

Appendix S

WATER AND SEDIMENT QUALITY DATA TABLES

WATER QUALITY

Table 1. LDEQ Field Parameter Results for Calcasieu River (2000-2006)

Parameter	Location					
	Burton Landing			Hackberry, LA.		
	High	Low	Mean	High	Low	Mean
Dissolved Oxygen (mg/L)	9.91	2.87	6.25	8.3	4.23	6.51
pH (Standard)	7.92	3.6	7.25	7.94	6.91	7.62
Salinity (%)	27.5	0	11.3	22.08	2.34	14.08
Total Suspended Solids (mg/L)	60	4.5	20.32	44	12	21.04
Turbidity (NTU)	70	3.2	14.74	45	4	13.27
Temperature (C°)	31.93	8.94	22.18	31.55	24.25	22.74
Specific Conductance (mS/cm)	42710	105	18028	35077	4280	23044

Source: LDEQ, 2006

Table 2. LDEQ Surface Water Quality Results for Calcasieu River at Burton Landing (2000-2006)

Toxic Substance	Water Quality Data			LDEQ Criteria			
				Freshwater		Marine Water	
	Mean	Low	High	Acute	Chronic	Acute	Chronic
Volatile Organic Chemicals							
Benzene	<0.38	<0.1	<0.5	2,249	1,125	2,700	1,350
Carbon Tetrachloride (Tetrachloromethane)	<0.38	<0.1	<0.5	2,730	1,365	15,000	7,500
Chloroform (Trichloromethane)	<0.38	<0.1	<0.5	2,890	1,445	8,150	4,075
Ethylbenzene	<0.38	<0.1	<0.5	3,200	1,600	8,760	4,380
1,2-Dichloroethane (EDC)	<0.42	<0.1	1.3	11,800	5,900	11,300	5,650
1,1,1-Trichloroethane	<0.38	<0.1	<0.5	5,280	2,640	3,120	1,560
1,1,2-Trichloroethane	<0.38	<0.1	<0.5	1,800	900	--	--
1,1,2,2-Tetrachloroethane	<0.38	<0.1	<0.5	932	466	902	451
1,1-Dichloroethylene	<0.38	<0.1	<0.5	1,160	580	22,400	11,200
Trichloroethylene	<0.38	<0.1	<0.5	3,900	1,950	200	100
Tetrachloroethylene	<0.38	<0.1	<0.5	1,290	645	1,020	510
Toluene	0.43	<0.1	1.6	1,270	635	950	475
Vinyl Chloride (Chloroethylene)	<0.38	<0.1	<0.5	--	--	--	--
Bromoform (Tribromomethane)	0.49	<0.1	1.25	2,930	1,465	1,790	895
Bromodichloromethane	<0.38	<0.1	<0.5	--	--	--	--
Acid-Extractable Organic Chemicals							

Toxic Substance	Water Quality Data			LDEQ Criteria			
				Freshwater		Marine Water	
	Mean	Low	High	Acute	Chronic	Acute	Chronic
Methylene chloride (Dichloromethane)	<0.38	<0.1	<0.5	19,300	9,650	25,600	12,800
Methyl chloride (Chloromethane)	<0.38	<0.1	<0.5	55,000	27,500	27,000	13,500
Dibromochloromethane	0.42	<.1	1.1	--	--	--	--
1,-3-Dichloropropene	<0.38	<0.1	<0.5	606	303	79	39.5
Metals and Inorganics							
Arsenic	0.76	0.36	1.28	339.8	150	69	36
Zinc ^{7,8}	151.8	0.09	1031	64	58	90	81
				117	108		
				205	187		
Cadmium ^{7,8}	0.175	0.001	0.7	15	0.62	45.35	10
				32	1.03		
				67	1.76		
Copper ^{7,8}	3.04	0.04	8.99	10	7	3.63	3.63
				18	12		
				35	22		
Lead ^{7,8}	0.89	0.006	6.7	30	1.2	209	8.08
				65	2.5		
				138	5.31		
Mercury ⁸	0.004	0.00065	0.01	2.04	0.01211	2	0.02511
Nickel ^{7,8}	2.73	0.03	8.15	788	88	74	8.2
				1397	160		
				2,495	279		

Source: LDEQ, 2006

Table 3. LDEQ Surface Water Quality Results for Calcasieu River at Hackberry, Louisiana (2000-2006)

Toxic Substance	Water Quality Data			LDEQ Criteria			
				Freshwater		Marine Water	
	Mean	Low	High	Acute	Chronic	Acute	Chronic
Volatile Organic Chemicals							
Benzene	<0.5	<0.5	<0.5	2,249	1,125	2,700	1,350
Carbon Tetrachloride (Tetrachloromethane)	<0.5	<0.5	<0.5	2,730	1,365	15,000	7,500
Chloroform (Trichloromethane)	<0.5	<0.5	<0.5	2,890	1,445	8,150	4,075
Ethylbenzene	<0.5	<0.5	<0.5	3,200	1,600	8,760	4,380
1,2-Dichloroethane (EDC)	<0.5	<0.5	<0.5	11,800	5,900	11,300	5,650
1,1,1-Trichloroethane	<0.5	<0.5	<0.5	5,280	2,640	3,120	1,560

Toxic Substance	Water Quality Data			LDEQ Criteria			
				Freshwater		Marine Water	
	Mean	Low	High	Acute	Chronic	Acute	Chronic
1,1,2-Trichloroethane	<0.5	<0.5	<0.5	1,800	900	--	--
1,1,2,2-Tetrachloroethane	<0.5	<0.5	<0.5	932	466	902	451
1,1-Dichloroethylene	<0.5	<0.5	<0.5	1,160	580	22,400	11,200
Trichloroethylene	<0.5	<0.5	<0.5	3,900	1,950	200	100
Tetrachloroethylene	<0.5	<0.5	<0.5	1,290	645	1,020	510
Toluene	<0.5	<0.5	<0.5	1,270	635	950	475
Vinyl Chloride (Chloroethylene)	<0.5	<0.5	<0.5	--	--	--	--
Bromoform (Tribromomethane)	<0.5	<0.5	<0.5	2,930	1,465	1,790	895
Bromodichloromethane	<0.5	<0.5	<0.5	--	--	--	--
Acid-Extractable Organic Chemicals							
Methylene chloride (Dichloromethane)	<0.5	<0.5	<0.5	19,300	9,650	25,600	12,800
Methyl chloride (Chloromethane)	<0.5	<0.5	<0.5	55,000	27,500	27,000	13,500
Dibromochloromethane	<0.5	<0.5	<0.5	--	--	--	--
1,-3-Dichloropropene	<0.5	<0.5	<0.5	606	303	79	39.5
Metals and Inorganics							
Arsenic	0.76	0.36	1.28	339.8	150	69	36
Zinc ^{7,8}	30.88	0.59	109.7	64	58	90	81
				117	108		
				205	187		
Cadmium ^{7,8}	0.02	0.01	0.03	15	0.62	45.35	10
				32	1.03		
				67	1.76		
Copper ^{7,8}	1.25	0.89	1.67	10	7	3.63	3.63
				18	12		
				35	22		
Lead ^{7,8}	0.04	0.02	0.11	30	1.2	209	8.08
				65	2.5		
				138	5.31		
Mercury ⁸	0.001	0.00311	0.004	2.04	0.01211	2	0.02511
Nickel ^{7,8}	1.12	0.97	1.3	788	88	74	8.2
				1397	160		
				2,495	279		

Source: LDEQ, 2006

Table 4. Mean Results for Calcasieu River and Ship Channel Field Parameters

Parameter	Segment		
	River	Upper Lake	Lower Lake
Depth (ft.)	42.6	44.5	39.1
pH (standard)	8.0	8.1	8.1
Specific Conductance (mS/cm)	33.0	38.1	41.1
Turbidity (NTU)	11.3	15.0	5.0
Temperature (C°)	14.0	12.7	13.7
Dissolved Oxygen (mg/L)	7.2	8.5	8.7
Salinity (%)	1.9	2.4	2.6

Source: G.E.C., Inc.

Table 5. Mean Results for Calcasieu Lake Field Parameters

Parameter	Result
Depth (ft.)	4.5
pH (standard)	7.74
Specific Conductance (mS/cm)	27.7
Turbidity (NTU)	18
Temperature (C°)	12
Dissolved Oxygen (mg/L)	10.23
Salinity (%)	1.68

Source: G.E.C., Inc.

Table 6. Mean Results for SNWR Field Parameters

Parameter	Result
Depth (ft.)	1.9
pH (standard)	8.07
Specific Conductance (mS/cm)	20.3
Turbidity (NTU)	26
Temperature (C°)	18.1
Dissolved Oxygen (mg/L)	8.98
Salinity (%)	1.21

Source: G.E.C., Inc.

Table 7. Constituents Detected in the River Segment Reach

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Chronic	Acute/Chronic
4,4'-DDT	0.000011 0.0000046 0.0000095	5 5	0.00013 0.000001	0.00013 0.000001
alpha-BHC	0.0000027 0.00000095 0.00000207	5 4	N/A	N/A
Ammonia	0.42 0.035 0.1688	5 5	N/A	N/A
Arsenic	0.053 0.021 0.037625	8 8	0.069 0.036	0.069 0.036
Barium	0.09 0.054 0.066	8 8	N/A	N/A
beta-BHC	0.0000012 0.00000094 0.0000001	5 3	N/A	N/A
Chromium	0.016 0.0073 0.01	8 8	N/A	N/A
Copper	0.0087 0.0062 0.00735	8 8	0.0036 0.0036	0.0048 0.0031
delta-BHC	0.0000015 0.00000093 0.00000123	5 3	N/A	N/A
Endrin	0.000004 0.0000019 0.00000326	5 4	0.000037 0.000023	0.000037 0.000023
gamma-Chlordane	0.0000021 0.00000094 0.00000147	5 3	0.00009 0.000004	0.00009 0.000004
Heptachlor epoxide	0.000018 0.00000094 0.00000756	5 2	N/A	0.000053 0.0000036
Mercury	0.00069 0.0002 0.000335	8 4	0.002 0.00003	0.0018 0.00094
Nickel	0.018 0.013 0.0154	8 8	0.074 0.0082	0.074 0.0082

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Chronic	Acute/Chronic
Selenium	0.19 0.12 0.1575	8 8	N/A	0.29 0.071
Zinc	0.0056 0.0043 0.00485	8 8	0.09 0.081	0.09 0.081

BRL - Below Reporting Limit; N/A - Not Applicable; Obs. - Number of Observations;
Det. - Number of Detections

Source: G.E.C., Inc.

Table 8. Constituents Detected in the Upper Lake Reach

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Cronic	Acute/Cronic
4,4'-DDT	0.0000052 0.0000052 0.0000052	1 1	0.00013 0.000001	0.00013 0.000001
Antimony	0.0028 0.002 0.0022	4 1	N/A	N/A
Arsenic	0.055 0.036 0.045	4 4	0.069 0.036	0.069 0.036
Barium	0.055 0.048 0.052	4 4	N/A	N/A
Chromium	0.02 0.0072 0.012	4 4	N/A	N/A
Copper	0.0098 0.007 0.008375	4 4	0.0036 0.0036	0.0048 0.0031
Heptachlor epoxide	0.0000051 0.0000051 0.0000051	1 1	N/A	0.000053 0.0000036
Mercury	0.0004 0.0002 0.0002975	4 2	0.002 0.00003	0.0018 0.00094

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Cronic	Acute/Cronic
Nickel	0.021 0.015 0.0175	4 4	0.074 0.0082	0.074 0.0082
Selenium	0.2 0.17 0.185	4 4	N/A	0.29 0.071
Zinc	0.0063 0.0029 0.0048	4 4	0.09 0.081	0.09 0.081

DBL – Below Reporting Limit; N/A – Not Applicable; Obs. – Number of Observations; Det. – Number of Detections

Source: G.E.C., Inc.

Table 9. Constituents Detected in the Lower Lake Reach

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Chronic	Acute/Chronic
alpha-BHC	0.0000018 0.0000018 0.0000018	1 1	N/A	N/A
Ammonia	1.1 1.1 1.1	1 1	N/A	N/A
Antimony	0.0046 0.002 0.0027	4 2	N/A	N/A
Arsenic	0.064 0.042 0.052	4 4	0.069 0.036	0.069 0.036
Barium	0.048 0.035 0.041	4 4	N/A	N/A
beta-BHC	0.0000039 0.0000039 0.0000039	1 1	N/A	N/A
Chromium	0.025 0.0047 0.012	4 4	N/A	N/A
Copper	0.0097 0.0062 0.0078	4 4	0.0036 0.0036	0.0048 0.0031

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.	Louisiana Criteria (ppm)	USEPA Criteria (ppm)
			Acute/Chronic	Acute/Chronic
delta-BHC	0.000018 0.000018 0.000018	1 1	N/A	N/A
Endrin	0.000044 0.000044 0.000044	1 1	0.000037 0.000023	0.000037 0.000023
gamma-Chlordane	0.000017 0.000017 0.000017	1 1	0.00009 0.000004	0.00009 0.000004
Heptachlor epoxide	0.000029 0.000029 0.000029	1 1	N/A	0.000053 0.0000036
Mercury	0.0031 0.0002 0.0011	4 2	0.002 0.00003	0.0018 0.00094
Nickel	0.023 0.016 0.019	4 4	0.074 0.0082	0.074 0.0082
Selenium	0.23 0.18 0.197	4 4	N/A	0.29 0.071
Zinc	0.0056 0.002 0.00357	4 3	0.09 0.081	0.09 0.081

DBL – Below Reporting Limit; N/A – Not Applicable; Obs. – Number of Observations; Det. – Number of Detections

Source: G.E.C., Inc.

SEDIMENT

Table 10. Sediment Results for the River Segment Reach

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
4,4'-DDT	0.0067 0.0018 0.0024	17 6
Ammonia	61 0.43 32.2	17 6

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
Antimony	0.38 0.14 0.19	17 6
Arsenic	2.5 1 1.74	17 17
Barium	380 66 128.9	17 17
Benzo[a]anthracene	0.03 0.02 0.021	17 2
Benzo[a]pyrene	0.025 0.02 0.0202	17 1
Benzo[b]fluoranthene	0.033 0.02 0.021	17 3
Benzo[g,h,i]perylene	0.022 0.02 0.0201	17 1
Beryllium	0.46 0.2 0.35	17 17
beta-BHC	0.0025 0.00092 0.00107	17 3
Bis(2-ethylhexyl) phthalate	0.06 0.036 0.0419	17 1
Chromium	8.3 4.1 6.7	17 17
Chrysene	0.048 0.02 0.022	17 2
Copper	11 4.4 7.49	17 17
delta-BHC	0.0019 0.00092 0.0011	17 5

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
Diesel Range Organics [C10-C28]	68 25 40.82	17 17
Endosulfan II	0.0045 0.0018 0.0021	17 5
Endosulfan sulfate	0.011 0.0018 0.0024	17 1
Fluoranthene	0.099 0.02 0.026	17 3
gamma-BHC (Lindane)	0.0012 0.00091 0.00096	17 1
gamma-Chlordane	0.0017 0.00091 0.00099	17 1
Gasoline Range Organics (GRO)-C6-C10	0.62 0.24 0.27	17 2
Heptachlor	0.00099 0.00092 0.00095	17 1
Hexavalent chromium	0.2 0.092 0.155	17 9
Lead	11 6.8 8.86	17 17
Mercury	0.15 0.018 0.06	17 17
Motor Oil Range Organics [C28-C40]	180 67 107	17 15
Nickel	7.2 2.8 5.38	17 17
PCB-1254	0.013 0.000095 0.00227	17 4

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
PCB-1260	0.011 0.00098 0.0035	17 14
Phenanthrene	0.045 0.02 0.021	17 1
Polychlorinated biphenyls, Total	0.011 0.00098 0.0045	8 6
Pyrene	0.095 0.02 0.034	17 10
Tetrachloroethylene	0.0026 0.0019 0.0020	17 1
Zinc	29 0. 005 23.06	17 16
TEL - Threshold Effect Level; ERL - Effect Range Low; PEL - Probable Effects Level; ERM - Effects Range Median; N/A - Not Applicable; Obs. - Number of Observations; Det. - Number of Detections		

Source: G.E.C., Inc.

Table 11. Sediment Results for the Upper Lake Reach

Constituent Of Concern	High/Low/Mean (ppm)	Obs./Det.
4,4'-DDT	0.0066 0.0018 0.0028	5 1
Ammonia	42 25 29.6	5 5
Arsenic	2.8 2.3 2.54	5 5
Barium	130 81 100.2	5 5
Beryllium	0.64 0.4 0.526	5 5

Constituent Of Concern	High/Low/Mean (ppm)	Obs./Det.
Chromium	8.6 6.7 8.02	5 5
Copper	7 6.4 6.7	5 5
Diesel (C10-C28)	43 24 33	5 5
Endosulfan II	0.0046 0.0018 0.0024	5 1
Hexavalent chromium	0.2 0.099 0.1718	5 1
Lead	8.8 8 8.34	5 5
Mercury	0.066 0.017 0.0334	5 4
Nickel	8.7 7.6 8.18	5 5
Selenium	0.51 0.42 0.472	5 4
Zinc	27 25 26.2	5 5
TEL - Threshold Effect Level; ERL - Effect Range Low; PEL - Probable Effects Level; ERM - Effects Range Median; N/A - Not Applicable; Obs. - Number of Observations; Det. - Number of Detections		

Source: G.E.C., Inc.

Table 12. Sediment Results for the Lower Lake Reach

Constituent Of Concern	High/Low/Mean (ppm)	Obs./Det.
4,4'-DDT	0.0025 0.0018 0.0021	7 3
Ammonia	52 15 27	7 7

Constituent Of Concern	High/Low/Mean (ppm)	Obs./Det.
Antimony	0.23 0.14 0.175	7 1
Arsenic	3.1 2.8 2.88	7 7
Barium	160 94 117.7	7 7
Beryllium	0.59 0.43 0.497	7 7
Chromium	9.5 7.6 8.7	7 7
Copper	7.4 5.5 6.6	7 7
Diesel (C10-C28)	30 13 21.7	7 7
Endosulfan II	0.0033 0.0019 0.0024	7 4
Fluoranthene	0.03 0. 02 0.021	7 1
Lead	9.2 6.9 8.27	7 7
Mercury	0.071 0.027 0.053	7 7
Nickel	9.4 7.9 9.01	7 7
Pyrene	0.022 0.02 0.02	7 1
Selenium	0.57 0.41 0.48	7 4
Tetrachloroethylene	0.0032 0.0019 0.0021	7 1
Zinc	29 23 27	7 7

Constituent Of Concern	High/Low/Mean (ppm)	Obs./Det.
TEL - Threshold Effect Level; ERL - Effect Range Low; PEL - Probable Effects Level; ERM - Effects Range Median; N/A - Not Applicable; Obs. - Number of Observations; Det. - Number of Detections		

Source: G.E.C., Inc.

Table 13. Sediment Results for SNWR

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
4,4'-DDT	0.002 0.002 0.002	1 1
Antimony	0.25 0.25 0.25	1 1
Arsenic	1.2 1.2 1.2	1 1
Barium	20 20 20	1 1
Beryllium	0.34 0.34 0.34	1 1
Chromium	5.8 5.8 5.8	1 1
Copper	4.5 4.5 4.5	1 1
delta-BHC	0.0013 0.0013 0.0013	1 1
Diesel Range Organics [C10-C28]	7.3 7.3 7.3	1 1
Lead	6.5 6.5 6.5	1 1
Nickel	4.3 4.3 4.3	1 1
Zinc	10 10 10	1 1

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
BRL - Below Reporting Limit; N/A - Not Applicable; Obs. - Number of Observations; Det. - Number of Detections		

Source: G.E.C., Inc.

Table 14. Sediment Results for Calcasieu Lake

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.
4,4'-DDT	0.0023 0.0023 0.0023	1 1
Ammonia	3.5 3.5 3.5	1 1
Arsenic	3.9 3.9 3.9	1 1
Barium	26 26 26	1 1
Beryllium	0.38 0.38 0.38	1 1
Chromium	6.9 6.9 6.9	1 1
Copper	5 5 5	1 1
delta-BHC	0.0012 0.0012 0.0012	1 1
Diesel Range Organics [C10-C28]	6.9 6.9 6.9	1 1
Lead	6.6 6.6 6.6	1 1
Nickel	7.7 7.7 7.7	1 1
Pyrene	0.021 0.021 0.021	1 1
Zinc	23 23 23	1 1
BRL - Below Reporting Limit; N/A - Not Applicable; Obs. - Number of Observations; Det. - Number of Detections		

Constituent of Concern	High/Low/Mean (ppm)	Obs./Det.

Source: G.E.C., Inc.