TEXTOX MENU #2 - INTERMITTENT STREAM WITHIN 3 MILES OF A FRESHWATER PERENNIAL

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2014 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	LONE STAR NGL FRACTIONATORS IV &V
TPDES Permit No.:	TX0134027
Outfall No.:	001
Prepared by:	Maria Okpala
Date:	11/7/2018

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	Unnamed Intermittent Freshwater Ditch
Perennial Stream/River within 3 Miles:	ou above Tidal
Segment No.:	0902
TSS (mg/L):	3
pH (Standard Units):	7.1
Hardness (mg/L as $CaCO_3$):	40
Chloride (mg/L):	83
Effluent Flow for Aquatic Life (MGD):	0.638
Critical Low Flow [7Q2] (cfs) for intermittent:	0
Critical Low Flow [7Q2] (cfs) for perennial:	2.64
% Effluent for Chronic Aquatic Life (Mixing Zone):	27.22
% Effluent for Acute Aquatic Life (ZID):	100
Effluent Flow for Human Health (MGD):	0.638
Harmonic Mean Flow (cfs) for perennial:	6.93
% Effluent for Human Health:	12.468
Public Water Supply Use?	**yes**

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Water Effect Ratio (WER)*	
Aluminum	N/A	N/A	N/A	1.00	Assumed	1 Assumed
Arsenic	5.68	-0.73	214635.47	0.61		1 Assumed
Cadmium	6.60	-1.13	1150410.88	0.22		1 Assumed
Chromium (Total)	6.52	-0.93	1192002.68	0.22		1 Assumed
Chromium (+3)	6.52	-0.93	1192002.68	0.22		1 Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	1 Assumed
Copper	6.02	-0.74	464440.70	0.42		1 Assumed

Lead	6.45	-0.80	1170315.61	0.22		1	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Nickel	5.69	-0.57	261842.95	0.56		1	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Silver	6.38	-1.03	773686.66	0.30		1	Assumed
Zinc	6.10	-0.70	583465.42	0.36		1	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (ug/L)*	*FW Chronic Criterion (ug/L)*	*WLAa*	*WLAc*	*LTAa*	*LTAc*	*Daily Avg. (ug/L)*	*Daily Max. (ug/L)*
Aldrin	3.0	N/A	3.00	N/A	1.72	N/A	2.53	5.35
Aluminum	991	N/A	991	N/A	568	N/A	835	1766
Arsenic	340	150	558.928	906.062	320.266	697.668	470.791	996.027
Cadmium	3.518	0.130	15.661	2.127	8.974	1.638	2.407	5.093
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.015	1.38	0.011	0.017	0.035
Chlorpyrifos	0.083	0.041	0.083	0.151	0.048	0.116	0.070	0.148
Chromium (+3)	269.018	34.994	1231.030	588.392	705.380	453.062	666.001	1409.023
Chromium (+6)	15.7	10.6	15.7	38.949	9.00	29.991	13.224	27.978
Copper	5.990	4.328	14.335	38.058	8.214	29.304	12.075	25.546
Cyanide (free)	45.8	10.7	45.8	39.316	26.2	30.274	38.578	81.617
4,4'-DDT	1.1	0.001	1.10	0.004	0.630	0.003	0.004	0.009
Demeton	N/A	0.1	N/A	0.367	N/A	0.283	0.416	0.880
Diazinon	0.17	0.17	0.170	0.625	0.097	0.481	0.143	0.303
Dicofol	59.3	19.8	59.3	72.754	34.0	56.020	49.949	105.674
Dieldrin	0.24	0.002	0.240	0.007	0.138	0.006	0.008	0.018
Diuron	210	70	210	257.210	120	198.052	176.885	374.226
Endosulfan I (alpha)	0.22	0.056	0.220	0.206	0.126	0.158	0.185	0.392
Endosulfan II (beta)	0.22	0.056	0.220	0.206	0.126	0.158	0.185	0.392
Endosulfan sulfate	0.22	0.056	0.220	0.206	0.126	0.158	0.185	0.392
Endrin	0.086	0.002	0.086	0.007	0.049	0.006	0.008	0.018
Guthion	N/A	0.01	N/A	0.037	N/A	0.028	0.042	0.088
Heptachlor	0.52	0.004	0.520	0.015	0.298	0.011	0.017	0.035
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.294	0.645	0.226	0.333	0.704
Lead	23.511	0.916	106.056	15.186	60.770	11.693	17.189	36.366
Malathion	N/A	0.01	N/A	0.037	N/A	0.028	0.042	0.088
Mercury	2.4	1.3	2.40	4.777	1.38	3.678	2.022	4.277
Methoxychlor	N/A	0.03	N/A	0.110	N/A	0.085	0.125	0.264
Mirex	N/A	0.001	N/A	0.004	N/A	0.003	0.004	0.009
Nickel	215.679	23.955	385.101	157.166	220.663	121.017	177.896	376.364

Nonylphenol	28	6.6	28.0	24.251	16.0	18.673	23.585	49.897
Parathion (ethyl)	0.065	0.013	0.065	0.048	0.037	0.037	0.054	0.114
Pentachlorophenol	9.646	7.400	9.646	27.191	5.527	20.937	8.125	17.189
Phenanthrene	30	30	30.0	110.233	17.2	84.879	25.269	53.461
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.00	0.051	1.15	0.040	0.058	0.123
Selenium	20	5	20.0	18.372	11.5	14.147	16.846	35.641
Silver	0.8	N/A	18.5342983	N/A	10.620	N/A	15.612	33.029
Toxaphene	0.78	0.0002	0.780	0.001	0.447	0.001	0.001	0.002
Tributyltin (TBT)	0.13	0.024	0.130	0.088	0.074	0.068	0.100	0.211
2,4,5 Trichlorophenol	136	64	136	235.163	77.9	181.076	114.554	242.356
Zinc	53.911	54.352	148.278	549.292	84.963	422.955	124.896	264.235

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Water and Fish Criterion (ug/L)*	*Fish Only Criterion (ug/L)*	*WLAh*	*LTAh*	*Daily Avg. (ug/L)*	*Daily Max. (ug/L)*
Acrylonitrile	0.80	3.8	30.477	28.344	41.666	88.150
Aldrin	0.00094	0.0010	0.008	0.007	0.011	0.023
Anthracene	5,569	N/A	N/A	N/A	N/A	N/A
Antimony	6	1,071	8589.819	7988.532	11743.141	24844.333
Arsenic	10	N/A	N/A	N/A	N/A	N/A
Barium	2,000	N/A	N/A	N/A	N/A	N/A
Benzene	5	513	4114.451	3826.439	5624.866	11900.227
Benzidine	0.00086	0.0020	0.016	0.015	0.022	0.046
Benzo(a)anthracene	0.68	3.28	26.307	24.465	35.964	76.087
Benzo(a)pyrene	0.068	0.33	2.647	2.461	3.618	7.655
Bis(chloromethyl)ether	0.0024	0.44	3.529	3.282	4.824	10.207
Bis(2-chloroethyl)ether	0.57	10.06	80.685	75.037	110.304	233.365
Bis(2-ethylhexyl)phthalate	6	41	328.835	305.817	449.551	951.090
Bromodichloromethane (Dichlorobromomethane)	10.2	322	2582.560	2401.781	3530.618	7469.538
Bromoform	69.1	2,175	17444.310	16223.208	23848.116	50454.178
Cadmium	5	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.3	30.5	244.621	227.498	334.422	707.518
Chlordane	0.0080	0.0081	0.065	0.060	0.089	0.188
Chlorobenzene	100	5,201	41713.957	38793.980	57027.151	120649.278
Chlorodibromomethane (Dibromochloromethane)	7.6	239	1916.869	1782.688	2620.552	5544.160
Chloroform	70	7,143	57289.520	53279.254	78320.503	165698.479
Chromium (+6)	62	502	4026.227	3744.391	5504.255	11645.056
Chrysene	68.13	327	2622.662	2439.075	3585.441	7585.525
Cresols (Methylphenols)	1,041	9,301	74597.484	69375.660	101982.220	215758.302
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A

4,4'-DDD	0.0059	0.0059	0.047	0.044	0.065	0.137
4,4'-DDE	0.0040	0.0040	0.032	0.030	0.044	0.093
4,4'-DDT	0.0040	0.0040	0.032	0.030	0.044	0.093
2,4'-D	70	N/A	N/A	N/A	N/A	N/A
Danitol	262	473	3793.636	3528.082	5186.280	10972.334
1,2-Dibromoethane	0.17	4.24	34.006	31.626	46.490	98.357
m-Dichlorobenzene (1,3-Dichlorobenzene)	473	1,445	11589.438	10778.177	15843.921	33520.132
o-Dichlorobenzene (1,2-Dichlorobenzene)	600	4,336	34776.335	32341.991	47542.727	100583.593
p-Dichlorobenzene (1,4-Dichlorobenzene)	75	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.32	0.44	3.529	3.282	4.824	10.207
1,2-Dichloroethane	5	553	4435.266	4124.797	6063.452	12828.120
1,1-Dichloroethylene	7	23,916	191815.227	178388.161	262230.596	554787.180
Dichloromethane (Methylene Chloride)	5	22,222	178228.716	165752.706	243656.477	515490.915
1,2-Dichloropropane	5	226	1812.604	1685.722	2478.011	5242.595
1,3-Dichloropropene (1,3- Dichloropropylene)	3.4	211	1692.299	1573.838	2313.541	4894.635
Dicofol	0.30	0.30	2.406	2.238	3.289	6.959
Dieldrin	0.001	0.001	0.008	0.007	0.011	0.023
2,4-Dimethylphenol	257	571	4579.633	4259.058	6260.816	13245.672
Di-n-Butyl Phthalate	1,318	3,010	24141.321	22451.428	33003.600	69823.943
Dioxins/Furans (TCDD Equivalents)	7.80E-08	7.97E-08	0.000	5.94E-07	8.74E-07	1.85E-06
Endrin	0.20	0.20	1.604	1.492	2.193	4.639
Ethylbenzene	700	7,143	57289.520	53279.254	78320.503	165698.479
Fluoride	4,000	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0015	0.012	0.011	0.016	0.035
Heptachlor Epoxide	0.00074	0.00075	0.006	0.006	0.008	0.017
Hexachlorobenzene	0.0044	0.0045	0.036	0.034	0.049	0.104
Hexachlorobutadiene	6.5	274	2197.582	2043.751	3004.314	6356.067
Hexachlorocyclohexane (alpha)	0.050	0.093	0.746	0.694	1.020	2.157
Hexachlorocyclohexane (beta)	0.17	0.33	2.647	2.461	3.618	7.655
Hexachlorocyclohexane (gamma) (Lindane)	0.2	6.2	49.726	46.245	67.981	143.823
Hexachlorocyclopentadiene	50	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	4.97	11.51	92.314	85.852	126.203	267.001
Hexachlorophene	2.05	2.90	23.259	21.631	31.797	67.272
Lead	1.15	3.83	138.567	128.868	189.435	400.778
Mercury	0.0122	0.0122	0.098	0.091	0.134	0.283
Methoxychlor	1.59	1.61	12.913	12.009	17.653	37.348
Methyl Ethyl Ketone	13,865	992,000	7956209	7399275	10876934	23011745
Nickel	332	1,140	16325.491	15182.707	22318.579	47218.218
Nitrate-Nitrogen (as Total Nitrogen)	10,000	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45	1,853	14861.750	13821.428	20317.499	42984.640
N-Nitrosodiethylamine	0.0037	2.1	16.843	15.664	23.026	48.714
N-Nitroso-di-n-Butylamine	0.119	4.2	33.686	31.328	46.052	97.429

Pentachlorobenzene	1.0	1.0	8.020	7.459	10.965	23.197
Pentachlorophenol	0.80	9.1	72.985	67.876	99.778	211.096
Polychlorinated Biphenyls (PCBs)	6.4E-04	6.4E-04	5.13E-03	4.77E-03	7.02E-03	1.48E-02
Pyridine	23	947	7595.293	7063.622	10383.525	21967.865
Selenium	50	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.65	0.71	5.694	5.296	7.785	16.470
1,1,2,2-Tetrachloroethane	1.7	40	320.815	298.358	438.586	927.893
Tetrachloroethylene	5	525	4210.696	3915.947	5756.442	12178.595
Thallium	0.12	0.23	1.845	1.716	2.522	5.335
Toluene	1,000	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.0053	0.043	0.040	0.058	0.123
2,4,5-TP (Silvex)	19	21	168.428	156.638	230.258	487.144
1,1,1-Trichloroethane	200	956,663	7672794	7135698	10489476	22192021
1,1,2-Trichloroethane	5	295	2366.010	2200.389	3234.572	6843.210
Trichloroethylene	5	82	657.671	611.634	899.101	1902.180
2,4,5-Trichlorophenol	1,194	2,435	19529.607	18162.534	26698.925	56485.482
TTHM (Sum of Total Trihalomethanes)	80	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.25	24	192.489	179.015	263.152	556.736

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life

Parameter	***70%***	***85%***	
Aldrin	1.77	2.15	
Aluminum	584	710	287
Arsenic	329.554	400.172	1.9
Cadmium	1.685	2.046	
Carbaryl	1.18	1.43	
Chlordane	0.012	0.014	
Chlorpyrifos	0.049	0.059	
Chromium (+3)	466.201	566.101	
Chromium (+6)	9.257	11.241	
Copper	8.452	10.264	4.5
Cyanide (free)	27.004	32.791	
4,4'-DDT	0.003	0.004	
Demeton	0.291	0.354	
Diazinon	0.100	0.122	
Dicofol	34.964	42.457	
Dieldrin	0.006	0.007	
Diuron	123.820	150.352	
Endosulfan (alpha)	0.130	0.158	
Endosulfan (beta)	0.130	0.158	

Endosulfan sulfate	0.130	0.158	
Endrin	0.006	0.007	
Guthion	0.029	0.035	
Heptachlor	0.012	0.014	
Hexachlorocyclohexane (Lindane)	0.233	0.283	
Lead	12.032	14.611	1.2
Malathion	0.029	0.035	
Mercury	1.415	1.718	0.00236
Methoxychlor	0.087	0.106	
Mirex	0.003	0.004	
Nickel	124.527	151.211	1.7
Nonylphenol	16.509	20.047	
Parathion (ethyl)	0.038	0.046	
Pentachlorophenol	5.687	6.906	
Phenanthrene	17.689	21.479	
Polychlorinated Biphenyls (PCBs)	0.041	0.049	
Selenium	11.792	14.319	0.88
Silver	10.928	13.270	
Toxaphene	0.001	0.001	
Tributyltin (TBT)	0.070	0.085	
2,4,5 Trichlorophenol	80.188	97.371	
Zinc	87.427	106.161	59

Human Health

Parameter	***70%***	***85%***
Acrylonitrile	29.166	35.416
Aldrin	0.008	0.009
Anthracene	N/A	N/A
Antimony	8220.199	9981.670
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	3937.406	4781.136
Benzidine	0.015	0.019
Benzo(a)anthracene	25.175	30.569
Benzo(a)pyrene	2.533	3.076
Bis(chloromethyl)ether	3.377	4.101
Bis(2-chloroethyl)ether	77.213	93.759
Bis(2-ethylhexyl)phthalate	314.685	382.118
Bromodichloromethane (Dichlorobromomethane)	2471.432	3001.025
Bromoform	16693.681	20270.899
Cadmium	N/A	N/A
Carbon Tetrachloride	234.095	284.259

Chlordane	0.062	0.075
Chlorobenzene	39919.005	48473.078
Chlorodibromomethane (Dibromochloromethane)	1834.386	2227.469
Chloroform	54824.352	66572.428
Chromium (+6)	3852.978	4678.617
Chrysene	2509.809	3047.625
Cresols (Methylphenols)	71387.554	86684.887
Cyanide (free)	N/A	N/A
4,4'-DDD	0.045	0.055
4,4'-DDE	0.031	0.037
4,4'-DDT	0.031	0.037
2,4'-D	N/A	N/A
Danitol	3630.396	4408.338
1,2-Dibromoethane	32.543	39.517
m-Dichlorobenzene (1,3-Dichlorobenzene)	11090.745	13467.333
o-Dichlorobenzene (1,2-Dichlorobenzene)	33279.909	40411.318
p-Dichlorobenzene (1,4-Dichlorobenzene)	N/A	N/A
3,3'-Dichlorobenzidine	3.377	4.101
1,2-Dichloroethane	4244.416	5153.934
1,1-Dichloroethylene	183561.417	222896.007
Dichloromethane (Methylene Chloride)	170559.534	207108.006
1,2-Dichloropropane	1734.608	2106.309
1,3-Dichloropropene (1,3- Dichloropropylene)	1619.479	1966.510
Dicofol	2.303	2.796
Dieldrin	0.008	0.009
2,4-Dimethylphenol	4382.571	5321.693
Di-n-Butyl Phthalate	23102.520	28053.060
Dioxins/Furans (TCDD Equivalents)	6.12E-07	7.43E-07
Endrin	1.535	1.864
Ethylbenzene	54824.352	66572.428
Fluoride	N/A	N/A
Heptachlor	0.012	0.014
Heptachlor Epoxide	0.006	0.007
Hexachlorobenzene	0.035	0.042
Hexachlorobutadiene	2103.020	2553.667
Hexachlorocyclohexane (alpha)	0.714	0.867
Hexachlorocyclohexane (beta)	2.533	3.076
Hexachlorocyclohexane (gamma) (Lindane)	47.587	57.784
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	88.342	107.273
Hexachlorophene	22.258	27.028
Lead	132.605	161.020

Mercury	0.094	0.114
Methoxychlor	12.357	15.005
Methyl Ethyl Ketone	7613854	9245394
Nickel	15623.005	18970.792
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	14222.249	17269.874
N-Nitrosodiethylamine	16.118	19.572
N-Nitroso-di-n-Butylamine	32.236	39.144
Pentachlorobenzene	7.675	9.320
Pentachlorophenol	69.845	84.812
Polychlorinated Biphenyls (PCBs)	4.91E-03	5.96E-03
Pyridine	7268.467	8825.996
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	5.449	6.617
1,1,2,2-Tetrachloroethane	307.010	372.798
Tetrachloroethylene	4029.509	4892.976
Thallium	1.765	2.144
Toluene	N/A	N/A
Toxaphene	0.041	0.049
2,4,5-TP (Silvex)	161.180	195.719
1,1,1-Trichloroethane	7342633	8916055
1,1,2-Trichloroethane	2264.200	2749.386
Trichloroethylene	629.371	764.236
2,4,5-Trichlorophenol	18689.248	22694.087
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	184.206	223.679