

TEXTOX MENU #7 - INTERMITTENT STREAM WITH PERENNIAL POOLS

**HUMAN HEALTH LIMITS HAVE BEEN MULTIPLIED BY 10 FOR INCIDENTAL FRESHWATER FISH TISSUE;
IF THIS DOES NOT APPLY TO THIS FACILITY, ADJUST THE FORMULAS ACCORDINGLY.**

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

Table 1, 2010 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life

Table 2, 2010 Texas Surface Water Quality Standards for Human Health (except Mercury)

Table 3, 2000 Texas Surface Water Quality Standards for Human Health (Mercury)

"Procedures to Implement the Texas Surface Water Quality Standards," Texas Commission on Environmental Quality, January 2003.

"Procedures to Implement the Texas Surface Water Quality Standards," Appendix D, Texas Commission on Environmental Quality, June 2010.

PERMIT INFORMATION

Permittee Name:	Jackson Gas Plant
TPDES Permit No.:	TX0133998
Outfall No.:	001
Prepared by:	Maria Okpala
Date:	1/24/14

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	unnamed tributary and then to Devers Creek
Segment No.:	1604
TSS (mg/L):	7.4
pH (Standard Units):	7.15
Hardness (mg/L as CaCO ₃):	54.4
Chloride (mg/L):	19
Effluent Flow for Aquatic Life (MGD):	0.017
Critical Low Flow [7Q2] (cfs):	0
Percent Effluent for Mixing Zone:	100
Percent Effluent for Zone of Initial Dilution:	100
Effluent Flow for Human Health (MGD):	0.017
Harmonic Mean Flow (cfs):	0.07
Percent Effluent for Human Health:	27.313

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

<i>Stream/River Metal</i>	<i>Intercept (b)</i>	<i>Slope (m)</i>	<i>Partition Coefficient (Kp)</i>	<i>Dissolved Fraction (Cd/Ct)</i>	<i>Water Effect Ratio (WER)</i>		
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	111035.24	0.55		1.00	Assumed
Cadmium	6.60	-1.13	414732.58	0.25		1.00	Assumed
Chromium (Total)	6.52	-0.93	514771.51	0.21		1.00	Assumed

Chromium (+3)	6.52	-0.93	514771.51	0.21		1.00	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	238105.01	0.36		1.00	Assumed
Lead	6.45	-0.80	568348.38	0.19		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	156508.50	0.46		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	305275.06	0.31		1.00	Assumed
Zinc	6.10	-0.70	310125.73	0.30		1.00	Assumed

CONVERT TISSUE-BASED CRITERIA TO WATER COLUMN CRITERIA:

<i>Parameter</i>	<i>Fish Only Criterion (ug/kg)</i>	<i>BCF (l/kg)</i>	<i>Fish Only Criterion (ug/L)</i>
4,4'-DDD	166.16	53600	0.0031
4,4'-DDE	214.4	53600	0.004
4,4'-DDT	209.04	53600	0.0039
Dioxins/Furans	0.0004	5000	8.00E-08
Mercury			
Polychlorinated Biphenyls (PCBs)	19.96	31200	6.40E-04

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>FW Chronic Criterion</i>		<i>WLAa</i>	<i>WLAc</i>	<i>LTAa</i>	<i>LTAc</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
	<i>FW Acute Criterion (ug/L)</i>	<i>(ug/L)</i>						
Aldrin	3	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	619.3646696	273.2491189	354.8959557	210.401822	309.29068	654.349665
Cadmium	4.746465489	0.161077882	19.3134683	0.655429305	11.06661733	0.50468056	0.7418804	1.56955656
Carbaryl	2	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.004	1.38	0.003	0.005	0.010
Chlorpyrifos	0.083	0.041	0.083	0.041	0.048	0.032	0.046	0.098
Chromium (+3)	346.058964	45.01516137	1664.304543	216.4918276	953.6465033	166.698707	245.0471	518.43298
Chromium (+6)	15.7	10.6	15.7	10.6	9.00	8.16	12.0	25.4
Copper	8.002486543	5.628095878	22.10268417	15.54467164	12.66483803	11.9693972	17.595014	37.2248252
Cyanide	45.8	10.7	45.8	10.7	26.2	8.24	12.1	25.6
4,4'-DDT	1.1	0.001	1.10	0.001	0.630	0.001	0.001	0.002
Demeton	N/A	0.1	N/A	0.100	N/A	0.077	0.113	0.239
Diazinon	0.17	0.17	0.170	0.170	0.097	0.131	0.143	0.303
Dicofol	59.3	19.8	59.3	19.8	34.0	15.2	22.4	47.4
Dieldrin	0.24	0.002	0.240	0.002	0.138	0.002	0.002	0.005

Diuron	210	70	210	70.0	120	53.9	79.2	168
Endosulfan I (alpha)	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endosulfan II (beta)	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endosulfan sulfate	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endrin	0.086	0.002	0.086	0.002	0.049	0.002	0.002	0.005
Guthion	N/A	0.01	N/A	0.010	N/A	0.008	0.011	0.024
Heptachlor	0.52	0.004	0.520	0.004	0.298	0.003	0.005	0.010
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.080	0.645	0.062	0.091	0.192
Lead	33.08932184	1.289443368	172.2556633	6.712555903	98.7024951	5.16866805	7.597942	16.0745576
Malathion	N/A	0.01	N/A	0.010	N/A	0.008	0.011	0.024
Mercury	2.4	1.3	2.40	1.30	1.38	1.00	1.47	3.11
Methoxychlor	N/A	0.03	N/A	0.030	N/A	0.023	0.034	0.072
Mirex	N/A	0.001	N/A	0.001	N/A	0.001	0.001	0.002
Nickel	279.7571965	31.07238756	603.7615954	67.05927328	345.9553942	51.6356404	75.904391	160.586842
Nonylphenol	28	6.6	28	6.60	16.0	5.08	7.47	15.8
Parathion (ethyl)	0.065	0.013	0.065	0.013	0.037	0.010	0.015	0.031
Pentachlorophenol	10.143	7.782	10.143	7.782	5.812	5.992	8.543	18.075
Phenanthrene	30	30	30.0	30.0	17.2	23.1	25.3	53.5
Polychlorinated Biphenyls (PCBs)	2	0.014	2.00	0.014	1.15	0.011	0.016	0.034
Selenium	20	5	20.0	5.00	11.5	3.85	5.66	12.0
Silver (free ion)	0.8	N/A	5.459107113	N/A	3.128068376	N/A	4.5982605	9.72829265
Toxaphene	0.78	0.0002	0.780	0.0002	0.447	0.0002	0.0002	0.0005
Tributyltin (TBT)	0.13	0.024	0.130	0.024	0.074	0.018	0.027	0.057
2,4,5 Trichlorophenol	136	64	136	64.0	77.9	49.3	72.4	153
Zinc	69.95650828	70.52874965	230.5018247	232.3873202	132.0775455	178.938237	194.15399	410.761167

HUMAN HEALTH (APPLIES FOR INCIDENTAL FRESHWATER FISH TISSUE)

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Acrylonitrile	3.8	13.91	12.94	190.20	402.41
Aldrin	0.001	0.00	0.00	0.05	0.11
Anthracene	N/A	N/A	N/A	N/A	N/A
Antimony	1071	3921.27	3646.78	53607.70	113414.93
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	513	1878.26	1746.78	25677.64	54324.80
Benzidine	0.002	0.01	0.01	0.10	0.21
Benzo(a)anthracene	0.33	1.21	1.12	16.52	34.95
Benzo(a)pyrene	0.33	1.21	1.12	16.52	34.95
Bis(chloromethyl)ether	0.44	1.61	1.50	22.02	46.59

Bis(2-chloroethyl)ether	5.27	19.30	17.94	263.78	558.07
Bis(2-ethylhexyl)phthalate	41	150.11	139.61	2052.21	4341.75
Bromodichloromethane	322	1178.94	1096.42	16117.35	34098.61
Bromoform	2175	7963.37	7405.93	108867.17	230324.43
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	29	106.18	98.75	1451.56	3070.99
Chlordane	0.0081	0.03	0.03	0.41	0.86
Chlorobenzene	5201	19042.51	17709.54	260330.20	550766.61
Chlorodibromomethane (Dibromochloromethane)	239	875.05	813.80	11962.88	25309.21
Chloroform	7143	26152.79	24322.10	357534.82	756417.20
Chromium (+6)	502	1837.98	1709.32	25127.04	53159.94
Chrysene	327	1197.25	1113.44	16367.62	34628.09
Cresols	1981	7253.07	6745.36	99156.72	209780.55
Cyanide	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0031	0.01	0.01	0.16	0.33
4,4'-DDE	0.004	0.01	0.01	0.20	0.42
4,4'-DDT	0.0039	0.01	0.01	0.20	0.41
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol	5.44	19.92	18.52	272.29	576.08
1,2-Dibromoethane	2.13	7.80	7.25	106.61	225.56
m-Dichlorobenzene	1445	5290.60	4920.26	72327.85	153020.14
o-Dichlorobenzene	4336	15875.47	14764.19	217033.60	459166.31
p-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.44	1.61	1.50	22.02	46.59
1,2-Dichloroethane	553	2024.71	1882.98	27679.79	58560.65
1,1-Dichloroethylene	23916	87564.07	81434.59	1197088.44	2532615.68
Dichloromethane	5926	21696.97	20178.18	296619.25	627541.42
1,2-Dichloropropane	226	827.46	769.54	11312.18	23932.56
1,3-Dichloropropene (1,3- Dichloropropylene)	211	772.54	718.46	10561.37	22344.12
Dicofol	0.076	0.28	0.26	3.80	8.05
Dieldrin	0.0005	0.00	0.00	0.03	0.05
2,4-Dimethylphenol	571	2090.61	1944.27	28580.76	60466.78
Di-n-Butyl Phthalate	3010	11020.57	10249.13	150662.16	318747.83
Dioxins/Furans (TCDD Equivalents)	8.00E-08	2.93E-07	2.72E-07	4.00E-06	8.47E-06
Endrin	0.2	0.73	0.68	10.01	21.18
Ethylbenzene	7143	26152.79	24322.10	357534.82	756417.20
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.01	0.01	0.08	0.16
Heptachlor Epoxide	0.00075	0.00	0.00	0.04	0.08
Hexachlorobenzene	0.0045	0.02	0.02	0.23	0.48
Hexachlorobutadiene	274	1003.20	932.98	13714.76	29015.58
Hexachlorocyclohexane (alpha)	0.093	0.34	0.32	4.66	9.85

Hexachlorocyclohexane (beta)	0.33	1.21	1.12	16.52	34.95
Hexachlorocyclohexane (gamma) (Lindane)	6.2	22.70	21.11	310.33	656.56
Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	62	227.00	211.11	3103.34	6565.57
Hexachlorophene	0.008	0.03	0.03	0.40	0.85
Lead	3.83	73.00	67.89	997.98	2111.37
Mercury	0.0122	0.04	0.04	0.61	1.29
Methoxychlor	0.33	1.21	1.12	16.52	34.95
Methyl Ethyl Ketone	1500000	5.49E+06	5.11E+06	7.51E+07	1.59E+08
Nickel	1140	9007.96	8377.40	123147.83	260537.24
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	463	1695.19	1576.53	23174.94	49029.98
N-Nitrosodiethylamine	2.1	7.69	7.15	105.11	222.38
N-Nitroso-di-n-Butylamine	4.2	15.38	14.30	210.23	444.76
Pentachlorobenzene	1	3.66	3.41	50.05	105.90
Pentachlorophenol	57	208.70	194.09	2853.07	6036.09
Polychlorinated Biphenyls (PCBs)	6.40E-04	0.00	0.00	0.03	0.07
Pyridine	2014	7373.89	6857.72	100808.50	213275.13
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.71	2.60	2.42	35.54	75.19
1,1,2,2-Tetrachloroethane	76	278.26	258.78	3804.09	8048.12
Tetrachloroethylene	49	179.40	166.85	2452.64	5188.92
Thallium	1.5	5.49	5.11	75.08	158.84
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.02	0.02	0.27	0.56
2,4,5-TP (Silvex)	7.6	27.83	25.88	380.41	804.81
1,1,1-Trichloroethane	956663	3502647.12	3257461.83	47884688.83	101307062.77
1,1,2-Trichloroethane	295	1080.09	1004.48	14765.89	31239.41
Trichloroethylene	649	2376.20	2209.86	32484.96	68726.69
2,4,5-Trichlorophenol	2435	8915.31	8291.24	121881.18	257857.47
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	24	87.87	81.72	1201.29	2541.51

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

Aquatic Life

Parameter	70%	85%	
Aldrin	1.77	2.15	
Aluminum	584	710	11
Arsenic	216.503	262.897	1.9
Cadmium	0.519	0.631	0.45
Carbaryl	1.18	1.43	

Chlordane	0.0032	0.0038	
Chlorpyrifos	0.032	0.039	
Chromium (+3)	171.533	208.290	
Chromium (+6)	8.40	10.2	2.4
Copper	12.317	14.956	1.2
Cyanide	8.48	10.3	
4,4'-DDT	0.0008	0.0010	
Demeton	0.079	0.096	
Diazinon	0.100	0.122	
Dicofol	15.7	19.0	
Dieldrin	0.0016	0.0019	
Diuron	55.5	67.3	
Endosulfan (alpha)	0.044	0.054	
Endosulfan (beta)	0.044	0.054	
Endosulfan sulfate	0.044	0.054	
Endrin	0.0016	0.0019	
Guthion	0.0079	0.0096	
Heptachlor	0.0032	0.0038	
Hexachlorocyclohexane (Lindane)	0.063	0.077	
Lead	5.319	6.458	0.91
Malathion	0.0079	0.0096	
Mercury	1.03	1.25	0.094
Methoxychlor	0.024	0.029	
Mirex	0.0008	0.0010	
Nickel	53.133	64.519	1.3
Nonylphenol	5.23	6.35	
Parathion (ethyl)	0.010	0.013	
Pentachlorophenol	5.9803	7.2618	
Phenanthrene	17.7	21.5	
Polychlorinated Biphenyls (PCBs)	0.011	0.013	
Selenium	3.96	4.81	2.1
Silver (free ion)	3.219	3.909	0.64
Toxaphene	0.00016	0.00019	
Tributyltin (TBT)	0.019	0.023	
2,4,5 Trichlorophenol	50.7	61.6	
Zinc	135.908	165.031	3

Human Health

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Acrylonitrile	133.143	161.674
Aldrin	0.035	0.043
Anthracene	N/A	N/A

Antimony	37525.389	45566.544	
Arsenic	N/A	N/A	
Barium	N/A	N/A	
Benzene	17974.346	21825.992	0.7
Benzidine	0.070	0.085	
Benzo(a)anthracene	11.562	14.040	
Benzo(a)pyrene	11.562	14.040	
Bis(chloromethyl)ether	15.417	18.720	
Bis(2-chloroethyl)ether	184.649	224.216	
Bis(2-ethylhexyl)phthalate	1436.546	1744.377	
Bromodichloromethane	11282.143	13699.745	
Bromoform	76207.022	92537.099	
Cadmium	N/A	N/A	
Carbon Tetrachloride	1016.094	1233.828	
Chlordane	0.284	0.345	
Chlorobenzene	182231.137	221280.667	
Chlorodibromomethane (Dibromochloromethane)	8374.013	10168.444	
Chloroform	250274.373	303904.596	
Chromium (+6)	17588.931	21357.988	
Chrysene	11457.332	13912.474	
Cresols	69409.71	84283.21	
Cyanide	N/A	N/A	
4,4'-DDD	0.109	0.132	
4,4'-DDE	0.140	0.170	
4,4'-DDT	0.137	0.166	
2,4'-D	N/A	N/A	
Danitol	190.605	231.449	
1,2-Dibromoethane	74.630	90.623	
m-Dichlorobenzene	50629.493	61478.670	
o-Dichlorobenzene	151923.517	184478.556	
p-Dichlorobenzene	N/A	N/A	
3,3'-Dichlorobenzidine	15.417	18.720	
1,2-Dichloroethane	19375.854	23527.823	
1,1-Dichloroethylene	837961.908	1017525.174	
Dichloromethane	207633.478	252126.366	
1,2-Dichloropropane	7918.523	9615.349	
1,3-Dichloropropene (1,3- Dichloropropylene)	7392.957	8977.162	
Dicofol	2.663	3.233	
Dieldrin	0.018	0.021	
2,4-Dimethylphenol	20006.533	24293.648	
Di-n-Butyl Phthalate	105463.512	128062.835	
Dioxins/Furans (TCDD Equivalents)	2.80E-06	3.40E-06	

Endrin	7.008	8.509
Ethylbenzene	250274.373	303904.596
Fluoride	N/A	N/A
Heptachlor	0.053	0.064
Heptachlor Epoxide	0.026	0.032
Hexachlorobenzene	0.158	0.191
Hexachlorobutadiene	9600.333	11657.547
Hexachlorocyclohexane (alpha)	3.259	3.957
Hexachlorocyclohexane (beta)	11.562	14.040
Hexachlorocyclohexane (gamma) (Lindane)	217.234	263.784
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	2172.338	2637.839
Hexachlorophene	0.280	0.340
Lead	698.586	848.284
Mercury	0.427	0.519
Methoxychlor	11.562	14.040
Methyl Ethyl Ketone	5.26E+07	6.38E+07
Nickel	86203.480	104675.655
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	16222.460	19698.702
N-Nitrosodiethylamine	73.579	89.346
N-Nitroso-di-n-Butylamine	147.158	178.692
Pentachlorobenzene	35.038	42.546
Pentachlorophenol	1997.150	2425.110
Polychlorinated Biphenyls (PCBs)	0.022	0.027
Pyridine	70565.951	85687.226
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	24.877	30.208
1,1,2,2-Tetrachloroethane	2662.866	3233.480
Tetrachloroethylene	1716.848	2084.744
Thallium	52.557	63.819
Toluene	N/A	N/A
Toxaphene	0.186	0.225
2,4,5-TP (Silvex)	266.287	323.348
1,1,1-Trichloroethane	33519282.184	40701985.510
1,1,2-Trichloroethane	10336.125	12551.009
Trichloroethylene	22739.475	27612.219
2,4,5-Trichlorophenol	85316.827	103599.005
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	840.905	1021.099