  
El Dorado Chemical Company  
4500 North West Avenue  
El Dorado, AR 71730

Prepared by:

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

El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
4500 North West Avenue  
El Dorado, AR 71730

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

Dear Ms. Larken Pennington:

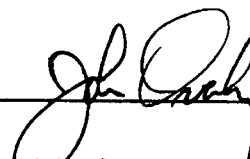
This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the laboratory director or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. The NOEC for growth occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. The NOEC for reproduction occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

  
\_\_\_\_\_  
John Overbey  
Laboratory Director

PDF cc: El Dorado Chemical Company  
ATTN: Ms. Larken Pennington  
lpennington@edc-ark.com

El Dorado Chemical Company  
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rmclaren@gbmcassoc.com

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agallagher@gbmcassoc.com



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A1: Test 1000.0

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Test 1002.0

*Ceriodaphnia dubia* Survival and Reproduction

A2: Statistics

A3: Water Chemistry

A4: Reference Toxicant

Appendix B: Chains of Custody

I. Control Acceptance Criteria

*Pimephales promelas* (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	95.0	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.400	PASS
Control Growth CV < or = 40%	16.0	PASS
Growth Minimum Significant Difference 12 to 30%	18.3	PASS
Critical Dilution CV < or = 40%	15.6	PASS

*Ceriodaphnia dubia* Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	20.6	PASS
Control CV < or = 40% per Surviving Female	31.1	PASS
Reproduction Minimum Significant Difference 13 to 47%	32.1	PASS
Critical Dilution CV < or = 40%	27.5	PASS

II. Outlined Report

A. Introduction

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

B. Source of Effluent/Dilution Water

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

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.9	7.8	7.7
pH (standard units)	7.3	7.0	7.3
Alkalinity (mg/l as CaCO <sub>3</sub> )	51	51	53
Hardness (mg/l as CaCO <sub>3</sub> )	40	40	38
Conductivity (umhos/cm)	390	390	390
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	4.9	4.2	4.3

2. Dilution Water Samples: Natural Receiving Water

- a. Dates Prepared: November 3, 2013 at 0930
- b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.5	7.6	8.5
pH (standard units)	6.4	6.5	7.0
Alkalinity (mg/l as CaCO <sub>3</sub> )	17	18	NA
Hardness (mg/l as CaCO <sub>3</sub> )	29	24	NA
Conductivity (umhos/cm)	130	130	87
Residual Chlorine (mg/l)	<0.05	<0.05	NA

C. Test Methods

1. Test methods used:

Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.

2. Endpoint: No Observable Effects Concentration (NOEC)

3. Test Conditions:

*Pimephales promelas* (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated: November 5, 2013 at 1200  
Date & Time Test Terminated: November 12, 2013 at 1018  
Type & Volume of Test Chamber: 500 ml disposable beaker  
Volume of Sample: 250 ml  
Number of Organisms per replicate: 8  
Number of Replicates per dilution: 5

*Ceriodaphnia dubia* Survival and Growth Method 1002.0

Date & Time Test Initiated: November 5, 2013 at 1530  
Date & Time Test Terminated: November 12, 2013 at 1545  
Type & Volume of Test Chamber: 30 ml disposable beaker  
Volume of Sample: 15 ml  
Number of Organisms per replicate: 1  
Number of Replicates per dilution: 10

4. Acclimation of test organisms: Obtained from in-house cultures

5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms

1. Scientific Name

- a. Test 1000.0 *Pimephales promelas*
- b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

*Pimephales promelas* (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

*Ceriodaphnia dubia* survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

*Pimephales promelas* (Fathead minnow)

Chronic reference tests are performed monthly.

A chronic reference test was performed on October 22, 2013 at 1720 to October 29, 2013 at 1637

The results were as follows: (Control No. 171796-1.)

Survival LC-50: 3370 mg/l

Growth IC-25: 2260 mg/l

Growth PMSD: 7.84

*Ceriodaphnia dubia*

Chronic reference tests are performed monthly.

A chronic reference test was performed on October 22, 2013 at 1630 to October 29, 2013 at 1620

The results were as follows: (Control No. 171796-2.)

Survival LC-50: 1853 mg/l

Growth IC-25: 1136 mg/l

Growth PMSD: 15.1

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.00
Hardness	EPA 200.7	97.7	0.930
pH	SM 4500-H+ B	101	0.134
Conductivity	EPA 120.1	104	3.22

VI. Organism History

*Pimephales promelas* (Fathead minnow)

Date: November 5, 2013

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

*Ceriodaphnia dubia*

Date: November 5, 2013

Age: <24 hours

Source: In-house culture

Water Chemistry Record:

Alkalinity: 57-64 mg/l

Hardness: 80-100 mg/l

Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

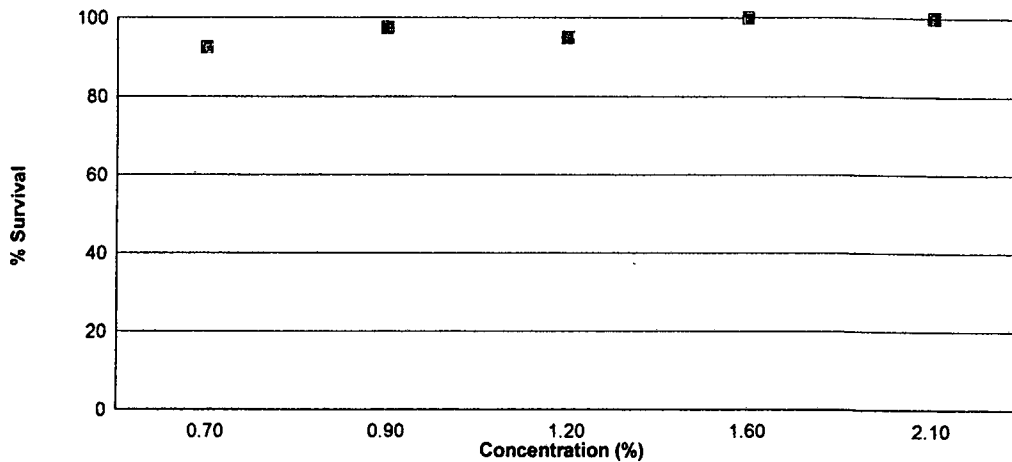
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

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

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

The test was initiated on November 5, 2013 at 1200 and continued through November 12, 2013 at 1018. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

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



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	95.0	0.380
0.7 %	92.5	0.366
0.9 %	97.5	0.370
1.2 %	95.0	0.356
1.6 %	100	0.417
2.1 %	100	0.429

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

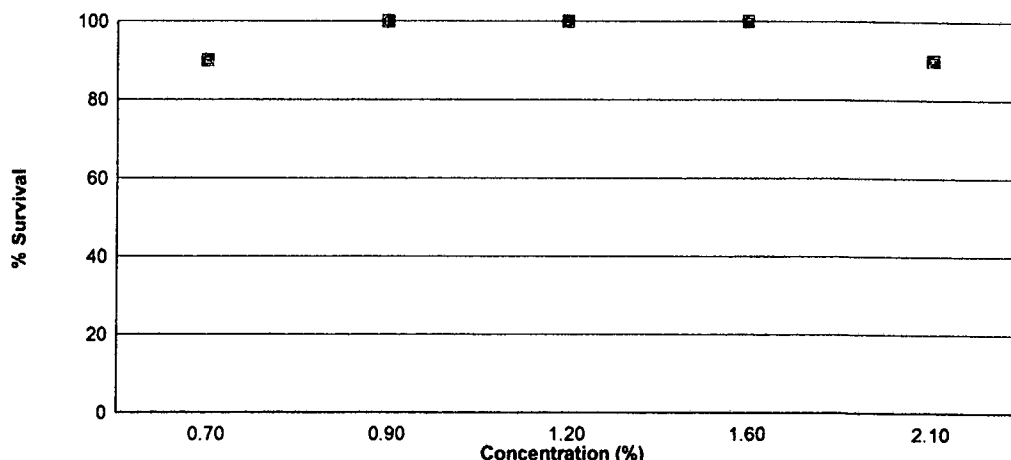
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

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

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

The test was initiated on November 5, 2013 at 1530 and continued through November 12, 2013 at 1545. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

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



Summary of the 7-day <i>Ceriodaphnia dubia</i> Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	20.6
0.7 %	90.0	19.6
0.9 %	100	21.3
1.2 %	100	18.5
1.6 %	100	18.4
2.1 %	90.0	20.4

## Appendix A1: Test 1000.0

*Pimephales promelas* (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: November 5, 2013 at 1200

Date and Time Test Terminated: November 12, 2013 at 1018

Concentration Replicate		Number of Survivors						
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	A	7	7	7	7	7	7	6
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
0.7 %	A	7	7	7	7	7	7	7
	B	8	8	7	7	7	7	7
	C	8	7	7	7	7	7	7
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
0.9 %	A	8	8	7	7	7	7	7
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
1.2 %	A	8	8	8	8	8	7	7
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	7
1.6 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
2.1 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

*Pimephales promelas* (Fathead Minnow) 7-Day Growth

Test Initiated: November 5, 2013 at 1200  
Test Terminated: November 12, 2013 at 1018

Drying Started: November 8, 2013 at 1705  
Drying Ended: November 13, 2013 at 1530

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.92962	.93205	0.00243	8	0.304
	B	.92975	.93279	0.00304	8	0.380
	C	.93180	.93478	0.00298	8	0.372
	D	.92801	.93180	0.00379	8	0.474
	E	.92971	.93267	0.00296	8	0.370
0.7 %	A	.93026	.93318	0.00292	8	0.365
	B	.92795	.93074	0.00279	8	0.349
	C	.92999	.93322	0.00323	8	0.404
	D	.92941	.93216	0.00275	8	0.344
	E	.93075	.93370	0.00295	8	0.369
0.9 %	A	.93149	.93376	0.00227	8	0.284
	B	.92925	.93212	0.00287	8	0.359
	C	.93486	.93818	0.00332	8	0.415
	D	.93282	.93595	0.00313	8	0.391
	E	.93281	.93602	0.00321	8	0.401
1.2 %	A	.93266	.93532	0.00266	8	0.332
	B	.93140	.93449	0.00309	8	0.386
	C	.93304	.93579	0.00275	8	0.344
	D	.93541	.93856	0.00315	8	0.394
	E	.93512	.93773	0.00261	8	0.326
1.6 %	A	.93760	.94046	0.00286	8	0.358
	B	.93801	.94068	0.00267	8	0.334
	C	.93795	.94164	0.00369	8	0.461
	D	.93878	.94246	0.00368	8	0.460
	E	.93898	.94274	0.00376	8	0.470
2.1 %	A	.93839	.94199	0.00360	8	0.450
	B	.93791	.94094	0.00303	8	0.379
	C	.93592	.93942	0.00350	8	0.438
	D	.92875	.93224	0.00349	8	0.436
	E	.92716	.93069	0.00353	8	0.441



## Appendix A1: Test 1002.0

*Ceriodaphnia dubia* Survival and Reproduction

 Date and Time Test Initiated: November 5, 2013 at 1530  
 Date and Time Test Terminated: November 12, 2013 at 1545

Concentration: Control														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	4	3	2	2	3	0	3	0	0	0	17	10	1.70	
5	10	11	9	9	10	0	11	4	3	4	71	10	7.10	
6	6	0	0	0	0	3	0	7	0	6	22	10	2.20	
7	1	14	12	14	12	9	14	5	7	8	96	10	9.60	
8														
TOTAL	21	28	23	25	25	12	28	16	10	18	206	10	20.6	

Concentration: 0.7 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
4	2	2	4	2	3	3	3	0	X	0	19	9	2.11	
5	10	9	9	7	9	9	10	0	X	5	68	9	7.56	
6	0	4	1	2	0	0	0	4	X	6	17	9	1.89	
7	14	1	16	12	12	12	15	8	X	2	92	9	10.2	
8														
TOTAL	26	16	30	23	24	24	28	12	0	13	196	10	19.6	

Concentration: 0.9 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
4	3	4	0	4	2	2	4	0	2	0	21	10	2.10	
5	10	9	4	10	8	8	8	0	0	3	60	10	6.00	
6	0	0	2	2	0	0	0	1	6	3	14	10	1.40	
7	15	15	12	13	13	12	14	5	11	8	118	10	11.8	
8														
TOTAL	28	28	18	29	23	22	26	6	19	14	213	10	21.3	

## Appendix A1: Test 1002.0

*Ceriodaphnia dubia* Survival and Reproduction

 Date and Time Test Initiated: November 5, 2013 at 1530  
 Date and Time Test Terminated: November 12, 2013 at 1545

Concentration: 1.2 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	0	0	0	0	0	0	10	0.00
4	3	3	3	4	2	4	3	0	0	0	22	10	2.20	
5	8	10	9	9	8	9	9	0	3	4	69	10	6.90	
6	8	9	0	0	9	7	0	3	5	3	44	10	4.40	
7	0	0	12	12	3	0	15	8	0	0	50	10	5.00	
8														
TOTAL	19	22	24	25	22	20	27	11	8	7	185	10	18.5	

Concentration: 1.6 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
3	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
4	4	3	3	3	2	2	3	0	0	0	20	10	2.00	
5	11	9	8	10	9	9	8	0	0	0	64	10	6.40	
6	5	9	7	0	0	8	5	3	6	5	48	10	4.80	
7	0	0	10	1	13	15E	0	8	10	10	52	10	5.20	
8														
TOTAL	20	21	28	14	24	19	16	11	16	15	184	10	18.4	

E = Excluded fourth brood neonates

Concentration: 2.1 %														
Day	Replicate										No. of Young	No. of Adults	Young per Adult	
	1	2	3	4	5	6	7	8	9	10				
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00	
3	0	0	0	0	0	0	0	X	0	0	0	9	0.00	
4	2	3	2	3	3	4	4	X	0	3	24	9	2.67	
5	8	8	10	9	10	10	9	X	2	0	66	9	7.33	
6	0	0	4	6	0	9	1	X	5	7	32	9	3.56	
7	14	14	10	0	14	0	11	X	8	11	82	9	9.11	
8														
TOTAL	24	25	26	18	27	23	25	0	15	21	204	10	20.4	

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Survival

Transformation of Data			Transform: Arc Sin(Square Root(Y))	
Group	Identification	Rep	Value	Transformed
1	Control	1	0.75000	1.04720
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	0.7 %	1	0.87500	1.20940
2	0.7 %	2	0.87500	1.20940
2	0.7 %	3	0.87500	1.20940
2	0.7 %	4	1.00000	1.39310
2	0.7 %	5	1.00000	1.39310
3	0.9 %	1	0.87500	1.20940
3	0.9 %	2	1.00000	1.39310
3	0.9 %	3	1.00000	1.39310
3	0.9 %	4	1.00000	1.39310
3	0.9 %	5	1.00000	1.39310
4	1.2 %	1	0.87500	1.20940
4	1.2 %	2	1.00000	1.39310
4	1.2 %	3	1.00000	1.39310
4	1.2 %	4	1.00000	1.39310
4	1.2 %	5	0.87500	1.20940
5	1.6 %	1	1.00000	1.39310
5	1.6 %	2	1.00000	1.39310
5	1.6 %	3	1.00000	1.39310
5	1.6 %	4	1.00000	1.39310
5	1.6 %	5	1.00000	1.39310
6	2.1 %	1	1.00000	1.39310
6	2.1 %	2	1.00000	1.39310
6	2.1 %	3	1.00000	1.39310
6	2.1 %	4	1.00000	1.39310
6	2.1 %	5	1.00000	1.39310

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0.2037		
W = 0.8704		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data FAIL normality test (alpha = 0.01).		

Steel's Many-One Rank Test				Transform: Arc Sin(Square Root(Y))	
Ho: Control < Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	0.7 %	24.00	16.00	5.00	
3	0.9 %	28.00	16.00	5.00	
4	1.2 %	26.00	16.00	5.00	
5	1.6 %	30.00	16.00	5.00	
6	2.1 %	30.00	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Growth

Shapiro - Wilk's Test for Normality	No Transformation
<p>D = 0.05209 W = 0.969 Critical W = 0.9 (alpha = 0.01, N = 30) Critical W = 0.927 (alpha = 0.05, N = 30)</p> <p>Data PASS normality test (alpha = 0.01).</p>	

Bartlett's Test for Homogeneity of Variance	No Transformation
<p>Calculated B1 statistic = 6.215 Critical B = 15.086 (alpha = 0.01, df = 5)</p> <p>Data PASS B1 homogeneity test at 0.01 level.</p>	

Appendix A2: Statistics

*Pimephales promelas* (Fathead minnow) Growth

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	0.02164	0.004328	1.994	
Within (Error)	24	0.05209	0.00217		
Total	29	0.07373			
Critical F = 3.9 (alpha = 0.01, df = 5,24)					
2.62 (alpha = 0.05, df = 5,24)					
Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)					

Dunnett's Test - Table 1 of 2					No Transformation	
Ho:Control<Treatment						
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05	
1	Control	0.38	0.38			
2	0.7 %	0.3662	0.3662	0.4684		
3	0.9 %	0.37	0.37	0.3394		
4	1.2 %	0.3564	0.3564	0.801		
5	1.6 %	0.4166	0.4166	-1.242		
6	2.1 %	0.4288	0.4288	-1.656		
Dunnett's critical value = 2.36 (1 Tailed, alpha = 0.05, df = 5,24)						

Dunnett's Test - Table 2 of 2					No Transformation	
Ho:Control<Treatment						
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control	
1	Control	5				
2	0.7 %	5	0.06953	18.3	0.0138	
3	0.9 %	5	0.06953	18.3	0.01	
4	1.2 %	5	0.06953	18.3	0.0236	
5	1.6 %	5	0.06953	18.3	-0.0366	
6	2.1 %	5	0.06953	18.3	-0.0488	

Appendix A2: Statistics

*Ceriodaphnia dubia* Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.7 %	9	1	10
Total	19	1	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 9. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.9 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
1.2 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
1.6 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Appendix A2: Statistics

*Ceriodaphnia dubia* Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
2.1 %	9	1	10
Total	19	1	20

Critical Fisher's value (10,10,10) ( $\alpha=0.05$ ) is 6. b value is 9. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Test				
Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	0	
1	0.7 %	10	1	
2	0.9 %	10	0	
3	1.2 %	10	0	
4	1.6 %	10	0	
5	2.1 %	10	1	



Appendix A2: Statistics

*Ceriodaphnia dubia* Reproduction

Kolmogorov Test for Normality	No Transformation
D = 0.1406 D* = 1.103 Critical D* = 1.035 (alpha = 0.01, N = 60)	
Data FAIL normality test (alpha = 0.01).	

Steel's Many-One Rank Test				No Transformation	
Ho: Control < Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	0.7 %	105.50	75.00	10.00	
3	0.9 %	111.00	75.00	10.00	
4	1.2 %	95.00	75.00	10.00	
5	1.6 %	92.50	75.00	10.00	
6	2.1 %	106.50	75.00	10.00	

Critical values are 1 tailed (k=5)

Appendix A2: Statistics

*Ceriodaphnia dubia* Reproduction

Dunnett's Test for PMSD Calculation (excluding deaths if applicable)

ANOVA Table				No Transformation	
SOURCE	DF	SS	MS	F	
Between	5	147.5	29.5	0.7617	
Within (Error)	52	2014	38.73		
Total	57	2162			
Critical F = 3.39 (alpha = 0.01, df = 5,52)					
2.39 (alpha = 0.05, df = 5,52)					
Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)					

Dunnett's Test - Table 1 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05
1	Control	20.6	20.6		
2	0.7 %	21.778	21.778	-0.412	
3	0.9 %	21.3	21.3	-0.2515	
4	1.2 %	18.5	18.5	0.7545	
5	1.6 %	18.4	18.4	0.7905	
6	2.1 %	22.667	22.667	-0.7229	
Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,52)					
WARNING - Unequal replicate sizes. Critical values assuming equal replicate sizes have been used.					

Dunnett's Test - Table 2 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control
1	Control	10			
2	0.7 %	9	6.605	32.1	-1.178
3	0.9 %	10	6.429	31.2	-0.7
4	1.2 %	10	6.429	31.2	2.1
5	1.6 %	10	6.429	31.2	2.2
6	2.1 %	9	6.605	32.1	-2.067

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: November 5, 2013 at 0903  
Date and Time Test Terminated: November 12, 2013 at 1545

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.5	7.6	7.6	7.7	8.5	8.1	7.9
	Final *1	7.3	7.4	7.2	7.4	7.6	7.2	7.1
	Final *2	7.6	8.4	7.6	8.0	8.2	7.7	7.9
pH, units	Initial	6.4	7.0	6.5	6.4	7.0	6.8	6.5
	Final *1	7.1	7.0	7.0	7.1	7.2	7.0	6.9
	Final *2	7.7	7.1	7.2	7.3	7.0	6.9	7.1
Alkalinity, mg CaCO <sub>3</sub> /l		17	NA	18	NA	NA	NA	NA
Hardness, mg CaCO <sub>3</sub> /l		29	NA	24	NA	NA	NA	NA
Conductivity, umhos/cm		130	140	130	90	87	140	130
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	NA	NA	NA

Effluent Conc.: 0.7 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	7.2	8.0	8.0	8.0	8.1	8.0
	Final *1	7.3	7.8	7.0	7.7	7.6	7.3	7.2
	Final *2	7.5	8.3	7.5	7.8	8.1	7.7	8.4
pH, units	Initial	6.7	7.1	6.8	6.6	6.8	6.9	6.5
	Final *1	7.1	7.1	6.9	7.1	7.2	6.9	6.9
	Final *2	7.8	7.4	7.3	7.4	7.0	6.9	7.0

Effluent Conc.: 0.9 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	7.2	8.0	7.9	8.0	8.2	7.9
	Final *1	7.5	7.8	7.3	7.7	6.9	7.2	6.8
	Final *2	7.8	8.2	7.5	7.8	8.2	7.8	8.1
pH, units	Initial	6.7	7.1	6.8	6.6	6.8	6.9	6.5
	Final *1	7.1	7.1	7.0	7.1	7.1	7.0	6.9
	Final *2	7.7	7.4	7.2	7.4	7.0	7.0	7.0

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: November 5, 2013 at 0903  
Date and Time Test Terminated: November 12, 2013 at 1545

Effluent Conc.: 1.2 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	7.5	7.6	7.8	8.1	8.1	8.1
	Final *1	7.4	7.9	7.3	8.0	7.5	7.2	7.1
	Final *2	7.6	8.4	7.6	8.0	8.3	7.8	8.0
pH, units	Initial	6.7	7.1	6.8	6.7	6.8	6.9	6.6
	Final *1	7.1	7.2	7.0	7.1	7.1	6.9	6.9
	Final *2	7.7	7.4	7.3	7.4	7.1	7.0	6.9

Effluent Conc.: 1.6 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.4	7.3	8.0	7.7	8.0	7.4	7.8
	Final *1	7.6	7.7	7.3	7.0	7.3	7.2	7.2
	Final *2	7.8	8.3	7.7	8.1	8.2	7.6	7.8
pH, units	Initial	6.7	7.1	6.9	6.6	6.8	7.0	6.6
	Final *1	7.1	7.1	7.1	6.9	7.1	7.0	6.9
	Final *2	7.8	7.3	7.3	7.4	7.0	7.0	7.0
Alkalinity, mg CaCO <sub>3</sub> /l	19	NA	17	NA	14	NA	NA	NA
Hardness, mg CaCO <sub>3</sub> /l	30	NA	24	NA	25	NA	NA	NA
Conductivity, umhos/cm	140	140	140	96	92	110	90	
Res. Chlorine, mg/l	0.050	NA	<0.05	NA	<0.05	NA	NA	NA

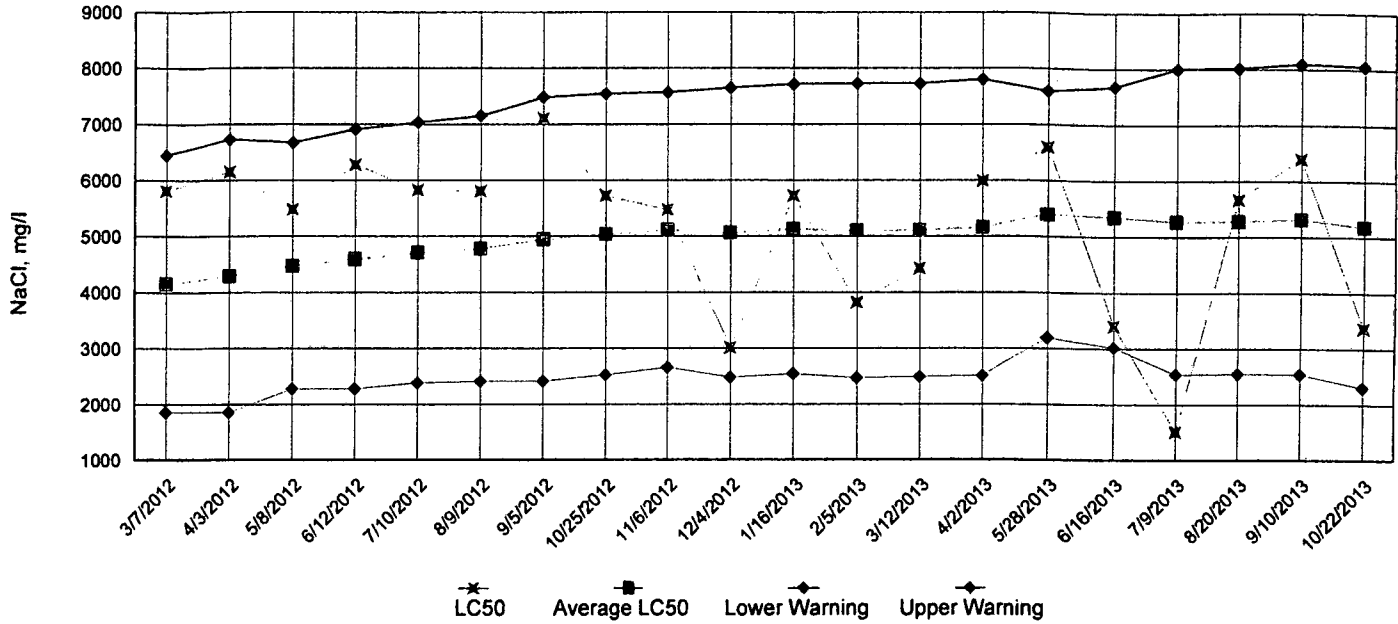
Effluent Conc.: 2.1 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.7	7.1	7.8	7.7	7.9	8.1	7.8
	Final *1	7.4	7.9	7.2	7.1	7.3	7.5	7.3
	Final *2	7.5	8.3	7.7	7.9	8.2	7.7	8.0
pH, units	Initial	6.8	7.1	6.8	6.7	6.8	7.0	6.5
	Final *1	7.1	7.2	7.0	7.0	7.1	7.0	6.9
	Final *2	7.8	7.3	7.3	7.4	7.1	7.0	7.0

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

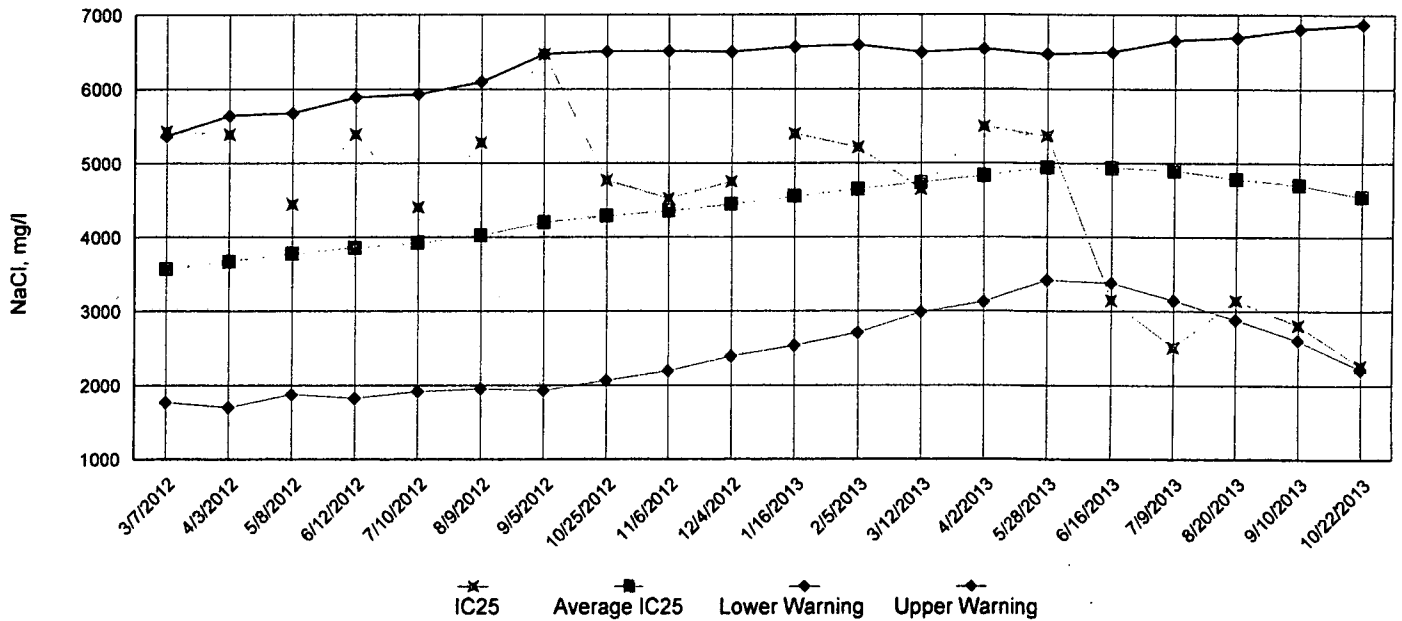
Appendix A4: Test 1000.0

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

LC50 Survival Data



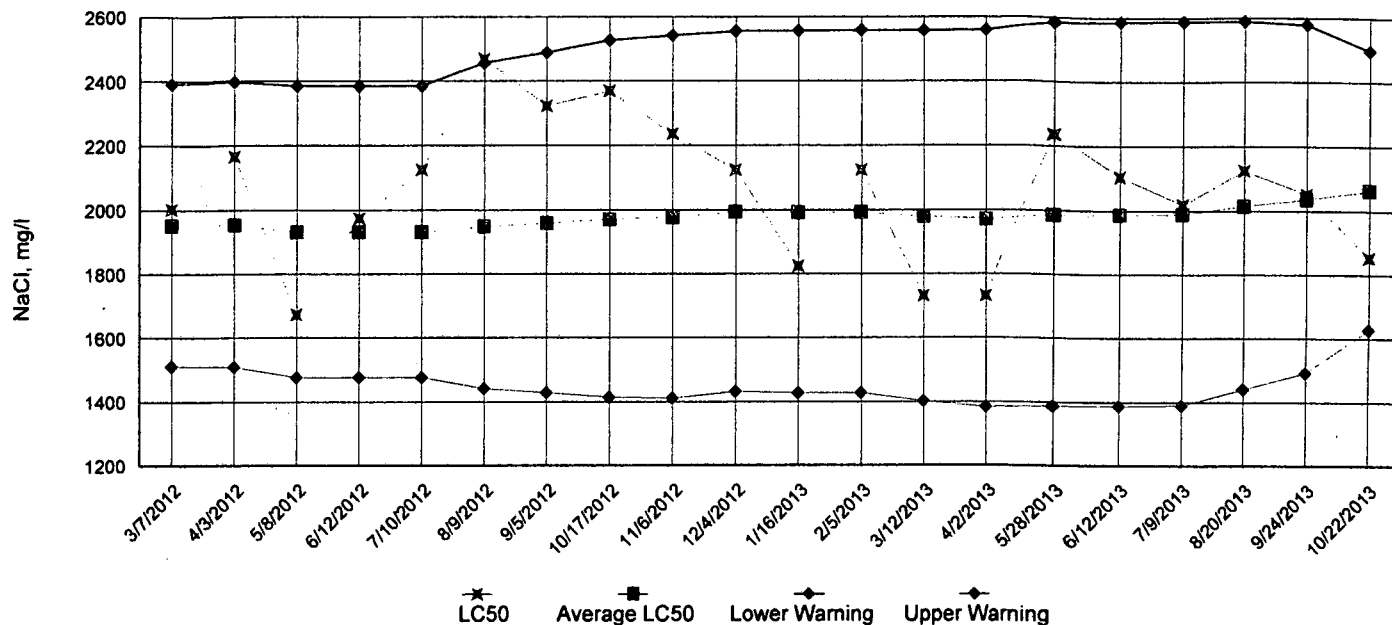
IC25 Growth Data



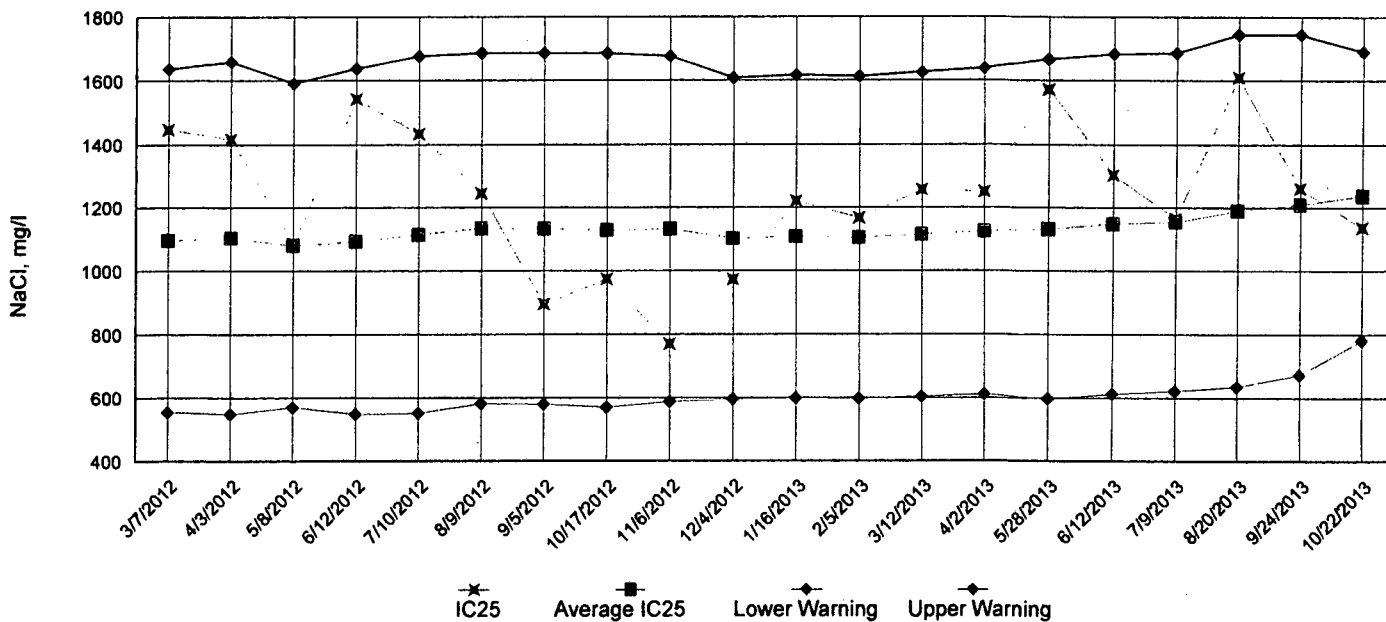
Appendix A4: Test 1002.0

Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



Appendix B: Test 1000.0

SUMMARY REPORTING FORMS  
CHRONIC BIOMONITORING  
*Pimephales promelas* (Fathead Minnow)  
SURVIVAL AND GROWTH

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: November 5, 2013 at 1200

Date and Time Test Terminated: November 12, 2013 at 1018

Dilution water used: Natural Receiving Water

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers					Mean percent survival			CV%
	A	B	C	D	E	24 hr	48 hr	7 days	
Control	75.0	100	100	100	100	97.5	97.5	95.0	11.8
0.7 %	87.5	87.5	87.5	100	100	97.5	95.0	92.5	7.40
0.9 %	87.5	100	100	100	100	100	100	97.5	5.73
1.2 %	87.5	100	100	100	87.5	100	100	95.0	7.21
1.6 %	100	100	100	100	100	100	100	100	0.00
2.1 %	100	100	100	100	100	100	100	100	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers					Mean dry weight, mg	CV%
	A	B	C	D	E		
Control	0.304	0.380	0.372	0.474	0.370	0.38	16.0
0.7 %	0.365	0.349	0.404	0.344	0.369	0.366	6.44
0.9 %	0.284	0.359	0.415	0.391	0.401	0.37	14.1
1.2 %	0.332	0.386	0.344	0.394	0.326	0.356	8.83
1.6 %	0.358	0.334	0.461	0.460	0.470	0.417	15.6
2.1 %	0.450	0.379	0.438	0.436	0.441	0.429	6.61

CV = Coefficient of variation = standard deviation \* 100 / mean



Appendix B: Test 1000.0  
SUMMARY REPORTING FORMS  
CHRONIC BIOMONITORING  
*Pimephales promelas* (Fathead Minnow)  
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

Is the mean survival significantly different ( $p=0.05$ ) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	<u>      </u> YES	<u>  X  </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u>      </u> YES	<u>      </u> NO

2. Dunnett's Test:

Is the mean dry weight (growth) significantly different ( $p=0.05$ ) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	<u>      </u> YES	<u>  X  </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u>      </u> YES	<u>      </u> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]:   0   (TLP6C)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]:   0   (TGP6C)
5. NOEC *Pimephales* Lethality:   2.1 %   (TOP6C)
6. LOEC *Pimephales* Lethality:   2.1 %   (TXP6C)
7. NOEC *Pimephales* Sublethality:   2.1 %   (TPP6C)
8. LOEC *Pimephales* Sublethality:   2.1 %   (TYP6C)
9. Coefficient of variation for *Pimephales* growth:   16   (TQP6C)



Appendix B: Test 1002.0  
SUMMARY REPORTING FORMS  
CHRONIC BIOMONITORING  
*Ceriodaphnia dubia*  
SURVIVAL AND REPRODUCTION

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: November 5, 2013 at 1530

Date and Time Test Terminated: November 12, 2013 at 1545

Dilution water used: Natural Receiving Water

PERCENT SURVIVAL

Time of Reading	Control	Percent Effluent				
		0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
7 day	100	90.0	100	100	100	90.0

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Replicates	Control	Percent Effluent				
		0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
A	21	26	28	19	20	24
B	28	16	28	22	21	25
C	23	30	18	24	28	26
D	25	23	29	25	14	18
E	25	24	23	22	24	27
F	12	24	22	20	19	23
G	28	28	26	27	16	25
H	16	12	6	11	11	0
I	10	0	19	8	16	15
J	18	13	14	7	15	21
Mean per Adult	20.6	19.6	21.3	18.5	18.4	20.4
Mean per Surviving Adult	20.6	21.8	21.3	18.5	18.4	22.7
CV %	31.1	30.0	34.2	39.1	27.5	17.5

CV = Coefficient of variation = standard deviation \* 100 / mean  
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0  
SUMMARY REPORTING FORMS  
CHRONIC BIOMONITORING  
*Ceriodaphnia dubia*  
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

Is the mean survival significantly different ( $p=0.05$ ) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	<u>      </u> YES	<u>  X  </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u>      </u> YES	<u>      </u> NO

2. Steel's Many-One Rank Test:

Is the mean number of young produced per female significantly different ( $p=0.05$ ) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	<u>      </u> YES	<u>  X  </u> NO
b.) 1/2 LOW FLOW DILUTION	(NA)	<u>      </u> YES	<u>      </u> NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]:   0   (TLP3B)
4. If you answered NO to 2.a) enter [0] otherwise enter [1]:   0   (TGP3B)
5. NOEC Ceriodaphnia Lethality:   2.1 %   (TOP3B)
6. LOEC Ceriodaphnia Lethality:   2.1 %   (TXP3B)
7. NOEC Ceriodaphnia Sublethality:   2.1 %   (TPP3B)
8. LOEC Ceriodaphnia Sublethality:   2.1 %   (TYP3B)
9. Coefficient of variation for Ceriodaphnia Reproduction:   31.1   (TQP3B)















Bio-Analytical Laboratories (BAL)  
ADEQ Certificate #88-0630  
Project X5267

### Bio-Analytical Laboratories' Executive Summary

**Permittee:** El Dorado Chemical Company  
4500 Northwest Avenue  
El Dorado, AR 71731

**Project #:** X5267

**Outfall:** 001 (treated process and contaminated storm water)

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

**Contact:** Larken Pennington

**Test Dates:** November 12 - 20, 2013

**Test Type:** Chronic Static Renewal Survival and Reproduction Test using *Ceriodaphnia dubia* (EPA Method 1002.0).  
Chronic Static Renewal Survival and Growth Test using *Pimephales promelas* (EPA Method 1000.0).

#### Results:

##### For *Ceriodaphnia dubia*:

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter TLP3B - 0 (Pass).
  2. If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter TGP3B - 1 (Fail).
  3. Report the NOEC value for survival, Parameter TOP3B - 100.0%.
  4. Report the NOEC value for reproduction, Parameter TPP3B - 56.0%.
  5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP3B - 36.38%.
- Treating the sample with ultraviolet light did not reduce the sublethal effect.

##### 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 TLP6C - 0 (Pass).
2. If the NOEC for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter TGP6C - 0 (Pass).
3. Report the NOEC value for survival, Parameter TOP6C - 100.0%
4. Report the NOEC value for growth, Parameter TPP6C - 100.0%
5. Report the largest % coefficient of variation between the control and the critical dilution, Parameter TQP6C - 11.46%.

**Note:** This study was conducted on samples that were collected due to the consolidated pipe rupture in November. The results are based on the dilutions listed in the permit number above.

This report contains a total of 49 pages, including this page. The results in the report pertain only to the samples documented in the enclosed chain of custody documents, and meet the current standards set forth by TNI and 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 CHRONIC DEFINITIVE TOXICITY TESTS FOR OUTFALL 001**

**AT**

**EL DORADO CHEMICAL COMPANY  
El Dorado, Arkansas**

**NPDES #AR0000752  
AFIN #70-00040**

**EPA Methods 1000.0 and 1002.0**

**Project X5267**

**Test Dates: November 12 - 20, 2013**

**Report Date: December 16, 2013**

**Prepared for:**  
Larken Pennington  
El Dorado Chemical Company  
4500 Northwest Avenue  
El Dorado, AR 71731

**Prepared by:**  
Ginger Briggs  
Bio-Analytical Laboratories  
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ADEQ #88-0630

BAL  
ADEQ #88-0630  
Project X5267

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Project X5267

## 1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two chronic definitive toxicity tests for Outfall 001 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the cladoceran, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. The purpose of this study is to determine if appropriately dilute effluent samples adversely affect the survival, reproduction and/or growth of the test organisms. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival, reproduction and/or growth of the test organism 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, reproduction and/or growth of the test organism in the control. The test endpoint is the No-Observed-Effect-Concentration (NOEC), the highest effluent concentration that is not significantly different from the control.

## 2.0 Methods and Materials

### 2.1 Test Methods

All methods followed were according to the latest edition of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (EPA-821-R-02-013), "Standard Methods for The Examination of Water and Wastewater. 20<sup>th</sup> Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedure.

### 2.2 Test Organisms

The *Ceriodaphnia dubia* test organisms were cultured in-house at test temperature and dilution water hardness and were less than 24 hours old at test initiation. The neonates were released within the same 8-hour period. The fathead minnow test organisms were raised in-house at test temperature and were less than 24 hours old at test initiation. The minnows were acclimated to dilution water hardness prior to test initiation. Monthly chronic reference toxicant tests were conducted in order to document organism sensitivity and demonstration of capability.

### 2.3 Dilution Water

Soft reconstituted water, made per method guidelines, was used as the dilution water and the control for the toxicity tests.

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## 2.4 Test Concentrations

The test concentrations used in the chronic toxicity tests were 100.0, 75.0, 56.0, 42.0 and 32.0 percent effluent, and a reconstituted water control. The critical dilution was 100.0 percent effluent. The *Ceriodaphnia* test was conducted using 10 replicates of one animal each for a total of 10 animals per concentration. The fathead minnow test was conducted using five replicates of eight animals each for a total of 40 animals per concentration.

## 2.5 Sample Collection

Three 24-hour composite samples of Outfall 001 were collected by El Dorado Chemical personnel on November 12, 13 and 15, 2013. Upon collection and completion of each composite, the samples were packed in ice and delivered the day of collection to the laboratory by BAL personnel. Sample temperature upon arrival for each set of samples was 0.5, 1.9 and -0.2° Celsius, respectively.

## 2.6 Sample Preparation

Upon arrival, the samples were logged in, given an identification number and refrigerated unless needed. Prior to use, the samples were warmed to  $25 \pm 1^{\circ}$  Celsius. Total residual chlorine levels (SM 4500-Cl D 1997) were measured with a Capital Controls<sup>R</sup> amperometric titrator and recorded if present. Total ammonia levels were measured using a HACH<sup>R</sup> test strip. Portions of the effluent were treated with an 18 watt ultraviolet light (UV) at a rate of 113 ml per minute. An extra 100.0 percent concentration was run in the tests to determine if any toxicity was due to pathogen interference. Dissolved oxygen (SM 4500-O G 1997) and pH (SM 4500-H+ B 1997) measurements were measured on the control and each concentration at test initiation, at test renewal and at test termination. Conductivity (SM 2510 B 1997) measurements were also taken at test initiation and at each renewal. Alkalinity (SM 2320-B 1997) and hardness (SM 2340-C 1997) levels were measured on the control and the undiluted effluent samples.

## 2.7 Monitoring of the Tests

The cladoceran test was run in a Precision<sup>R</sup> dual-programmable, illuminated incubator at a temperature of  $25 \pm 1^{\circ}$  Celsius. The fathead minnow test was run in a circulating waterbath, using a Remcor<sup>R</sup> heated liquid circulator to keep a constant temperature of  $25 \pm 1^{\circ}$  Celsius. AEMC<sup>R</sup> data-loggers were used to monitor diurnal test temperature. Test temperatures were recorded at the beginning of the day, after test renewal and at the end of the day. Light cycles and intensities were recorded twice a month.

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## 2.8 Data Analysis

*Ceriodaphnia dubia* survival data was analyzed using Fisher's Exact Test, an equality test comparing concentration data to control data. Reproduction data was analyzed using Steel's Many-One Rank Test, a non-parametric test comparing concentration data to control data. Fathead minnow survival data was analyzed using Steel's Many-One Rank Test, while the growth data was analyzed using Dunnett's Test, a parametric test. The test endpoints in the reference toxicant tests and any other quality control test endpoints were obtained by approved EPA methods of analysis.

## 3.0 Results and Discussion

The results of the *Ceriodaphnia dubia* test can be found in Table 1. After eight days of exposure, 100.0 percent survival occurred in the control and in all of the effluent dilutions. The average number of neonates per female after three broods in the control was 26.1, while the average number of neonates in the 100.0 percent critical dilution and the UV-treated critical dilution was 15.0 and 19.5, respectively. An erratic dose response occurred in the reproduction data. After further investigation, it was determined that the No-Observed-Effect-Concentration (NOEC) for survival and reproduction in this test was 100.0 and 56.0 percent effluent, respectively ( $p=.05$ ). Treating the effluent with UV-light did not reduce the sublethal effects in the critical dilution. See Appendix C, Statistical Analysis, for further information.

The fathead minnow test results can be found in Table 2. One hundred percent survival occurred in the control and 95.0 percent survival occurred in the 100.0 percent critical dilution after seven days of exposure. The average weight gained per minnow in the control was 0.383 milligram (mg) and the average weight gained in the critical dilution was 0.433 mg. The NOEC for survival and growth in this test was 100.0 percent effluent ( $p=.05$ ). Treating the effluent with UV-light was not necessary as the test passed at the non-treated 100.0 percent critical dilution.



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**Table 1: Results of the Chronic Definitive *Ceriodaphnia dubia* Test**

Percent Effluent	Percent Survival	Sig.*	Mean # Neonates-Surviving	Mean # Neonates -Total	Sig.*
Control	100.0		26.1	26.1	
32.0	100.0		23.7	23.7	
42.0	100.0		19.8	19.8	*
56.0	100.0		22.1	22.1	
75.0	100.0		18.3	18.3	*
100.0	100.0		15.0	15.0	*
100.0 UV	100.0		19.5	19.5	*

\*significant when compared to the control (p=.05). Test validity based on mean number of neonates per surviving female. NOEC value based on total mean number of neonates. +accidental death.

**Table 2: Results of the Chronic Definitive Fathead Minnow Test**

Percent Effluent	Percent Survival	Sig.*	Mean Dry Weight (mg)	Sig.*
Control	100.0		0.383	
32.0	97.5		0.408	
42.0	95.0		0.413	
56.0	97.5		0.430	
75.0	87.5		0.435	
100.0	95.0		0.433	
100.0 UV	100.0		0.425	

\*significant when compared to the control (p=.05). +Test validity based on mean dry weight per surviving larvae in the control. NOEC value based on mean dry weight per the number of larvae at the start of the test.

The monthly chronic reference toxicant tests showed those test organisms to be within the respective sensitivity range. The graphs of the results of the chronic reference toxicant tests can be found in Appendix D- Quality Assurance Charts.

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#### 4.0 Conclusions

The three composite samples of Outfall 001 collected from El Dorado Chemical Company, El Dorado, Arkansas, on November 12, 13 and 15, 2013, were not found to be lethally toxic to the fathead minnow test organisms nor the *Ceriodaphnia dubia* test organisms in the 100.0 percent critical dilution after seven and eight days of exposure, respectively ( $p=.05$ ). Sub-lethal effects (i.e., lack reproduction and growth) were noted in the critical dilution in the *Ceriodaphnia dubia* test but not in the fathead minnow test ( $p=.05$ ). Treating the samples with UV-light did not reduce the toxic effect in the *Ceriodaphnia dubia* test.

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### **5.0 References**

EPA, 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. EPA-821-R-02-013, 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. 20<sup>th</sup> Edition.

**APPENDIX A**  
**CHAIN-OF-CUSTODY DOCUMENTS**



**Bio-Analytical Laboratories**

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

Laboratory Use Only:

<b>Company:</b> El Dorado Chemical Company		<b>Phone:</b> (870) 863-1484		<b>Analysis:</b>						<b>Project Number:</b> X5267				
<b>Address:</b> 4500 Norwest Ave., El Dorado, AR 71731		<b>Fax:</b> (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform						Temperature upon arrival: 0.58 Thermometer #: 29 Tech: JLC Date: 11/12/13	Temp. upon arrival: 0.58 Preservative: (below)			
<b>Permit #:</b> AR0000752/AFIN 70-00040		<b>Purchase Order:</b>										Lab Control Number:	C8190	KE
<b>Sampler's Signature/Printed Name/Affiliation:</b> Hanken Pennington / Hanken Pennington / EDC														
<b>Date Start</b> Date End	<b>Time Start</b> Time End	C	G	# and type of container	Sample Identification									
11/11/13 11/12/13	800- 800	x		8 half gallons	001		X	X						
<b>Relinquished by/Affiliation:</b> Hanken Pennington / EDC				<b>Date:</b> 11/12/13	<b>Time:</b> 1015	<b>Received by/Affiliation:</b> J B J				<b>Date:</b> 11/12/13	<b>Time:</b> 1015			
<b>Relinquished by/Affiliation:</b>				<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>				<b>Date:</b>	<b>Time:</b>			
<b>Relinquished by/Affiliation:</b> J B J				<b>Date:</b> 11/12/13	<b>Time:</b> 1245	<b>Received by/Affiliation:</b> J C				<b>Date:</b> 11/12/13	<b>Time:</b> 1245			
<b>Method of Shipment:</b> <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 <b>Tracking #</b> _____														
<b>Comments:</b>														
COC Rev. 3.0														



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

Laboratory Use Only:

<b>Company:</b> El Dorado Chemical Company				<b>Phone:</b> (870) 863-1484		<b>Analysis:</b>					<b>Project Number:</b> X5267		
<b>Address:</b> 4500 Norwest Ave., El Dorado, AR 71731				<b>Fax:</b> (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform						<b>Temp. upon arrival:</b> 1.9°C	
<b>Permit #:</b> AR0000752/AFIN 70-00040				<b>Purchase Order:</b>								<b>Temperature upon arrival:</b> 1.9°C	
<b>Sampler's Signature/Printed Name/Affiliation:</b> Larken Pennington / Larken Pennington / EDCC												<b>Thermometer #:</b> 29	
												<b>Tech:</b> AA	
<b>Date Start</b> Date End		<b>Time Start</b> Time End		C	G	# and type of container	Sample Identification		Lab Control Number:		Preservative: (below)		
11/12/13- 11/13/13		800-800		x		8 half gallons	001		C8196		ICE		
<b>Relinquished by/Affiliation:</b> Larken Pennington / EDCC				<b>Date:</b> 11/13/13	<b>Time:</b> 1020	<b>Received by/Affiliation:</b> JBS			<b>Date:</b> 11/13/13	<b>Time:</b> 1020			
<b>Relinquished by/Affiliation:</b>				<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>			<b>Date:</b>	<b>Time:</b>			
<b>Relinquished by/Affiliation:</b> JBS				<b>Date:</b> 11/13/13	<b>Time:</b> 1300	<b>Received by/Affiliation:</b> Anne Houghton			<b>Date:</b> 11/13/13	<b>Time:</b> 1300			
<b>Method of Shipment:</b> <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 # _____													
<b>Comments:</b>													
COC Rev. 3.0													



**APPENDIX B**  
**RAW DATA SHEETS**



BIO-ANALYTICAL LABORATORIES CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Project# XS267 Date start: 11/21/13 Date end: 11/20/13

Client/Contact: EDCC/El Dorado Chemical  
 Address: 4500 Northwest Avenue El Dorado AR 71731  
 NPDES#: AR0000752 AFIN70-00040  
 Sample Description: 001 Dilution Water: Soft Reconstituted  
 Test Temperature(°C) 25+1° Technicians: EGB/AH/LC

Adults isolated: Date 11/11/13 Time: 2230

Neonates collected: Date 11/21/13 Time: 0530 Board: X13S  
 Dissolved Oxygen Meter: Model YSI55D Serial #06E2089 AU  
 pH Meter: Model Orion 230A+ Serial #105253  
 Conductivity Meter: Model Control Company Serial# 80277924  
 Amperometric Titrator: Model Fischer-Porter Serial # 92W445766

Effluent Initial D.O. (mg/L & %)/Tech	Aerate?/Minutes /Final D.O. (mg/L & %)/Tech	Receiving Water Initial D.O. (mg/L & %)/Tech	Aerate?/Minutes /Final D.O. (mg/L & %)/Tech
0. <u>11.0/127.9%</u>	0. <u>Y/20/8.1/96.0%bc</u>	0. <u>NA</u>	0. <u>NA</u>
1. <u>10.4/125.9%bc</u>	1. <u>Y/20/7.9/94.9%bc</u>	1. _____	1. _____
2. <u>10.8/124.1%bc</u>	2. <u>Y/20/8.2/96.0%bc</u>	2. _____	2. _____
3. <u>10.4/125.7%bc</u>	3. <u>Y/20/8.2/98.2%bc</u>	3. _____	3. _____
4. <u>11.0/134.3%bc</u>	4. <u>Y/20/7.9/96.5%bc</u>	4. _____	4. _____
5. <u>11.5/136.3%bc</u>	5. <u>Y/20/8.3/98.3%bc</u>	5. _____	5. _____
6. <u>8.8/99.1%bc</u>	6. <u>NO bc</u>	6. _____	6. _____
7. <u>8.4/100.1%bc</u>	7. <u>NO bc</u>	7. _____	7. _____

Total Residual Chlorine (mg/L)/Tech	Dechlorinated? Amount?/Tech	Ammonia (NH3) (mg/L)/Tech	BAL Sample # Date in Use
1. <u>&lt;0.01/AH</u>	1. <u>NO/AH</u>	1. <u>1.0/AH</u>	1. <u>C8190 11/21/13</u>
2. <u>&lt;0.01/bc</u>	2. <u>NO/bc</u>	2. <u>3.0/bc</u>	2. <u>C8196 11/14/13</u>
3. <u>&lt;0.01/bc</u>	3. <u>NO/bc</u>	3. <u>3.0/bc</u>	3. <u>C8208 11/16/13</u>

Comments:

BIO-ANALYTICAL LABORATORIES  
NUMBER NEONATES PER BROOD CERIODAPHNIA

Project # X5267 Test Dates 11/20/13 - 11/20/13

Client EI Dorado chemical

Replicate	% Concentration								
	0	32	42	56	75	100	100 UV		
A	21	22	24	17	17	20	19		
B	24	22	16	22	21	8	17		
C	26	21	20	23	18	16	22		
D	34	27	23	23	22	20	20		
E	26	24	21	21	22	10	20		
F	26	27	24	26	17	9	23		
G	11	25	20	20	11	23	17		
H	31	22	24	23	19	12	18		
I	33	25	7	21	18	12	22		
J	29	<del>28</del> <sup>25</sup>	19	25	18	20	17		
Surviving Mean	26.1	23.7	19.8	22.1	18.3	15.0	19.5		
Total Mean	26.1	23.7	19.8	22.1	18.3	15.0	19.5		
CV%*	25.57	9.34	26.28	11.58	17.48	36.36	11.66		

\*coefficient of variation = standard deviation x 100/mean (calculation based on young of the surviving adults)

Key: M=male; X=dead adult

Calculated by: LC 11/20/13

Calculations checked by: PH 11/20/13

BIO-ANALYTICAL LABORATORIES

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST-LIVE NEONATE PRODUCTION

Project# X5267 Test started: Date 11/13 Time 1310  
 Client El Dorado Chemical Test ended: Date 11/18 Time 1340  
 Technician: Day 0 SC 1 AM 2 SC 3 AM 4 SC 5 SC 6 AM 7 SC 8 SC  
 Time: Day 0 1310 1 1030 2 1350 3 1210 4 1315 5 1345 6 1210 7 1410 8 1340  
 Temp. (°C): Day 0 24.8 1 24.2 2 24.0 3 24.0 4 25.0 5 25.0 6 25.0 7 25.0 8 24.0

Conc %	Day	A	B	C	D	E	F	G	H	I	J	Number of Live Adults
0	1	0										10
	2	0										10
	3	0										10
	4	0										10
	5	0	5	3	3	4	2	4	5	3	1	9/10 SC 11/10
	6	0	10	9	12	12	13	7	12	13	12	10
	7	0										10
	8	0	9	14	19	10	11	0	14	17	16	10
32	1	0										10
	2	0										10
	3	0										10
	4	0							1	0		10
	5	0	3	0	4	0	3	2	0	2	3	10
	6	0	9	12	10	13	12	12	10	11	9	16
	7	0										10
	8	0	10	9	13	11	12	11	11	12	10	10
42	1	0										10
	2	0										10
	3	0										10
	4	0						3	1	0		10
	5	0	3	0	2	0	0	0	0	0	3	10
	6	0	9	8	10	11	10	0	10	0	7	10
	7	0										10
	8	0	4	12	11	10	12	0	13	0	9	10
56	1	0										10
	2	0										10
	3	0										10
	4	0										10
	5	0	2	3	0	2	2	0	3	1	2	10
	6	0	8	8	8	6	12	11	9	9	11	10
	7	0										10
	8	0	12	12	14	13	12	9	11	10	12	10
75	1	0										6
	2	0										10
	3	0										10
	4	0										10
	5	0	4	0	3	1	0	1	1	0	1	10
	6	0	7	8	10	12	6	10	9	10	8	10
	7	0										10
	8	0	10	10	9	9	11	0	9	8	9	10
100	1	0										10
	2	0										10
	3	0										10
	4	0										10
	5	0	0	3	2	2	0	2	0		2	10
	6	0	8	9	9	8	4	10	8	8	11	10
	7	0										10
	8	0	0	9	9	0	5	11	4	4	7	10

Key: X=dead adult, X<sup>n</sup>=adult had n neonates before death, M=male CERIO2 Rev.2.0

BIO-ANALYTICAL LABORATORIES  
CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST-LIVE NEONATE PRODUCTION

Project# NS267 Test started: Date 1/16/83 Time 1310  
 Client El Dorado Chemical Test ended: Date 1/20/83 Time 1340  
 Technician: Day 0 JC 1 PH 2 JC 3 PH 4 JC 5 JC 6 PH 7 JC 8 JC  
 Time: Day 0 1310 1 1000 2 1330 3 1210 4 1315 5 1345 6 1310 7 1410 8 1340  
 Temp. (°C): Day 0 24.8 1 24.2 2 24.0 3 24.0 4 25.0 5 25.0 6 25.0 7 25.0 8 24.0

Conc %	Day	A	B	C	D	E	F	G	H	I	J	Number of Live Adults	
100 W- H+D	1	0										10	
	2	0										10	
	3	0										10	
	4	0										10	
	5	0	0	0		1	2	0		3	0	W	
	6	0	7	10	11	9	9	10	10	10	9	10	
	7	0											10
	8	11	8	12	9	10	12	7	8	9	8	10	
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	1												
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	5												
	6												
	7												
	8												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												

Day/# water used	8559	1	2	3	4	5	6	7	8	
Concentration: Control <u>504</u>										
pH	7.3	7.3	7.3	7.4	7.3	7.4	7.4	7.2	7.4	7.5
DO (mg/l)	8.3	8.5	8.3	8.1	8.3	8.5	8.4	8.2	8.4	8.3
Cond (umhos/cm)	1809	179.6	181.1	178.8	180.6	183.8	181.3	185.3		
Alkalinity (mg/L)	28.0							32.0		
Hardness (mg/L)	48.0							52.0		
Concentration: <u>322</u>										
pH	7.5	7.4	7.3	7.3	7.3	7.4	7.4	7.3	7.4	7.5
DO (mg/l)	8.2	8.4	8.2	8.2	8.3	8.5	8.0	8.4	8.2	8.5
Cond (umhos/cm)	265	264	265	262	264	265	265	269		
Concentration: <u>422</u>										
pH	7.5	7.4	7.3	7.4	7.3	7.4	7.4	7.3	7.4	7.3
DO (mg/l)	8.2	8.4	8.2	8.3	8.1	8.5	8.0	8.3	8.2	8.5
Cond (umhos/cm)	287	289	289	285	288	287	289	292		
Concentration: <u>502</u>										
pH	7.5	7.5	7.4	7.4	7.3	7.4	7.5	7.3	7.5	7.4
DO (mg/l)	8.2	8.4	8.1	8.2	8.1	8.4	8.0	8.3	8.4	8.2
Cond (umhos/cm)	324	326	325	322	324	323	326	329		
Concentration: <u>752</u>										
pH	7.5	7.5	7.4	7.5	7.3	7.4	7.6	7.3	7.6	7.4
DO (mg/l)	8.2	8.4	8.0	8.1	8.1	8.3	8.0	8.3	8.4	8.2
Cond (umhos/cm)	372	375	374	371	373	370	373	371		
Concentration: <u>1002</u>										
pH	7.6	7.5	7.4	7.4	7.4	7.5	7.6	7.3	7.6	7.4
DO (mg/l)	8.1	8.4	8.2	8.1	8.5	8.3	8.2	8.4	8.3	8.2
Cond (umhos/cm)	439	444	439	436	440	430	439	445		
Tech-prerenewal		PH	LC	PH	LC	LC		PH	LC	LC
Tech-postrenewal	LC	PH	LC	LC	LC	LC		PH	PH	
Alkalinity (mg/l)	56.0		52.0		52.0					
Hardness (mg/l)	48.0		56.0		60.0					

Key: prerenewal/postrenewal

BIO-ANALYTICAL LABORATORIES CHRONIC WATER QUALITY DATA (CHR CHEM Rev. 2.0)  
 Project# X5267 Test started: Date 10/13 Time 1510  
 Client El Dorado Chemical Test ended: Date 10/13 Time 1310  
 Organism C. dubia

Day/# water used	0	1	2	3	4	5	6	7	8
Concentration: <del>Control</del>		100µM THF							
pH	7.4	7.5	7.6	7.5	7.4	7.5	7.6	7.5	7.4
DO (mg/l)	7.8	8.3	7.7	8.0	8.5	7.9	8.3	8.2	7.9
Cond (umhos/cm)	438	441	432	442	440	416	435	439	
Alkalinity (mg/L)									
Hardness (mg/L)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH									
DO (mg/l)									
Cond (umhos/cm)									
Tech-prerenewal		AH	LC	AH	LC	LC	AH	LC	LC
Tech-postrenewal	LC	AH	LC	LC	LC	LC	AH	AH	
Alkalinity (mg/l)									
Hardness (mg/l)									

Key: prerenewal/postrenewal

BIO-ANALYTICAL LABORATORIES  
PIMEPHALES PROMELAS SURVIVAL AND GROWTH DATA SHEET

Project# X5267 Date started: 11/12/13 Date ended 11/19/13

Client/Contact EDCC/El Dorado Chemical  
Address 4500 Northwest Avenue El Dorado AR 71731  
NPDES# AR0000752 AFIN70-00040  
Sample Description 001 Dilution Water Soft Reconstituted  
Test Temperature (°C) 25+1° Celsius Technicians EGB/AH/LC  
Test organism age 24h Vendor/ID# BAL/111213

Feeding Times

Day	Technician/Time/Amount (per replicate)		
	AM	NOON	PM
0			AH/1640/0.20ml
1	JC/1085/0.10ml	JC/1100/0.10ml	AH/1730/0.10ml
2	JC/1093/0.10ml	AH/1030/0.10ml	AH/1650/0.10ml
3	JC/1085/0.10ml	JC/1135/0.10ml	AH/1425/0.10ml
4	JC/1102/0.20ml		JC/1350/0.20ml
5	JC/1105/0.20ml		JC/1350/0.20ml
6	JC/1052/0.10ml	JC/1100/0.10ml	JC/1525/0.10ml

Dissolved Oxygen Meter: Model YSI55D Serial #06E2089 AU  
pH Meter: Model Orion 230A+ Serial #105253  
Conductivity Meter: Model Control Company Serial #80277924  
Amperometric Titrator: Model Fischer-Porter Serial #92W445766

Effluent Initial DO (mg/L & %)/Tech	Aerate?/Minutes /Final DO (mg/L & %)/Tech	Receiving Water Initial DO (mg/L & %)/Tech	Aerate?/Minutes /Final DO (mg/L & %)/Tech
0. 11.0/127.9% Jc	0. y/b/08.1/96.0% Jc	0. NA	0. NA
1. 10.4/125.9% Jc	1. y/b/07.9/94.9% Jc	1. NA	1. NA
2. 10.8/124.1% Jc	2. y/b/08.2/96.4% Jc	2. NA	2. NA
3. 10.4/125.7% Jc	3. y/b/08.2/98.2% Jc	3. NA	3. NA
4. 11.0/134.3% Jc	4. y/b/07.9/96.5% Jc	4. NA	4. NA
5. 11.5/136.3% Jc	5. y/b/08.3/98.3% Jc	5. NA	5. NA
6. 8.8/99.1% Jc	6. no Jc	6. NA	6. NA

Total Residual Chlorine (mg/L)/Tech	Dechlorinated? Amount?/Tech	Ammonia (NH3) (mg/L)/Tech	BAL Sample # Date in use
1. <0.01 Jc	1. no Jc	1. 1.0 Jc	1. C8190 11/12/13
2. <0.01 Jc	2. no Jc	2. 3.0 Jc	2. C8196 11/14/13
3. <0.01 Jc	3. no Jc	3. 3.0 Jc	3. C8208 11/16/13

Comments:

BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA

Project# X5267 Test started: Date 11/13 Time 1430  
 Client El Dorado Chemical Test ended: Date 11/13 Time 1045  
 Technician: Day 0 AH 1 SC 2 AH 3 SC 4 SC 5 SC 6 AH 7 SC  
 Time: Day 0 1430 1 1130 2 1335 3 1150 4 1235 5 1205 6 1155 7 1045  
 Temperature Day 0 24.6 1 25.0 2 26.0 3 26.0 4 25.0 5 25.0 6 25.0 7 25.0

Conc. %	Rep.	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
0	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞
32	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞
42	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞
56	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞
75	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞
100	A	∞	∞	∞	∞	∞	∞	∞	∞
	B	∞	∞	∞	∞	∞	∞	∞	∞
	C	∞	∞	∞	∞	∞	∞	∞	∞
	D	∞	∞	∞	∞	∞	∞	∞	∞
	E	∞	∞	∞	∞	∞	∞	∞	∞

Minnow2



BIO-ANALYTICAL LABORATORIES 7-DAY CHRONIC MINNOW SURVIVAL DATA

Project# X5267 Test started: Date 1/21/13 Time 1430  
 Client El Dorado Chemical Test ended: Date 1/23 Time 1245  
 Technician: Day0 ah 1 jc 2 ah 3 jc 4 jc 5 jc 6 ah 7 jc  
 Time: Day0 1430 1 1100 2 1325 3 1130 4 1035 5 1205 6 1155 7 1245  
 Temperature Day0 24.6 1 25.0 2 26.0 3 26.0 4 25.0 5 25.0 6 25.0 7 25.0

Conc. %	Rep.	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
100 UV- H+D	A	8	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8	8
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								
	A								
	B								
	C								
	D								
	E								

Project#/Client: X5267/EDCC Temp Start (°C): 105.0 Tech: JC Date: 11/13/13 Time: 1245  
 Temp End (°C): 125.0 Tech: PH Date: 11/20/13 Time: 0850

Conc. %	Replicate/ Pan number	Wt. of pan(g)/ Date weighed: Tech:	Wt. of pan + larvae(g)/ Date weighed: Tech:	Total wt. of larvae (g)	Original # of larvae at test initiation	Mean Dry wt. of larvae (mg)	Mean Dry wt. - surviving larvae (mg) Control Only*
0	A 96	0.9552 11/13/13 JC	0.9586 11/20/13 PH	0.0034	8	0.425	
	B 97	0.9569	0.9600	0.0031	8	0.388	
	C 98	0.9564	0.9594	0.0030	8	0.375	
	D 99	0.9590	0.9615	0.0025	8	0.313	
	E 100	0.9580	0.9613	0.0033	8	0.413	
32	A 101	0.9572	0.9603	0.0031	8	0.388	
	B 102	0.9577	0.9608	0.0031	8	0.388	
	C 103	0.9565	0.9603	0.0038	8	0.475	
	D 104	0.9571	0.9601	0.0030	8	0.375	
	E 105	0.9609	0.9642	0.0033	8	0.413	
42	A 106	0.9599	0.9635	0.0036	8	0.450	
	B 107	0.9609	0.9646	0.0037	8	0.463	
	C 108	0.9603	0.9632	0.0029	8	0.363	
	D 109	0.9567	0.9600	0.0033	8	0.413	
	E 110	0.9548	0.9578	0.0030	8	0.375	
56	A 111	0.9531	0.9567	0.0036	8	0.450 PH 11/20/13	
	B 112	0.9524	0.9557	0.0033	8	0.413	
	C 113	0.9572	0.9609	0.0037	8	0.463	
	D 114	0.9581	0.9616	0.0035	8	0.438	
	E 115	0.9596	0.9627	0.0031	8	0.388	
75	A 116	0.9620	0.9651	0.0031	8	0.388	
	B 117	0.9597	0.9632	0.0035	8	0.438	
	C 118	0.9620	0.9660	0.0040	8	0.500	
	D 119	0.9641	0.9673	0.0032	8	0.400	
	E 120	0.9635	0.9671	0.0036	8	0.450	
100	A 121	0.9671	0.9707	0.0036	8	0.450	
	B 122	0.9649	0.9680	0.0031	8	0.388	
	C 123	0.9616	0.9648	0.0032	8	0.400	
	D 124	0.9630	0.9668	0.0038	8	0.475	
	E 125	0.9584	0.9620	0.0036	8	0.450	

\* Test acceptance of control weight based on surviving larvae at end of test.

Calculated by: PH 11/20/13 Calculations checked by: EGB 11/20/13

Project#/Client: YSW/EDCC Temp Start (°C) 105.0° Tech zc Date: 11/19/13 Time: 1245  
 Temp End (°C) 104.0° Tech PH Date: 11/20/13 Time: 0850

Conc.	Replicate/ Pan number	Wt. of pan(g)/ Date weighed: <u>11/15/13</u> Tech: <u>zc</u>	Wt. of pan + larvae(g)/ Date weighed: <u>11/20/13</u> Tech: <u>PH</u>	Total wt. of larvae (g)	Original # of larvae at test initiation	Mean Dry wt. of larvae (mg)	Mean Dry wt. - surviving larvae (mg) Control Only*
100 UV tr'd	A 126	0.9545	0.9581	0.0036	8	0.450	
	B 127	0.9582	0.9620	0.0038	8	0.475	
	C 128	0.9554	0.9588	0.0034	8	0.425	
	D 129	0.9525	0.9553	0.0028	8	0.350	
	E 130	0.9550	0.9584	0.0034	8	0.425	
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						
	A						
	B						
	C						
	D						
	E						

\* Test acceptance of control weight based on surviving larvae at end of test.  
 Calculated by: PH 11/20/13 Calculations checked by: EBB 11/20/13

Day/# water used	3559	1	2	3	4	5	6	7	8	
Concentration: Control 50%										
pH	7.3	7.3	7.4	7.3	7.3	7.2	7.3	7.4	7.2	7.2
DO (mg/l)	8.3	7.5	8.4	8.2	6.8	8.3	8.1	8.0	7.0	8.2
Cond (umhos/cm)	180.9	179.6	181.1	178.8	180.6	183.8	181.3			
Alkalinity (mg/L)	28.0									
Hardness (mg/L)	48.0									
Concentration: 32%										
pH	7.5	7.3	7.4	7.3	7.1	7.3	7.2	7.4	7.1	7.1
DO (mg/l)	8.2	7.4	8.2	8.2	6.7	8.3	6.7	8.0	7.3	8.0
Cond (umhos/cm)	265	264	265	262	264	265	265			
Concentration: 42%										
pH	7.5	7.2	7.5	7.4	7.1	7.4	7.1	7.4	7.0	7.1
DO (mg/l)	8.2	7.4	8.2	6.6	8.1	6.6	8.2	6.3	8.0	7.1
Cond (umhos/cm)	287	289	289	285	288	287	289			
Concentration: 50%										
pH	7.5	7.3	7.5	7.1	7.5	7.1	7.4	7.2	7.5	7.1
DO (mg/l)	8.2	7.4	8.1	6.6	8.1	6.7	8.2	5.9	8.0	7.0
Cond (umhos/cm)	324	326	325	322	324	323	326			
Concentration: 75%										
pH	7.5	7.4	7.6	7.2	7.5	7.2	7.5	7.1	7.6	7.1
DO (mg/l)	8.2	7.4	8.0	6.7	8.1	6.6	8.2	5.8	8.0	6.8
Cond (umhos/cm)	372	375	374	371	373	370	373			
Concentration: 100%										
pH	7.6	7.3	7.6	7.3	7.6	7.2	7.5	7.1	7.6	7.0
DO (mg/l)	8.1	7.4	7.9	6.6	8.1	6.7	8.1	5.7	7.9	6.6
Cond (umhos/cm)	439	444	439	436	440	430	439			
Tech-prerenewal		LC	PH	LC	LC	LC	LC	PH	LC	
Tech-postrenewal	LC		PH	LC	LC	LC	LC	PH		
Alkalinity (mg/l)	56.0		52.0		52.0		52.0			
Hardness (mg/l)	48.0		56.0		60.0					

Key: prerenewal/postrenewal

Day/# water used	0	1	2	3	4	5	6	7	8
Concentration: <sup>PH111113</sup> Control	100µM THHd								
pH	7.4	7.4	7.6	7.5	7.4	7.5	7.6	7.5	
DO (mg/l)	7.8	7.4	7.7	8.0	7.9	6.3	6.8	8.3	6.3
Cond (umhos/cm)	438	441	432	442	440	416	435		
Alkalinity (mg/L)									
Hardness (mg/L)									
Concentration:									
pH	DRAFT PH 11/11/13								
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH	DRAFT PH 11/11/13								
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH	DRAFT PH 11/11/13								
DO (mg/l)									
Cond (umhos/cm)									
Concentration:									
pH	DRAFT PH 11/11/13								
DO (mg/l)									
Cond (umhos/cm)									
Tech-prerenewal		LC	PH	LC	LC	LC	PH	LC	
Tech-postrenewal	LC	PH	LC	LC	LC	LC	PH		
Alkalinity (mg/l)									
Hardness (mg/l)									

Key: prerenewal/postrenewal

**APPENDIX C**  
**STATISTICAL ANALYSIS**

**Ceriodaphnia Survival and Reproduction Test-7 Day Survival**

Start Date: 11/12/2013      Test ID: X5267CD      Sample ID: 001-AR0000752  
 End Date: 11/20/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/12/2013      Protocol: EPAFW02-EPA/821/R-02-01      Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
42	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100 uv	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Not		Total	N	Fisher's 1-Tailed	
			Resp	Resp			Exact P	Critical
D-Control	1.0000	1.0000	0	10	10	10		
32	1.0000	1.0000	0	10	10	10	1.0000	0.0500
42	1.0000	1.0000	0	10	10	10	1.0000	0.0500
56	1.0000	1.0000	0	10	10	10	1.0000	0.0500
75	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100 uv	1.0000	1.0000	0	10	10	10	1.0000	0.0500

**Hypothesis Test (1-tail, 0.05)**

Fisher's Exact Test indicates no significant differences  
 Treatments vs D-Control

**Ceriodaphnia Survival and Reproduction Test-Reproduction**

Start Date: 11/12/2013 Test ID: X5267CD Sample ID: 001-AR0000752  
 End Date: 11/20/2013 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial  
 Sample Date: 11/12/2013 Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	21.000	24.000	26.000	34.000	26.000	26.000	11.000	31.000	33.000	29.000
32	22.000	22.000	21.000	27.000	24.000	27.000	25.000	22.000	25.000	22.000
42	24.000	16.000	20.000	23.000	21.000	24.000	20.000	24.000	7.000	19.000
56	17.000	22.000	23.000	23.000	21.000	26.000	20.000	23.000	21.000	25.000
75	17.000	21.000	18.000	22.000	22.000	17.000	11.000	19.000	18.000	18.000
100	20.000	8.000	16.000	20.000	10.000	9.000	23.000	12.000	12.000	20.000
100 uv	19.000	17.000	22.000	20.000	20.000	23.000	17.000	18.000	22.000	17.000

Conc-%	Mean	N-Mean	Transform: Untransformed				N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%			
D-Control	26.100	1.0000	26.100	11.000	34.000	25.572	10		
32	23.700	0.9080	23.700	21.000	27.000	9.340	10	85.00	74.00
*42	19.800	0.7586	19.800	7.000	24.000	26.276	10	70.00	74.00
56	22.100	0.8467	22.100	17.000	26.000	11.576	10	75.50	74.00
*75	18.300	0.7011	18.300	11.000	22.000	17.481	10	67.00	74.00
*100	15.000	0.5747	15.000	8.000	23.000	36.379	10	63.00	74.00
*100 uv	19.500	0.7471	19.500	17.000	23.000	11.657	10	68.00	74.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution ( $p > 0.05$ )	0.87156	0.895	-1.0113	2.68562
Bartlett's Test indicates unequal variances ( $p = 1.84E-03$ )	20.9932	16.8119		

**Hypothesis Test (1-tail, 0.05)**

Steel's Many-One Rank Test indicates significant differences

Treatments vs D-Control

$IC_{25} = 65.86\%$

42% = Replicate I = 7 neonates  
total weak  
adult.

NOEC = 56.0%

EGB  
11/27/13



**Ceriodaphnia Survival and Reproduction Test-Reproduction**

Start Date: 11/12/2013 Test ID: X5267CD Sample ID: 001-AR0000752  
 End Date: 11/20/2013 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial  
 Sample Date: 11/12/2013 Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	21.000	24.000	26.000	34.000	26.000	26.000	11.000	31.000	33.000	29.000
32	22.000	22.000	21.000	27.000	24.000	27.000	25.000	22.000	25.000	22.000
42	24.000	16.000	20.000	23.000	21.000	24.000	20.000	24.000	7.000	19.000
56	17.000	22.000	23.000	23.000	21.000	26.000	20.000	23.000	21.000	25.000
75	17.000	21.000	18.000	22.000	22.000	17.000	11.000	19.000	18.000	18.000
100	20.000	8.000	16.000	20.000	10.000	9.000	23.000	12.000	12.000	20.000
100 uv	19.000	17.000	22.000	20.000	20.000	23.000	17.000	18.000	22.000	17.000

Conc-%	Mean	N-Mean	Transform: Untransformed					N	1-Tailed		
			Mean	Min	Max	CV%	t-Stat		Critical	MSD	
D-Control	26.100	1.0000	26.100	11.000	34.000	25.572	10				
32	23.700	0.9080	23.700	21.000	27.000	9.340	10	1.254	2.347	4.493	
*42	19.800	0.7586	19.800	7.000	24.000	26.276	10	3.291	2.347	4.493	
56	22.100	0.8467	22.100	17.000	26.000	11.576	10	2.090	2.347	4.493	
*75	18.300	0.7011	18.300	11.000	22.000	17.481	10	4.075	2.347	4.493	
*100	15.000	0.5747	15.000	8.000	23.000	36.379	10	5.799	2.347	4.493	
*100 uv	19.500	0.7471	19.500	17.000	23.000	11.657	10	3.448	2.347	4.493	

Auxiliary Tests	Statistic	Critical	Skew	Kurt		
Kolmogorov D Test indicates normal distribution (p > 0.05)	0.87156	0.895	-1.0113	2.68562		
Bartlett's Test indicates unequal variances (p = 1.84E-03)	20.9932	16.8119				
Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test indicates significant differences Treatments vs D-Control	4.49269	0.17213	134.329	18.319	5.7E-06	6, 63

**Ceriodaphnia Survival and Reproduction Test-Reproduction**

Start Date: 11/12/2013 Test ID: X5267CD Sample ID: 001-AR0000752  
 End Date: 11/20/2013 Lab ID: ADEQ880630 Sample Type: EFF2-Industrial  
 Sample Date: 11/12/2013 Protocol: EPAFW02-EPA/821/R-02-01 Test Species: CD-Ceriodaphnia dubia  
 Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
D-Control	21.000	24.000	26.000	34.000	26.000	26.000	11.000	31.000	33.000	29.000
32	22.000	22.000	21.000	27.000	24.000	27.000	25.000	22.000	25.000	22.000
42	24.000	16.000	20.000	23.000	21.000	24.000	20.000	24.000	7.000	19.000
56	17.000	22.000	23.000	23.000	21.000	26.000	20.000	23.000	21.000	25.000
75	17.000	21.000	18.000	22.000	22.000	17.000	11.000	19.000	18.000	18.000
100	20.000	8.000	16.000	20.000	10.000	9.000	23.000	12.000	12.000	20.000
100 uv	19.000	17.000	22.000	20.000	20.000	23.000	17.000	18.000	22.000	17.000

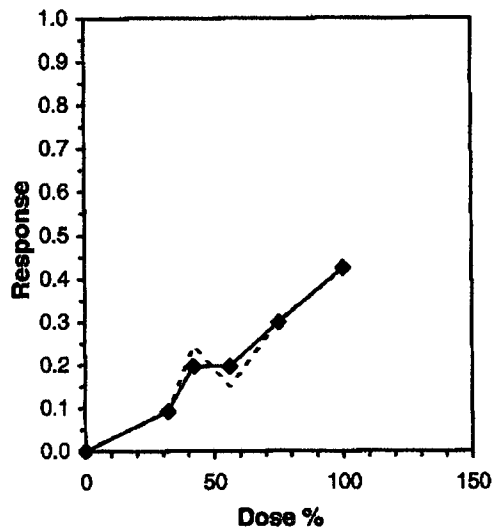
Conc-%	Transform: Untransformed							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	26.100	1.0000	26.100	11.000	34.000	25.572	10	26.100	1.0000
32	23.700	0.9080	23.700	21.000	27.000	9.340	10	23.700	0.9080
42	19.800	0.7586	19.800	7.000	24.000	26.276	10	20.950	0.8027
56	22.100	0.8467	22.100	17.000	26.000	11.576	10	20.950	0.8027
75	18.300	0.7011	18.300	11.000	22.000	17.481	10	18.300	0.7011
100	15.000	0.5747	15.000	8.000	23.000	36.379	10	15.000	0.5747
100 uv	19.500	0.7471	19.500	17.000	23.000	11.657	10		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution ( $p > 0.05$ )	0.87156	0.895	-1.0113	2.68562
Bartlett's Test indicates unequal variances ( $p = 1.84E-03$ )	20.9932	16.8119		

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL	Skew
IC05*	17.400	11.937	7.782 44.813	0.7560
IC10	32.764	11.929	15.564 61.663	0.8770
IC15	37.509	14.322	23.345 72.370	0.8203
IC20	56.502	16.272	31.127 79.144	0.3337
IC25	65.858			
IC40	95.000			
IC50	>100			

\* indicates IC estimate less than the lowest concentration



**Larval Fish Growth and Survival Test-7 Day Survival**

Start Date: 11/12/2013      Test ID: X5267PP      Sample ID: 001-AR0000752  
 End Date: 11/19/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/11/2013      Protocol: EPAFW02-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	0.8750	1.0000	1.0000	1.0000
42	0.8750	1.0000	0.8750	1.0000	1.0000
56	1.0000	1.0000	1.0000	0.8750	1.0000
75	0.8750	0.7500	1.0000	0.8750	0.8750
100	0.8750	0.8750	1.0000	1.0000	1.0000
100 UV	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root				Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	
32	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00
42	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50
56	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00
75	0.8750	0.8750	1.2137	1.0472	1.3931	10.087	5	17.50
100	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50
100 UV	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05) Equality of variance cannot be confirmed	0.88327	0.934	-0.5583	0.47088
<b>Hypothesis Test (1-tail, 0.05)</b>				
Steel's Many-One Rank Test indicates no significant differences Treatments vs D-Control				

**Larval Fish Growth and Survival Test-7 Day Growth**

Start Date: 11/12/2013      Test ID: X5267PP      Sample ID: 001-AR0000752  
 End Date: 11/19/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/11/2013      Protocol: EPAFW02-EPA/821/R-02-01      Test Species: PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	0.4250	0.3875	0.3750	0.3125	0.4125
32	0.3875	0.3875	0.4750	0.3750	0.4125
42	0.4500	0.4625	0.3625	0.4125	0.3750
56	0.4500	0.4125	0.4625	0.4375	0.3875
75	0.3875	0.4375	0.5000	0.4000	0.4500
100	0.4500	0.3875	0.4000	0.4750	0.4500
100 UV	0.4500	0.4750	0.4250	0.3500	0.4250

Conc-%	Mean	N-Mean	Transform: Untransformed				N	t-Stat	1-Tailed	
			Mean	Min	Max	CV%			Critical	MSD
D-Control	0.3825	1.0000	0.3825	0.3125	0.4250	11.461	5			
32	0.4075	1.0654	0.4075	0.3750	0.4750	9.845	5	-0.957	2.409	0.0629
42	0.4125	1.0784	0.4125	0.3625	0.4625	10.714	5	-1.149	2.409	0.0629
56	0.4300	1.1242	0.4300	0.3875	0.4625	7.001	5	-1.819	2.409	0.0629
75	0.4350	1.1373	0.4350	0.3875	0.5000	10.241	5	-2.010	2.409	0.0629
100	0.4325	1.1307	0.4325	0.3875	0.4750	8.574	5	-1.914	2.409	0.0629
100 UV	0.4250	1.1111	0.4250	0.3500	0.4750	11.005	5	-1.627	2.409	0.0629

Auxiliary Tests	Statistic	Critical	Skew	Kurt		
Shapiro-Wilk's Test indicates normal distribution ( $p > 0.05$ )	0.97154	0.934	-0.1261	-0.7431		
Bartlett's Test indicates equal variances ( $p = 0.99$ )	0.91219	16.8119				
Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test indicates no significant differences Treatments vs D-Control	0.06291	0.16446	0.00174	0.00171	0.43117	6, 28

**Larval Fish Growth and Survival Test-7 Day Growth**

Start Date: 11/12/2013      Test ID: X5267PP      Sample ID: 001-AR0000752  
 End Date: 11/19/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/11/2013      Protocol: EPAFW02-EPA/821/R-02-01      Test Species: PP-Pimephales promelas

Comments:

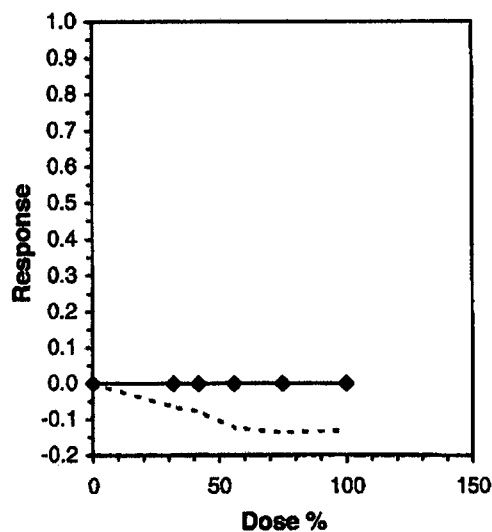
Conc-%	1	2	3	4	5
D-Control	0.4250	0.3875	0.3750	0.3125	0.4125
32	0.3875	0.3875	0.4750	0.3750	0.4125
42	0.4500	0.4625	0.3625	0.4125	0.3750
56	0.4500	0.4125	0.4625	0.4375	0.3875
75	0.3875	0.4375	0.5000	0.4000	0.4500
100	0.4500	0.3875	0.4000	0.4750	0.4500
100 UV	0.4500	0.4750	0.4250	0.3500	0.4250

Conc-%	Transform: Untransformed							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
D-Control	0.3825	1.0000	0.3825	0.3125	0.4250	11.461	5	0.4167	1.0000
32	0.4075	1.0654	0.4075	0.3750	0.4750	9.845	5	0.4167	1.0000
42	0.4125	1.0784	0.4125	0.3625	0.4625	10.714	5	0.4167	1.0000
56	0.4300	1.1242	0.4300	0.3875	0.4625	7.001	5	0.4167	1.0000
75	0.4350	1.1373	0.4350	0.3875	0.5000	10.241	5	0.4167	1.0000
100	0.4325	1.1307	0.4325	0.3875	0.4750	8.574	5	0.4167	1.0000
100 UV	0.4250	1.1111	0.4250	0.3500	0.4750	11.005	5		

Auxillary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.97154	0.934	-0.1281	-0.7431
Bartlett's Test indicates equal variances (p = 0.99)	0.91219	16.8119		

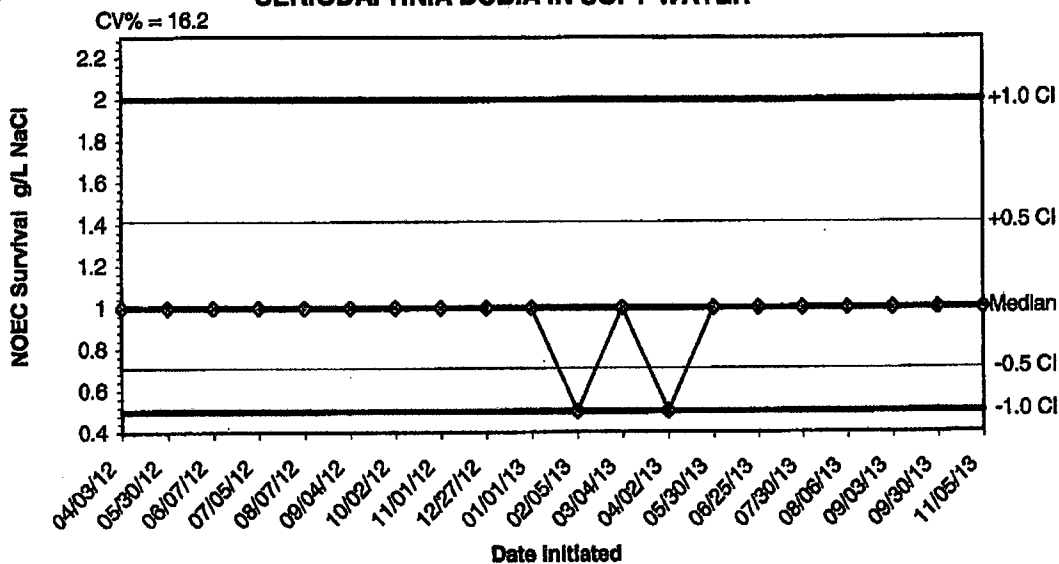
**Linear Interpolation (200 Resamples)**

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



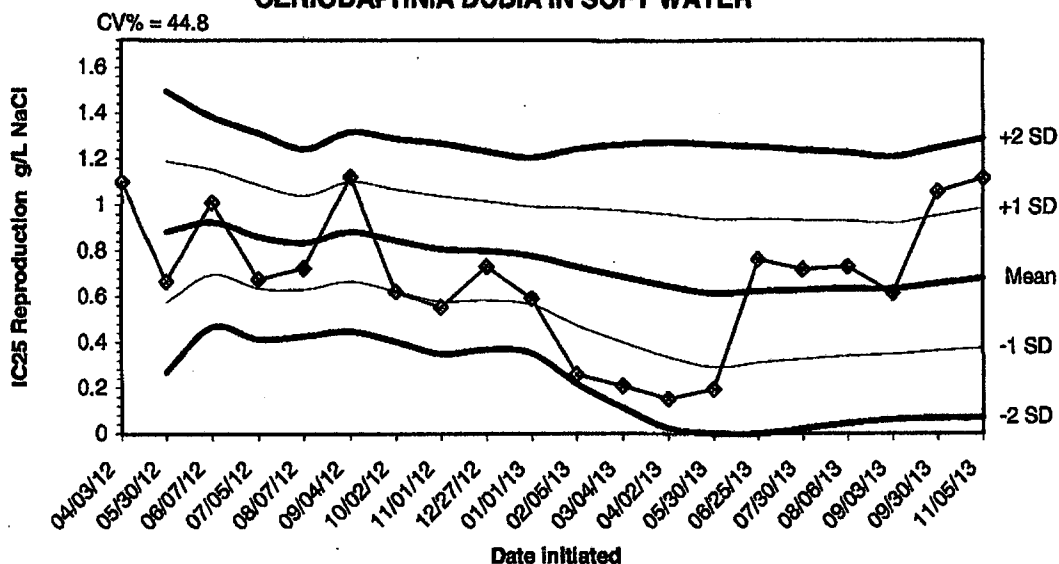
**APPENDIX D**  
**QUALITY ASSURANCE CHARTS**

**2013 CHRONIC REFERENCE TOXICANT TEST RESULTS FOR  
CERIODAPHNIA DUBIA IN SOFT WATER**



Dates	Values	Median	-0.5 CI	-1.0 CI	+0.5 CI	+1.0 CI
04/03/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
05/30/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
06/07/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
07/05/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
08/07/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
09/04/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
10/02/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
11/01/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
12/27/12	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
01/01/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
02/05/13	0.5000	1.0000	0.7071	0.5000	1.4142	2.0000
03/04/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
04/02/13	0.5000	1.0000	0.7071	0.5000	1.4142	2.0000
05/30/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
06/25/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
07/30/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
08/06/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
09/03/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
09/30/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000
11/05/13	1.0000	1.0000	0.7071	0.5000	1.4142	2.0000

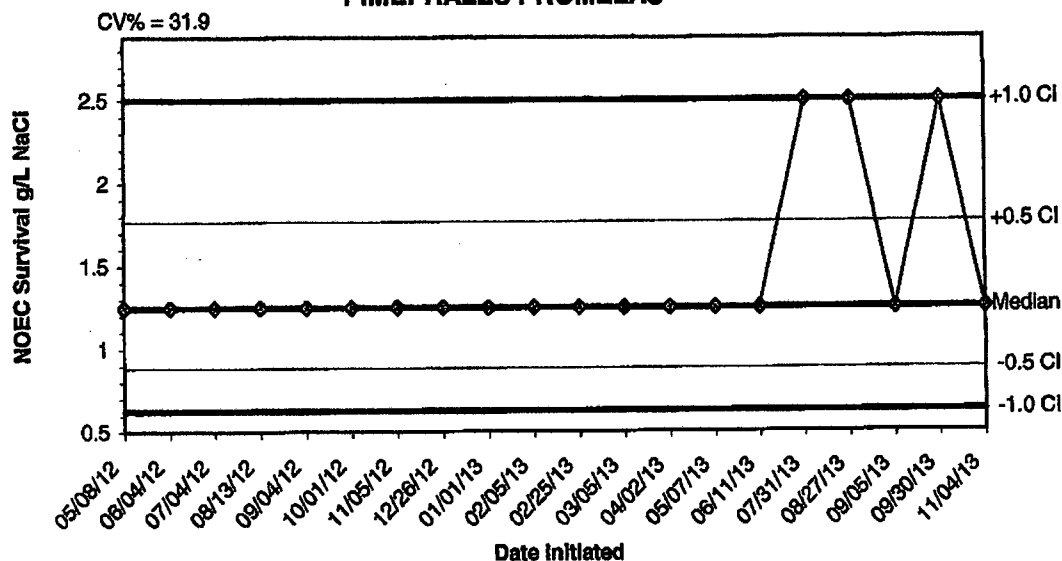
**2013 CHRONIC REFERENCE TOXICANT TEST RESULTS FOR  
CERIODAPHNIA DUBIA IN SOFT WATER**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/03/12	1.1000					
05/30/12	0.6660	0.8830	0.5761	0.2692	1.1899	1.4968
06/07/12	1.0102	0.9254	0.6963	0.4672	1.1545	1.3836
07/05/12	0.6765	0.8632	0.6385	0.4138	1.0878	1.3125
08/07/12	0.7250	0.8355	0.6314	0.4272	1.0397	1.2438
09/04/12	1.1229	0.8834	0.6664	0.4494	1.1005	1.3175
10/02/12	0.6225	0.8462	0.6248	0.4035	1.0675	1.2888
11/01/12	0.5553	0.8098	0.5805	0.3513	1.0391	1.2683
12/27/12	0.7326	0.8012	0.5852	0.3693	1.0172	1.2332
01/01/13	0.5948	0.7806	0.5667	0.3529	0.9944	1.2083
02/05/13	0.2615	0.7334	0.4772	0.2209	0.9896	1.2458
03/04/13	0.2108	0.6898	0.4027	0.1156	0.9770	1.2641
04/02/13	0.1529	0.6485	0.3359	0.0232	0.9612	1.2738
05/30/13	0.1943	0.6161	0.2921	0.0000	0.9401	1.2641
06/25/13	0.7643	0.6260	0.3114	0.0000	0.9405	1.2550
07/30/13	0.7212	0.6319	0.3271	0.0223	0.9367	1.2415
08/06/13	0.7333	0.6379	0.3417	0.0456	0.9340	1.2302
09/03/13	0.6178	0.6368	0.3494	0.0621	0.9241	1.2115
09/30/13	1.0600	0.6590	0.3634	0.0678	0.9547	1.2503
11/05/13	1.1200	0.6821	0.3764	0.0708	0.9878	1.2934

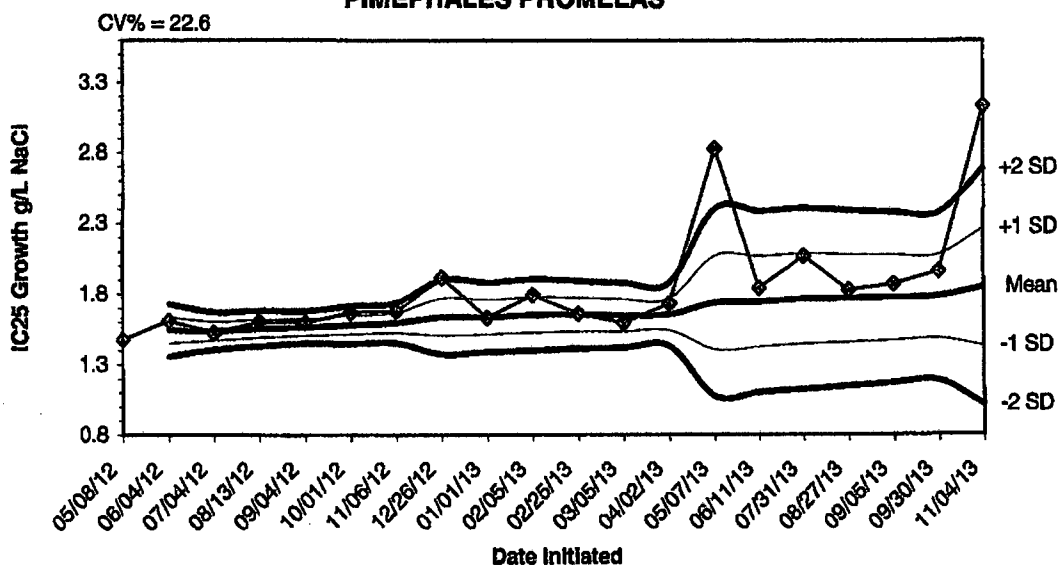


**2013 CHRONIC REFERENCE TOXICANT TEST RESULTS FOR  
PIMEPHALES PROMELAS**



Dates	Values	Median	-0.5 CI	-1.0 CI	+0.5 CI	+1.0 CI
05/08/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
06/04/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
07/04/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
08/13/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
09/04/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
10/01/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
11/05/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
12/26/12	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
01/01/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
02/05/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
02/25/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
03/05/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
04/02/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
05/07/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
06/11/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
07/31/13	2.5000	1.2500	0.8839	0.6250	1.7678	2.5000
08/27/13	2.5000	1.2500	0.8839	0.6250	1.7678	2.5000
09/05/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000
09/30/13	2.5000	1.2500	0.8839	0.6250	1.7678	2.5000
11/04/13	1.2500	1.2500	0.8839	0.6250	1.7678	2.5000

**2013 CHRONIC REFERENCE TOXICANT TEST RESULTS FOR  
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/08/12	1.4800					
06/04/12	1.6119	1.5460	1.4527	1.3594	1.6392	1.7325
07/04/12	1.5255	1.5391	1.4721	1.4051	1.6061	1.6731
08/13/12	1.8031	1.5551	1.4918	1.4284	1.6185	1.6819
09/04/12	1.5956	1.5632	1.5054	1.4476	1.6210	1.6788
10/01/12	1.6692	1.5809	1.5135	1.4461	1.6483	1.7157
11/06/12	1.6773	1.5947	1.5231	1.4516	1.6662	1.7377
12/26/12	1.9167	1.6349	1.5032	1.3715	1.7666	1.8983
01/01/13	1.6322	1.6346	1.5114	1.3882	1.7578	1.8810
02/05/13	1.7919	1.6503	1.5240	1.3976	1.7767	1.9031
02/25/13	1.6572	1.6510	1.5311	1.4112	1.7709	1.8908
03/05/13	1.5937	1.6462	1.5307	1.4152	1.7617	1.8772
04/02/13	1.7306	1.6527	1.5396	1.4266	1.7657	1.8788
05/07/13	2.8280	1.7366	1.4043	1.0719	2.0690	2.4014
06/11/13	1.8409	1.7436	1.4222	1.1008	2.0650	2.3864
07/31/13	2.0669	1.7638	1.4429	1.1221	2.0846	2.4055
08/27/13	1.8269	1.7675	1.4565	1.1454	2.0785	2.3896
09/05/13	1.8685	1.7731	1.4704	1.1677	2.0758	2.3785
09/30/13	1.9629	1.7831	1.4857	1.1884	2.0805	2.3778
11/04/13	3.1342	1.8507	1.4323	1.0139	2.2690	2.6874

**APPENDIX E**  
**AGENCY FORMS**

**SUMMARY REPORTING FORMS  
CHRONIC BIOMONITORING**

**Ceriodaphnia dubia Survival and Reproduction**

Permittee: El Dorado Chemical  
Outfall 001

NPDES No.: AR0000752  
AFIN: 70-00040

	<b>Time</b>	<b>Date</b>	<b>Time</b>	<b>Date</b>
Composite 1 Collected From	0800	11/11/13 To	0800	11/12/13
Composite 2 Collected From	0800	11/12/13 To	0800	11/13/13
Composite 3 Collected From	0800	11/14/13 To	0800	11/15/13
Test initiated:	1510 am/pm		11/12/13	date
Test terminated:	1340 am/pm		11/20/13	date
Dilution water used:	Receiving		<b>Reconstituted</b>	

**PERCENT SURVIVAL**

Time of Reading	Percent Effluent						
	0	32.0	42.0	56.0	75.0	100.0	100.0UV
24h	100	100	100	100	100	100	100
48h	100	100	100	100	100	100	100
End of test	100	100	100	100	100	100	100

**NUMBER OF YOUNG PRODUCED PER FEMALE @ END OF TEST**

Rep	0	32.0	42.0	56.0	75.0	100.0	100.0UV
A	21	22	24	17	17	20	19
B	24	22	16	22	21	8	17
C	26	21	20	23	18	16	22
D	34	27	23	23	22	20	20
E	26	24	21	21	22	10	20
F	26	27	24	26	17	9	23
G	11	25	20	20	11	23	17
H	31	22	24	23	19	12	18
I	33	25	7	21	18	12	22
J	29	22	19	25	18	20	17
Surv. Mean	26.1	23.7	19.8	22.1	18.3	15.0	19.5
Total Mean	26.1	23.7	19.8	22.1	18.3	15.0	19.5
CV%*	25.57	9.34	26.28	11.58	17.48	36.38	11.66

\*coefficient of variation = standard deviation x 100/mean. D=dead adult

PMSD = 17.2%

**Ceriodaphnia dubia**  
**Survival and Reproduction (cont)**

**1. Fisher's Exact Test:**

Is the mean survival at the end of the test significantly different ( $p=.05$ ) than the control survival for the % effluent corresponding to (lethality):

- |  |     |   |    |
|--|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | YES | X | NO |
| b) 1/2 LOW FLOW DILUTION (N/A %):        | YES |   | NO |

**2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:**

Is the mean number of young produced per female significantly different ( $p=.05$ ) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

- |  |   |     |    |
|--|---|-----|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%): | X | YES | NO |
| b) 1/2 LOW FLOW DILUTION (N/A %):        |   | YES | NO |

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 1
4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A
5. Enter response to item 3 on DMR Form, parameter #TEP3B.
6. Enter response to item 4 on DMR Form, parameter #TFP3B.
7. Enter percent effluent corresponding to each NOEC below and circle lowest number:
  - a) NOEC survival: 100.0% effluent
  - b) NOEC reproduction: 56.0% effluent
  - c) LOEC survival: N/A% effluent
  - d) LOEC reproduction: 100.0% effluent



**SUMMARY REPORTING FORMS CHRONIC BIOMONITORING  
FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL  
(Pimephales promelas)**

Permittee: El Dorado Chemical  
Outfall 001

NPDES No.: AR0000752  
AFIN: 70-00040

	<b>Time</b>	<b>Date</b>	<b>Time</b>	<b>Date</b>
Composite 1 Collected from:	0800	11/11/13 To	0800	11/12/13
Composite 2 Collected from:	0800	11/12/13 To	0800	11/13/13
Composite 3 Collected from:	0800	11/14/13 To	0800	11/15/13
Test initiated:	1430	am/pm	11/12/13	date
Test terminated:	1245	am/pm	11/19/13	date
Dilution water used:		Receiving	<b>Reconstituted</b>	

**DATA TABLE FOR SURVIVAL**

Effluent Conc. %	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
0	100	100	100	100	100	100	100	100	0.00
32.0	100	87.5	100	100	100	100	97.5	97.5	6.06
42.0	87.5	100	87.5	100	100	100	95.0	95.0	7.62
56.0	100	100	100	87.5	100	100	97.5	97.5	6.06
75.0	87.5	75.0	100	87.5	87.5	100	92.5	87.5	10.09
100.0	87.5	87.5	100	100	100	100	95.0	95.0	7.62
100.0 UV	100	100	100	100	100	100	100	100	0.00

**DATA TABLE FOR GROWTH**

Effluent Conc. %	Average Dry Weight in milligrams in replicate chambers					Mean Dry Weight mg	CV*
	A	B	C	D	E		
0	0.425	0.388	0.375	0.313	0.413	0.383	11.46
32.0	0.388	0.388	0.475	0.375	0.413	0.408	9.85
42.0	0.450	0.463	0.363	0.413	0.375	0.413	10.71
56.0	0.450	0.413	0.463	0.438	0.388	0.430	7.00
75.0	0.388	0.438	0.500	0.400	0.450	0.435	10.24
100.0	0.450	0.388	0.400	0.475	0.450	0.433	8.58
100.0 UV	0.450	0.475	0.425	0.350	0.425	0.425	11.01

\*coefficient of variation = standard deviation x 100/mean.

PMSD = 16.4%

**FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL (cont)**  
**(Pimephales promelas)**

**1. Dunnett's Procedure or Steels Many-One Rank Test as appropriate:**

Is the mean survival at 7 days significantly different ( $p=.05$ ) than the control survival for the % effluent corresponding to:

- |   |     |   |    |
|---|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%) | YES | X | NO |
| b) 1/2 LOW FLOW DILUTION (N/A%)         | YES |   | NO |

**2. Dunnett's Procedure (or appropriate test):**

Is the mean dry weight (growth) at 7 days significantly different ( $p=.05$ ) than the control's dry weight for the % effluent corresponding to (significant non-lethal effects):

- |   |     |   |    |
|---|-----|---|----|
| a) LOW FLOW OR CRITICAL DILUTION (100%) | YES | X | NO |
| b) 1/2 LOW FLOW DILUTION (N/A%)         | YES |   | NO |

3. If you answered NO to 1. a) and 2. a) enter (0) otherwise enter (1): 0

4. If you answered NO to 1. b) and 2. b) enter (0) otherwise enter (1): N/A

5. Enter response to item 3 on DMR Form, parameter #TEP6C.

6. Enter response to item 4 on DMR Form, parameter #TFP6C.

7. Enter percent effluent corresponding to each NOEC below and circle lowest number:

- |                   |                  |
|-------------------|------------------|
| a.) NOEC survival | 100.0% effluent. |
| b.) NOEC growth   | 100.0% effluent. |
| c.) LOEC survival | N/A % effluent   |
| d.) LOEC growth   | N/A % effluent   |



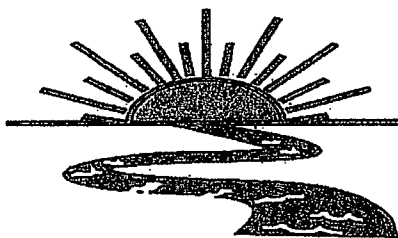
Biomonitoring Form  
Chronic Toxicity Summary Form  
*Pimephales promelas*  
Chemical Parameters Chart

Permittee: El Dorado Chemical  
NPDES No.: AR0000752/AFIN 70-00040  
Contact: Larken Pennington  
Analyst: Briggs, Haughton, Cotty

Sample No. 1 Collected: Date: 11/12/13 Time: 0800  
Sample No. 2 Collected: Date: 11/13/13 Time: 0800  
Sample No. 3 Collected: Date: 11/13/13 Time: 0800  
Test Begin: Date: 11/12/13 Time: 1430  
Test End: Date: 11/19/13 Time: 1245

Dilution: 0 Day:									Dilution: 56.0 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0		Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0	
DO Initial	7.5	6.7	6.8	7.1	7.3	7.0	6.8		DO Initial	7.4	6.6	6.7	5.9	7.0	6.8	6.5	
DO Final	8.4	8.2	8.3	8.1	8.0	8.2			DO Final	8.1	8.1	8.2	8.0	8.1	8.2		
pH Initial	7.3	7.1	7.1	7.2	7.3	7.1	7.2		pH Initial	7.3	7.1	7.1	7.0	7.2	7.0	7.1	
pH Final	7.4	7.3	7.3	7.3	7.4	7.2			pH Final	7.5	7.5	7.4	7.4	7.5	7.5		
Alkalinity	28.0								Alkalinity								
Hardness	48.0								Hardness								
Conductivity	179.6	181.1	178.8	180.6	183.8	181.3			Conductivity	326.0	325.0	322.0	324.0	323.0	326.0		
Chlorine	<.01								Chlorine								
Dilution: 32.0 Day:									Dilution: 75.0 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0		Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0	
DO Initial	7.4	6.6	6.7	6.7	7.3	6.9	6.7		DO Initial	7.4	6.7	6.6	5.8	6.8	6.8	6.5	
DO Final	8.2	8.2	8.3	8.0	8.0	8.2			DO Final	8.0	8.1	8.2	8.0	8.1	8.3		
pH Initial	7.3	7.1	7.1	7.1	7.2	7.1	7.1		pH Initial	7.4	7.2	7.2	7.0	7.1	7.0	7.1	
pH Final	7.4	7.3	7.3	7.3	7.4	7.4			pH Final	7.6	7.5	7.5	7.5	7.6	7.6		
Alkalinity									Alkalinity								
Hardness									Hardness								
Conductivity									Conductivity	375.0	374.0	371.0	373.0	370.0	373.0		
Chlorine									Chlorine								
Dilution: 42.0 Day:									Dilution: 100.0 Day:								
	1	2	3	4	5	6	7	Comments		1	2	3	4	5	6	7	Comments
Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0		Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0	
DO Initial	7.4	6.6	6.6	6.3	7.1	6.8	6.6		DO Initial	7.4	6.6	6.7	5.7	6.6	6.6	6.5	
DO Final	8.2	8.1	8.2	8.0	8.0	8.2			DO Final	7.9	8.1	8.1	7.9	8.2	8.3		
pH Initial	7.2	7.1	7.1	7.1	7.2	7.0	7.1		pH Initial	7.3	7.3	7.2	7.0	7.1	7.0	7.1	
pH Final	7.5	7.4	7.4	7.3	7.4	7.4			pH Final	7.6	7.6	7.5	7.5	7.6	7.6		
Alkalinity									Alkalinity	96.0	52.0		52.0				
Hardness									Hardness	48.0	56.0		60.0				
Conductivity	289.0	289.0	283.0	288.0	287.0	289.0			Conductivity	444.0	439.0	436.0	440.0	430.0	439.0		
Chlorine									Chlorine	<.01	<.01		<.01				
Dilution: 100 UV Day:																	
	1	2	3	4	5	6	7	Comments									
Temp (C)	25.0	26.0	26.0	25.0	25.0	25.0	25.0										
DO Initial	7.4	6.3	6.6	6.3	6.8	6.3	6.3										
DO Final	7.7	8.0	7.9	7.7	7.8	8.3											
pH Initial	7.4	7.2	7.2	7.1	7.2	7.0	7.1										
pH Final	7.6	7.5	7.4	7.5	7.6	7.5											
Alkalinity																	
Hardness																	
Conductivity	441.0	432.0	442.0	440.0	416.0	435.0											

**APPENDIX F**  
**REPORT QUALITY ASSURANCE FORM**



# Bio-Analytical Laboratories

3240 Spurgin Road  
Post Office Box 527  
Doyle, LA 71023

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

## REPORT QUALITY ASSURANCE FORM

Client: Eldorado Chemical

Project#: X5267

Chain of Custody Documents Checked by: AH 12/2/13  
Technician/Date

Raw Data Documents Checked by: AH 12/2/13  
Technician/Date

Statistical Analysis Package Checked by: EGG 11/27/13  
Quality Manager/Date

Quality Control Data Checked by: EGG 12/3/13  
Quality Manager/Date

Report Checked by: EGG 12/17/13  
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.

Curtis S. Burgo, BS  
Quality Manager

12/17/13  
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 X5279

### Bio-Analytical Laboratories' Executive Summary

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

**Project #:** X5279

**Outfall:** Outfall 002 (overflow pond for process water and storm water)

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

**Contact:** Ms. Larken Pennington

**Test Dates:** November 23 - 25, 2013

**Test Type:** 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).  
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

**Results:**

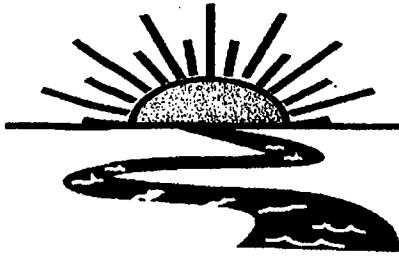
**For *Pimephales promelas*:**

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

**For *Daphnia pulex*:**

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 0-Pass.
2. Report the NOEC for survival, Parameter TOM3D -100.0%.
3. Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 7.62%.

**This report contains a total of 31 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.**



## **Bio-Analytical Laboratories**

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**THE RESULTS OF TWO 48-HOUR ACUTE  
TOXICITY TESTS  
FOR OUTFALL 002  
AT**

**EL DORADO CHEMICAL COMPANY  
El Dorado, Arkansas**

**NPDES #AR0000752  
AFIN #70-00040**

**EPA Methods 2000.0 and 2021.0**

**Project X5279**

**Test Dates: November 23 - 25, 2013  
Report Date: December 16, 2013**

**Prepared for:**  
Ms. Larken Pennington  
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 X5279

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BAL  
ADEQ #88-0630  
Project X5279

## 1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 002 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, 20<sup>th</sup> 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 *Daphnia pulex* test organisms were raised in-house 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 X5279

### **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, 42.0 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 002 was collected by El Dorado Chemical personnel on November 22, 2013. Upon completion of collection, the sample was packed in ice and personally delivered to Bio-Analytical Laboratories. The temperature upon arrival was -1.8° 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<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured on the control and the highest effluent concentration.

### **2.7 Monitoring of the Tests**

The tests were run in a Precision<sup>R</sup> dual controlled illuminated incubator at a temperature of  $25 \pm 1^{\circ}$  Celsius. An AEMC<sup>R</sup> data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.



BAL  
ADEQ #88-0630  
Project X5279

**2.8 Data Analysis**

The NOEC and LC<sub>50</sub> values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

**3.0 Results and Discussion**

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for both tests was 100.0 percent effluent (p=.05). A 48-hour LC<sub>50</sub> value could not be determined because greater than 50.0 percent survival occurred in both tests. See Appendix C-Statistical Analysis, 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
32.0	100.0	87.5
42.0	100.0	87.5
56.0	97.5	95.0
75.0	100.0	87.5
100.0	100.0	97.5

The 48-hour reference toxicant test results indicate 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 X5279

#### 4.0 Conclusions

The sample of Outfall 002 collected from El Dorado Chemical Company, El Dorado, Arkansas, on November 22, 2013, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in any of the effluent dilutions after 48 hours of exposure ( $p=.05$ ). The 48-hour  $LC_{50}$  value for the tests could not be determined because greater than 50.0 percent survival occurred in the 100.0 percent dilution in each test.

BAL  
ADEQ #88-0630  
Project X5279

### 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. 20<sup>th</sup> Edition.

**APPENDIX A**  
**CHAIN-OF-CUSTODY DOCUMENTS**



**Bio-Analytical Laboratories**

1290 Spangin Road  
Post Office Box 227  
Doyle, LA 71223

(510) 743-2772  
1-800-258-1288  
Fax: (510) 743-2773

NELAP/LELAP 01975, ADRQ 38-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company		Phone: (870) 863-1484		Analysis:				Project Number:  X5279  Temp. upon arrival: -1.80C #29 868 11/23/13  Preservative: (below)  ice		
Address: 4500 Norwest Ave., El Dorado, AR 71731		Fax: (870) 863-7499		Fecal Coliform	Acute Ceriodaphnia	Acute Mysid	Acute Daphnia species			
Permit #: AR0000752/AFIN 70-00040		Purchase Order:							Chronic minnow	Acute minnow (fresh/marine)
Sampler's Signature/Printed Name/Affiliation: <i>Dilbert Davis Sartin / EDEC</i>		Chronic Ceriodaphnia	Sample Identification							
Date Start Date End	Time Start Time End							C		
11-22-13	0730				✓	2 6.5 gallon	002	C8241		
Relinquished by/Affiliation: <i>Dilbert Sartin / EDEC</i>				Date: 11/23/13	Time: 1110	Received by/Affiliation: BAL <i>Eric S. Brigg</i>		Date: 11/23/13	Time: 1110	
Relinquished by/Affiliation:		Date:	Time:	Received by/Affiliation:		Date:	Time:			
Relinquished by/Affiliation:		Date:	Time:	Received by/Affiliation:		Date:	Time:			
Method of Shipment: <input type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input checked="" 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# X5279

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 002

Technicians: EGB/AH/LC

Test initiated: Date 11/23/13 Time 1445

Test terminated: Date 11/25/13 Time 1330

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

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

Conductivity Meter: Model # Control Co. Serial #80277924

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

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/Final D.O.(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
C8241	1.1 11.62%	120/8.2 98.82%	<0.01	NO	0.50	N/A	96.0	12.0	EGB
↓	10.0 132.9%	120/7.8 97.13%	↓	↓	↓	↓	↓	↓	↓

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	3562	N/A	N/A	N/A	N/A	7.2	52.0	32.0	EGB
↓	3563					7.4	44.0	28.0	↓

Test Species Information

Test Species Info.	Species ID#	Species ID#	Species ID#	Species ID#
	Daphnia BAY K19	P. promelas BAY 111813		
Age	24h	15 days		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	YCT: Algae	Artemia		
Amount	Fed 2hrs prior to test initiation			
Aeration?	N/A			
Amount				
Condition of survivors	Good EGB 11/25/13	Good AH 11/25/13		

Comments: pH = 6.75 EGB 11/23/13

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

Project# X5279

Test started: Date 11/23/13 Time 1315

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1320

Sample Description 002 Test Species D. Dux ID# 019/K19  
 Technician: 0hour EGG 24hour EGG 48hour EGG 72hour EGG 96hour EGG  
 Time: 0hour 1315 24hour 1210 48hour 1320 72hour EGG 96hour EGG  
 Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour EGG 96hour EGG

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity							
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96			
0	A	N/A	8	7	7			8.5	8.2	8.3			7.4	7.4	7.6			175.6	176.7	176.9			205.0	EGG 11/25/13	
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	8																				
	E		8	7	7																				
32	A		8	8	7			8.4	8.1	8.1			7.2	7.3	7.6			230	230	230			241.0	EGG 11/25/13	
	B		8	6	6																				
	C		8	7	7																				
	D		8	8	8																				
	E		8	7	7																				
Chemistry Tech prerenewal/postrenewal			EGG/EGG/EGG/EGG/EGG					EGG/EGG/EGG/EGG/EGG					EGG/EGG/EGG/EGG/EGG												





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

Project# X5279

Test started: Date 11/23/13 Time 1315

Time 1315

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1320

Time 1320

Sample Description 002

Test Species D. DUX

ID# 09L/K19

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

Time: 0hour 1315 24hour 1210 48hour 1320 72hour ESB 96hour ESB

Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour ESB 96hour ESB

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		
75	A	N/A	8	6	6			8.2	8.1	8.2			7.0	7.1	7.5			295	294	298	410			
	B		8	8	8																			
	C		8	7	7																			
	D		8	8	8																			
	E		8	6	6																			
100	A		8	8	8			8.2	8.0	8.3			6.9	7.1	7.4			336	332	335	420			
	B		8	8	8																			
	C		8	8	8																			
	D		8	7	7																			
	E		8	8	8																			
Chemistry Tech prerenewal/postrenewal			ESB/ESB/ESB					ESB/ESB/ESB					ESB/ESB/ESB											

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

Project# X5279

Test started: Date 11/23/13 Time 1445

Client Eldorado Chemical

Test ended: Date 11/25/13 Time 1330

Sample Description 002

Test Species P. promelas ID# BAU111813

Technician: 0hour 268 24hour 268 48hour PH 72hour PH 96hour PH

Time: 0hour 1445 24hour 0950 48hour 1330 72hour PH 96hour PH

Temperature (°C): 0hour 25.4 24hour 25.1 48hour 25.2 72hour PH 96hour PH

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A	N/A	8	8	8			8.5	7.5	7.9			7.4	7.3	7.9			175.4	176.7	184.0		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	PH		8	8	8																	
32	A		8	8	8			8.4	7.6	7.9			7.2	7.3	7.9			230	248	258		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	PH		8	8	8																	
Chemistry Tech prerenewal/postrenewal							268	268	PH			268	268	PH			268	268	PH			

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

Project# X5279

Test started: Date 11/23/13 Time 1445

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1320

Sample Description 002

Test Species P. promelas ID# BAU11813

Technician: Ohour ETB 24hour EB 48hour PH 72hour PH 96hour PH

Time: Ohour 1445 24hour 0950 48hour 1320 72hour PH 96hour PH

Temperature (°C): Ohour 25.4 24hour 25.1 48hour 25.2 72hour PH 96hour PH

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				
42	A	N/A	8	8	8			8.3	7.5	8.1	7.8			7.2	7.3	7.1	7.0			24	26.6	24.5	25.4			
	B		8	8	8																					
	C		8	8	8																					
	D		8	8	8																					
	F		8	8	8																					
56	A		8	8	8			8.3	7.6	8.1	7.8			7.2	7.3	7.1	7.0			26.6	27.6	28.8	27.3			
	B		8	8	8																					
	C		8	7	8																					
	D		8	8	8																					
	F		8	8	8																					
Chemistry Tech prerenewal/postrenewal																										

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

Project# X5279

Test started: Date 11/23/13 Time 1445

Client El Dorado Chemical

Test ended: Date 1/25/13 Time 1330

Sample Description 002

Test Species P. promelas ID# BAU/111813

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

Time: Ohour 1445 24hour 0950 48hour 1330 72hour ELB 96hour ELB

Temperature (°C): Ohour 25.4 24hour 25.1 48hour 25.2 72hour ELB 96hour ELB

Test Dilution %	Replicate	Test Salinity N/A	# 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			
75	A		8	8	8			8.2	7.6	7.1	7.8			7.0	7.2	7.1	6.9			315	303	288	305		
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	8																				
	U		8	8	8																				
100	A		8	8	8			8.2	7.2	7.1	7.8			6.9	7.1	6.9	6.9			336	345	339	343		
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	8																				
	U		8	8	8																				
Chemistry Tech prerenewal/postrenewal							ELB <del>ELB</del> AH					ELB <del>ELB</del> AH					ELB <del>ELB</del> AH								

**APPENDIX C**  
**STATISTICAL ANALYSIS**

**Daphnid Acute Test-48 Hr Survival**

Start Date: 11/23/2013      Test ID: X5279DP      Sample ID: 2  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      Protocol: EPAAW02-EPA/821/R-02-01      Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5
D-Control	0.8750	1.0000	1.0000	1.0000	0.8750
32	0.8750	0.7500	0.8750	1.0000	0.8750
42	0.7500	0.8750	0.7500	1.0000	1.0000
56	0.7500	1.0000	1.0000	1.0000	1.0000
75	0.7500	1.0000	0.8750	1.0000	0.7500
100	1.0000	1.0000	1.0000	0.8750	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%				
D-Control	0.9500	1.0000	1.3196	1.2094	1.3931	7.623	5			
32	0.8750	0.9211	1.2137	1.0472	1.3931	10.087	5	21.50	16.00	
42	0.8750	0.9211	1.2180	1.0472	1.3931	14.204	5	23.00	16.00	
56	0.9500	1.0000	1.3239	1.0472	1.3931	11.884	5	29.00	16.00	
75	0.8750	0.9211	1.2180	1.0472	1.3931	14.204	5	23.00	16.00	
100	0.9750	1.0263	1.3564	1.2094	1.3931	6.055	5	30.00	16.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution ( $p \leq 0.05$ )	0.91525	0.927	-0.3967	-0.707
Bartlett's Test indicates equal variances ( $p = 0.69$ )	3.0954	15.0863		
<b>Hypothesis Test (1-tail, 0.05)</b>	<b>NOEC</b>	<b>LOEC</b>	<b>ChV</b>	<b>TU</b>
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

**Acute Fish Test-48 Hr Survival**

Start Date: 11/23/2013      Test ID: X5279PP      Sample ID: 2  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      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
42	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	0.8750	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
42	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
75	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00

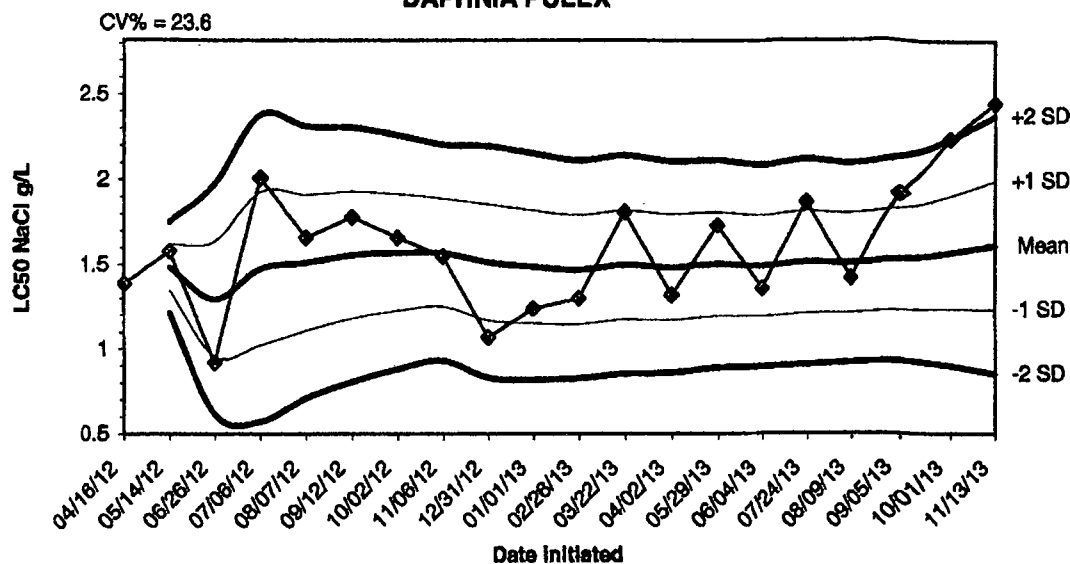
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.41613	0.927	-3.8705	19.8512
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

*EAB*  
*12/3/13*



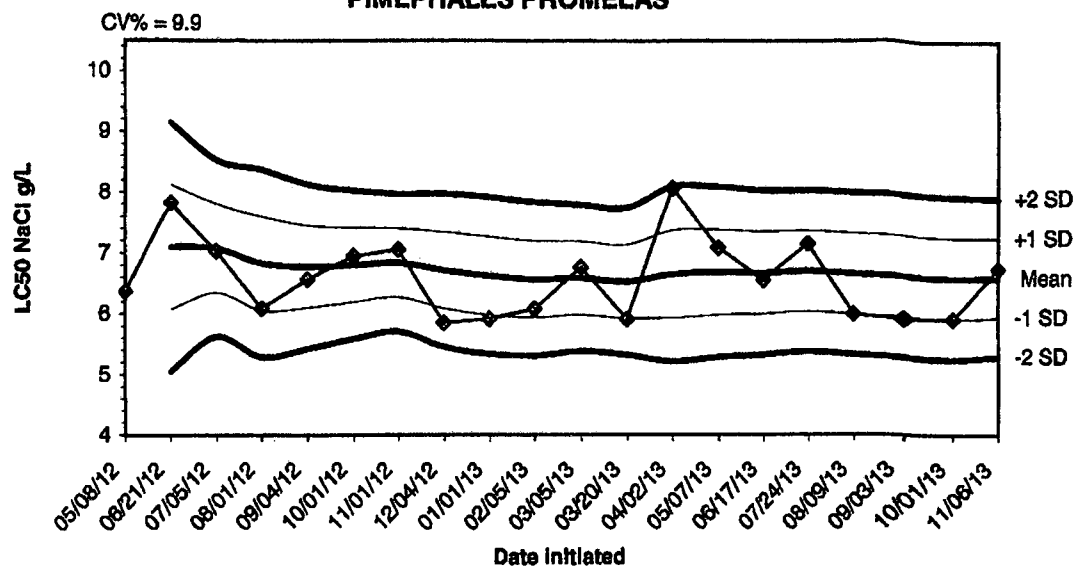
**APPENDIX D**  
**QUALITY ASSURANCE CHARTS**

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
DAPHNIA PULEX**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/16/12	1.3900					
05/14/12	1.5800	1.4850	1.3506	1.2163	1.6194	1.7537
06/26/12	0.9200	1.2967	0.9569	0.6172	1.6364	1.9762
07/06/12	2.0100	1.4750	1.0232	0.5713	1.9268	2.3787
08/07/12	1.6600	1.5120	1.1120	0.7121	1.9120	2.3119
09/12/12	1.7800	1.5567	1.1826	0.8085	1.9308	2.3049
10/02/12	1.6600	1.5714	1.2277	0.8840	1.9152	2.2589
11/06/12	1.5500	1.5688	1.2504	0.9321	1.8871	2.2054
12/31/12	1.0700	1.5133	1.1723	0.8313	1.8544	2.1954
01/01/13	1.2400	1.4860	1.1531	0.8201	1.8189	2.1519
02/26/13	1.3000	1.4691	1.1483	0.8275	1.7899	2.1107
03/22/13	1.8100	1.4975	1.1762	0.8549	1.8188	2.1401
04/02/13	1.3200	1.4838	1.1723	0.8608	1.7954	2.1069
05/29/13	1.7300	1.5014	1.1950	0.8885	1.8079	2.1144
06/04/13	1.3600	1.4920	1.1944	0.8969	1.7896	2.0871
07/24/13	1.8700	1.5156	1.2130	0.9104	1.8182	2.1208
08/09/13	1.4200	1.5100	1.2161	0.9222	1.8039	2.0978
09/05/13	1.9200	1.5328	1.2317	0.9306	1.8339	2.1349
10/01/13	2.2400	1.5700	1.2354	0.9009	1.9046	2.2391
11/13/13	2.4500	1.6140	1.2335	0.8530	1.9945	2.3750

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/08/12	6.3700					
06/21/12	7.8200	7.0950	6.0697	5.0444	8.1203	9.1456
07/05/12	7.0300	7.0733	6.3474	5.6214	7.7993	8.5253
08/01/12	6.0900	6.8275	6.0574	5.2873	7.5976	8.3677
09/04/12	6.5700	6.7760	6.0992	5.4224	7.4528	8.1296
10/01/12	6.9500	6.8050	6.1955	5.5860	7.4145	8.0240
11/01/12	7.0600	6.8414	6.2767	5.7120	7.4061	7.9708
12/04/12	5.8600	6.7188	6.0913	5.4638	7.3462	7.9737
01/01/13	5.9200	6.6300	5.9855	5.3410	7.2745	7.9190
02/05/13	6.0900	6.5760	5.9448	5.3138	7.2072	7.8384
03/05/13	6.7700	6.5936	5.9920	5.3903	7.1953	7.7969
03/20/13	5.9200	6.5375	5.9318	5.3261	7.1432	7.7489
04/02/13	8.0700	6.8554	5.9364	5.2174	7.3744	8.0934
05/07/13	7.0900	6.6864	5.9859	5.2854	7.3869	8.0874
06/17/13	6.5600	6.6780	6.0022	5.3264	7.3538	8.0296
07/24/13	7.1600	6.7081	6.0442	5.3803	7.3720	8.0360
08/09/13	6.0000	6.6665	6.0011	5.3357	7.3319	7.9972
09/03/13	5.9200	6.6250	5.9559	5.2869	7.2941	7.9631
10/01/13	5.9200	6.5879	5.9179	5.2478	7.2579	7.9280
11/06/13	6.7500	6.5960	5.8428	5.2897	7.2492	7.9023

**APPENDIX E**  
**AGENCY FORMS**

**Acute Forms**  
**Daphnia pulex Survival**

**Permittee: El Dorado Chemical - Outfall 002**  
**NPDES Permit Number: AR0000752/ AFIN 70-00040**

**Composite Collected From: 11/22/13 To: 11/22/13**  
**From: To:**

**Test Initiated: 11/23/13**

**Dilution Water Used: Receiving Water      X Reconstituted Water**

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	42.0	56.0	75.0	100.0
24-hour	A	87.5	100.0	75.0	75.0	75.0	100.0
	B	100.0	75.0	87.5	100.0	100.0	100.0
	C	100.0	87.5	75.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	87.5
	E	87.5	87.5	100.0	100.0	75.0	100.0
48-hour	A	87.5	87.5	75.0	75.0	75.0	100.0
	B	100.0	75.0	87.5	100.0	100.0	100.0
	C	100.0	87.5	75.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	87.5
	E	87.5	87.5	100.0	100.0	75.0	100.0
	Mean	95.0	87.5	87.5	95.0	87.5	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%)**      YES      X NO  
b.) **1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)**      YES      NO

**2. Enter percent effluent corresponding to the LC<sub>50</sub> below:**

LC<sub>50</sub> =      N/A % effluent

95 % confidence limits: N/A

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

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

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

Permittee: El Dorado Chemical - Outfall 002  
 NPDES Number: AR0000752/ AFIN 70-00040  
 Contact: Larken Pennington  
 Analyst: Briggs, Houghton  
 Sample Collected

From: Date 11/22/13 Time 0730  
 To: Date 11/22/13 Time 0730  
 Date 11/23/13 Time 1315  
 Date 11/25/13 Time 1320

Test Begin  
 Test End

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		8.5	8.3	8.3	24.7	24.4	24.6	32.0	28.0		52.0	44.0		7.4	7.3	7.6
32.0		8.4	8.3	8.1	24.7	24.4	24.6							7.2	7.2	7.6
42.0		8.3	8.1	8.1	24.7	24.4	24.6							7.2	7.1	7.5
56.0		8.3	8.1	8.2	24.7	24.4	24.6							7.2	7.1	7.5
75.0		8.2	7.9	8.2	24.7	24.4	24.6							7.0	7.1	7.5
100.0		8.2	7.8	8.3	24.7	24.4	24.6	12.0			96.0			6.9	6.9	7.4

\*This Form is to be submitted with each DMR.  
 Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

**Acute Forms**  
**Pimephales promelas Survival**

Permittee: El Dorado Chemical - Outfall 002  
NPDES Permit Number: AR0000752/ AFIN 70-00040

Composite Collected      From: 11/22/13      To: 11/22/13  
From:      To:

Test Initiated: 11/23/13

Dilution Water Used:      Receiving Water       Reconstituted Water

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	42.0	56.0	75.0	100.0
24-hour	A	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
	C	100.0	100.0	100.0	87.5	100.0	100.0
	D	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
48-hour	A	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
	C	100.0	100.0	100.0	87.5	100.0	100.0
	D	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
	Mean		100.0	100.0	100.0	97.5	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:

- a.) LOW FLOW OR CRITICAL DILUTION (100%)      YES       NO  
b.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)      YES      NO

2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

LC<sub>50</sub> =      N/A % effluent

95 % confidence limits: N/A

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

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

**Biomonitoring  
Fathead Minnow 48 hour Acute Static Renewal  
Chemical Parameters Chart\***

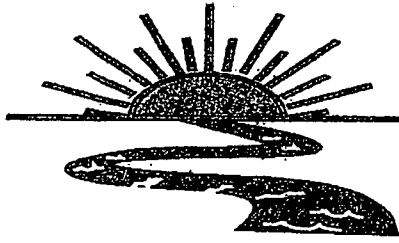
Permittee: El Dorado Chemical - Outfall 002  
 NPDES Number: AR0000752/ AFIN 70-00040  
 Contact: Larken Pennington  
 Analyst: Briggs, Houghton  
 Sample Collected From: Date 11/22/13 Time 0730  
 To: Date 11/22/13 Time 0730  
 Test Begin Date 11/23/13 Time 1445  
 Test End Date 11/25/13 Time 1330

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH			
	Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.5	8.3	7.9	25.4	25.1	25.2	32.0	28.0			52.0	44.0		7.4	7.3	6.9
32.0	8.4	8.3	7.9	25.4	25.1	25.2								7.2	7.2	6.9
42.0	8.3	8.1	7.8	25.4	25.1	25.2								7.2	7.1	7.0
56.0	8.3	8.1	7.8	25.4	25.1	25.2								7.2	7.1	7.0
75.0	8.2	7.9	7.8	25.4	25.1	25.2								7.0	7.1	6.9
100.0	8.2	7.8	7.8	25.4	25.1	25.2	12.0				96.0			6.9	6.9	6.9

\*This Form is to be submitted with each DMR.  
 Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>



**APPENDIX F**  
**REPORT QUALITY ASSURANCE FORM**



# Bio-Analytical Laboratories

3240 Spurgin Road  
Post Office Box 527  
Doyline, LA 71023

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

## REPORT QUALITY ASSURANCE FORM

Client: EDCC 002

Project#: X5279

Chain of Custody Documents Checked by: AH 12/2/13  
Technician/Date

Raw Data Documents Checked by: AH 12/2/13  
Technician/Date

Statistical Analysis Package Checked by: EGG 12/3/13  
Quality Manager/Date

Quality Control Data Checked by: EGG 12/3/13  
Quality Manager/Date

Report Checked by: EGG 12/17/13  
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. Beapp, BS  
Quality Manager

12/17/13  
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 X5280

### Bio-Analytical Laboratories' Executive Summary

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

**Project #:** X5280

**Outfall:** Outfall 006 (contaminated storm water)

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

**Contact:** Ms. Larken Pennington

**Test Dates:** November 23 - 25, 2013

**Test Type:** 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).  
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

**Results:**

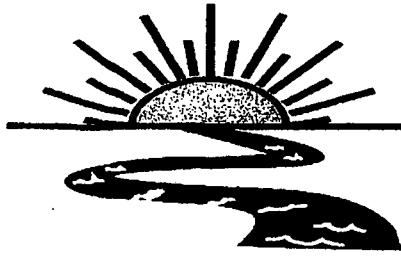
**For *Pimephales promelas*:**

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

**For *Daphnia pulex*:**

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

3240 Spurgin Road  
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Fax: (318) 745-2773

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

**EL DORADO CHEMICAL COMPANY  
El Dorado, Arkansas**

**NPDES #AR0000752  
AFIN #70-00040**

**EPA Methods 2000.0 and 2021.0**

**Project X5280**

**Test Dates: November 23 - 25, 2013  
Report Date: December 16, 2013**

**Prepared for:**  
Ms. Larken Pennington  
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 X5280

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BAL  
ADEQ #88-0630  
Project X5280

## 1.0 Introduction

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

## 2.0 Methods and Materials

### 2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012), "Standard Methods for The Examination of Water and Wastewater. 20<sup>th</sup> 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 *Daphnia pulex* test organisms were raised in-house 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 X5280

### **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, 42.0, 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 November 23, 2013. Upon completion of collection, the sample was packed in ice and personally delivered to Bio-Analytical Laboratories. The temperature upon arrival was  $-1.0^{\circ}$  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<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured on the control and the highest effluent concentration.

### **2.7 Monitoring of the Tests**

The tests were run in a Precision<sup>R</sup> dual controlled illuminated incubator at a temperature of  $25 \pm 1^{\circ}$  Celsius. An AEMC<sup>R</sup> data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

BAL  
ADEQ #88-0630  
Project X5280

## 2.8 Data Analysis

The NOEC and LC<sub>50</sub> values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

## 3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in either test after 48 hours of exposure ( $p=.05$ ). The NOEC value for both tests was 100.0 percent effluent ( $p=.05$ ). A 48-hour LC<sub>50</sub> value could not be determined because greater than 50.0 percent survival occurred in both tests. See Appendix C-Statistical Analysis, 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	100.0
22.0	100.0	80.0
32.0	100.0	92.5
42.0	100.0	95.0
56.0	100.0	92.5
75.0	95.0	97.5
100.0	100.0	90.0

The 48-hour reference toxicant test results indicate 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 X5280

#### 4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on November 23, 2013, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in any of the effluent dilutions after 48 hours of exposure ( $p=.05$ ). The 48-hour  $LC_{50}$  value for the tests could not be determined because greater than 50.0 percent survival occurred in the 100.0 percent dilution in each test.

BAL  
ADEQ #88-0630  
Project X5280

### 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. 20<sup>th</sup> Edition.

**APPENDIX B**  
**RAW DATA SHEETS**

**APPENDIX A**  
**CHAIN-OF-CUSTODY DOCUMENTS**



**Bio-Analytical Laboratories**

3240 Spurgin Road  
Post Office Box 827  
Daytone, LA 71023

(515) 745-2772  
1-800-368-1288  
Fax: (515) 745-2773

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

Laboratory Use Only:

<b>Company:</b> El Dorado Chemical Company		<b>Phone:</b> (870) 863-1484		<b>Analysis:</b>				<b>Project Number:</b>  X5280  Temp. upon arrival: -1.0°C # 29 11/23/13  <b>Preservative:</b> (below)  ice							
<b>Address:</b> 4500 Norwest Ave., El Dorado, AR 71731		<b>Fax:</b> (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform			<b>Lab Control Number:</b>  C8242								
<b>Permit #:</b> AR0000752/AFIN 70-00040		<b>Purchase Order:</b>													
<b>Sampler's Signature/Printed Name/Affiliation:</b> DAVID SARTAN / EDCC															
<b>Date Start</b> Date End	<b>Time Start</b> Time End	<b>C</b>	<b>G</b>					<b># and type of container</b>					<b>Sample Identification</b>		
11-22-13 11-23-13	400am - 400am	✓		6 half gallon	CCL6										
<b>Relinquished by/Affiliation:</b> / EDCC				<b>Date:</b> 11-23-13	<b>Time:</b> 1110	<b>Received by/Affiliation:</b> BAL 		<b>Date:</b> 11/23/13	<b>Time:</b> 1110						
<b>Relinquished by/Affiliation:</b>				<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>						
<b>Relinquished by/Affiliation:</b>				<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>						
<b>Method of Shipment:</b> ___ Lab ___ Bus ___ Fed Ex ___ DHL ___ UPS <input checked="" type="checkbox"/> Client ___ Other <b>Tracking #</b> _____ <b>Comments:</b>															

COC Rev. 3.0

BIO-ANALYTICAL LABORATORIES  
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5280

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES# AR0000752 Outfall 006

Technicians: EGB/AH/LC

Test initiated: Date 11/23/13 Time 1515

Test terminated: Date 11/25/13 Time 1340

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

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

Conductivity Meter: Model # Control Co. Serial #80277924

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

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O.(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
C8242	8.5 105.6%	1/29 8.0 96.1%	<0.01	NO	3.0	N/A	72.0	24.0	EGB
↓	9.3 120.7%	1/20 7.6 92.3%	↓	↓	↓	↓	↓	↓	↓

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	3562	N/A	N/A	N/A	N/A	7.2	52.0	32.0	EGB
↓	3563					7.4	44.6	28.0	↓

Test Species Information

Test Species Info.	Species: ID#	Species: ID#	Species: ID#	Species: ID#
Age	<u>D. pulex</u> 11/19/13	<u>P. promelas</u> 11/18/13		
Test Container Size	24h	~5 days		
Test volume	30ml	250ml		
Feeding: Type	25ml	200ml		
Amount	VCT: Algae	Artemia		
Aeration?	Feed 2hrs prior to test initiation			
Amount	N/A			
Condition of survivors	good	good		

Comments: pH=7.0 EGB 11/23/13

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

Project# X5280

Test started: Date 11/23/13 Time 1335

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1330

Sample Description 006

Test Species D. pulch ID# BAK19-L19

Technician: 0hour ECS 24hour EB 48hour EB 72hour EB 96hour EB

Time: 0hour 1335 24hour 1326 48hour 1330 72hour EB 96hour EB

Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour EB 96hour EB

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity					
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
0	A	N/A	8	8	8			8.5	<del>8.2</del> 8.4	8.3			7.0	<del>7.4</del> 7.4	7.6			178.2	<del>179.3</del> 179.3	180.0	180.0	180.0	180.0
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
22	A		8	8	6			8.4	<del>8.1</del> 8.2	8.3			7.0	<del>7.4</del> 7.4	7.3			204	<del>201</del> 201	203	203	203	203
	B		8	8	7																		
	C		8	8	7																		
	D		8	8	6																		
	E		8	6	6																		
Chemistry Tech prerenewal/postrenewal								<del>ECS</del> ECS					<del>ECS</del> ECS					<del>ECS</del> ECS					

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

Project# X5280

Test started: Date 11/23/13 Time 1335

client El Dorado Chemical

Test ended: Date 11/25/13 Time 1330

Sample Description DDG

Test Species D. pulex ID# BAK194219

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

Time: 0hour 1335 24hour 1220 48hour 1330 72hour 1330 96hour 1330

Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour 24.6 96hour 24.6

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
32	A	N/A	8	7	6			8.3	8.0	8.1	8.0		7.1	7.4	7.5		216	214	214	214	214	
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
42	A		8	8	8			8.3	8.0	8.1	8.0		7.2	7.5	7.5		227	227	227	227	227	
	B		8	8	6																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EGB					EGB					EGB									



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

Project# X5280

Test started: Date 11/23/13

Time 1335

Client El Dorado Chemical

Test ended: Date 11/25/13

Time 1330

Sample Description ODL6

Test Species D. rerio

ID# BA11919/L19

Technician: 0hour 268 24hour EGB 48hour EGB 72hour EGB 96hour EGB

Time: 0hour 1335 24hour 1220 48hour 1330 72hour EGB 96hour EGB

Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour EGB 96hour EGB

Test Dilution %	Replicate	Test Salinity N/A	# Live Organisms					Dissolved Oxygen					pH					Conductivity					
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
56	A		8	8	7			8.2	7.9	8.1	8.2			7.2	7.4	7.3	7.5			243	244	245	290
	B		8	8	8																		
	C		8	8	7																		
	D		8	8	8																		
	E		8	8	7																		
75	A		8	8	8			8.1	7.9	8.3			7.2	7.3	7.4				266	265	265	310	
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	7																		
	E		8	8	8																		
Chemistry Tech prerenewal/postrenewal			<del>EGB</del>					<del>EGB</del>					<del>EGB</del>										

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

Project# X5280

Test started: Date 11/23/13

Time 1335

Client El Dorado Chemical

Test ended: Date 11/25/13

Time 1330

Sample Description 006

Test Species D. DULUX

ID# 091/K194 L19

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

Time: Ohour 1335 24hour 1220 48hour 1330 72hour EBB 96hour EBB

Temperature (°C): Ohour 24.7 24hour 24.4 48hour 24.6 72hour EBB 96hour EBB

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity					
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
100	A	N/A	8	8	8			7.9	7.8	7.8	8.2			7.3	7.3	7.3			301	305	305	305	
	B		8	8	6																		
	C		8	8	7																		
	D		8	8	7																		
	E		8	8	8																		
	F		8	8	8																		
	G		8	8	8																		
	H		8	8	8																		
	I		8	8	8																		
	J		8	8	8																		
Chemistry tech prerenewal/postrenewal			EBB/EBB/EBB/EBB/EBB					EBB/EBB/EBB/EBB/EBB					EBB/EBB/EBB/EBB										

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

Project# X5280

Test started: Date 11/23/13 Time 1515

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1340

Sample Description 006

Test Species P. promelas ID# BA/111813

Technician: 0hour EBB 24hour EBB 48hour AH 72hour EBB 96hour EBB

Time: 0hour 1515 24hour 0930 48hour 1340 72hour EBB 96hour EBB

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour EBB 96hour EBB

Test Dilution %	Replicate	Test Salinity N/A	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A		8	8	8			8.5	8.4	8.4			7.0	7.4	7.3			178.2	176.4	185.0		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22	A		8	8	8			8.4	8.2	8.0			7.0	7.4	7.2			204.2	203.2	211		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								EBB	EBB	AH			EBB	EBB	AH			EBB	EBB	AH		

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

Project# X5280

Test started: Date 1/23/13

Time 1515

Client El Dorado Chemical

Test ended: Date 1/28/13

Time 1240

Sample Description 006

Test Species P. promelas ID# BA/111813

Technician: 0hour ESB 24hour EGP 48hour AI 72hour EGP 96hour EGP

Time: 0hour 515 24hour 0930 48hour 1300 72hour EGP 96hour EGP

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour EGP 96hour EGP

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
32	A	N/A	8	8	8			8.3	8.1	8.0			7.1	7.2	7.3			216	224	228		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
42	A		8	8	8			8.3	8.1	8.0			7.2	7.3	7.1			227	240	236		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EGP/ESB					EGP/ESB					EGP/ESB									

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

Project# X5280

Test started: Date 11/23/13 Time 1515

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1340

Sample Description 006

Test Species P. promelas ID# BA111813

Technician: EBB 0hour EBB 24hour EBB 48hour PH 72hour EBB 96hour EBB

Time: 12/31/13 0hour 1515 24hour 0930 48hour 1340 72hour EBB 96hour EBB

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour EBB 96hour EBB

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity							
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96			
56	A	N/A	8	8	8			8.2	7.4	8.0			7.2	7.1	7.3	7.1			243	253	247	255			
	B		8	8	8																				
	C		8	8	8																				
	D		8	8	8																				
	E		8	8	8																				
75	A		8	8	8			8.1	7.4	7.9			7.2	7.1	7.3	7.1			266	273	268	270			
	B		8	7	7																				
	C		8	7	7																				
	D		8	8	8																				
	E		8	8	8																				
Chemistry tech prerenewal/postrenewal								EBB	PH				EBB	PH					EBB	PH					

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

Project# X5280

Test started: Date 11/23/13 Time 1515

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1340

Sample Description ADG

Test Species P. promelas ID# BA1/1/1513

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

Time: Ohour 1515 24hour 0930 48hour 0840 72hour AM 96hour AM

Temperature (°C): Ohour 25.4 24hour 25.3 48hour 25.2 72hour AM 96hour AM

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity					
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
100	A	N/A	8	8	8			7.9	7.2	7.5	7.9			7.3	7.1	7.1			301	302	303		
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	II		8	8	8																		
	A		8																				
	B		8																				
	C		8																				
	D		8																				
	II		8																				
Chemistry tech prerenewal/postrenewal			ESB/AM					ESB/AM					ESB/AM										

**APPENDIX C**  
**STATISTICAL ANALYSIS**

**Daphnid Acute Test-48 Hr Survival**

Start Date: 11/23/2013      Test ID: X5280DP      Sample ID: 6  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      Protocol: EPAAW02-EPA/821/R-02-01      Test Species: CD-Ceriodaphnia dubia  
 Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	0.7500	0.8750	0.8750	0.7500	0.7500
32	0.7500	0.8750	1.0000	1.0000	1.0000
42	1.0000	0.7500	1.0000	1.0000	1.0000
56	0.8750	1.0000	0.8750	1.0000	0.8750
75	1.0000	1.0000	1.0000	0.8750	1.0000
100	1.0000	0.7500	0.8750	0.8750	1.0000

Conc-%	Transform: Arcsin Square Root							Rank Sum	1-Tailed Critical
	Mean	N-Mean	Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	0.8000	0.8000	1.1121	1.0472	1.2094	7.990	5	15.00	16.00
32	0.9250	0.9250	1.2872	1.0472	1.3931	12.116	5	22.50	16.00
42	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00
56	0.9250	0.9250	1.2829	1.2094	1.3931	7.841	5	20.00	16.00
75	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
100	0.9000	0.9000	1.2504	1.0472	1.3931	11.683	5	20.00	16.00

anomaly  
EGG  
12/3/13

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test Indicates non-normal distribution (p <= 0.05)	0.91645	0.934	-0.9011	0.50782
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	<22	22		
Treatments vs D-Control				



**Acute Fish Test-48 Hr Survival**

Start Date: 11/23/2013      Test ID: X5280PP      Sample ID: 6  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      Protocol: EPAAW02-EPA/821/R-02-01      Test Species: PP-Pimephales promelas  
 Comments:

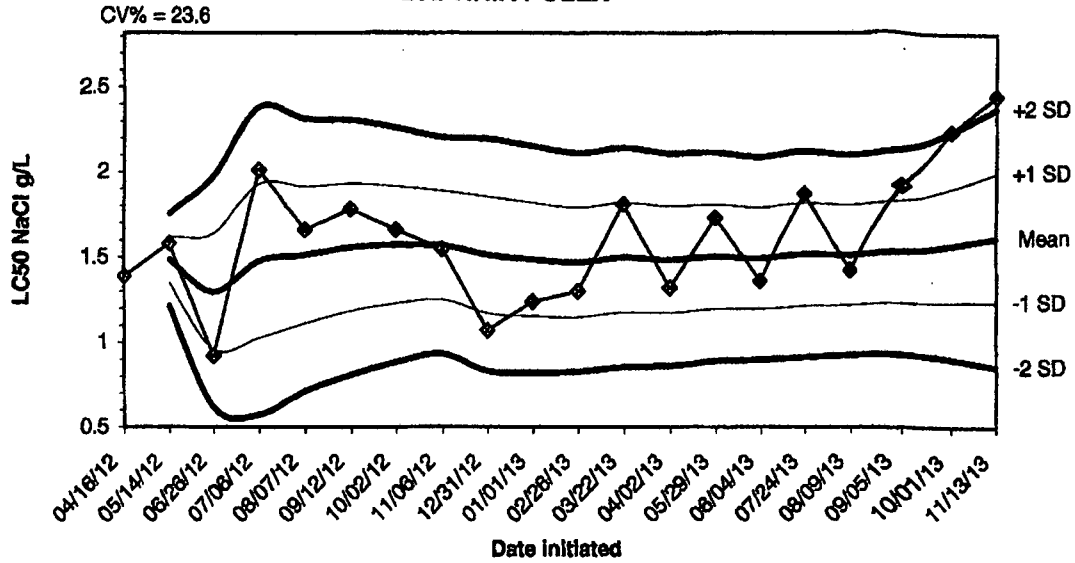
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
42	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	0.8750	0.8750	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%	N		
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
42	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.52019	0.934	-1.1291	6.18182
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				

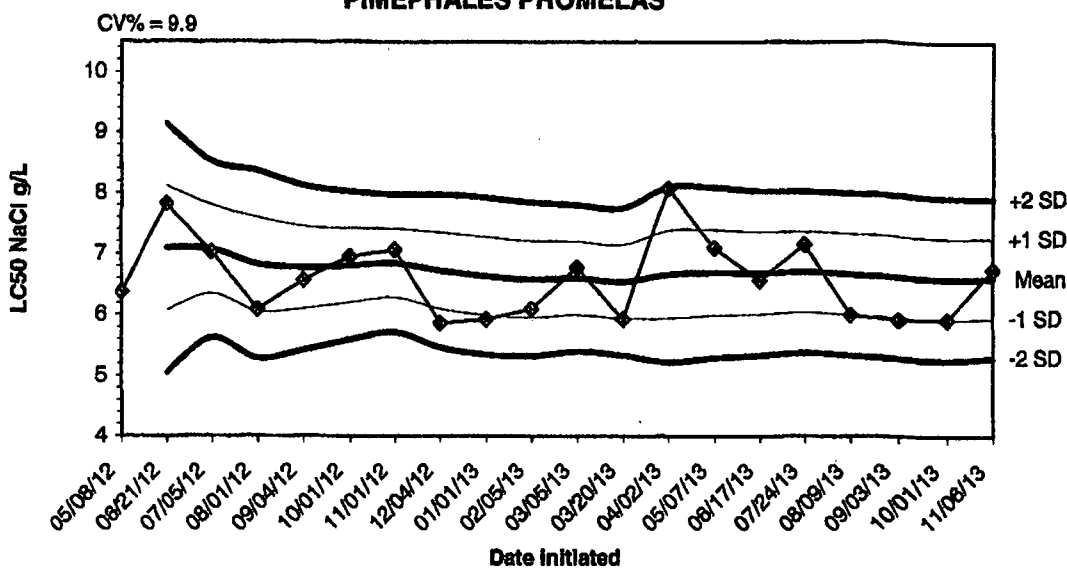
**APPENDIX D**  
**QUALITY ASSURANCE CHARTS**

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
DAPHNIA PULEX**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/16/12	1.3900					
05/14/12	1.5800	1.4850	1.3506	1.2163	1.6194	1.7537
06/26/12	0.9200	1.2967	0.9569	0.6172	1.6364	1.9762
07/06/12	2.0100	1.4750	1.0232	0.5713	1.9268	2.3787
08/07/12	1.6600	1.5120	1.1120	0.7121	1.9120	2.3119
09/12/12	1.7800	1.5567	1.1828	0.8085	1.9308	2.3049
10/02/12	1.6600	1.5714	1.2277	0.8840	1.9152	2.2589
11/06/12	1.5500	1.5688	1.2504	0.9321	1.8871	2.2054
12/31/12	1.0700	1.5133	1.1723	0.8313	1.8544	2.1954
01/01/13	1.2400	1.4860	1.1531	0.8201	1.8189	2.1519
02/26/13	1.3000	1.4691	1.1483	0.8275	1.7899	2.1107
03/22/13	1.8100	1.4975	1.1762	0.8549	1.8188	2.1401
04/02/13	1.3200	1.4838	1.1723	0.8608	1.7954	2.1069
05/29/13	1.7300	1.5014	1.1950	0.8885	1.8079	2.1144
06/04/13	1.3600	1.4920	1.1944	0.8989	1.7896	2.0871
07/24/13	1.8700	1.5156	1.2130	0.9104	1.8182	2.1208
08/09/13	1.4200	1.5100	1.2161	0.9222	1.8039	2.0978
09/05/13	1.9200	1.5328	1.2317	0.9306	1.8339	2.1349
10/01/13	2.2400	1.5700	1.2354	0.9009	1.9046	2.2391
11/13/13	2.4500	1.6140	1.2335	0.8530	1.9945	2.3750

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/08/12	6.3700					
06/21/12	7.8200	7.0950	6.0697	5.0444	8.1203	9.1456
07/05/12	7.0300	7.0733	6.3474	5.6214	7.7993	8.5253
08/01/12	6.0900	6.8275	6.0574	5.2873	7.5976	8.3677
09/04/12	6.5700	6.7760	6.0992	5.4224	7.4528	8.1296
10/01/12	6.9500	6.8050	6.1955	5.5860	7.4145	8.0240
11/01/12	7.0600	6.8414	6.2767	5.7120	7.4061	7.9708
12/04/12	5.8600	6.7188	6.0913	5.4638	7.3462	7.9737
01/01/13	5.9200	6.6300	5.9855	5.3410	7.2745	7.9190
02/05/13	6.0900	6.5760	5.9448	5.3136	7.2072	7.8384
03/05/13	6.7700	6.5936	5.9920	5.3903	7.1953	7.7969
03/20/13	5.9200	6.5375	5.9318	5.3261	7.1432	7.7489
04/02/13	8.0700	6.6554	5.9364	5.2174	7.3744	8.0934
05/07/13	7.0900	6.6864	5.9859	5.2854	7.3869	8.0874
06/17/13	6.5600	6.6780	6.0022	5.3264	7.3538	8.0296
07/24/13	7.1600	6.7081	6.0442	5.3803	7.3720	8.0360
08/09/13	6.0000	6.6665	6.0011	5.3357	7.3319	7.9972
09/03/13	5.9200	6.6250	5.9559	5.2869	7.2941	7.9631
10/01/13	5.9200	6.5879	5.9179	5.2478	7.2579	7.9280
11/06/13	6.7500	6.5960	5.9428	5.2897	7.2492	7.9023

**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: 11/22/13      To: 11/23/13  
From:      To:

Test Initiated: 11/23/13

Dilution Water Used:      Receiving Water       Reconstituted Water

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	22.0	32.0	42.0	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	100.0	87.5	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	75.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	75.0	75.0	100.0	87.5	100.0	100.0
	B	100.0	87.5	87.5	75.0	100.0	100.0	75.0
	C	100.0	87.5	100.0	100.0	87.5	100.0	87.5
	D	100.0	75.0	100.0	100.0	100.0	87.5	87.5
	E	100.0	75.0	100.0	100.0	87.5	100.0	100.0
	Mean	100.0	80.0	92.5	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%)      YES       NO  
b.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A %)      YES      NO

2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

LC<sub>50</sub> =      N/A % effluent

95 % confidence limits: N/A

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

3. If you answered NO to 1.a) enter (P) otherwise enter (F): P

4. Enter response to item 3 on DMR Form, parameter TEM3D

5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A

6. Enter response to item 5 on DMR Form, parameter TFM3D

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

Permittee: El Dorado Chemical - Outfall 006  
 NPDES Number: AR0000752/ AFIN 70-00040  
 Contact: Larken Pennington  
 Analyst: Briggs  
 Sample Collected

From: Date 11/22/13 Time 0400  
 To: Date 11/23/13 Time 0400  
 Date 11/23/13 Time 1335  
 Date 11/25/13 Time 1330

Test Begin  
 Test End

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		8.5	8.4	8.3	24.7	24.4	24.6	32.0	28.0		52.0	44.0		7.0	7.4	7.6
22.0		8.4	8.2	8.3	24.7	24.4	24.6							7.0	7.4	7.3
32.0		8.3	8.1	8.0	24.7	24.4	24.6							7.1	7.3	7.5
42.0		8.3	8.1	8.2	24.7	24.4	24.6							7.2	7.3	7.5
56.0		8.2	8.1	8.2	24.7	24.4	24.6							7.2	7.3	7.5
75.0		8.1	7.8	8.3	24.7	24.4	24.6							7.2	7.3	7.4
100.0		7.9	7.5	8.2	24.7	24.4	24.6	24.0			72.0			7.3	7.3	7.3

\*This Form is to be submitted with each DMR.  
 Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

**Acute Forms**  
**Pimephales promelas Survival**

Permittee: El Dorado Chemical - Outfall 006  
NPDES Permit Number: AR0009752/ AFIN 70-00040

Composite Collected From: 11/22/13 To: 11/23/13  
From: To:

Test Initiated: 11/23/13

Dilution Water Used: Receiving Water X Reconstituted Water

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	22.0	32.0	42.0	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	87.5	100.0
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	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	87.5	100.0
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	100.0	100.0	100.0	100.0	95.0	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:

- a.) LOW FLOW OR CRITICAL DILUTION (100%) YES X NO  
 b.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%) YES NO

2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

LC<sub>50</sub> = N/A% effluent  
 95 % confidence limits: N/A  
 Method of LC<sub>50</sub> calculation:

3. If you answered NO to 1.a) enter (P) otherwise enter (F): P

4. Enter response to item 3 on DMR Form, parameter TEM3D

5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A

6. Enter response to item 5 on DMR Form, parameter TFM3D



**Blomonitoring  
Fathead minnow 48 hour Acute Static Renewal  
Chemical Parameters Chart\***

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

**Contact: Larken Pennington  
Analyst: Briggs, Haughton**

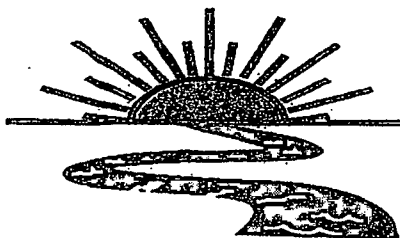
**Sample Collected From: Date 11/22/13 Time 0400  
To: Date 11/23/13 Time 0400  
Test Begin Date 11/23/13 Time 1515  
Test End Date 11/25/13 Time 1340**

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	8.5	8.4	7.9	25.4	25.3	25.2	32.0	28.0			52.0	44.0		7.0	7.4	7.3
22.0	8.4	8.2	8.0	25.4	25.3	25.2								7.0	7.4	7.2
32.0	8.3	8.1	8.0	25.4	25.3	25.2								7.1	7.3	7.2
42.0	8.3	8.1	8.0	25.4	25.3	25.2								7.2	7.3	7.1
56.0	8.2	8.1	8.0	25.4	25.3	25.2								7.2	7.3	7.1
75.0	8.1	7.8	7.9	25.4	25.3	25.2								7.2	7.3	7.1
100.0	7.9	7.5	7.9	25.4	25.3	25.2	24.0				72.0			7.3	7.3	7.1

\*This Form is to be submitted with each DMR.

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

**APPENDIX F**  
**REPORT QUALITY ASSURANCE FORM**



# Bio-Analytical Laboratories

3240 Spurgin Road  
Post Office Box 527  
Doyline, LA 71023

(318) 745-2772  
1-800-269-1248  
Fax: (318) 745-2773

## REPORT QUALITY ASSURANCE FORM

Client: EDCC COLO

Project#: X5280

Chain of Custody Documents Checked by: AH 12/2/13  
Technician/Date

Raw Data Documents Checked by: AH 12/2/13  
Technician/Date

Statistical Analysis Package Checked by: EOB 12/3/13  
Quality Manager/Date

Quality Control Data Checked by: EOB 12/3/13  
Quality Manager/Date

Report Checked by: EOB 12/17/13  
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. Bragg, BS  
Quality Manager

12/17/13  
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 X5281

### Bio-Analytical Laboratories' Executive Summary

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

**Project #:** X5281

**Outfall:** Outfall 007 (contaminated storm water)

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

**Contact:** Ms. Larken Pennington

**Test Dates:** November 23 - 25, 2013

**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 - 7.62%.

**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 X5281**

**Test Dates: November 23 - 25, 2013**

**Report Date: December 16, 2013**

**Prepared for:**  
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ADEQ #88-0630

BAL  
ADEQ #88-0630  
Project X5281

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BAL  
ADEQ #88-0630  
Project X5281

## 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. 20<sup>th</sup> 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 *Daphnia pulex* test organisms were raised in-house 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 X5281

### **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, 42.0 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 November 23, 2013. Upon completion of collection, the sample was packed in ice and personally delivered to Bio-Analytical Laboratories. The temperature upon arrival was  $-1.0^{\circ}$  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<sup>R</sup> amperometric titrator and recorded if present. The total ammonia level was measured using a HACH<sup>R</sup> test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured on the control and the highest effluent concentration.

### **2.7 Monitoring of the Tests**

The tests were run in a Precision<sup>R</sup> dual controlled illuminated incubator at a temperature of  $25 \pm 1^{\circ}$  Celsius. An AEMC<sup>R</sup> data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.



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Project X5281

## 2.8 Data Analysis

The NOEC and LC<sub>50</sub> values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

## 3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for both tests was 100.0 percent effluent (p=.05). A 48-hour LC<sub>50</sub> value could not be determined because greater than 50.0 percent survival occurred in both tests. See Appendix C-Statistical Analysis, 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
32.0	100.0	92.5
42.0	97.5	92.5
50.0	100.0	90.0
56.0	100.0	92.5
75.0	100.0	87.5
100.0	97.5	100.0

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

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#### 4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on November 23, 2013, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in any of the effluent dilutions after 48 hours of exposure ( $p=.05$ ). The 48-hour  $LC_{50}$  value for the tests could not be determined because greater than 50.0 percent survival occurred in the 100.0 percent dilution in each test.

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Project X5281

### 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*. 20<sup>th</sup> Edition.

**APPENDIX A**  
**CHAIN-OF-CUSTODY DOCUMENTS**



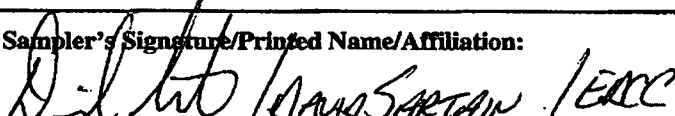
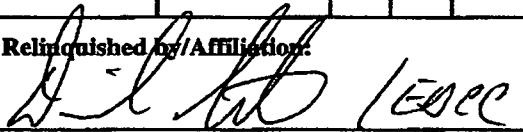
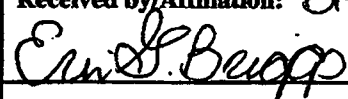
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NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

<b>Company:</b> El Dorado Chemical Company		<b>Phone:</b> (870) 863-1484		<b>Analysis:</b>						<b>Project Number:</b>  X5281  <b>Temp. upon arrival:</b> -1.00C #29 EGB 11/23/13  <b>Preservative:</b> (below) ice						
<b>Address:</b> 4500 Norwest Ave., El Dorado, AR 71731		<b>Fax:</b> (870) 863-7499		Chronic Ceriodaphnia Chronic minnow Acute minnow (fresh/marine) Acute Daphnia species Acute Mysid Acute Ceriodaphnia Fecal Coliform					<b>Lab Control Number:</b>  C8243							
<b>Permit #:</b> AR0000752/AFIN 70-00040											<b>Purchase Order:</b>					
<b>Sampler's Signature/Printed Name/Affiliation:</b>  DAVID SARTAIN / ECCC																
<b>Date Start</b> Date End	<b>Time Start</b> Time End	<b>C</b>	<b>G</b>							<b># and type of container</b>	<b>Sample Identification</b>					<b>Lab Control Number:</b>
11-22-13 - 11-23-13	400 AM - 400 AM	<input checked="" type="checkbox"/>		6 half gallon	007					X X						
<b>Relinquished by/Affiliation:</b>  / ECCC		<b>Date:</b> 11-23-13	<b>Time:</b> 1110	<b>Received by/Affiliation:</b> BAL 		<b>Date:</b> 11/23/13	<b>Time:</b> 1110									
<b>Relinquished by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>									
<b>Relinquished by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>	<b>Received by/Affiliation:</b>		<b>Date:</b>	<b>Time:</b>									
<b>Method of Shipment:</b> <input type="checkbox"/> Lab <input type="checkbox"/> Bus <input type="checkbox"/> Fed Ex <input type="checkbox"/> DHL <input type="checkbox"/> UPS <input checked="" type="checkbox"/> Client <input type="checkbox"/> Other <b>Tracking #</b> _____																
<b>Comments:</b>																
COC Rev. 3.0																

**APPENDIX B**  
**RAW DATA SHEETS**

BIO-ANALYTICAL LABORATORIES  
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X5281

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/AH/LC

Test initiated: Date 11/23/13 Time 1540

Test terminated: Date 11/25/13 Time 1345

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

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

Conductivity Meter: Model # Control Co. Serial #80277924

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

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/Final D.O.(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
08243	8.6 110.0%	7/20/8.0 92.0%	0.01	NO	0.25	N/A	72.0	20.0	EGB
↓	9.2 122.9%	4/20/7.5 92.9%	↓	↓	↓	↓	↓	↓	↓

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	3562	NA	NA	NA	NA	7.2	52.0	32.0	EGB
↓	3563					7.4	44.0	28.0	↓

Test Species Information

Test Species Info.	Species: ID#	Species: ID#	Species: ID#	Species: ID#
Age	224h	~500y5		
Test Container Size	30ml	250ml		
Test volume	25ml	200ml		
Feeding: Type	VCT: Algae	Artemia		
Amount	Feed 7 hrs prior to test initiation			
Aeration? Amount	NA			
Condition of survivors	Good EGB 11/25/13	Good AH 11/25/13		

Comments: pH=7.1 EGB 11/23/13

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

Project# X5281

Test started: Date 11/23/13 Time 1400

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species D. pulex ID# BA(L-19)

Technician: Ohour 2:53 24hour 2:53 48hour 2:53 72hour     96hour    

Time: Ohour 1400 24hour 1440 48hour 1345 72hour     96hour    

Temperature (°C): Ohour 24.7 24hour 24.4 48hour 24.6 72hour     96hour    

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A	N/A	8	8	7			8.5	8.3	8.4	8.2		7.4	7.4	7.6		175.7	176.0	177.4	263		
	B		8	8	8																	
	C		8	8	7																	
	D		8	8	8																	
	E		8	8	8																	
32	A		8	8	8			8.3	8.1	8.1			7.3	7.3	7.5		216	214	217	269		
	B		8	8	7																	
	C		8	8	7																	
	D		8	8	8																	
	E		8	8	7																	
		chemistry tech																				
		prerenewal/postrenewal																				



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

Project# X5281

Test started: Date 11/23/13 Time 1400

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species D. pulex ID# BA1219

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

Time: 0hour 1400 24hour 1240 48hour 1305 72hour EGS 96hour EGS

Temperature (°C): 0hour 24.7 24hour 24.4 48hour 24.6 72hour EGS 96hour EGS

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
42	A	N/A	8	8	7			8.1	8.1				7.3	7.3	7.5			229	229	281		
	B		8	8	7																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
50	A		8	8	8			8.2	8.2				7.3	7.3	7.4			227	227	280		
	B		8	8	6																	
	C		8	8	6																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EGS					EGS					EGS									

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

Project# X5281

Test started: Date 11/23/13 Time 1400

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species D. Pulex ID# BAL149

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

Time: Ohour 1400 24hour 1240 48hour 1345 72hour ECS 96hour ECS

Temperature (°C): Ohour 24.7 24hour 24.4 48hour 24.6 72hour ECS 96hour ECS

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity							
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96			
50	A	N/A	8	8	8			<del>8.2</del> 8.1	<del>8.0</del> 8.0	8.2	7.3	<del>7.3</del> 7.5	7.5					<del>347</del> 347	<del>341</del> 341					300	
	B		8	8	8																				
	C		8	8	6																				
	D		8	8	7																				
	E		8	8	8																				
75	A		8	8	8			<del>8.1</del> 8.1	<del>8.0</del> 8.0	8.2	4.3	<del>4.3</del> 4.4	4.4					<del>369</del> 369	<del>363</del> 363					314	
	B		8	8	6																				
	C		8	8	6																				
	D		8	8	7																				
	E		8	8	8																				
Chemistry Tech prerenewal/postrenewal			ECS					ECS					ECS												

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

Project# X5281

Test started: Date 11/22/13 Time 1400

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species D. pulex ID# BAL419

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

Time: Ohour 1400 24hour 1345 48hour 1345 72hour EGB 96hour EGB

Temperature (°C): Ohour 24.7 24hour 24.4 48hour 24.6 72hour EGB 96hour EGB

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
100	A	N/A	8	8	8			7.9	7.9	8.1			7.1	7.2	7.4			302	341	342		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
	F		8	8	8																	
	G		8	8	8																	
	H		8	8	8																	
	I		8	8	8																	
	J		8	8	8																	
	K		8	8	8																	
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	BR		8	8	8																	
	BS		8	8	8																	
	BT		8	8	8																	
	BU		8	8	8																	
	BV		8	8	8																	
	BW		8	8	8																	
	BX		8	8	8																	
	BY		8	8	8																	
	BZ		8	8	8																	
	CA		8	8	8																	
	CB		8	8	8																	
	CC		8	8	8																	
	CD		8	8	8																	
	CE		8	8	8																	
	CF		8	8	8																	
	CG		8	8	8																	
	CH		8	8	8																	
	CI		8	8	8																	
	CJ		8	8	8																	

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

Project# X5281

Test started: Date 11/23/13 Time 1540

Client EI Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species P. promelas ID# BA1/11813

Technician: 0hour EGS 24hour EGS 48hour PH 72hour PH 96hour PH

Time: 0hour 1540 24hour 0900 48hour 1345 72hour PH 96hour PH

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour PH 96hour PH

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0	A	N/A	8	8	8			8.5	8.1	7.9			7.4	7.4	7.3			178.7	177	185.7		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32	A		8	8	8			8.3	8.1	8.0			7.3	7.3	7.2			216	217	222		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal			EGS/PH					EGS/PH					EGS/PH									

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

Project# X5281

Test started: Date 11/23/13 Time 1540

Client El Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species P. promelas ID# 091/11613

Technician: 0hour 268 24hour 263 48hour 241 72hour     96hour    

Time: 0hour 1540 24hour 0920 48hour 1345 72hour     96hour    

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 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
42	A	N/A	8	8	8			8.1	7.4	8.0			7.3	7.3	7.2			229	249	234		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
50	A		8	8	8			8.2	7.5	8.0			7.3	7.2	7.0			237	249	245		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
		Chemistry Tech																				
		prerenewal/postrenewal																				

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

Project# X5281

Test started: Date 11/23/13 Time 1540

client EI Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species P. promelas ID# 091/11813

Technician: 0hour EBD 24hour EBB 48hour AH 72hour     96hour    

Time: 0hour 1540 24hour 0900 48hour 1345 72hour     96hour    

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour     96hour    

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity					
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
56	A	N/A	8	8	8			8.2	7.5	8.0			7.3	7.0	7.1			247	269	243	252		
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
75	A		8	8	8			8.1	7.5	8.0			7.3	7.0	7.1			269	279	267	278		
	B		8	8	8																		
	C		8	8	8																		
	D		8	8	8																		
	E		8	8	8																		
Chemistry tech prerenewal/postrenewal			EBB/EBB/AH					EBB/EBB/AH					EBB/EBB/AH										

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

Project# X5281

Test started: Date 11/23/13 Time 1540

client Ej Dorado Chemical

Test ended: Date 11/25/13 Time 1345

Sample Description 007

Test Species P. promelas ID# 6PL111813

Technician: 0hour EGB 24hour EGB 48hour AH 72hour     96hour    

Time: 0hour 1540 24hour 0920 48hour 0345 72hour     96hour    

Temperature (°C): 0hour 25.4 24hour 25.3 48hour 25.2 72hour     96hour    

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
100	A	N/A	8	8	8			7.9	7.2	7.9			7.1	7.1	7.0			302	303	305		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
	A		8																			
	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal			EGB/AH					EGB/AH					EGB/AH									

**APPENDIX C**  
**STATISTICAL ANALYSIS**



**Daphnid Acute Test-48 Hr Survival**

Start Date: 11/23/2013      Test ID: X5281DP      Sample ID: 7  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      Protocol: EPAAW02-EPA/821/R-02-01      Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5
D-Control	0.8750	1.0000	0.8750	1.0000	1.0000
32	1.0000	0.8750	0.8750	1.0000	0.8750
42	0.8750	0.8750	1.0000	0.8750	1.0000
50	1.0000	0.7500	0.7500	1.0000	1.0000
56	1.0000	1.0000	0.7500	0.8750	1.0000
75	1.0000	0.7500	0.7500	0.8750	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					N	Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%				
D-Control	0.9500	1.0000	1.3186	1.2094	1.3931	7.623	5			
32	0.9250	0.9737	1.2829	1.2094	1.3931	7.841	5	25.00	16.00	
42	0.9250	0.9737	1.2829	1.2094	1.3931	7.841	5	25.00	16.00	
50	0.9000	0.9474	1.2547	1.0472	1.3931	15.099	5	25.50	16.00	
56	0.9250	0.9737	1.2872	1.0472	1.3931	12.116	5	26.50	16.00	
75	0.8750	0.9211	1.2180	1.0472	1.3931	14.204	5	23.00	16.00	
100	1.0000	1.0526	1.3931	1.3931	1.3931	0.000	5	32.50	16.00	

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test Indicates non-normal distribution (p <= 0.05)	0.92627	0.934	-0.3401	-0.9673
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: 11/23/2013      Test ID: X5281PP      Sample ID: 7  
 End Date: 11/25/2013      Lab ID: ADEQ880630      Sample Type: EFF2-Industrial  
 Sample Date: 11/23/2013      Protocol: EPAAW02-EPA/821/R-02-01      Test Species: PP-Pimephales promelas

Comments:

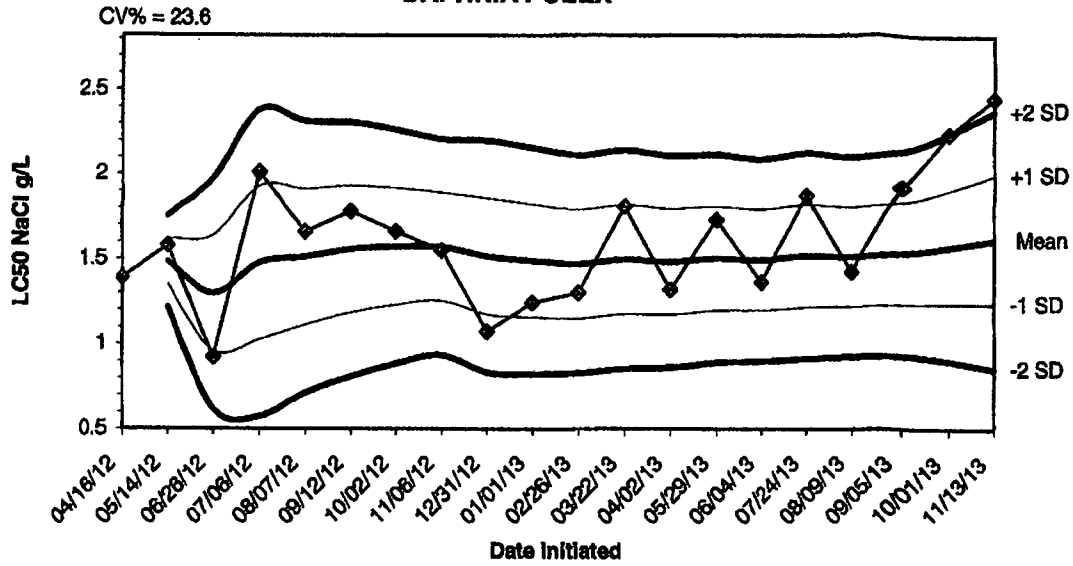
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
42	1.0000	1.0000	1.0000	0.8750	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.8750	1.0000	1.0000	1.0000

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		
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
42	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
50	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
100	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00

Auxillary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.51902	0.934	-2.9335	9.90057
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				

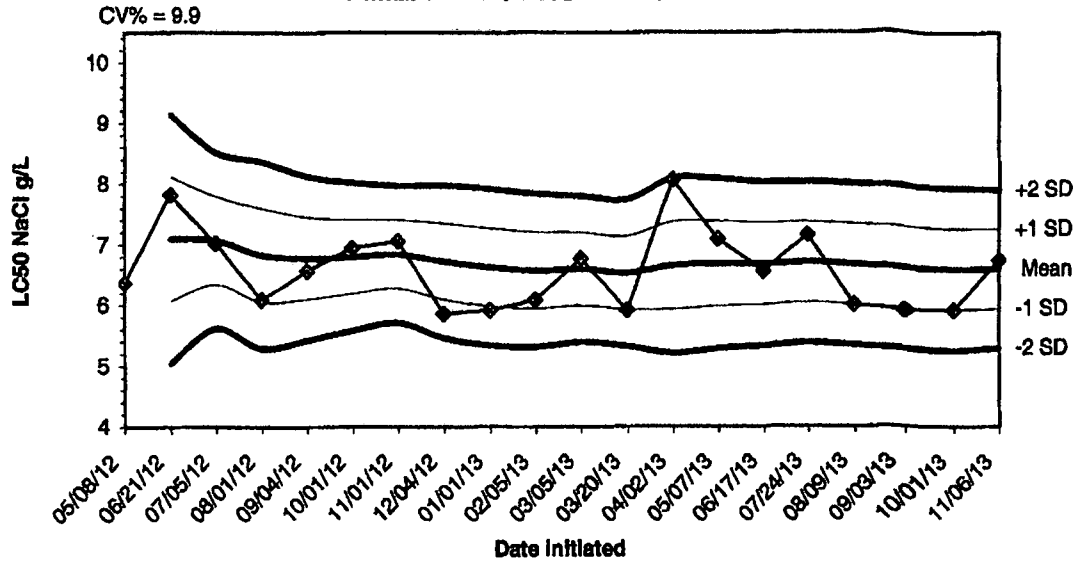
**APPENDIX D**  
**QUALITY ASSURANCE CHARTS**

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
DAPHNIA PULEX**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
04/18/12	1.3900					
05/14/12	1.5800	1.4850	1.3506	1.2163	1.6194	1.7537
06/28/12	0.9200	1.2967	0.9569	0.6172	1.6364	1.9762
07/08/12	2.0100	1.4750	1.0232	0.5713	1.9268	2.3787
08/07/12	1.6600	1.5120	1.1120	0.7121	1.9120	2.3119
09/12/12	1.7800	1.5567	1.1826	0.8085	1.9308	2.3049
10/02/12	1.6600	1.5714	1.2277	0.8840	1.9152	2.2589
11/08/12	1.5500	1.5688	1.2504	0.9321	1.8871	2.2054
12/31/12	1.0700	1.5133	1.1723	0.8313	1.8544	2.1954
01/01/13	1.2400	1.4860	1.1531	0.8201	1.8189	2.1519
02/26/13	1.3000	1.4691	1.1483	0.8275	1.7899	2.1107
03/22/13	1.8100	1.4975	1.1762	0.8549	1.8188	2.1401
04/02/13	1.3200	1.4838	1.1723	0.8608	1.7954	2.1069
05/29/13	1.7300	1.5014	1.1950	0.8885	1.8079	2.1144
06/04/13	1.3600	1.4920	1.1944	0.8969	1.7896	2.0871
07/24/13	1.8700	1.5156	1.2130	0.9104	1.8182	2.1208
08/09/13	1.4200	1.5100	1.2161	0.9222	1.8039	2.0978
09/05/13	1.9200	1.5328	1.2317	0.9306	1.8339	2.1349
10/01/13	2.2400	1.5700	1.2354	0.9009	1.9046	2.2391
11/13/13	2.4500	1.6140	1.2335	0.8530	1.9945	2.3750

**2013 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR  
PIMEPHALES PROMELAS**



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
05/08/12	6.3700					
06/21/12	7.8200	7.0950	6.0697	5.0444	8.1203	9.1456
07/05/12	7.0300	7.0733	6.3474	5.6214	7.7993	8.5253
08/01/12	6.0900	6.8275	6.0574	5.2873	7.5976	8.3677
09/04/12	6.5700	6.7760	6.0992	5.4224	7.4528	8.1296
10/01/12	6.9500	6.8050	6.1955	5.5860	7.4145	8.0240
11/01/12	7.0600	6.8414	6.2767	5.7120	7.4061	7.9708
12/04/12	5.8600	6.7188	6.0913	5.4638	7.3462	7.9737
01/01/13	5.9200	6.6300	5.9855	5.3410	7.2745	7.9190
02/05/13	6.0900	6.5760	5.9448	5.3138	7.2072	7.8384
03/05/13	6.7700	6.5936	5.9920	5.3903	7.1953	7.7969
03/20/13	5.9200	6.5375	5.9318	5.3261	7.1432	7.7489
04/02/13	8.0700	6.6554	5.9364	5.2174	7.3744	8.0934
05/07/13	7.0900	6.6864	5.9859	5.2854	7.3869	8.0874
06/17/13	6.5800	6.6780	6.0022	5.3264	7.3538	8.0296
07/24/13	7.1600	6.7081	6.0442	5.3803	7.3720	8.0360
08/09/13	6.0000	6.6665	6.0011	5.3357	7.3319	7.9972
09/03/13	5.9200	6.6250	5.9559	5.2869	7.2941	7.9631
10/01/13	5.9200	6.5879	5.9179	5.2478	7.2579	7.9280
11/06/13	6.7500	6.5960	5.9428	5.2897	7.2492	7.9023

**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: 11/22/13      To: 11/23/13  
From:      To:

Test Initiated: 11/23/13

Dilution Water Used:      Receiving Water      X Reconstituted Water

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	42.0	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	87.5	100.0
	C	100.0	100.0	100.0	100.0	100.0	87.5	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	87.5	100.0	87.5	100.0	100.0	100.0	100.0
	B	100.0	87.5	87.5	75.0	100.0	75.0	100.0
	C	87.5	87.5	100.0	75.0	75.0	75.0	100.0
	D	100.0	100.0	87.5	100.0	87.5	87.5	100.0
	E	100.0	87.5	100.0	100.0	100.0	100.0	100.0
	Mean	95.0	92.5	92.5	90.0	92.5	87.5	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different ( $p=.05$ ) than the control survival for the % effluent corresponding to:

- a.) LOW FLOW OR CRITICAL DILUTION (100%)      YES      X NO  
b.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)      YES      NO

2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

LC<sub>50</sub> =      N/A % effluent

95 % confidence limits: N/A

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

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

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

**Permittee: El Dorado Chemical - Outfall 007  
NPDES Number: AR0000752/ AFIN 70-00040  
Contact: Larken Pennington  
Analyst: Briggs  
Sample Collected**

**From: Date 11/22/13 Time 0400  
To: Date 11/23/13 Time 0400  
Date 11/23/13 Time 1400  
Date 11/25/13 Time 1345**

**Test Begin  
Test End**

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		8.5	8.4	8.2	24.7	24.4	24.6	32.0	28.0		52.0	44.0		7.4	7.4	7.6
32.0		8.3	8.1	8.1	24.7	24.4	24.6							7.3	7.3	7.5
42.0		8.1	7.9	8.1	24.7	24.4	24.6							7.3	7.3	7.5
50.0		8.2	8.0	8.2	24.7	24.4	24.6							7.3	7.3	7.4
56.0		8.2	7.8	8.2	24.7	24.4	24.6							7.3	7.5	7.5
75.0		8.1	7.8	8.2	24.7	24.4	24.6							7.3	7.3	7.4
100.0		7.9	7.5	8.1	24.7	24.4	24.6	24.0			72.0			7.1	7.2	7.4

\*This Form is to be submitted with each DMR.  
Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>



**Acute Forms**  
**Pimephales promelas Survival**

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

Composite Collected      From: 11/22/13      To: 11/23/13  
From:      To:

Test Initiated: 11/23/13

Dilution Water Used:      Receiving Water      X Reconstituted Water

**Dilution Series Results - Percent Survival**

TIME OF READING	REP	0	32.0	42.0	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	87.5
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	87.5
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	87.5	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	100.0	97.5	100.0	100.0	100.0	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%)      YES      X NO  
b.) 1/2 LOW FLOW OR 2X CRITICAL DILUTION (N/A%)      YES      NO

2. Enter percent effluent corresponding to the LC<sub>50</sub> below:

LC<sub>50</sub> =      N/A% effluent

95 % confidence limits: N/A

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

3. If you answered NO to 1.a) enter (P) otherwise enter (F): P

4. Enter response to item 3 on DMR Form, parameter TEM3D

5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A

6. Enter response to item 5 on DMR Form, parameter TFM3D

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

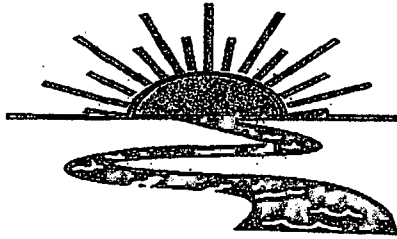
**Permittee: El Dorado Chemical - Outfall 007  
NPDES Number: AR0000752/ AFIN 70-00040  
Contact: Larken Pennington  
Analyst: Briggs, Haughton**

**Sample Collected From: Date 11/22/13 Time 0400  
To: Date 11/23/13 Time 0400  
Test Begin Date 11/23/13 Time 1540  
Test End Date 11/25/13 Time 1345**

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		8.5	8.4	7.9	25.4	25.3	25.2	32.0	28.0		52.0	44.0		7.4	7.4	7.3
32.0		8.3	8.1	8.0	25.4	25.3	25.2							7.3	7.3	7.2
42.0		8.1	7.9	8.0	25.4	25.3	25.2							7.3	7.3	7.2
50.0		8.2	8.0	8.0	25.4	25.3	25.2							7.3	7.3	7.2
56.0		8.2	7.8	8.0	25.4	25.3	25.2							7.3	7.5	7.1
75.0		8.1	7.8	8.0	25.4	25.3	25.2							7.3	7.3	7.1
100.0		7.9	7.5	7.9	25.3	25.3	25.2	24.0			72.0			7.1	7.2	7.0

\*This Form is to be submitted with each DMR.  
Alkalinity and hardness to be reported as mg/l CaCO<sub>3</sub>

**APPENDIX F**  
**REPORT QUALITY ASSURANCE FORM**



# Bio-Analytical Laboratories

3240 Spurgin Road  
Post Office Box 527  
Doyline, LA 71023

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

## REPORT QUALITY ASSURANCE FORM

Client: EDCC 007

Project#: X5281

Chain of Custody Documents Checked by: AH 12/2/13  
Technician/Date

Raw Data Documents Checked by: AH 12/2/13  
Technician/Date

Statistical Analysis Package Checked by: EGG 12/3/13  
Quality Manager/Date

Quality Control Data Checked by: EGG 12/3/13  
Quality Manager/Date

Report Checked by: EGG 12/14/13  
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. Bepp, BS  
Quality Manager

12/14/13  
Date

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From: (870) 863-1125  
Larken Pennington  
EL DORADO CHEMICAL COMPANY  
4500 Northwest Ave.

Origin ID: ELDA



J13201309290326

Ship Date: 18DEC13  
ActWgt: 5.0 LB  
CAD: 5887030/NET3430

El Dorado, AR 71730

Delivery Address Bar Code



SHIP TO: (870) 863-1484

BILL SENDER

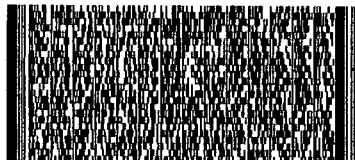
ADEQ - Water Division Enforcement  
ADEQ - Water Division Enforcement  
5301 NORTHSHORE DR

Ref #  
Invoice #  
PO #  
Dept #

NORTH LITTLE ROCK, AR 72118

THU - 19 DEC 10:30A  
PRIORITY OVERNIGHT

TRK# 7974 4210 8069  
0201



72118  
AR-US  
LIT

X2 LITA



51AG4680511ASE

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