



VIA HAND DELIVERY

July 30, 1999

Mr. Art Riddle
NPDES Enforcement Supervisor
Water Division
Arkansas Department of Environmental Quality
8001 National Drive
Little Rock, Arkansas 72219-8913

RE: Final Report - CAO LIS 98-119

Dear Mr. Riddle:

Pursuant to paragraph 2(e) of Consent Administrative Order No. 98-119, enclosed please find the Final Report for the Wastewater Characterization and Water Quality Evaluation. Should you have any questions, please feel free to call Byron Smith at (870) 863-1498.

Sincerely,

A handwritten signature in cursive script that reads "John M. Carver".

John M. Carver
Vice President Safety and
Environmental Compliance

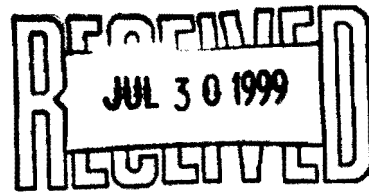
JMC/ymq

Enclosures

cc: Belinda Colby, Enforcement Coordinator, Hazardous Waste Division
Keith Brown, Manager, State Permits, Water Division

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Final Wastewater Characterization and Water Quality Evaluation Report



Prepared for:

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

Prepared by:

**GBM^c & Associates
219 Brown Lane
Bryant, AR 72022**

July 30, 1999

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1.0 Background

The objective of this document is to provide the Arkansas Department of Environmental Quality (ADEQ) with a Final Wastewater Characterization and Water Quality Evaluation Report as required by Consent Administrative Order (CAO) LIS 98-119, Order and Agreement Section 2(e). This section states:

“On or before August 1, 1999, the Respondent shall submit a Final Report of the Wastewater Characterization and Water Quality Evaluation to ADPC&E. This Final Report shall include an engineering drawing of the plant drain system and the influent sources, the results of the wastewater and storm water characterization, and water quality evaluation.”

This submittal fulfills that CAO requirement. The following sections discuss the activities and present the location of the data collected under those efforts.

2.0 Internal Sampling Results/Plant Drawing

Pursuant to the requirements of CAO Order and Agreement Section 2(a), Appendix A contains the results of the internal source identification and characterization efforts performed at El Dorado Chemical Company (EDCC) in a tabular format. In addition, Appendix A presents the results of the sampling of the Lake Kildeer influent pursuant to Attachment A of the CAO and the engineering drawing of the plant drain system.

3.0 Wastewater and Storm Water Characterizations

Appendix B contains tables presenting the results of the wastewater characterizations performed under CAO Order and Agreement Section 2(b). For comparison purposes, these tables also present a listing of the applicable water quality criteria from the Arkansas Water Quality Standards (Regulation No. 2 of the ADEQ). That appendix presents documentation for Outfalls 001, 004, 005, 006 and 007. Please note that there is no data for Outfalls 008 and 009 because they have been consolidated into Outfall 007 pursuant to CAO Order and Agreement Section 2(c).

4.0 Ouachita River Outfall

In addition to the data presented in Appendix B pursuant to the CAO, Table 4.1 presents a comparison of effluent characteristics and projected NPDES permit limitations for selected parameters for the proposed Ouachita River Outfall which has been discussed with ADEQ management. The effluent characteristics utilized are those for Outfall 001. For this comparison, the effluent flow was 2 mgd and a 7Q10 flow of 607 cfs was used for the Ouachita River. A pH of 7.3 was utilized in the calculation of the ammonia limitations. Based on these results, it can be seen

that there are no significant NPDES permit limitation compliance issues with the proposed Ouachita River Outfall.

Table 4.1 Screening Values for EDCC 001 Into the Ouachita River.

Parameter	Monthly Average	Daily Maximum
Nitrate (mg/L)	1970	2955
Ammonia (mg/L)	147.4	295.8
Chromium (tri) ($\mu\text{g/L}$)	10,922	21,911
Chromium (hex) ($\mu\text{g/L}$)	185.3	371.8
Copper ($\mu\text{g/L}$)	158.5	318.0
Lead ($\mu\text{g/L}$)	168.9	338.8
Mercury ($\mu\text{g/L}$)	2.2	4.4
Zinc ($\mu\text{g/L}$)	1416	2841
TDS (mg/L)	55,622	83,433
Sulfate (mg/L)	6,508	9,762
Chloride (mg/L)	28,972	43,458

Appendix A

Internal Sampling Results/Plant Drawing

El Dorado Chemical Company
Internal Sampling Laboratory Results

Parameter	units	Sample ID								
		KTCB	E2004L	KT009L*	CT8	CT4	DSN013L	DSN001L	DSN03007	CTLOX*
Antimony	µg/L	<60	<60	<60	<60	<60	<60	<60	<60	<60
Arsenic	µg/L	<10	<10	<10	<10	<10	12.8	<10	<10	<10
Beryllium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	µg/L	<10	<10	13.2	<10	<10	<10	<10	<10	28
Copper	µg/L	33.3	<25	123.5	<25	<25	<25	49.5	45.7	105.4
Lead	µg/L	3.55	<3	7.03	<3	<3	<3	11.7	3.9	4.18
Mercury	µg/L	<0.2	0.261	0.256	<0.2	<0.2	<0.2	<0.2	<0.2	0.415
Nickel	µg/L	<40	<40	<40	<40	<40	<40	<40	<40	<40
Selenium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	µg/L	12.7	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	µg/L	366	<20	196	331	3210	3690	160	207	209.5
Ammonia	mg/L	2160	11.8	30140	4.53	1.21	6.22	0.39	4.04	0.258
Nitrate	mg/L	1850	10.7	23900	2.08	6.03	2.81	1.56	21.8	0.51
pH	S.U.	7.29	8.59	2.21	8.27	7.82	7.37	8.32	7.23	1.88
Sulfate	mg/L	80.4	<10	125.4	123	864	714	<10	<10	1545
TDS	mg/L	3590	352	47590	692	1870	1580	392	502	1377
TOC	mg/L	9.2	2.5	71.5	2.7	12.6	14.1	3.44	1.26	4.57
TSS	mg/L	25	<4	13.5	29	<4	<4	25	11	7
Flow Rate	gpm	43.2	46.38	5.21**	22.63**	4.62**	74.89**	8.37**	-	10.57**

ND denotes Non Detected at or above the adjusted reporting limit.

* Values are the result of the average of two separate data sets.

**These flow rate values are based upon approximate, instantaneous flow measurement.

El Dorado Chemical Company
Internal Sampling Laboratory Results

Parameter	units	Sample ID								
		DSN012L	DSN014L	EWRNS033L	EWRNA032L	DMW008L	EWRNA-NAC	E2001L	E2CB	TFMWL
Antimony	µg/L	<60	<60	<60	<60	<60	<60	<60	<60	<60
Arsenic	µg/L	13	<10	<10	<10	<10	<10	<10	<10	<10
Beryllium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium	µg/L	<10	33.7	<10	53.8	<10	10.2	263	10.4	54.1
Copper	µg/L	<25	<25	<25	36.1	<25	47	39.2	<25	<25
Lead	µg/L	9.61	10.8	3.33	5.31	<3	<3	28.4	<3	5.88
Mercury	µg/L	<0.2	<0.2	0.22	<0.2	0.256	1.69	0.897	<0.2	<0.2
Nickel	µg/L	<40	<40	<40	<40	<40	<40	889	<40	0.222
Selenium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	152
Silver	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	µg/L	5080	1620	391	4500	91	1140	757	200	418
Ammonia	mg/L	6.57	2.16	0.248	5.2	5.88	0.944	129	14.6	13.1
Nitrate	mg/L	3.89	442	18.8	75.8	30.6	21.2	470	50.5	62.5
O&G	mg/L	-	-	5.2	-	11	-	-	-	-
pH	S. U	7.32	1.62	7.71	2.66	2.91	6.25	8.47	8.17	8.24
Sulfate	mg/L	796	287	47.5	533	<10	88.1	<10	50.7	78.1
TDS	mg/L	1890	1390	602	1440	158	460	2840	675	1010
TOC	mg/L	18.6	9.9	5.72	15.4	10	7.62	5.9	3.5	9.5
TSS	mg/L	5	7	<4	6	<4	17	656	17	49
Flow Rate	gpm	136	0	34.15	111.5	0	41.9	2213	45.5	236.7

ND denotes Non Detected at or above the adjusted reporting limit.

El Dorado Chemical Company
Internal Sampling Laboratory Results

Parameter	units	Sample ID								
		SA04L	E2W006007L	CT5	FRDR	KT003L	E2Q006007-SW	SA04L-SW	KT6IN	KTO14L-SW
Antimony	µg/L	<60	<60	<60	<60	<60	<60	<60	<60	<60
Arsenic	µg/L	13.6	<10	12.1	35.5	<10	<10	15.7	<10	<10
Beryllium	µg/L	<5	<5	<5	18.5	<5	<5	<5	<5	<5
Cadmium	µg/L	<5	<5	<5	13.5	<5	<5	23.2	<5	<5
Chromium	µg/L	94.8	<10	40.8	<10	<10	<10	543	23	12.5
Copper	µg/L	43.3	<25	287	<25	<25	45.7	348	102	132
Lead	µg/L	15.7	<3	<3	84.5	<3	5.63	90.2	4.03	49.4
Mercury	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3.59	0.256	2.78
Nickel	µg/L	62.6	<40	<40	895	<40	<40	410	<40	<40
Selenium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Thallium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	µg/L	120	41.1	2500	646	<20	94.2	1510	74.1	227
Ammonia	mg/L	0.462	143	0.077	13200	0.217	10.1	19.8	4870	52.7
Nitrate	mg/L	30.3	121	2.52	9580	16	14.7	117	6100	63.8
pH	S.U	2.33	7.85	8.21	3.91	7.79	7.27	2.06	1.38	4.79
Sulfate	mg/L	538	<10	762	203	<10	20	3320	83.7	<10
TDS	mg/L	1010	660	1920	60900	352	570	2440	650	560
TOC	mg/L	6.2	14.1	12.8	11	1.6	17.1	37.6	30.8	5.2
TSS	mg/L	27	<4	<4	54	<4	16	17	10	187
Flow Rate	gpm	13.3	-	26.14**	-	-	-	-	-	-

ND denotes Non Detected at or above the adjusted reporting limit.

**These flow rate values are based upon approximate, instantaneous flow measurement.

El Dorado Chemical Company
Internal Sampling Laboratory Results

Parameter	units	Sample ID						
		KTO02L-SW	EWRNA032L-SW	DSN03007-SW	EZW002007-SW	SA07L-SW	Kildeer Influent	Kildeer Influent
Antimony	µg/L	<60	<60	<60	<60	<60	-	-
Arsenic	µg/L	<10	<10	10.5	<10	<10	-	-
Beryllium	µg/L	<5	<5	<5	<5	<5	-	-
Cadmium	µg/L	7.86	<5	<5	<5	<5	4	<4.0
Chromium	µg/L	13.1	23.4	22.5	<10	37.2	-	-
ChromiumVI	µg/L	-	-	-	-	-	<3.0	<3.0
Copper	µg/L	197	137	151	107	194	6	40
Lead	µg/L	20.7	36.2	41.5	46.3	16.2	37	30
Mercury	µg/L	<0.2	<0.2	1.41	<0.2	16.9	<0.2	<0.2
Nickel	µg/L	<40	<40	<40	61.1	80.3	<10.0	580
Selenium	µg/L	<5	<5	<5	<5	<5	<50.0	<50.0
Silver	µg/L	<10	<10	<10	<10	<10	<3.0	<3.0
Thallium	µg/L	<10	<10	<10	<10	<10	-	-
Zinc	µg/L	1220	552	194	124	328	46	<25.0
Cyanide	µg/L	-	-	-	-	-	<5.0	<5.0
Ammonia	mg/L	405	9.74	6.16	2760	12.5	76.2	151.8
Nitrate	mg/L	506	275	34.8	3570	11.6	275.2	177.4
pH	S.U.	3.75	5.86	7.41	7.08	4.55	6.35	8.16
Sulfate	mg/L	24.2	50.8	180	<200	827	303	221
TDS	mg/L	1170	3260	790	11400	1510	-	-
Chloride	mg/L	-	-	-	-	-	97.6	56.7
TOC	mg/L	31.2	7.6	8.6	17.2	9.3	-	-
TSS	mg/L	151	75	412	746	168	-	-
Chronic Bio.	-	-	-	-	-	-	Failed	Failed

ND denotes Non Detected at or above the adjusted reporting limit.

Appendix B

Wastewater/Storm Water Characterization and Water Quality Evaluation

Outfall 001 Data Summary and Comparison.

Parameter	Average	Minimum	Maximum	Number Measurements	Instream Standard (chronic ¹)
Cadmium (mg/L)	0.003*	0.001	0.004	4	0.00043
Copper (mg/L)	0.012	0.005	0.018	4	0.00417
Lead (mg/L)	0.020*	0.003	0.025	4	0.00069
Nickel (mg/L)	0.018	0.010	0.030	4	0.05836
Selenium (mg/L)	0.027*	0.003	0.05	4	0.00500
Silver (mg/L)	0.003*	0.002	0.003	4	0.00046
Zinc (mg/L)	0.114	0.032	0.238	4	0.03874
Chromium VI (mg/L)	0.003*	0.003	0.003	4	0.01058
Mercury (µg/L)	0.0002*	0.0002	0.0002	4	0.01200
Cyanide (mg/L)	0.005*	0.005	0.005	4	0.00520
Chloride (mg/L)	60.53	41.90	72.20	4	14.0

¹ All standards for metals are chronic values.

* All analyses below detection limits, values in analysis set to MDL.

Outfall 004 Data Summary and Comparison.

Parameter	Average	Minimum	Maximum	Number Measurements	Instream Standard (chronic ¹)
Cadmium (mg/L)	0.004	0.004	0.004	4	0.00043
Copper (mg/L)	0.003	0.002	0.004	4	0.00417
Lead (mg/L)	0.020*	0.003	0.025	4	0.00069
Nickel (mg/L)	0.029	0.020	0.040	4	0.05836
Selenium (mg/L)	0.038*	0.003	0.050	4	0.00500
Silver (mg/L)	0.003*	0.002	0.003	4	0.00046
Zinc (mg/L)	0.271	0.134	0.350	4	0.03874
Chromium VI (mg/L)	0.003*	0.003	0.003	4	0.01058
Mercury (µg/L)	0.0002*	0.0002	0.0002	4	0.01200
Cyanide (mg/L)	0.005*	0.005	0.005	4	0.00520
NO ₃ -N (mg/L)	452.7	200.0	850.0	3	10.0
Chloride (mg/L)	19.2	4.3	53.8	4	14.0
SO ₄ (mg/L)	51.3	26.0	122.0	4	31.0
Acute Biomonitoring					
Fathead Minnow Tests	# Passed:	1	# Failed:	3	
<i>Daphnia pulex</i> Tests	# Passed:	1	# Failed:	3	

¹ All standards for metals are chronic values.

*All analyses below detection limits, values in analysis set to MDL.

Outfall 005 Data Summary and Comparison.

Parameter	Average	Minimum	Maximum	Number Measurements	Instream Standard (chronic ¹)
Cadmium (mg/L)	0.002*	0.001	0.004	3	0.00043
Copper (mg/L)	0.053	0.041	0.065	3	0.00417
Lead (mg/L)	0.010*	0.003	0.025	3	0.00069
Nickel (mg/L)	0.013	0.010	0.020	3	0.05836
Selenium (mg/L)	0.019*	0.003	0.050	3	0.00500
Silver (mg/L)	0.002*	0.002	0.003	3	0.00046
Zinc (mg/L)	0.197	0.047	0.395	3	0.03874
Chromium VI (mg/L)	0.003*	0.003	0.003	3	0.01058
Mercury (mg/L)	0.0002*	0.0002	0.0002	3	0.01200
Cyanide (mg/L)	0.005	0.005	0.006	3	0.00520
NH3-N (mg/L)	9.4	5.9	12.8	3	-
NO3-N (mg/L)	6.1	0.1	12.0	2	10.0
Chloride (mg/L)	13.1	6.2	18.9	3	14.0
SO4 (mg/L)	20.3	11.0	30.0	3	31.0
Acute Biomonitoring					
Fathead Minnow Tests	# Passed:	3	# Failed:	0	
<i>Daphnia pulex</i> Tests	# Passed:	3	# Failed:	0	

¹ All criteria for metals are chronic values. The nitrate value is the drinking water criterion. There is no water quality criterion for ammonia nitrogen promulgated in the State of Arkansas.

*All analyses below detection limits, values in analysis set to MDL.

Outfall 006 Data Summary and Comparison.

Parameter	Average	Minimum	Maximum	Number Measurements	Instream Standard (chronic ¹)
Cadmium (mg/L)	0.002	0.001	0.004	3	0.00043
Copper (mg/L)	0.183	0.012	0.379	3	0.00417
Lead (mg/L)	0.010*	0.003	0.025	3	0.00069
Nickel (mg/L)	0.031	0.014	0.060	3	0.05836
Selenium (mg/L)	0.019*	0.003	0.050	3	0.00500
Silver (mg/L)	0.002*	0.002	0.003	3	0.00046
Zinc (mg/L)	0.668	0.441	0.843	3	0.03874
Chromium VI (mg/L)	0.004	0.003	0.006	3	0.01058
Mercury (mg/L)	0.0003	0.0002	0.0006	3	0.01200
Cyanide (mg/L)	0.006	0.005	0.009	3	0.00520
NH3-N (mg/L)	168.4	72.2	326.6	3	-
NO3-N (mg/L)	324.1	122.1	526.0	2	10.0
Chloride (mg/L)	25.0	15.6	30.7	3	14.0
SO4 (mg/L)	33.3	12.0	55.0	3	31.0
Acute Biomonitoring					
Fathead Minnow Tests	# Passed:	2	# Failed:	1	
<i>Daphnia pulex</i> Tests	# Passed:	1	# Failed:	2	

¹ All criteria for metals are chronic values. The nitrate value is the drinking water criterion. There is no water quality criterion for ammonia nitrogen promulgated in the State of Arkansas.

*All analyses below detection limits, values in analysis set to MDL.

Outfall 007 Data Summary and Comparison.

Parameter	Average	Minimum	Maximum	Number Measurements	Instream Standard (chronic ¹)
Cadmium (mg/L)	0.002*	0.001	0.004	3	0.00043
Copper (mg/L)	0.007	0.002	0.012	3	0.00417
Lead (mg/L)	0.010*	0.003	0.025	3	0.00069
Nickel (mg/L)	0.011	0.010	0.012	3	0.05836
Selenium (mg/L)	0.019*	0.003	0.050	3	0.00500
Silver (mg/L)	0.002*	0.002	0.003	3	0.00046
Zinc (mg/L)	0.011	0.004	0.024	3	0.03874
Chromium VI (mg/L)	0.003*	0.003	0.003	3	0.01058
Mercury (mg/L)	0.0002*	0.0002	0.0002	3	0.01200
Cyanide (mg/L)	0.005*	0.005	0.005	3	0.00520
NH3-N (mg/L)	15.0	8.4	21.3	3	-
NO3-N (mg/L)	74.3	39.5	109.0	2	10.0
Chloride (mg/L)	23.8	12.7	30.2	3	14.0
SO4 (mg/L)	258.0	146.0	351.0	3	31.0
Acute Biomonitoring					
Fathead Minnow Tests	# Passed:	1	# Failed:	2	
<i>Daphnia pulex</i> Tests	# Passed:	1	# Failed:	2	

¹ All criteria for metals are chronic values. The nitrate value is the drinking water criterion. There is no water quality criterion for ammonia nitrogen promulgated in the State of Arkansas.

*All analyses below detection limits, values in analysis set to MDL.

