

TEXTOX MENU #9 - INTERMITTENT FRESHWATER STREAM WITHIN 3 MILES OF A NARROW TIDAL RIVER

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

Table 1, 2000 Texas Surface Water Quality Standards (30 TAC 307) for Marine and Freshwater Aquatic Life
 Table 3, 2000 Texas Surface Water Quality Standards for Human Health
 "Procedures to Implement the Texas Surface Water Quality Standards," Texas Commission on Environmental Quality, January 2003

PERMITTEE INFORMATION:

Permittee Name: Targa Resources - Mont Belvieu
 TPDES Permit No: TX0002887
 Outfall No: 001
 Prepared by: Maria Okpala
 Date: July 12, 2012

DISCHARGE INFORMATION:

Intermittent Receiving Waterbody: Unammed Tributary of Cedar Bayou Tidal
 TSS (mg/L) (Intermittent): 4
 pH (Standard Units) (Intermittent): 7.14
 Hardness (mg/L as CaCO₃) (Intermittent): 54
 Chloride (mg/L) (Intermittent): 81
 Effluent Flow for Aquatic Life (MGD): 0.846
 Percent Effluent for Zone of Initial Dilution: 100
 Saltwater Receiving Waterbody: Cedar Bayou Tidal
 Segment No.: 901
 TSS (mg/L) (Narrow Tidal River): 18
 Chloride (mg/L) (Naorrow Tidal River): 2570
 Critical Low Flow [7Q2]: 0.66
 Percent Effluent for Mixing Zone: 66.480
 Percent Effluent for Zone of Initial Dilution: 88.806
 Effluent Flow for Human Health (MGD): 0.846
 Harmonic Mean Flow (cfs): 2.64
 Percent Effluent for Human Health: 33.147

CALCULATE TOTAL/DISSOLVED RATIO:

Stream/River Metal	Intercept (b)	Slope (m)	Partition Coefficient (Kp)	Dissolved Fraction (Cd/Ct)	Water Effects Ratio (WER)	
					Assumed	Assumed
Aluminum	N/A	N/A	N/A	1.00	Assumed	Assumed
Arsenic	5.68	-0.73	173978.75	0.59	1.00	Assumed
Cadmium	6.6	-1.13	831136.22	0.23	1.00	Assumed
Chromium (Total)	6.52	-0.93	912187.69	0.22	1.00	Assumed
Chromium (+3)	6.52	-0.93	912187.69	0.22	1.00	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	Assumed
Copper	6.02	-0.74	375383.87	0.40	1.00	Assumed
Lead	6.45	-0.8	929719.64	0.21	1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	Assumed
Nickel	5.69	-0.57	222241.83	0.53	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	Assumed
Silver	6.38	-1.03	575278.59	0.30	1.00	Assumed
Zinc	6.1	-0.7	477043.53	0.34	1.00	Assumed

Estuarine Metal	Intercept (b)	Slope (m)	Partition Coefficient (Kp)	Dissolved Fraction (Cd/Ct)	Water Effects Ratio (WER)	
					Assumed	Assumed
Aluminum	N/A	N/A	N/A	1.00	Assumed	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (Total)	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (+3)	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	Assumed
Copper	4.85	-0.72	8834.94	0.86	1.00	Assumed
Lead	6.06	-0.85	98405.27	0.36	1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	Assumed
Silver	5.86	-0.74	85329.33	0.39	1.00	Assumed
Zinc	5.36	-0.52	50963.39	0.52	1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS

Parameter	FW Acute Standard (ug/L)	SW Acute Standard (ug/L)	SW Chronic Standard (ug/L)	FW WL _A	SW WL _A	SW WL _{Ac}	FW LT _{Aa}	SW LT _{Aa}	SW LT _{Ac}	Daily Avg.	Daily Max.
										(ug/L)	(ug/L)
Aldrin	3	1.3	N/A	3.00	1.46	N/A	1.72	0.84	N/A	1.23	2.61
Aluminum	991	N/A	N/A	991.00	N/A	N/A	567.84	N/A	N/A	834.73	1765.99

Arsenic	360	149	78	610.53	167.78	117.33	349.83	96.14	90.34	132.80	280.97
Cadmium	16.359	45.4	10	70.75	51.12	15.04	40.54	29.29	11.58	17.03	36.02
Carbaryl	2	613	N/A	2.00	690.27	N/A	1.15	395.53	N/A	1.68	3.56
Chlordane	2.4	0.09	0.004	2.40	0.10	0.01	1.38	0.06	0.00	0.01	0.01
Chlorpyrifos	0.083	0.006	0.0056	0.08	0.01	0.01	0.05	0.00	0.01	0.01	0.01
Chromium (+3)	331.280	N/A	N/A	1540.04	N/A	N/A	882.44	N/A	N/A	1297.19	2744.40
Chromium (+6)	15.700	1090	49.6	15.70	1227.40	74.61	9.00	703.30	57.45	13.22	27.98
Copper	10.311	13.5	3.6	25.79	17.62	6.28	14.78	10.10	4.83	7.10	15.03
Cyanide	45.78	5.6	5.6	45.78	6.31	8.42	26.23	3.61	6.49	5.31	11.24
4,4'-DDT	1.1	0.13	0.001	1.10	0.15	0.00	0.63	0.08	0.00	0.00	0.00
Dementon	N/A	N/A	0.1	N/A	N/A	0.15	N/A	N/A	0.12	0.17	0.36
Dicofol	59.3	N/A	N/A	59.30	N/A	N/A	33.98	N/A	N/A	49.95	105.67
Dieldrin	2.5	0.002	0.0019	2.50	0.00	0.00	1.43	0.00	0.00	0.00	0.00
Diuron	210	N/A	N/A	210.00	N/A	N/A	120.33	N/A	N/A	176.89	374.23
Endosulfan I (alpha)	0.22	0.034	0.009	0.22	0.04	0.01	0.13	0.02	0.01	0.02	0.03
Endosulfan II (beta)	0.22	0.034	0.009	0.22	0.04	0.01	0.13	0.02	0.01	0.02	0.03
Endosulfan sulfate	0.22	0.034	0.009	0.22	0.04	0.01	0.13	0.02	0.01	0.02	0.03
Endrin	0.18	0.002	0.0023	0.18	0.00	0.00	0.10	0.00	0.00	0.00	0.00
Guthion	N/A	N/A	0.01	N/A	N/A	0.02	N/A	N/A	0.01	0.02	0.04
Heptachlor	0.52	0.004	0.0036	0.52	0.00	0.01	0.30	0.00	0.00	0.00	0.01
Hexachlorocyclohexane (Lindane)	2	0.16	N/A	2.00	0.18	N/A	1.15	0.10	N/A	0.15	0.32
Lead	33.126	133	5.3	156.32	415.04	22.09	89.57	237.82	17.01	25.01	52.91
Malathion	N/A	N/A	0.01	N/A	N/A	0.02	N/A	N/A	0.01	0.02	0.04
Mercury	2.400	2.1	1.1	2.40	2.36	1.65	1.38	1.35	1.27	1.87	3.96
Methoxychlor	N/A	N/A	0.03	N/A	N/A	0.05	N/A	N/A	0.03	0.05	0.11
Mirex	N/A	N/A	0.001	N/A	N/A	0.00	N/A	N/A	0.00	0.00	0.00
Nickel	840.400	118	13.1	1587.49	132.87	19.71	909.63	76.14	15.17	22.30	47.19
Parathion (ethyl)	0.065	N/A	N/A	0.07	N/A	N/A	0.04	N/A	N/A	0.05	0.12
Pentachlorophenol	10.441	9.6	9.56	10.44	10.81	14.38	5.98	6.19	11.07	8.79	18.61
Phenanthrene	30	7.7	4.6	30.00	8.67	6.92	17.19	4.97	5.33	7.30	15.45
Polychlorinated Biphenyls (PCBs)	2	10	0.03	2.00	11.26	0.05	1.15	6.45	0.03	0.05	0.11
Selenium	20	564	136	20.00	635.10	204.57	11.46	363.91	157.52	16.85	35.64
Silver, (free ion)	0.8	2	N/A	18.01	63.59	N/A	10.32	36.44	N/A	15.17	32.09
Toxaphene	0.78	0.21	0.0002	0.78	0.24	0.00	0.45	0.14	0.00	0.00	0.00
Tributyltin (TBT)	0.13	0.24	0.043	0.13	0.27	0.06	0.07	0.15	0.05	0.07	0.15
2,4,5 Trichlorophenol	136	259	12	136.00	291.65	18.05	77.93	167.11	13.90	20.43	43.23
Zinc	67.899	92.7	84.2	197.46	200.14	242.84	113.15	114.68	186.99	166.32	351.88

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS

Parameter	SW Fish (ug/L)	WLAh	LTAh	Daily Avg.	Daily Max.
				(ug/L)	(ug/L)
Acrylonitrile	7.3	22.02	20.48	30.11	63.70
Aldrin	0.0028	0.01	0.01	0.01	0.02
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	70.8	213.60	198.64	292.01	617.78
Benzidine	0.00232	0.01	0.01	0.01	0.02
Benzo(a)anthracene	0.54	1.63	1.52	2.23	4.71
Benzo(a)pyrene	0.54	1.63	1.52	2.23	4.71
Bis(chloromethyl)ether	0.0129	0.04	0.04	0.05	0.11
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	5.6	16.89	15.71	23.10	48.86
Chlordane	0.0213	0.06	0.06	0.09	0.19
Chlorobenzene	920	2775.53	2581.25	3794.43	8027.68
Chloroform	861	2597.54	2415.71	3551.09	7512.86
Chromium	2216	6685.42	6217.44	9139.63	19336.23
Chrysene	5.4	16.29	15.15	22.27	47.12
Cresols	8744	26379.64	24533.07	36063.61	76297.84
Cyanide	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.007	0.02	0.02	0.03	0.06
4,4'-DDE	0.005	0.02	0.01	0.02	0.04
4,4'-DDT	0.005	0.02	0.01	0.02	0.04
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol	0.481	1.45	1.35	1.98	4.20
Dibromochloromethane	47.7	143.91	133.83	196.73	416.22
1,2-Dibromoethane	0.223	0.67	0.63	0.92	1.95
1,3-Dichloropropene (1,3- Dichloropropylene)	107	322.81	300.21	441.31	933.65
Dieldrin	0.001	0.00	0.00	0.00	0.01
p-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane	49.3	148.73	138.32	203.33	430.18
1,1-Dichloroethylene	3.9	11.77	10.94	16.09	34.03
Dicofol	0.144	0.43	0.40	0.59	1.26
Dioxins/Furans (TCDD Equivalents)	9.33E-08	2.81E-07	2.62E-07	3.85E-07	8.14E-07
Endrin	0.893	2.69	2.51	3.68	7.79
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.00177	0.01	0.00	0.01	0.02
Heptachlor Epoxide	0.723	2.18	2.03	2.98	6.31
Hexachlorobenzene	0.0132	0.04	0.04	0.05	0.12
Hexachlorobutadiene	2.4	7.24	6.73	9.90	20.94

Hexachlorocyclohexane (alpha)	0.275	0.83	0.77	1.13	2.40
Hexachlorocyclohexane (beta)	0.964	2.91	2.70	3.98	8.41
Hexachlorocyclohexane (gamma) (Lindane)	1.34	4.04	3.76	5.53	11.69
Hexachloroethane	185	558.12	519.06	763.01	1614.26
Hexachlorophene	0.036	0.11	0.10	0.15	0.31
Lead	16.9	141.30	131.40	193.17	408.67
Mercury	0.025	0.08	0.07	0.10	0.22
Methoxychlor	1.48	4.46	4.15	6.10	12.91
Methyl Ethyl Ketone	6.63E+06	2.00E+07	1.86E+07	2.73E+07	5.79E+07
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	156	470.63	437.69	643.40	1361.21
N-Nitrosodiethylamine	5.12	15.45	14.37	21.12	44.68
N-Nitroso-di-n-Butylamine	8.98	27.09	25.20	37.04	78.36
PCB's (Polychlorinated Biphenyls)	0.000885	0.00	0.00	0.00	0.01
Pentachlorobenzene	4.45	13.43	12.49	18.35	38.83
Pentachlorophenol	90	271.52	252.51	371.19	785.32
Pyridine	8889	26817.09	24939.90	36661.65	77563.07
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.162	0.49	0.45	0.67	1.41
Tetrachloroethylene	215	648.63	603.23	886.74	1876.03
Toxaphene	0.009	0.03	0.03	0.04	0.08
2,4,5-TP (Silvex)	33.6	101.37	94.27	138.58	293.18
2,4,5-Trichlorophenol	712	2148.02	1997.66	2936.56	6212.72
Trichloroethylene	408	1230.89	1144.73	1682.75	3560.10
1,1,1-Trichloroethane	8391	25314.68	23542.66	34607.70	73217.66
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	277	835.68	777.18	1142.45	2417.03

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS

Parameter	70%	85%	
Aquatic Life			
Aldrin	0.863	1.048	
Aluminum	584.310	709.520	
Arsenic	92.963	112.884	
Cadmium	11.918	14.472	
Carbaryl	1.179	1.432	
Chlordane	0.005	0.006	
Chlorpyrifos	0.004	0.005	
Chromium (+3)	908.03	1102.61	
Chromium (+6)	9.257	11.241	
Copper	4.973	6.039	14
Copper (oyster waters)	N/A	N/A	
Cyanide	3.718	4.515	
4,4'-DDT	0.001	0.001	
Dementon	0.119	0.145	
Dicofol	34.964	42.457	
Dieldrin	0.001	0.002	
Diuron	123.820	150.352	
Endosulfan (alpha)	0.011	0.013	
Endosulfan (beta)	0.011	0.013	
Endosulfan sulfate	0.011	0.013	
Endrin	0.001	0.002	
Guthion	0.012	0.014	
Heptachlor	0.003	0.003	
Hexachlorocyclohexane (Lindane)	0.106	0.129	
Lead	17.506	21.257	
Malathion	0.012	0.014	
Mercury	1.311	1.592	
Methoxychlor	0.036	0.043	
Mirex	0.001	0.001	
Nickel	15.613	18.959	
Parathion (ethyl)	0.038	0.047	
Pentachlorophenol	6.156	7.475	
Phenanthrene	5.112	6.208	
Polychlorinated Biphenyls (PCBs)	0.036	0.043	
Selenium	11.792	14.319	
Silver, (free ion)	10.618	12.893	
Toxaphene	0.000	0.000	
Tributyltin (TBT)	0.051	0.062	
2,4,5 Trichlorophenol	14.302	17.367	
Zinc	116.427	141.376	79
Human Health			
Acrylonitrile	21.076	25.592	
Aldrin	0.008	0.010	
Arsenic	N/A	N/A	
Barium	N/A	N/A	
Benzene	204.404	248.205	
Benzidine	0.007	0.008	
Benzo(a)anthracene	1.559	1.893	

Benzo(a)pyrene	1.559	1.893
Bis(chloromethyl)ether	0.037	0.045
Cadmium	N/A	N/A
Carbon Tetrachloride	16.168	19.632
Chlordane	0.061	0.075
Chlorobenzene	2656.103	3225.268
Chloroform	2485.766	3018.430
Chromium	6397.744	7768.689
Chrysene	15.590	18.931
Cresols	25244.53	30654.07
Cyanide	N/A	N/A
4,4'-DDD	0.020	0.025
4,4'-DDE	0.014	0.018
4,4'-DDT	0.014	0.018
2,4'-D	N/A	N/A
Danitol	1.389	1.686
Dibromochloromethane	137.713	167.223
1,2-Dibromoethane	0.644	0.782
1,3-Dichloropropene (1,3- Dichloropropylene)	308.916	375.113
Dieldrin	0.003	0.004
p-Dichlorobenzene	N/A	N/A
1,2-Dichloroethane	142.332	172.832
1,1-Dichloroethylene	11.260	13.672
Dicofol	0.416	0.505
Dioxins/Furans (TCDD Equivalents)	2.69E-07	3.27E-07
Endrin	2.578	3.131
Fluoride	N/A	N/A
Heptachlor	0.005	0.006
Heptachlor Epoxide	2.087	2.535
Hexachlorobenzene	0.038	0.046
Hexachlorobutadiene	6.929	8.414
Hexachlorocyclohexane (alpha)	0.794	0.964
Hexachlorocyclohexane (beta)	2.783	3.380
Hexachlorocyclohexane (gamma) (Lindane)	3.869	4.698
Hexachloroethane	534.108	648.559
Hexachlorophene	0.104	0.126
Lead	135.216	164.190
Mercury	0.072	0.088
Methoxychlor	4.273	5.188
Methyl Ethyl Ketone	1.91E+07	2.32E+07
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	450.383	546.893
N-Nitrosodiethylamine	14.782	17.949
N-Nitroso-di-n-Butylamine	25.926	31.481
PCB's (Polychlorinated Biphenyls)	0.003	0.003
Pentachlorobenzene	12.847	15.600
Pentachlorophenol	259.836	315.515
Pyridine	25663.15	31162.40
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.468	0.568
Tetrachloroethylene	620.720	753.731
Toxaphene	0.026	0.032
2,4,5-TP (Silvex)	97.006	117.792
2,4,5-Trichlorophenol	2055.593	2496.077
Trichloroethylene	1177.924	1430.336
1,1,1-Trichloroethane	24225.39	29416.55
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	799.718	971.086