ANNUAL PERFORMANCE REPORT

2009

ST. THOMAS WATER POLLUTION CONTROL PLANT

Certificate of Approval 5276-5M9JW7
Annual Performance Report

For the Period
January 1st to December 31st, 2009

THE CORPORATION OF THE CITY OF
ST. THOMAS

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Monitoring Data Overview:

For the purposes of this report the St. Thomas Water Pollution Control Plant shall be referred to as 'the plant' and Ontario Ministry of the Environment Certificate of Approval 5276-5M9JW7 shall be referred to as the 'C of A'. Formal notification of start up of operation of the works for this C of A was given on February 14, 2003.

The peak and average daily sewage flow limits, 54600 m3/day and 27300 m3/day/year respectively, as set out in the C of A, were maintained at all times throughout 2009.

Throughout 2009 the St. Thomas Water Pollution Control Plant has been operated not only within the limits set out in the C of A but within all C of A objectives as well. A marked improvement in Ammonia Effluent concentrations to Kettle Creek can be attributed to upgrades in the aeration systems of Plant 3.

Sewage flows were maintained within the sewage works and were continuously disinfected with a Trojan UV system at all times throughout 2009.

A partial power failure occurred on October 21, 2009. During this City wide power failure, the plant was left with partial disinfection for approximately 46 minutes. There were no known adverse affects as a result of this incident.

The monitoring data and its supporting information collected throughout 2009 and presented in this report, indicate that St. Thomas Sewage Treatment Program was both adequate and successful throughout 2009.

There were no reported public complaints or adverse affects on the receiving stream throughout 2009.

The following tables, Table 1 through Table 3, represent a summary of all monitoring data collected at the plant throughout 2009:

Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 1 - 2009 Daily WPCP Flow Summary (Limit: Ave. Daily Flow 27300 m3/day >1 Year and Max. Flow 54600 m3/Day)

	January		February		March		April		May		June		July		August		September		October		November		December	
	Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)		Flow (M3)	
Min:	12939	**Min:**	12650	**Min:**	17559	**Min:**	16402	**Min:**	13591	**Min:**	12142	**Min:**	12537	**Min:**	12536	**Min:**	12012	**Min:**	13192	**Min:**	12227	**Min:**	13787
Max:	26330	**Max:**	40727	**Max:**	40563	**Max:**	38086	**Max:**	38520	**Max:**	29769	**Max:**	22804	**Max:**	26848	**Max:**	27579	**Max:**	24662	**Max:**	15514	**Max:**	30800
Avg:	16536	**Avg:**	23617	**Avg:**	24507	**Avg:**	22670	**Avg:**	17856	**Avg:**	16039	**Avg:**	15617	**Avg:**	15900	**Avg:**	14470	**Avg:**	16595	**Avg:**	13355	**Avg:**	17753
Total:	512614	**Total:**	661283	**Total:**	759716	**Total:**	680097	**Total:**	553536	**Total:**	481174	**Total:**	484116	**Total:**	492908	**Total:**	434108	**Total:**	514445	**Total:**	400649	**Total:**	550347
1	26330	1	14576	1	25668	1	19513	1	38520	1	13963	1	19222	1	13781	1	14124	1	14840	1	13915	1	13787
2	24904	2	14278	2	22415	2	17979	2	25302	2	13249	2	19882	2	12836	2	14683	2	23064	2	13654	2	15196
3	22476	3	13396	3	20230	3	35572	3	22410	3	13113	3	16623	3	13436	3	14075	3	23176	3	13481	3	27797
4	21977	4	13016	4	18943	4	38086	4	20338	4	12709	4	15176	4	13728	4	13632	4	19099	4	14596	4	18163
5	20778	5	12650	5	18612	5	29094	5	19107	5	12501	5	14915	5	12863	5	12869	5	16797	5	14255	5	16064
6	19716	6	12967	6	18750	6	36746	6	18185	6	12142	6	18131	6	12536	6	12601	6	16666	6	13691	6	15124
7	19506	7	20257	7	24634	7	34953	7	18015	7	12649	7	14909	7	12709	7	13666	7	18052	7	13442	7	14839
8	18331	8	29958	8	40137	8	27481	8	17922	8	14542	8	14393	8	19045	8	13482	8	15888	8	13598	8	14142
9	17312	9	22969	9	39469	9	24239	9	25106	9	18766	9	13650	9	17492	9	13248	9	24468	9	13223	9	30333
10	16911	10	20709	10	38231	10	22584	10	18884	10	13413	10	13498	10	26848	10	13376	10	24662	10	12898	10	30800
11	16831	11	40727	11	40563	11	20644	11	18234	11	17302	11	13529	11	26411	11	12886	11	17562	11	12785	11	20876
12	16351	12	39941	12	39771	12	19445	12	16723	12	14412	12	13199	12	18165	12	12394	12	24123	12	12932	12	18481
13	16300	13	38075	13	34698	13	19622	13	16430	13	13218	13	13425	13	16215	13	13020	13	14623	13	12614	13	20475
14	15505	14	34481	14	28458	14	18749	14	22393	14	13225	14	12537	14	15038	14	13251	14	15247	14	12556	14	18128
15	15450	15	29938	15	25711	15	18381	15	17393	15	13425	15	13133	15	14021	15	12714	15	15096	15	12693	15	17471
16	14097	16	26393	16	24330	16	17289	16	16733	16	12740	16	13324	16	13077	16	12900	16	14691	16	12692	16	16581
17	15169	17	23618	17	22888	17	16831	17	15774	17	17077	17	17315	17	14308	17	12757	17	14001	17	12321	17	16182
18	15249	18	25119	18	21975	18	16402	18	16026	18	14532	18	14225	18	14308	18	12507	18	14040	18	12227	18	15631
19	15181	19	23651	19	21098	19	16565	19	15646	19	13340	19	13091	19	13479	19	12012	19	14067	19	14105	19	15097
20	14133	20	20807	20	20171	20	24263	20	14848	20	26890	20	13066	20	19108	20	12731	20	13310	20	13312	20	14692
21	14131	21	19449	21	19380	21	22422	21	14705	21	16562	21	12882	21	14827	21	21034	21	13992	21	12453	21	14778
22	14429	22	18788	22	19305	22	18840	22	14430	22	15339	22	13175	22	16003	22	14159	22	13280	22	12449	22	14139
23	14564	23	18271	23	19133	23	17331	23	13591	23	14277	23	21156	23	14383	23	13419	23	18384	23	12661	23	14078
24	13789	24	17437	24	17996	24	16953	24	13913	24	13792	24	15331	24	14083	24	12979	24	16174	24	12881	24	14087
25	13622	25	18014	25	20897	25	17088	25	14026	25	19751	25	18331	25	13683	25	12865	25	14551	25	15514	25	22013
26	13588	26	20852	26	19375	26	22818	26	13913	26	29769	26	22804	26	19197	26	17015	26	14158	26	13903	26	21560
27	13349	27	37295	27	17768	27	18025	27	13692	27	17542	27	16599	27	15458	27	14885	27	13631	27	13385	27	17520
28	13332	28	33651	28	17559	28	24901	28	18852	28	21790	28	15189	28	16830	28	27579	28	13842	28	12983	28	16440
29	13190			29	22324	29	20826	29	14760	29	20273	29	21664	29	19075	29	21024	29	13192	29	14456	29	15252
30	13174			30	20912	30	26455	30	13887	30	18871	30	15414	30	15734	30	16221	30	13817	30	14974	30	15049
31	12939			31	18315			31	13778			31	14328	31	14231			31	15952			31	15572

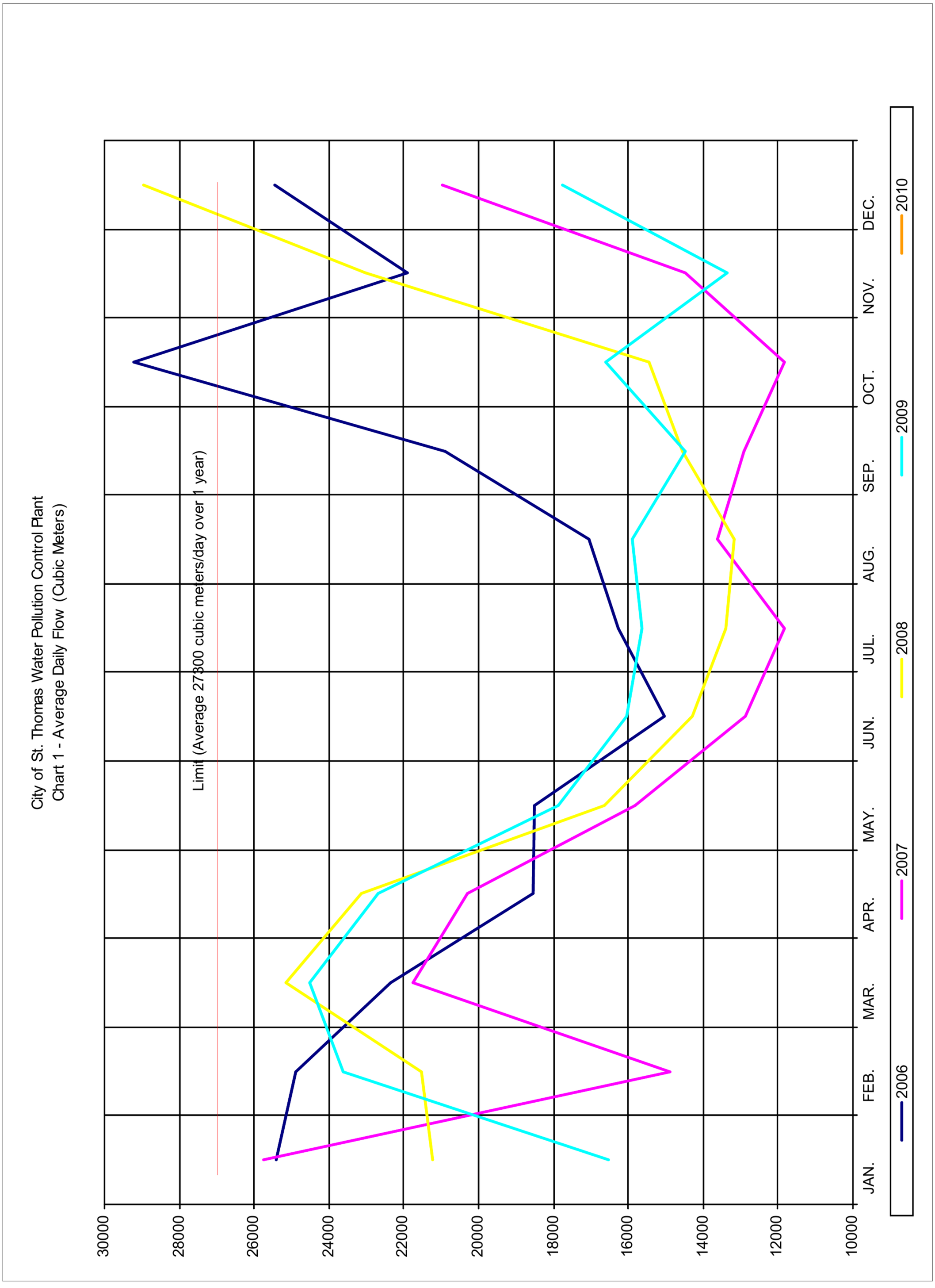
Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 2 - Monthly Flow Summary

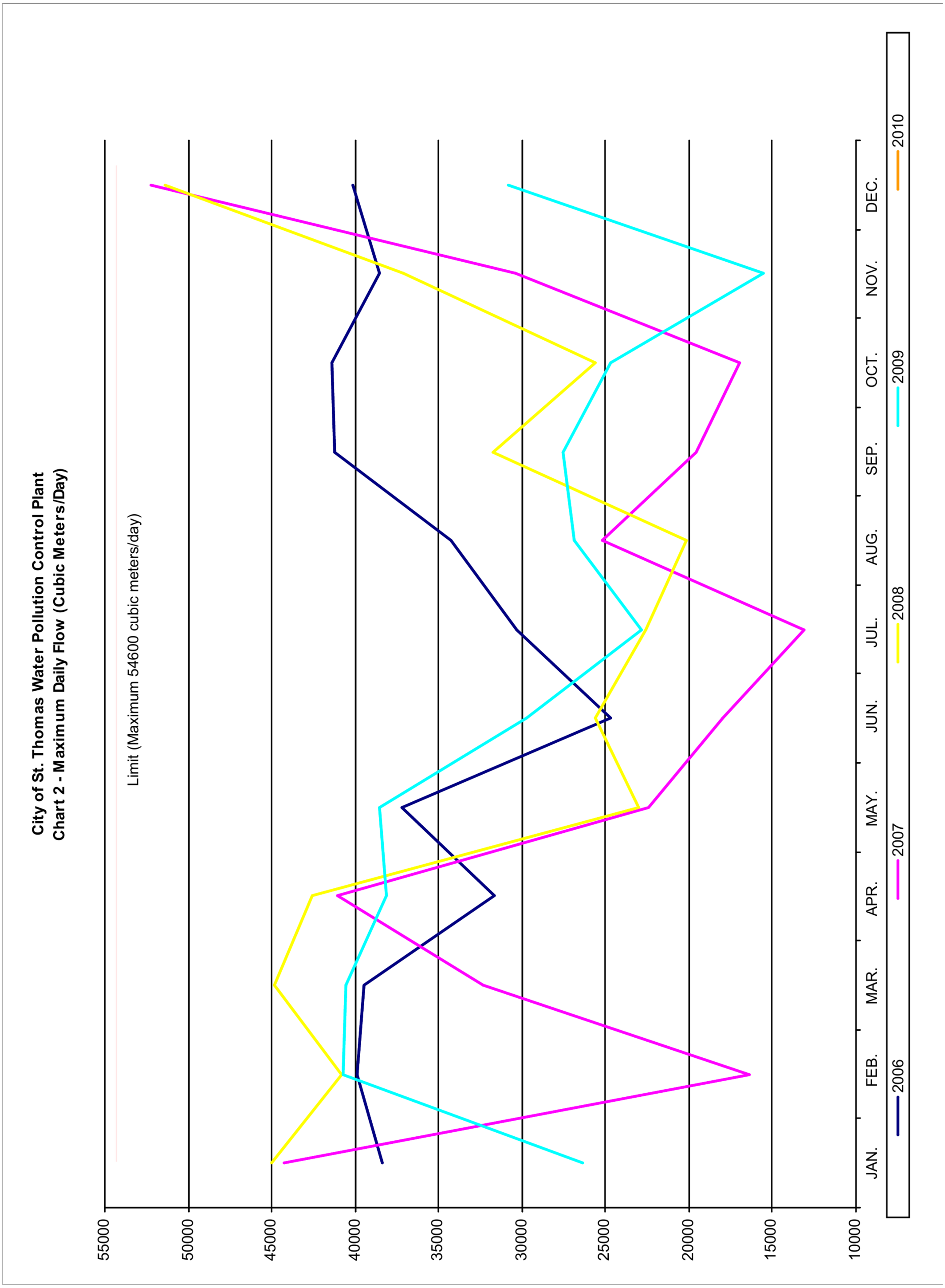
Month of: 2009	Total Flow (m3)	Average Flow (m3)	Min. Flow (m3)	Max. Flow (m3)
January 2009	512614	16536	12939	26330
February 2009	661283	23617	12650	40727
March 2009	759716	24507	17559	40563
April 2009	680097	22670	16402	38086
May 2009	553536	17856	13591	38520
June 2009	481174	16039	12142	29769
July 2009	484116	15617	12537	22804
August 2009	492908	15900	12536	26848
September 2009	434108	14470	12012	27579
October 2009	514445	16595	13192	24662
November 2009	400649	13355	12227	15514
December 2009	550347	17753	13787	30800
Totals:	6524993	17910	12012	40727

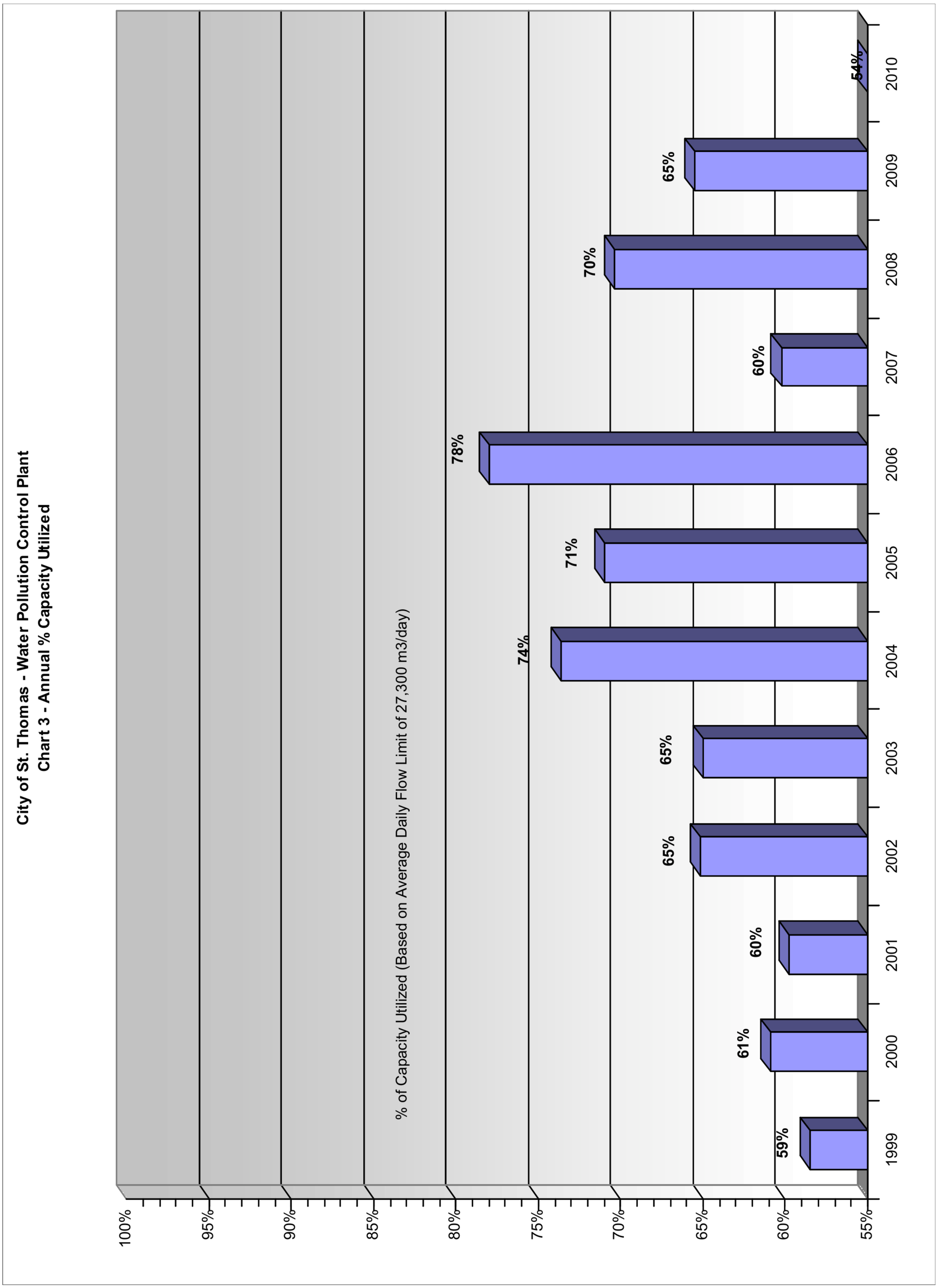
Month of: 2008	Total Flow (m3)	Average Flow (m3)	Min. Flow (m3)	Max. Flow (m3)
January 2008	658463	21241	15102	45042
February 2008	624773	21544	15330	40839
March 2008	779755	25153	15150	44849
April 2008	693477	23116	15698	42584
May 2008	515367	16625	13137	22988
June 2008	429099	14303	12366	25651
July 2008	415553	13405	11015	22608
August 2008	408171	13167	10845	20122
September 2008	437046	14568	10968	31739
October 2008	478491	15435	11143	25576
November 2008	690731	23024	14711	37152
December 2008	897879	28964	17805	51425
Totals:	7028805	19212	10845	51425

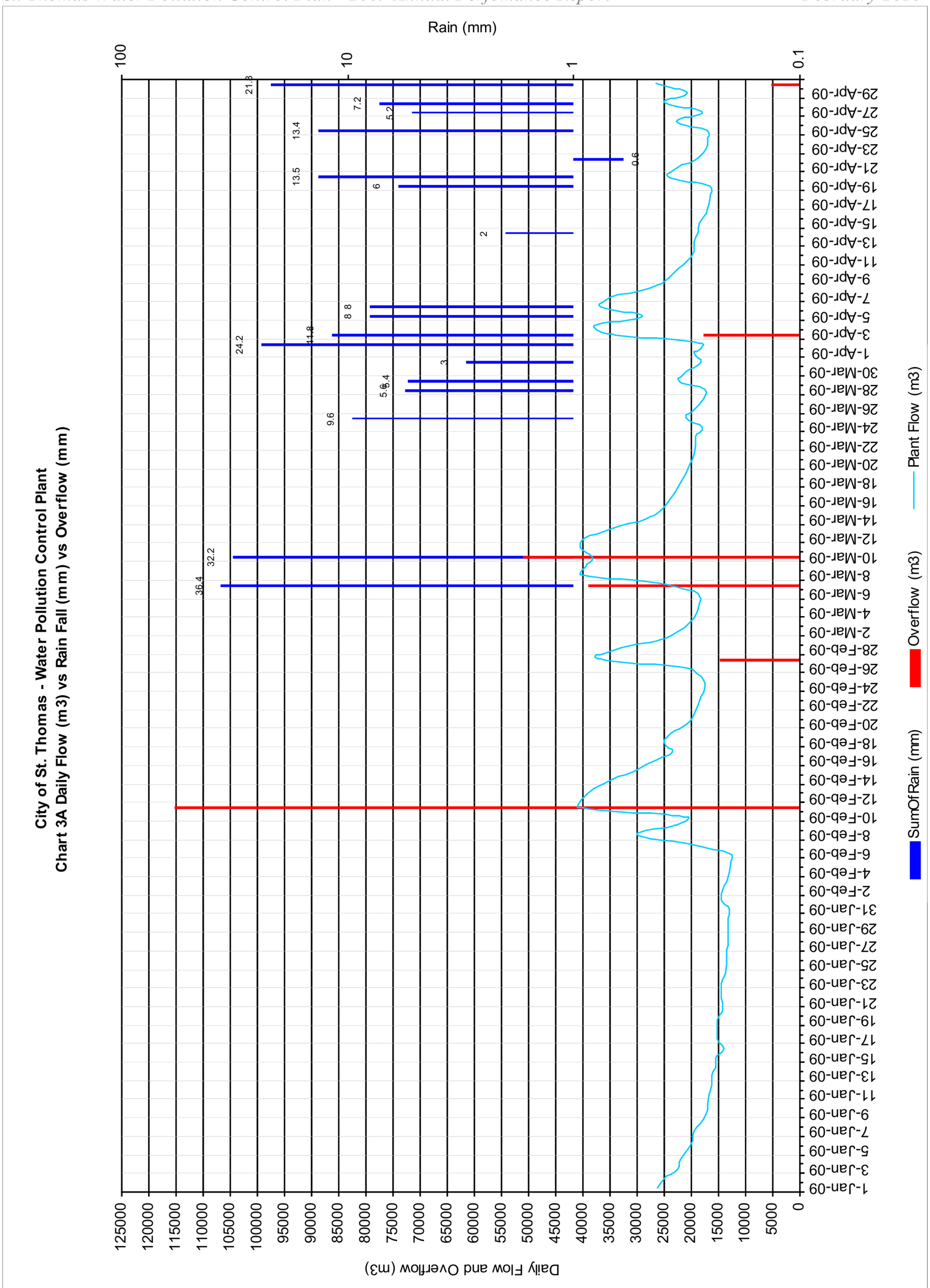
Friday, January 08, 2010

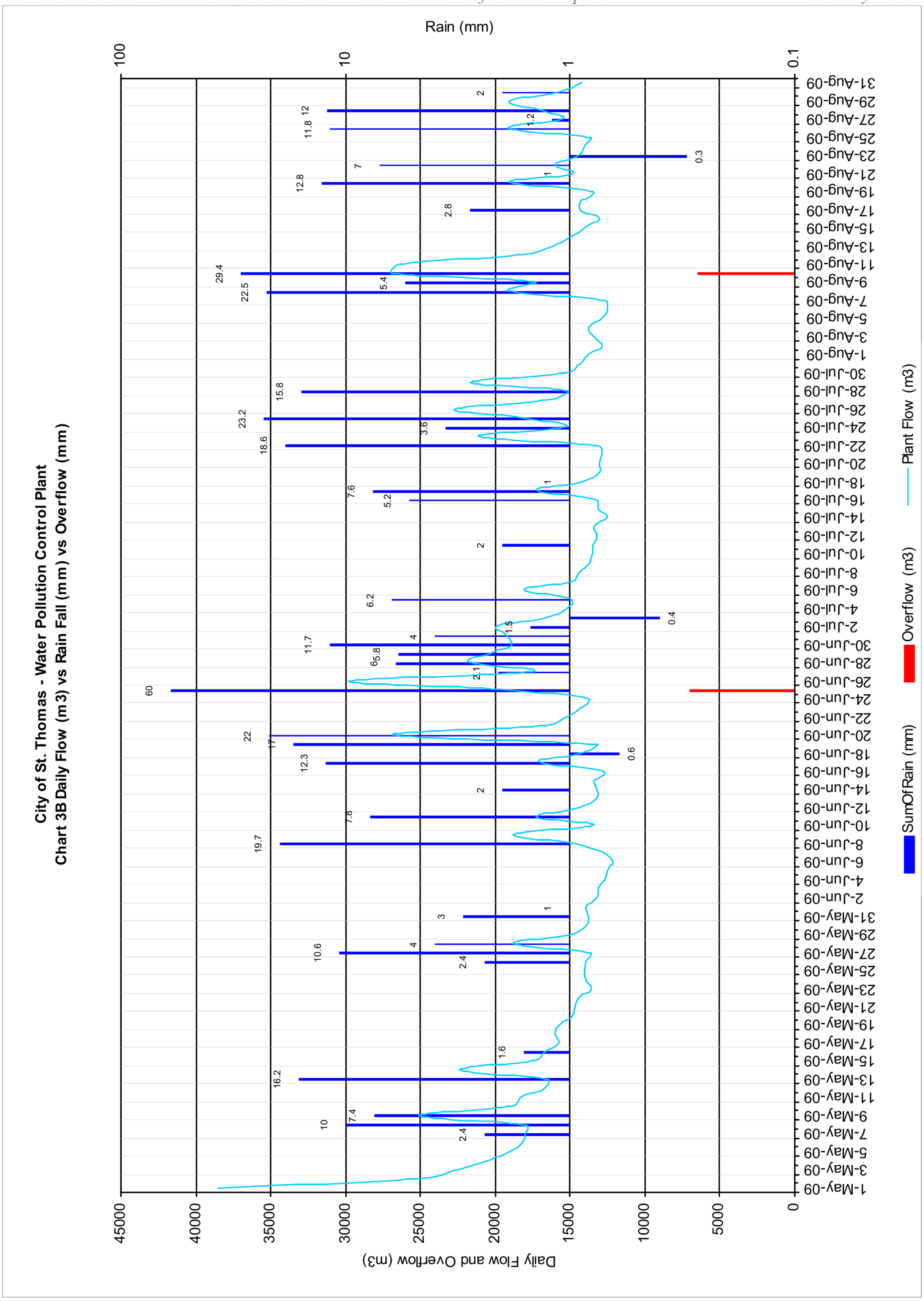

City of St. Thomas Water Pollution Control Plant
Chart 1 - Average Daily Flow (Cubic Meters)
Limit (Average 27300 cubic meters/day over 1 year)
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
JAN.
FEB.
MAR.
APR.
MAY.
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
2006
2007
2008
2009
2010

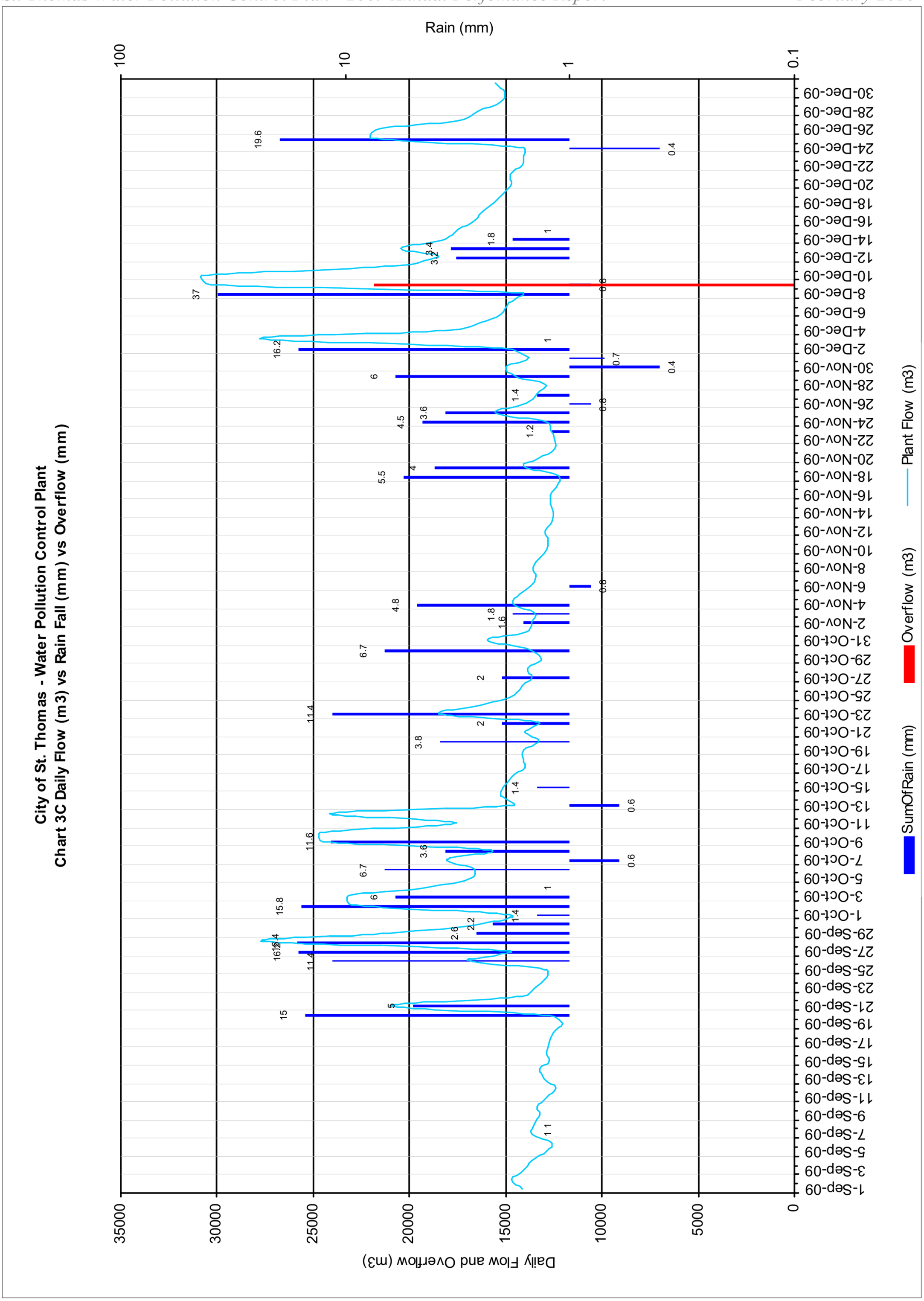
City of St. Thomas Water Pollution Control Plant
Chart 2 - Maximum Daily Flow (Cubic Meters/Day)




City of St. Thomas - Water Pollution Control Plant
Chart 3 - Annual % Capacity Utilized
% of Capacity Utilized (Based on Average Daily Flow Limit of 27,300 m3/day)
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
59%
61%
60%
78%
74%
71%
65%
65%
70%
65%
60%
54%
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010


City of St. Thomas - Water Pollution Control Plant
Chart 3A Daily Flow (m3) vs Rain Fall (mm) vs Overflow (mm)
Rain (mm)
100
10
1
0.1
Daily Flow and Overflow (m3)
SumOfRain (mm)
Overflow (m3)
Plant Flow (m3)


City of St. Thomas - Water Pollution Control Plant
Chart 3B Daily Flow (m3) vs Rain Fall (mm) vs Overflow (mm)
Rain (mm)
100
10
1
0.1
Daily Flow and Overflow (m3)
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
SumOfRain (mm)
Overflow (m3)
Plant Flow (m3)


City of St. Thomas - Water Pollution Control Plant
Chart 3C Daily Flow (m3) vs Rain Fall (mm) vs Overflow (mm)
Rain (mm)
100
10
1
0.1
Daily Flow and Overflow (m3)
35000
30000
25000
20000
15000
10000
5000
0
SumOfRain (mm)
Overflow (m3)
Plant Flow (m3)

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Table 3 - Weekly Plant Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
07-Jan-09	6.89	11.4	100	3	132	6		1.8	19.7	2.1	1.17	19.2	20.4	2.3	0.45	34	60%		2.89
14-Jan-09	6.71	10.7		4		5		0.4	27.1	1.1	1.32	22.1	23.4	2.83	0.46	46	60%		0.40
21-Jan-09	7.22	10.5		3		6		0.2	25.8	0.25	1.18	23.7	24.9	3.27	0.55	2	160%		0.64
28-Jan-09	7.05	10.5		1		5		0.3	33.2	1.8	0.68	24.8	25.5	3.5	0.52	1	160%		0.65
			100	**3**	**132**	**6**		**0.68**	**26.45**	**1.31**	**1.09**	**22.45**	**23.55**	**2.98**	**0.50**				
04-Feb-09	7.4	11	78	6	77	4		0.4	32.6	1.8	0.58	26.6	27.2	2.06	0.4	192	160%		2.01
11-Feb-09	7	9.7		9		8		0.4	14.7	0.8	0.45	14	14.5	0.91	0.28	324	160%		0.72
18-Feb-09	7.2	10.1		3		4		0.05	15.8	0.5	0.5	16.2	16.7	1.21	0.23	2	160%		0.15
25-Feb-09	7	9.9		5		7		0.05	21.8	0.25	0.53	21.2	21.7	2.84	0.36	1	160%		0.09
			78	**6**	**77**	**6**		**0.23**	**21.23**	**0.84**	**0.52**	**19.50**	**20.03**	**1.76**	**0.32**				
04-Mar-09	7.2	9.8	112	3	115	7		0.9	22.7	3	0.35	17.9	18.3	2.76	0.37	2	160%		2.60
11-Mar-09	7.1	7.9		5		13		0.6	8.1	0.7	0.25	10.3	10.6	1	0.5	2	160%		1.19
18-Mar-09	7.2			2		6		0.5	17.2	1.8	0.33	17.6	17.9	1.76	0.49	12	60%		
25-Mar-09	7.1			4		6		3	22.3	3.5	0.89	16.1	17	2.3	0.66	6	60%		
			112	**4**	**115**	**8**		**1.25**	**17.58**	**2.25**	**0.46**	**15.48**	**15.95**	**1.96**	**0.51**				
01-Apr-09	6.95	11	89	2	116	7		1	17	1.8	0.76	16.6	17.4	2.17	0.85	10			1.79
08-Apr-09	6.85	10.1		2		9		0.3	12.2	0.6	0.27	12.1	12.4	1.89	0.61	4	160%		0.40
15-Apr-09	6.9	11.2		2		3		0.2	14.9	0.25	0.14	17.9	18	1.12	0.74	6	64%		0.32
22-Apr-09	6.8	11.5		2		4		0.2	19.8	1	0.12	16.5	16.6	1.36	0.46	2	60%		0.26
29-Apr-09	6.6	12.6		3		5		1.7	16.5	2.8	0.66	18.4	19.1	3.25	0.6	1	50%		1.54
			89	**2**	**116**	**6**		**0.68**	**16.08**	**1.29**	**0.39**	**16.30**	**16.70**	**1.96**	**0.65**				
06-May-09	7	13.2	82	3	124	3		0.8	18.4	1	0.52	19.7	20.2	1.7	0.46	8	50%		1.90
13-May-09	7.1	13.7		4		5		0.2	20.2	1.6	0.21	17.7	17.9	2.44	0.49	2	160%		0.62
20-May-09	6.81	14.8		3		4		0.5	24.9	1.4	0.26	21.5	21.8	2.83	0.68	12	60%		0.87
27-May-09	6.9	15.2		2		4		0.3	26.5	2.3	0.2	24.7	24.9	7.46	0.85	2	60%		0.66
			82	**3**	**124**	**4**		**0.45**	**22.50**	**1.58**	**0.30**	**20.90**	**21.20**	**3.61**	**0.62**				
03-Jun-09	6.7	15.8	116	2	175	10		0.05	25.8	0.25	0.28	24.2	24.5	2.91	0.91	1	60%		0.07
10-Jun-09	6.6	16.5		4		4		0.2	26.4	1.2	0.16	19.7	19.9	2.42	0.56	16	60%		0.24
17-Jun-09	6.1	17.1		1		4		0.8	24	1	0.29	26.6	26.9	5.69	0.52	4	60%		0.32
24-Jun-09	6.63	17.5		4		1		0.1	31	1	0.1	21.4	21.5	2.83	0.51	2720	60%		0.14
			116	**3**	**175**	**5**		**0.29**	**26.80**	**0.86**	**0.21**	**22.98**	**23.20**	**3.46**	**0.63**				

Friday, January 08, 2010

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Table 3 - Weekly Plant Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
02-Jul-09	6.8	17.4		2		4		0.05	14.8	0.5	0.08	16.5	16.6	1.44	0.47	4	100%		0.10
08-Jul-09	7.2	18.1		2		4		0.05	22.4	0.25	0.23	22.3	22.5	2.64	0.44	12	60%		0.27
15-Jul-09	6.9	18.8		2		3		0.3	30.5	0.25	0.35	25	25.4	3.44	0.52	98	60%		0.86
22-Jul-09	6.9	19.1		2		7		0.2	38	0.8	0.35	24.7	25	4.16	0.67	10	60%		0.59
29-Jul-09	6.9	19.5	97	7	190	25		1.3	24.1	1.7	0.55	20.7	21.3	2.95	0.97	86	60%		3.93
			97	**3**	**190**	**9**		**0.38**	**25.96**	**0.70**	**0.31**	**21.84**	**22.16**	**2.93**	**0.61**				
05-Aug-09	6.8	20.1	178	2	146	17		1.1	27.9	1.2	0.38	26.6	27	3.55	0.99	20	60%		2.76
12-Aug-09	7.2	19.6		5		25		0.3	15.7	0.8	0.24	13	13.2	1.47	0.4	14	60%		1.82
20-Aug-09	6.9	20.9		2		2		0.7	29.1	1.2	0.35	24.9	25.2	3.32	0.59	6	60%		2.34
26-Aug-09	6.9	20.3		2		4		0.5	27.7	0.8	0.21	22.5	22.7	3.05	0.6	12	60%		1.60
			178	**3**	**146**	**12**		**0.65**	**25.10**	**1.00**	**0.30**	**21.75**	**22.03**	**2.85**	**0.65**				
02-Sep-09	6.8	19.6		1		2		0.2	23.7	0.8	0.09	21.1	21.2	2.17	0.5	8	60%		0.48
09-Sep-09	6.8	20.6	50	2	88	5		1.6	25.5	3.1	0.25	22.5	22.8	2.5	0.47	26	60%		4.17
16-Sep-09	6.98	20.6		2		8		2.4	29.4	3.1	0.18	25.5	25.7	3.33	0.63	82	60%		9.45
23-Sep-09	6.9	20		3		8		0.8	31	1.1	0.18	23.8	24	3.47	0.57	68	60%		2.51
30-Sep-09	6.3	20		1		6		0.05	15.8	1.5	0.06	13.3	13.4	1.2	0.42	82	60%		0.04
			50	**2**	**88**	**6**		**1.01**	**25.08**	**1.92**	**0.15**	**21.24**	**21.42**	**2.53**	**0.52**				
07-Oct-09	6.6	18.5		3		6		1.2	23.8	2.6	0.57	21.6	22.2	2.45	0.52	440	60%		1.69
14-Oct-09	6.76	17.5		2		5		0.6	23.9	1.8	0.58	19.1	19.7	3.7	0.41	24	60%		1.14
21-Oct-09	7	17.8	116	4	200	5		0.6	26.2	0.8	0.21	24	24.2	3.1	0.51	8	60%		2.01
28-Oct-09	6.31	18		2		6		0.6	25.2	0.6	0.21	25.8	26	3.21	0.54	1	60%		0.42
			116	**3**	**200**	**6**		**0.75**	**24.78**	**1.45**	**0.39**	**22.63**	**23.03**	**3.12**	**0.50**				
04-Nov-09	6.8	16.7	240	1	330	6		1	52.5	1.4	0.37	24.8	25.2	6.6	0.52	200	60%		1.95
13-Nov-09	6.7	16.6		2		5		0.8	35	0.8	0.22	28.3	28.5	4.71	0.43	35	60%		1.23
18-Nov-09	6.9	16.1		2		4	0.05	0.08	33.9	1.2	0.08	27.7	27.8	2.9	0.34	18	60%		0.19
25-Nov-09	7	16.3		3		5		1.6	28.5	1.9	0.2	27.5	27.7	3.69	0.38	3540	60%		4.80
			240	**2**	**330**	**5**	**0.05**	**0.87**	**37.48**	**1.33**	**0.22**	**27.08**	**27.30**	**4.48**	**0.42**				
02-Dec-09	7	15.4	172	3	256	5		0.05	36.7	0.25	0.03	23.8	23.8	7.12	0.36	64	60%		0.14
09-Dec-09	7.1	12		2		1.5		1.4	32.6	1.6	0.4	22	22.4	2.97	0.53	112	160%		3.81
16-Dec-09	7	14.1		2		4		0.05	26.3	1.6	0.17	22.3	22.5	2.77	0.56	44	60%		0.13
22-Dec-09	7.1	13.2		3		4		1	29.2	1.7	1.08	22.2	23.3	3.65	0.54	38	60%		2.99
29-Dec-09	7.1	12.5		2		6		0.9	30.7	0.9	0.9	20.8	21.7	3.2	0.49	6	60%		2.55
			172	**2**	**256**	**4**		**0.68**	**31.10**	**1.21**	**0.52**	**22.22**	**22.74**	**3.94**	**0.50**				

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The Corporation of the City of St. Thomas - Water Pollution Control Plant
Table 4 - Monthly Average Influent/Effluent Concentrations and Loadings

	Date	# of Days	Total Flow (m3)	# of Samples Inf.	# of Samples Eff.		CBOD 15(10)mg/L 409.5(273 kg/d) Inf.	CBOD Eff.	TSS 20(15)mg/L 546(409.5 kg/d) Inf.	TSS Eff.	Eff. Amm D-A (3) M-N 5(1)mg/L M-N 136.5 (27.3) D-A 81.9 kg/d Eff.	TKN Inf.	TKN Eff.	TP 1(0.8)mg/L 27.3(21.8 kg/d) Inf.	TP Eff.	E.coli Geomean cfu/100mL Eff.	pH Min/Max Eff.
1	January 2009	31	512614	1	4	(mg/L):	100	3	132	6	0.68	26.45	1.3125	3	0.50	7	6.71
						(kg/day):	1654	45	2183	91	11.2			49	8.2		7.22
2	February 2009	28	661283	1	4	(mg/L):	78	6	77	6	0.23	21.225	0.8375	2	0.32	19	7
						(kg/day):	1842	136	1819	136	5.3			41	7.5		7.4
3	March 2009	31	759716	1	2	(mg/L):	112	4	115	8	1.25	17.575	2.25	2	0.51	4	7.1
						(kg/day):	2745	86	2818	196	30.6			48	12.4		7.2
4	April 2009	30	680097	1	5	(mg/L):	89	2	116	6	0.68	16.08	1.29	2	0.65	3	6.6
						(kg/day):	2018	50	2630	127	15.4			44	14.8		6.95
5	May 2009	31	553536	1	4	(mg/L):	82	3	124	4	0.45	22.5	1.575	4	0.62	4	6.81
						(kg/day):	1464	54	2214	71	8.0			64	11.1		7.1
6	June 2009	30	481174	1	4	(mg/L):	116	3	175	5	0.29	26.8	0.8625	3	0.63	20	6.1
						(kg/day):	1861	44	2807	76	4.6			56	10.0		6.7
7	July 2009	31	484116	1	5	(mg/L):	97	3	190	9	0.38	25.96	0.7	3	0.61	21	6.8
						(kg/day):	1515	47	2967	134	5.9			46	9.6		7.2
8	August 2009	31	492908	1	4	(mg/L):	178	3	146	12	0.65	25.1	1	3	0.65	12	6.8
						(kg/day):	2830	44	2321	191	10.3			45	10.3		7.2
9	September 2009	30	434108	1	5	(mg/L):	50	2	88	6	1.01	25.08	1.92	3	0.52	39	6.3
						(kg/day):	724	26	1273	84	14.6			37	7.5		6.98
10	October 2009	31	514445	1	4	(mg/L):	116	3	200	6	0.75	24.775	1.45	3	0.50	17	6.31
						(kg/day):	1925	46	3319	91	12.4			52	8.2		7
11	November 2009	30	400649	1	4	(mg/L):	240	2	330	5	0.87	37.475	1.325	4	0.42	145	6.7
						(kg/day):	3205	27	4407	67	11.6			60	5.6		7
12	December 2009	31	550347	1	5	(mg/L):	172	2	256	4	0.68	31.1	1.21	4	0.50	37	7
						(kg/day):	3054	43	4545	73	12.1			70	8.8		7.1
	Annual Averages	**365**	**6524993**	**12**	**50**	**(mg/L):**	**119**	**3**	**162**	**6**	**0.66**	**25.01**	**1.31**	**3**	**0.53**		
						(kg/day):	**2070**	**54**	**2775**	**111**	**12**			**51**	**9**		

May to November Limits
December to April Objective

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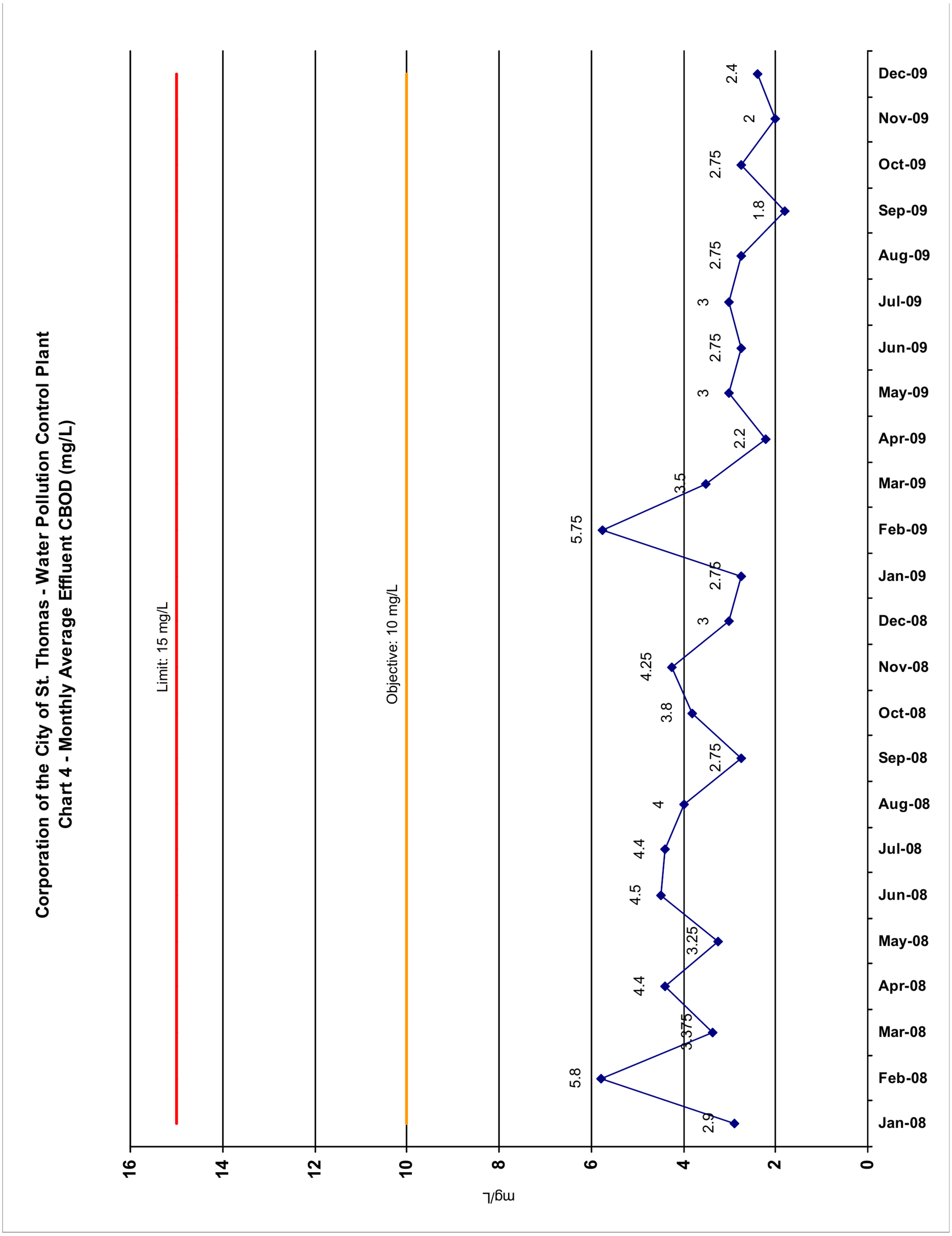
Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 4 - Monthly Average Effluent CBOD (mg/L)
Limit: 15 mg/L
Objective: 10 mg/L
mg/L
16
14
12
10
8
6
4
2
0
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
2.4
2
2.75
1.8
2.75
3
2.75
3
2.2
3.5
5.75
2.75
3
4.25
3.8
2.75
4
4.4
4.5
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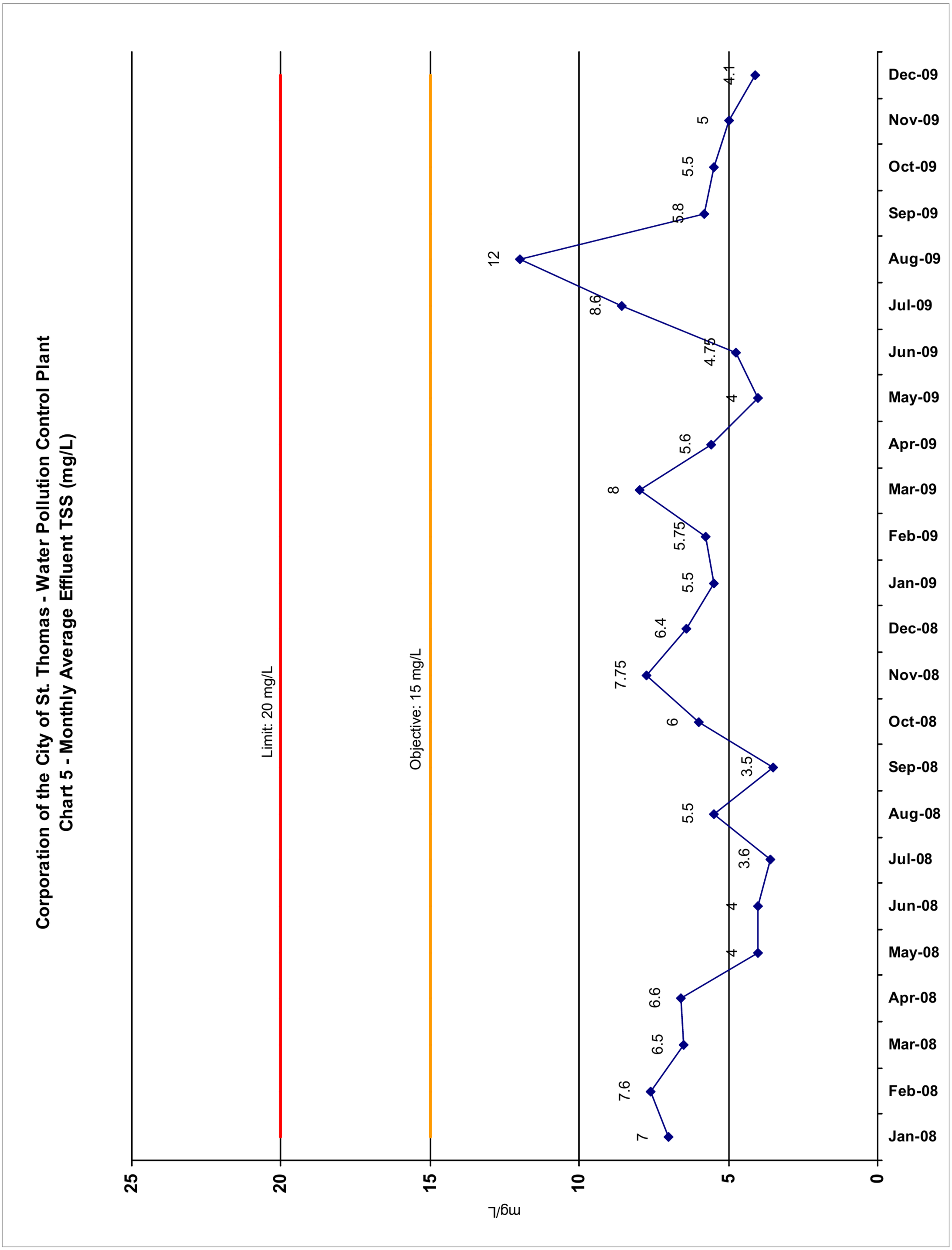
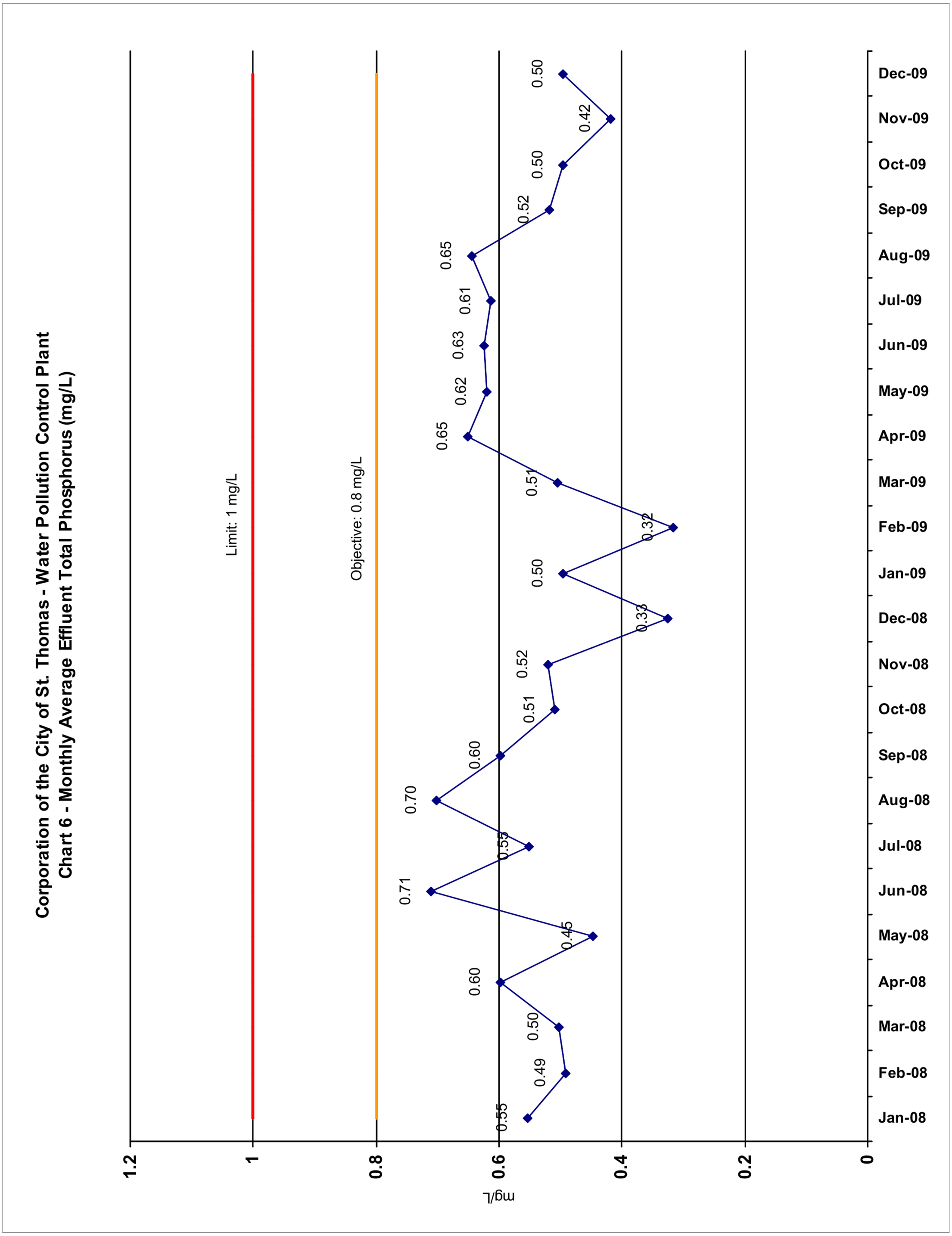
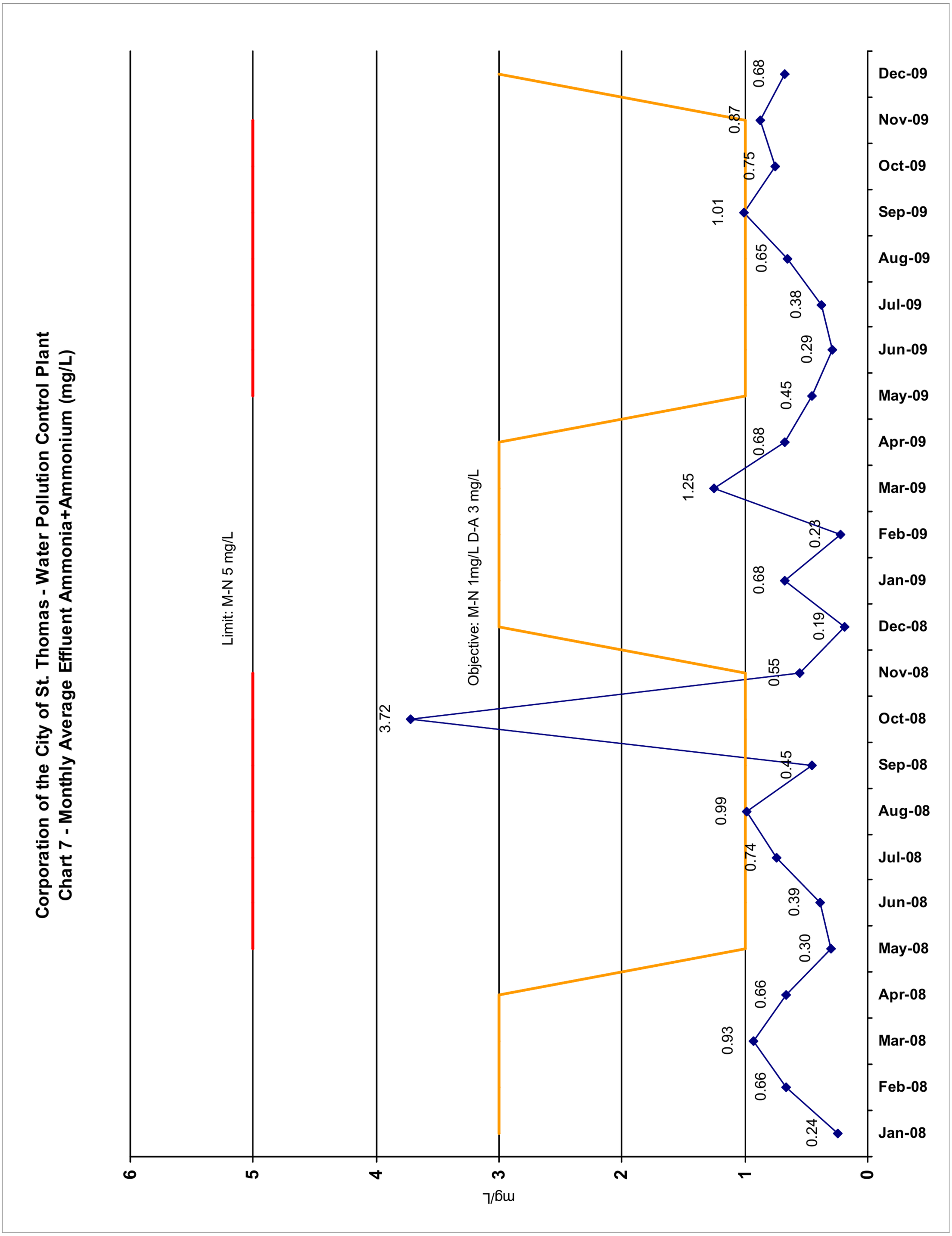
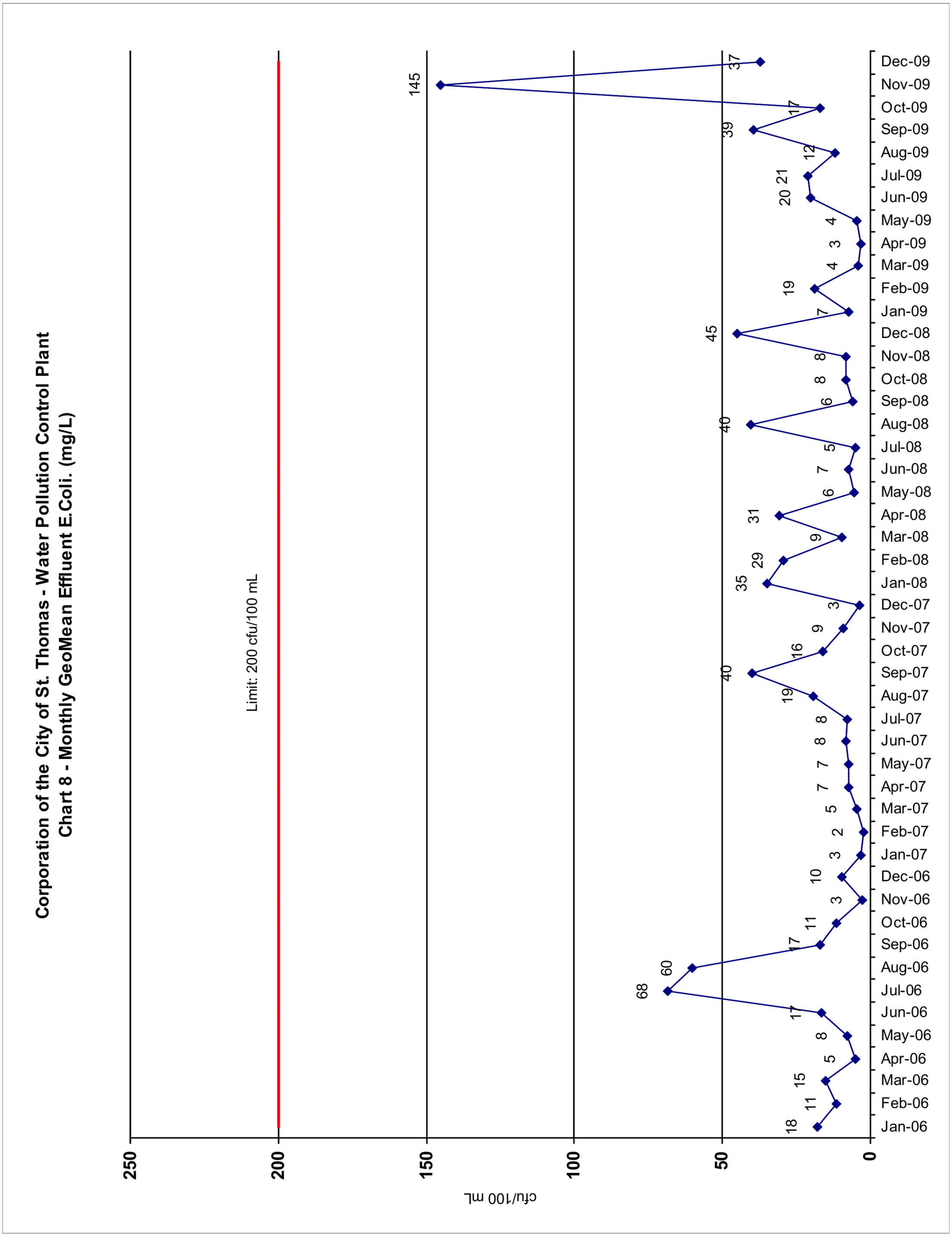
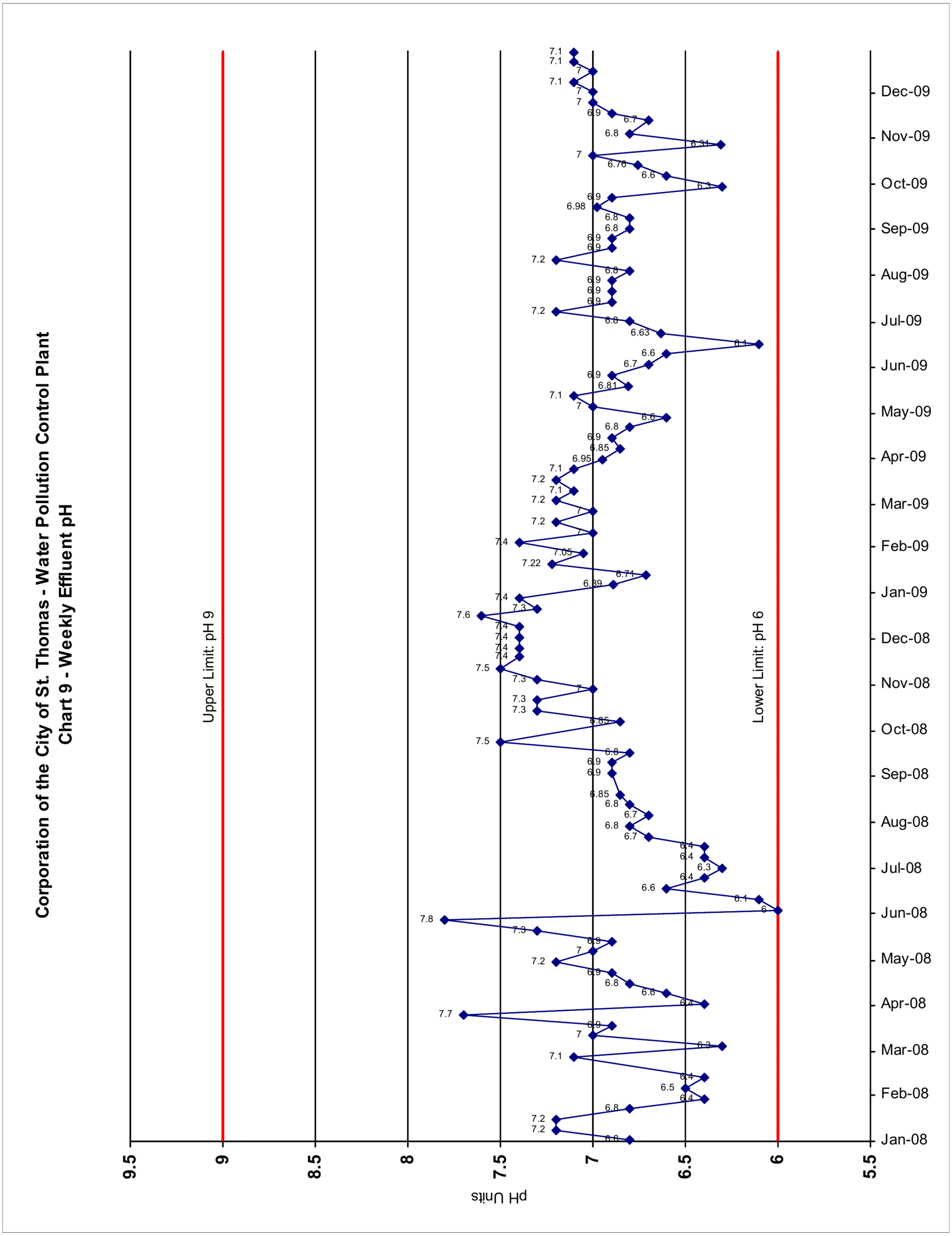
3.375
5.8
2.9


Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 5 - Monthly Average Effluent TSS (mg/L)
Limit: 20 mg/L
Objective: 15 mg/L
mg/L
25
20
15
10
5
0
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
4.1
5
5.5
5.8
12
8.6
4.75
4
5.6
8
5.75
5.5
6.4
7.75
6
3.5
5.5
3.6
4
4
6.6
6.5
7.6
7


Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 6 - Monthly Average Effluent Total Phosphorus (mg/L)
Limit: 1 mg/L
Objective: 0.8 mg/L
0.50
0.42
0.50
0.52
0.65
0.61
0.63
0.62
0.65
0.51
0.32
0.50
0.33
0.52
0.51
0.60
0.70
0.55
0.71
0.45
0.60
0.50
0.49
0.55
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
1.2
1
0.8
0.6
0.4
0.2
0
mg/L


Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 7 - Monthly Average Effluent Ammonia+Ammonium (mg/L)
Limit: M-N 5 mg/L
Objective: M-N 1mg/L D-A 3 mg/L
mg/L
0
1
2
3
4
5
6
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
0.68
0.87
0.75
1.01
0.65
0.38
0.29
0.45
0.68
1.25
0.23
0.68
0.19
0.55
3.72
0.45
0.99
0.74
0.39
0.30
0.66
0.93
0.66
0.24


Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 8 - Monthly GeoMean Effluent E.Coli. (mg/L)
Limit: 200 cfu/100 mL
cfu/100 mL
250
200
150
100
50
0
145
45
40
40
35
68
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
Sep-06
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06


Corporation of the City of St. Thomas - Water Pollution Control Plant
Chart 9 - Weekly Effluent pH
Upper Limit: pH 9
Lower Limit: pH 6
pH Units
9.5
9
8.5
8
7.5
7
6.5
6
5.5
Dec-09
Nov-09
Oct-09
Sep-09
Aug-09
Jul-09
Jun-09
May-09
Apr-09
Mar-09
Feb-09
Jan-09
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08

Data Interpretation:

The following represents a comprehensive interpretation of all monitoring and analytical data obtained during the 2009 reporting period, comparing plant effluent quality and quantity to the criteria stipulated in the C of A in Conditions 1.1 through 1.8.

Peak Flow:

The highest peak flow measured through the plant at any one time was February 2009 at 40727 m^3/day. This represents 75% of the C of A limit peak flow rate of 54600 m^3/day.

Average Daily Flow:

The average daily flow for the year measured through the plant in 2009 was 17910 m^3/day. This represents 66% of the C of A limit average daily flow of 27300 m^3/day for any period greater that one (1) calendar year.

A **three (3) year** average daily flow for, 2007–16418 m^3/day, 2008-19212 m^3/day and 2009–17910 m^3/day is **17847 m^3/day** or **65% of Plant Capacity**.

Overflow and Bypass:

There were no diversions of sewage from any portion of the sewage treatment plant under C of A 5276-5M9JW7 during 2009. Diversions of sewage of this nature are prohibited.

$CBOD_5$:

The highest monthly average $CBOD_5$ in effluent was 6 mg/L in February of 2009 with an annual average of 3.0 mg/L. Effluent Loadings were highest in February of 2009 at 136 kg/d averaging 54 kg/d over 2009. As per the C of A, the monthly average limit of 15 mg/L with yearly average loading limits of 409.5 kg/d were not exceeded at any time in 2009.

Suspended Solids:

The highest monthly average Suspended Solids in effluent was 12 mg/L in August of 2009 with an annual average of 6 mg/L. Effluent Loadings were highest in March at 196 kg/d averaging 111 kg/d over 2009. As per the C of A, the monthly average limit of 20 mg/L with annual average loading limits of 546 kg/d were not exceeded at any time in 2009.

Total Phosphorus:

The highest monthly average Total Phosphorus in effluent was 0.65 mg/L in April and August of 2009 with an annual average of 0.53 mg/L. Effluent Loadings were highest in April at 14.8 kg/d averaging 9 kg/d over 2009. As per the C of A, the monthly average limit of 1 mg/L with yearly average loading limits of 27.3 kg/d were not exceeded at any time in 2009.

(Ammonia + Ammonium) Nitrogen:

The highest monthly average (Ammonia + Ammonium) Nitrogen in effluent was 1.25 mg/L in October of 2009 with an annual average of 0.66 mg/L. Effluent Loadings were highest in January at 30.6 kg/d averaging 12 kg/d over 2009. As per the C of A, the monthly average limit of 5 mg/L with annual average loading limits of 136.5 kg/d between May and November were not exceeded at any time in 2009.

Effluent pH:

pH ranged from 6.1 to 7.4 throughout 2009. As per the C of A, the range limit of 6.0 to 9.5 was maintained throughout 2009.

Disinfection:

The highest monthly geomean E.coli was 145 cfu/100 ml in November of 2009. As per the C of A, the monthly geomean limit of 200 cfu/100 ml was not exceeded at any time over 2009.

Operational Summaries

The following tables, Table 5 through 8, represent a summary of effluent quality assurance/control measures, major maintenance conducted at the plant, mitigative measures for environmental and operational problems, future plant alterations and upgrades and monitoring equipment calibration/maintenance procedures:

The Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 5 - Summary of Effluent Quality Assurance/Control and Environmental Operating Issues

Date	Effluent Quality Assurance/Control Environmental Operating Issues	Mitigative Measures
June 7, 2007	Over Amm Objective.	DO's in Plant 2 and 3 are <2 mg/L little nitrification occurring. Inefficient aeration.
July 7, 2007	Over Amm Objective.	DO's in Plant 2 and 3 are <2 mg/L little nitrification occurring. Inefficient aeration.
August 7, 2007	Over Amm Objective.	DO's in Plant 2 and 3 are <2 mg/L little nitrification occurring. Inefficient aeration. Turn on additional Blower. Plant 2 and 3 aeration systems need to be upgraded!
September 7, 2007	Over Amm Objective.	Aerations needs to be upgraded, have a hard time distributing air flows.
September 7, 2007	Over Total Phosphorus Objective.	Corrective action was taken after test results were known. Increasing feed rate.
October 7, 2007	Over Amm Objective.	Aerations needs to be upgraded, have a hard time distributing air flows.
November 7, 2007	Over Amm Objective.	Aerations needs to be upgraded, have a hard time distributing air flows.
October 2008	Over Amm Objective.	Due to Digester Start-up, large volumes and possible high solids content of the supernatant went to the head works of the plant causing a greater oxygen demand in the aeration system. This time frame was during the expected 6 -8 weeks it takes to start-up a digester.
2009	Operating Objectives were maintained through out 2009. Increased air efficiency from Plant 3 Upgrades are a contributing factor.	

The Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 6 - Summary of Major Maintenance Items

Date	Major Maintenance Items	Comments
Jan 01 to Dec 31, 2008	APPROX. 682 PREVENTATIVE MAINTENANCE WORK ORDERS WERE ISSUED FOR ALL MAJOR EQUIPMENT AT THE PLANT AND PUMPING STATIONS.	PREVENTATIVE MAINTENANCE INCLUDES [BUT IS NOT ALL INCLUSIVE TO] INSPECTIONS, ADJUSTMENTS, CALIBRATIONS, TESTING, LUBRICATION, OIL CHANGES, REPLACEMENT OF WEARING PARTS, ETC.
2008	IN ADDITION, CORRECTIVE ACTION WAS TAKEN TO REPAIR, OR REPLACE, OR UPGRADE EQUIPMENT AS NECESSARY.	
Jan 01 to Dec 31, 2009	APPROX. 428 PREVENTATIVE MAINTENANCE WORK ORDERS WERE COMPLETED FOR ALL MAJOR EQUIPMENT AT THE PLANT AND PUMPING STATIONS.	PREVENTATIVE MAINTENANCE INCLUDES [BUT IS NOT ALL INCLUSIVE TO] INSPECTIONS, ADJUSTMENTS, CALIBRATIONS, TESTING, LUBRICATION, OIL CHANGES, REPLACEMENT OF WEARING PARTS, ETC.
2009	IN ADDITION, CORRECTIVE ACTION WAS TAKEN TO REPAIR, OR REPLACE, OR UPGRADE EQUIPMENT AS NECESSARY.	
Nov. 2009	Pulled #1 Effluent pump, sent out for rebuild,Reinstall Jan.2010	
May-09	Hoffman blower # 5 rebuilt by Toll Morise	
Jun-09	Progressive cavity pump in centrifuge building rebuilt	
	UV banks serviced and lamps replaced as required	
	Lift station S.C.A.D.A. still being updated	
Aug-09	Plant 3 north final clarifier rebuilt	
	Plant 4A final clarifier rebuilt	
Sep-09	Gearbox in plant 4 west primary replaced	
9-Sep	Gearbox in 4B secondary clarifier replaced	
Nov.2009	Pulled pump #3 at Woodworth and replaced with new.	
Nov. 2009	Replaced rebuilt gearbox and motor plant #4	
	Centrifuge serviced by Antritz	
1-Dec-09	Replaced rotating assembly #2 in RAS Gallery #2	
Dec-09	Replaced rebuilt pump at Sunset Station	

The Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 7 - Summary of Future Upgrade Planning

Estimated Date	Planned Upgrade Items	Comments
2004	Chain and Flight Replacements	Completed
2004	Scum Trough Improvements	Ongoing
2004	Grit Tank Bucket Improvements	Completed
2005	Upgrading SCADA Computer	Documentation Completed
2005	Repairs to the Digester Gas Control and waste burner System	Completed
2005	Repairs or possible replacement of Sludge pump	Ongoing
2005	Chain and Flygt Replacement	Completed
2006	Air Blower Overhaul	Completed
2006	CSO Sampler	Completed 2008
2007	Aeration System Plant #2 and 3	Plant #3 replace diffusiors
2007	Emergency Hydro Needs Review	To be completed under needs study
2007	Effluent Gate Control	completed
2007	Chemical Feedline repairs	Completed 2008
2007	Replace wash water flushing lines	completed
2007	Grating repairs	completed
2007	Decommission Chlorine Contact Chamber	scheduled
2008	Gas Detection Equipment Replacement	Completed
2008	Influent control valve	gate actuator ordered
2008	Grating Repairs On-going	Ongoing
2008	Digester Clean-out	Completed 2008
2008	Final Tank Chains and Shafts	Being assessed
2008	Effluent Pump Overhaul	scheduled 2009(overhaul complete)
2008	Gas Condensation Traps / Modifications	last 2 have been ordered
2008	Digester Deep Well Pumps	rented when digester is cleaned
2009	Stop/Start Blower Controls	not done
2009	Pnuematic Control Air Drier	purchased and to be installed
2009	Ground water pumps	Being assessed
2009	Acid Clean diffusers plant 4	To be scheduled.

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Table 8 - Summary of Monitoring Equipment Calibration/Maintenance Procedures

Date	Calibration/Maintenance of Monitoring Equipment	Comments
11-Nov-04	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass 0.00% to 0.13 % Error.
11-Nov-04	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass 0.00% to 0.67 % Error.
16-Dec-05	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass -0.33% to 0.00 % Error.
16-Dec-05	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass 0.00% to 0.48 % Error.
23-Oct-06	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass -0.22% to 0.00 % Error.
23-Oct-06	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass 0.00% to 0.49 % Error.
12-Nov-07	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass -0.19% to 0.16% Error.
12-Nov-07	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass -0.22% to 0.61 % Error.
1-Oct-08	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass-0.13 to 0.16 % Error.
1-Oct-08	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass -0.03 to 0.24 % Error.
2-Nov-09	FIT-212 U.V. Building Effluent Flow Meter Plants 3/4 North	Pass -0.16 to -0.03 % Error.
2-Nov-09	FIT-211 U.V. Building Effluent Flow Meter Plants 2/3 South	Pass -0.12 to 0.54 % Error.

Sludge Production:

This activated sludge plant, transfers sludge to three anaerobic digesters. Each digester is 40' diameter; 25' deep (including the 5' cone bottom) with a capacity of 712 cubic meters (156 580 imp gallons). Digested sludge is centrifuged into a solid using polymer.

As part of the plants latest upgrades, a larger capacity centrifuge was commissioned resulting in an increased dewatering efficiency. It is anticipated that quantity of sludge produced during 2010 will be equal to or less than the 2909 tonnes produced in 2009.

Sludge Disposal:

Currently, anaerobically digested plant sludge is dewatered by centrifuge and transferred into a City owned and operated dump truck under Waste Management System C of A A051601. Once the dump truck is filled (approximately 12 tonnes), it drives to the Green Lane Landfill where the sludge is dumped. The City of St. Thomas has a waste service contract with BFI Canada Inc.. All sludge produced over 2010 will continue to be disposed of at this landfill. Green Lane Landfill is owned by the City of Toronto and operated by CRA.

Digesters 1, 2 and 3 were cleaned out during the summer of 2008 and the contents were land applied in liquid form.

For sludge disposal contingency purposes, the plant could utilize its sludge drying bed, which has an approximate storage capacity of one year of sludge production. Alternatively, in the past, the City of St. Thomas has land applied dewatered sludge solids to local farmland. Land application of sludge solids however, has proven unappealing to local farmers, difficult to work with and cost prohibitive. All sludge solids are tested and maintained at land application quality for contingency purposes.

The following table represents a summary of the monthly production of digested dewatered sludge processed in 2009:

The Corporation of the City of St. Thomas - Water Pollution Control Plant

Table 9 - Dewatered Sludge Production/Disposal

Year: 2009

Month	Total Tonnes	Tonnes > 1st Load
January 2009	247	0
February 2009	251	10
March 2009	264	42
April 2009	246	72
May 2009	201	17
June 2009	239	0
July 2009	241	0
August 2009	263	0
September 2009	217	0
October 2009	217	0
November 2009	254	0
December 2009	269	21
Total:	**2909**	**162**

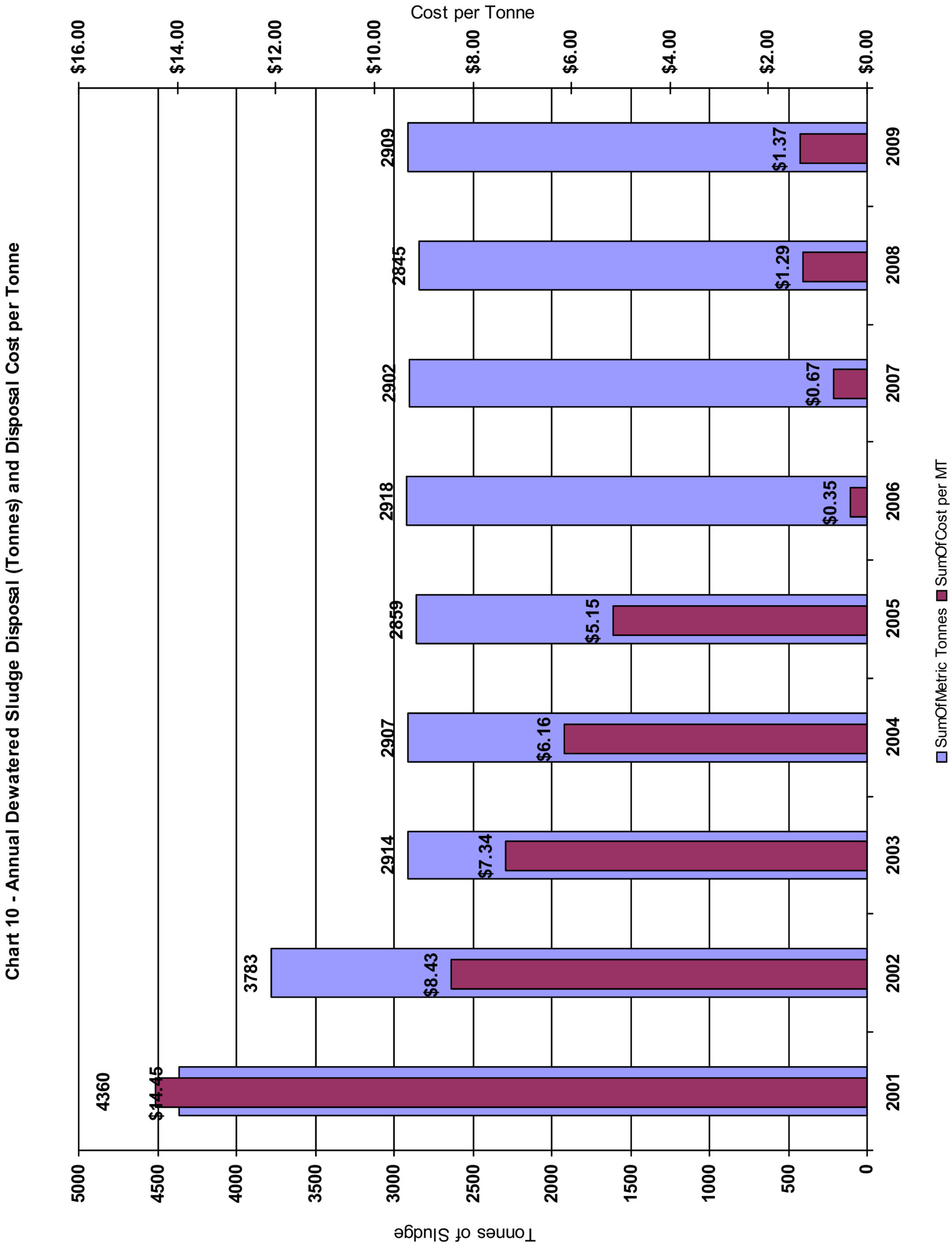
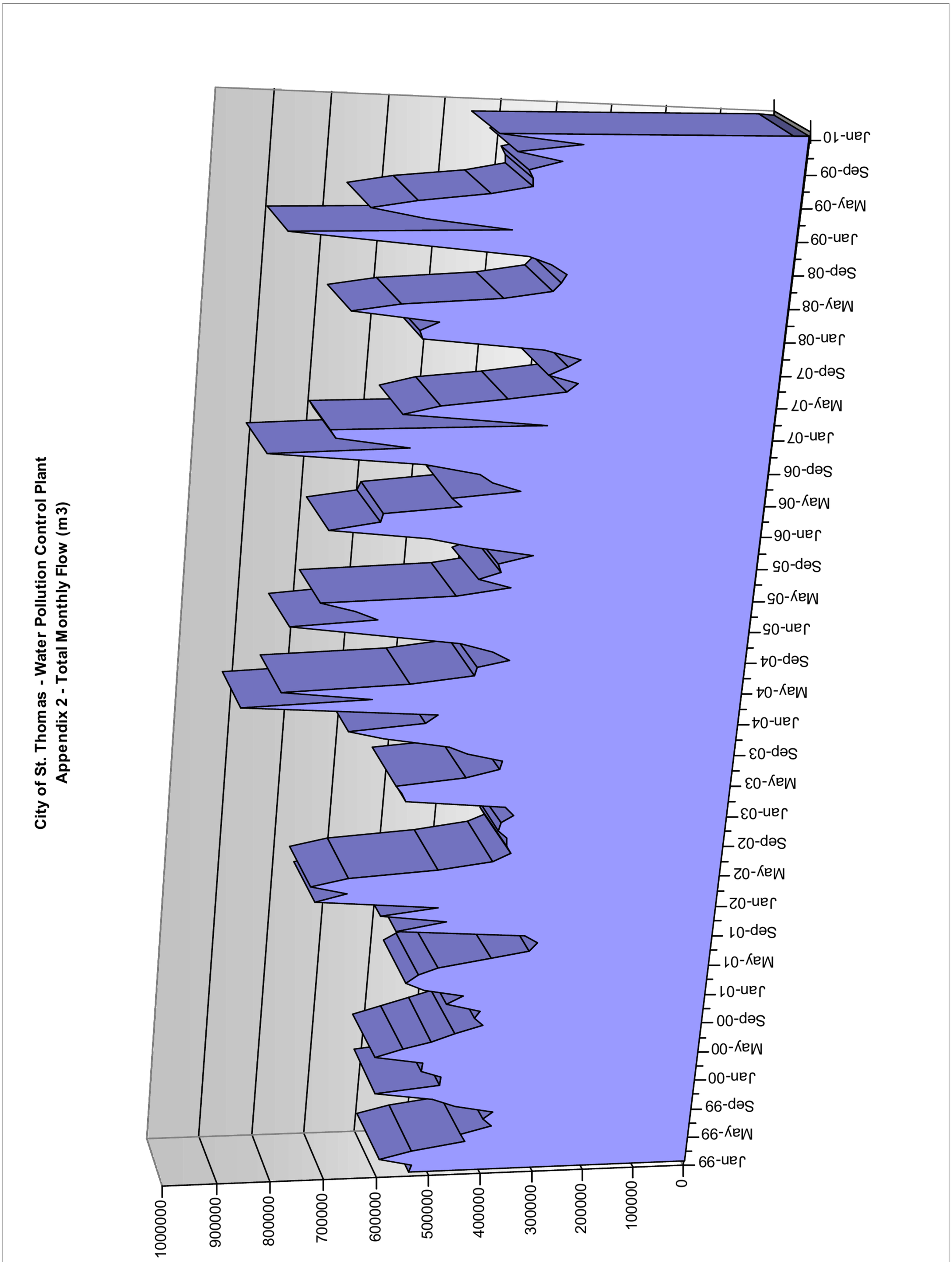


Chart 10 - Annual Dewatered Sludge Disposal (Tonnes) and Disposal Cost per Tonne
City of St. Thomas Water Pollution Control Plant
Cost per Tonne
$16.00
$14.00
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
2009 2909 $1.37
2008 2845 $1.29
2007 2902 $0.67
2006 2918 $0.35
2005 2859 $5.15
2004 2907 $6.16
2003 2914 $7.34
2002 3783 $8.43
2001 4360 $14.45
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Tonnes of Sludge
SumOfMetric Tonnes
SumOfCost per MT

City of St. Thomas Water Pollution Control Plant
Appendix 1 - Historical Flow Capacity Data

Year	Total Monthly Flow (m3)	Max of Monthly Flow (m3)	% Flow Capacity (27300 m3,day)
1999	5855042	46682	59%
2000	6026225	41431	61%
2001	5870506	39166	60%
2002	6520059	43184	65%
2003	6476804	44213	65%
2004	7361170	47637	74%
2005	7071505	47976	71%
2006	7767828	41380	78%
2007	6002256	52240	60%
2008	7028805	51425	70%
2009	6524993	40727	65%


City of St. Thomas - Water Pollution Control Plant
Appendix 2 - Total Monthly Flow (m3)
0
100000
200000
300000
400000
500000
600000
700000
800000
900000
1000000
Jan-99
May-99
Sep-99
Jan-00
May-00
Sep-00
Jan-01
May-01
Sep-01
Jan-02
May-02
Sep-02
Jan-03
May-03
Sep-03
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
May-06
Sep-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
Jan-10

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
04-Jan-06	6.7	8.3	63	2	106	3		0.8	13.7	0.8	0.52	12	12.5	1.57	0.5	20	80%	10.10	0.65
11-Jan-06	7.5	12.6		5		4		2.2	38	3.2	1.2	15.7	16.9	9.16	0.68	14	64%	28.80	15.70
18-Jan-06	6.9	10.2		3		5		1.8	15.5	3.5	0.98	13.8	14.8	2.01	0.51	66	96%	23.40	2.69
25-Jan-06	7.06	11.7		3		2		1.6	19.5	1.8	1.21	14.2	15.4	2.01	0.44	6	68%	49.00	3.89
01-Feb-06	7.26	12.2	133	3	214	3		1	16.6	1.4	1.27	12.4	13.7	2.19	0.45	4	76%	171.00	0.00
08-Feb-06	7.4	11.3		3		8		1.2	14.5	2.6	1.58	11	12.6	2.18	0.71	6	80%		6.16
15-Feb-06	7.6	11.6		3		7		1.6	26.5	2.8	2.43	14.7	17.1	3.19	0.56	4	68%	50.00	13.29
22-Feb-06	7.35	10.9		1		2		1.2	19	1.9	0.8	13.2	14	2.44	0.49	168	76%	12.50	5.33
01-Mar-06	7	10.8	110	1	168	5		1.7	23.8	2.7	1.16	17.4	18.6	3.07	0.51	14	68%	10.40	3.35
08-Mar-06	6.9	10.9		26		76		0.2	20.5	1	0.2	16.4	16.6	2.5	1.59	62	72%	13.00	0.32
15-Mar-06	6.9	10		2		2		0.2	12.9	2.4	0.2	11	11.2	1.31	0.21	48	84%	3.80	0.29
22-Mar-06	7.3	10.8		3		2		0.7	18.4	0.8	0.3	17.5	17.8	2.3	0.35	10	68%	6.70	2.75
29-Mar-06	6.9	11.9		2		2		1.2	20.5	1.2	0.35	18.4	18.8	2.27	0.68	2	69%	5.81	2.05
05-Apr-06	6.3	11.4	108	4	120	3		2.4	24.7	3	0.36	18.5	18.9	2.4	0.9	10	68%	7.77	0.99
12-Apr-06	6.7	13.5		3		2		1.9	24.8	2.3	0.38	19.3	19.7	2.82	0.75	4	64%	6.58	2.32
19-Apr-06	6.7	13.6		3		8		2.3	23.3	2.4	0.45	18.1	18.6	2.94	1.57	8	72%	19.30	2.83
26-Apr-06	6.9	13.4		4		5		0.9	25.5	1.6	0.34	17.3	17.6	2.97	0.83	2	72%	16.60	1.72
03-May-06	7.2	14.7	149	3	168	4		0.9	28.6	2.8	0.44	19.1	19.5	4.46	1.14	8	68%	5.20	3.79
10-May-06	7.3	14		3		4		2.1	34.4	2.7	0.57	21.5	22.1	4.38	1.15	14	68%	17.30	10.55
17-May-06	7	15		3		3		1.1	15.7	1.8	0.46	16.3	16.8	1.98	0.67	6	74%	17.90	3.00
24-May-06	7.3	15.4		4		3		1.5	24.8	1.7	0.48	17.1	17.6	2.84	0.46	2	76%		8.38
31-May-06	7.1	17.6		1		2		0.8	23.4	2.4	0.33	17.9	18.2	2.58	0.51	20	60%		3.33
07-Jun-06	7.1	17.6	100	3	200	3		0.3	22.3	1.8	0.33	17.4	17.7	2.84	0.56	34	60%		1.25
14-Jun-06	6.6	18.7		4		4		4.7	26.4	4.7	0.41	17.7	18.1	2.61	0.84	6	60%		6.73
21-Jun-06	6.6	18.7		3		3		1	27.6	1.3	0.46	24.2	24.7	3.51	0.77	26	60%		1.43
28-Jun-06	7	19.6		2		5		1	28.5	1.7	0.58	22.8	23.4	3.64	0.68	14	60%		3.83
05-Jul-06	6.7	19.3	98	3	229	3		1.2	17	1.3	0.34	15.6	15.9	2.39	0.59	108	60%		2.26
12-Jul-06	7.1	19.5		4		8		1.3	26.8	1.9	0.4	19.9	20.3	3.19	0.7	1960	60%		6.22
19-Jul-06	7	21.2		4		3		1.8	34.3	2.6	0.84	18.2	19	4.58	0.67	4	60%		7.75
26-Jul-06	7.1	20.6		3		5		1.3	17.7	3.6	0.19	13.3	13.5	2.36	0.53	26	60%		6.74

Tuesday, February 02, 2010

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
02-Aug-06	7.3	23.4	95	5	128	2		0.1	21.7	2.1	0.06	15.9	15.9	2.69	0.48	20	60%	31.80	1.00
09-Aug-06	7	21.8		3		3		0.7	25.6	1.2	0.17	17.6	17.8	4.04	0.47	8	60%		3.15
16-Aug-06	7.1	21.4		4		3		0.5	26.5	1.2	0.16	19.9	20.1	3.9	0.64	28	60%		2.75
23-Aug-06	7.2	21.5		5		5		1.4	33.8	1.7	0.24	17.8	18	2.25	0.82	5200	60%		9.73
30-Aug-06	7	21.7		4		2		0.1	20.9	0.7	0.06	14.9	15	1.78	0.57	34	60%		0.45
06-Sep-06	7.2	21.4	103	2	138	2		0.1	22.6	3.2	0.06	20.9	20.9	2.34	0.55	22	60%	0.01	0.69
13-Sep-06	6.7	20.7		4		5		0.7	21.4	1.9	0.16	19.2	19.4	3.35	0.84	980	92%		1.46
20-Sep-06	7.2	19.8		4		10		0.1	15	1.2	0.1	11	11.1	1.47	0.67	2	200%		0.61
27-Sep-06	7.3	20		3		5		0.1	17.2	2.1	0.06	15.3	15.3	2.26	0.57	2	60%		0.78
04-Oct-06	6.8	20.4	58	3	116	6		0.2	12.7	0.5	0.1	10.7	10.8	1.68	0.42	26	192%	23.20	0.51
11-Oct-06	7	19.9		3		4		0.2	16.5	1.6	0.12	16.7	16.8	1.83	0.56	4	176%		0.78
18-Oct-06	7.4	17		5		4		0.1	4.8	0.5	0.06	8.86	8.86	0.77	0.44	40	180%		0.79
25-Oct-06	6.8	16.9		3		3		0.2	12.2	0.6	0.06	12.3	12.3	1.8	0.49	4	60%		0.40
01-Nov-06	6.8	16.3	77	3	122	2		0.1	13.6	0.5	0.06	12.8	12.8	2.02	0.58	2	60%		0.19
08-Nov-06	6.6	17.3		2		2		0.4	16.3	0.9	0.11	16.4	16.5	2.1	0.64	2	60%		0.52
15-Nov-06	7.7	16.5		2		10		0.1	20.8	1.4	0.1	20.6	20.7	2.39	0.28	2	60%		1.51
22-Nov-06	7.3	15.6		2		4		0.4	20.4	1.4	0.18	16.5	16.7	2.94	0.31	4	60%		2.27
29-Nov-06	6.9	15.8		5		4		0.2	24.5	2.2	0.06	0.05	0.06	2.69	0.72	6	60%		0.46
06-Dec-06	7.6	13.9	80	3	124	4		0.1	20.6	1.6	0.35	14	14.4	2.39	0.5	6	60%		0.99
13-Dec-06	6.4	13.4		2		6		0.3	14.9	0.8	0.44	13.1	13.5	1.72	0.61	8	75%		0.18
20-Dec-06	7.1	13.6		5		4		1.8	22.6	2	0.8	15	15.8	1.95	0.78	30	75%		5.54
27-Dec-06	6.8	12.9		3		3		0.3	15.3	0.9	0.98	12.2	13.2	1.89	0.51	6	60%		0.44
03-Jan-07	6.8	13.3	112	4	160	4		0.5	19.1	0.7	1.95	13.9	15.9	2.41	0.52	2	60%	9.23	0.76
10-Jan-07	7	12		3		4		0.1	12.3	1.2	0.42	10.9	11.3	1.97	0.63	2	60%		0.22
17-Jan-07	6.9	11.5		3		7		0.2	12	0.5	0.81	11.2	12	1.39	0.59	4	64%		0.33
24-Jan-07	7	11.9		3		5		0.5	20.6	0.7	1.97	16.9	18.9	2.69	0.78	2	60%		1.07
31-Jan-07	7	11.2		4		4		0.8	24.8	1.5	1.7	18.6	18.6	3.1	0.73	12	60%		1.63

Tuesday, February 02, 2010

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
07-Feb-07	6.6	10.5	114	1	174	3		3.1	27.4	3	0.88	18.7	19.6	3.04	0.72	2	60%		2.38
14-Feb-07	6.6	10.8		5		7		0.5	27.6	3.1	0.29	24.4	24.7	4.13	0.99	4	60%		0.39
21-Feb-07	6.5	11	112	4	68	3		1.3	31.1	2.4	0.38	21.8	22.2	3.31	0.81	2	60%		0.83
28-Feb-07	7.1	11.4		2		4		1.8	27.7	2.3	0.42	20.2	20.6	3.36	0.52	2	60%		4.68
07-Mar-07	6.9	10.2	112	4	116	6		1.1	28	2.6	0.44	21.8	22.2	3.07	0.44	2	60%		1.65
14-Mar-07	7	10.3		5		10		0.5	13.6	1.1	0.27	11.8	12.1	1.83	0.41	12	68%		0.95
21-Mar-07	6.9	10.2		2		4		1.6	22.6	1.7	0.54	19.1	19.6	2.47	0.57	10	75%		2.39
28-Mar-07	6.8	10.7		5		4		0.5	12.6	0.6	0.24	12.2	12.4	1.84	0.44	2	64%		0.62
04-Apr-07	7.2	11.8	94	6	136	4		2.2	24.5	3.1	0.43	19.8	20.2	3.35	0.65	2	60%		7.43
11-Apr-07	6.3	11.7		2		7		2.2	27.2	2.8	0.45	19.6	20	3.29	0.93	5	60%		0.93
18-Apr-07	7.5	11.6		4		5		0.6	21.2	2.1	0.22	18.2	18.4	2.59	0.51	18	60%		3.97
25-Apr-07	7.1	12.5		3		3		1.4	22.9	3.2	0.41	20.5	20.9	3.12	0.65	16	68%		3.96
02-May-07	7.1	12.9	82	4	140	4		0.2	17.9	1.2	0.13	17.8	17.9	2.14	0.42	100	60%		0.58
09-May-07	7.3	14.3		5		4		0.5	24.8	1.8	0.24	20.8	21	4.58	0.4	4	60%		2.57
16-May-07	6.6	14.8		5		4		1.1	26.4	3.4	0.46	21.2	21.7	2.8	0.55	2			1.18
23-May-07	6.4	16		6		4		0.9	28.8	3.4	0.47	22.4	22.9	3.77	0.53	2	200%		0.67
30-May-07	6.7	16.4		5		3		0.1	27.2	0.5	0.35	23.1	23.5	2.94	0.5	14	60%		0.15
06-Jun-07	6.9	18.9	131	4	206	3		0.8	31.6	1.8	0.75	21.9	22.7	3.22	0.6	20	60%		2.31
13-Jun-07	7	18		5		6		1.1	27.4	1.4	0.75	21.5	22.3	3.49	0.66	6	60%		3.75
20-Jun-07	7.1	18.8		4		7		2.6	24.8	3.1	0.44	18.6	19	3.22	0.76	18	65%		11.82
27-Jun-07	7.1	19.7		1		5		1.4	33.6	2.4	0.44	23.4	23.8	6.06	0.76	2	60%		6.80
04-Jul-07	7	18.7	151	4	262	3		0.1	28.9	1.6	0.17	21.9	22.1	6.16	0.6	4	60%		0.36
11-Jul-07	6.6	20.1	165	4	208	6		2.3	30.4	3.1	0.39	27.3	27.7	4.81	0.87	16	60%		3.65
18-Jul-07	7	21.5		1		5		4	30.3	5.8	0.42	23.7	24.1	6.08	0.68	8	143%		17.59
25-Jul-07	6.6	20.2		7		4		1.1	26.4	1	0.25	24.1	24.4	3.64	0.6	8	60%		1.76
01-Aug-07	6.4	21.6	58	4	191	3		1.5	32.7	2.3	0.4	26.9	27.3	4.66	0.68	6	60%		1.67
08-Aug-07	6.5	21.5		4		4		3.5	23	3.8	0.23	17.3	17.5	3.27	0.42	18	60%		4.88
15-Aug-07	6.4	21.7		3		2		2.1	28.6	3.5	0.45	26.2	26.7	3.88	0.44	156	60%		2.36
22-Aug-07	6.9	20.9		3		4		0.7	30	3.4	0.19	20.4	20.6	3.49	0.52	16	60%		2.34
29-Aug-07	6.9	21.9		4		6		0.05	29.9	1.2	0.22	26.1	26.3	4.12	0.53	10	60%		0.18

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The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
05-Sep-07	7.1	21.9	166	2	154	7		0.2	31.6	4	0.03	22.4	22.4	4.27	0.58	14	60%		1.14
12-Sep-07	7.5	21		4		10		0.6	24.9	1.7	0.3	20.1	20.4	2.49	0.56	102	60%		7.98
19-Sep-07	7	21		5		8		1.3	32.7	1.1	0.24	25.4	25.6	2.77	1	64	60%		5.51
26-Sep-07	6.9	21.8		4		8		2.2	33	4	0.36	26.8	27.2	3.57	1.1	28	160%		7.86
03-Oct-07	6.9	21.3	142	3	160	6		1.3	33.3	3.1	0.34	25.8	26.1	4.1	0.74	280	60%		4.48
10-Oct-07	6.8	21		4		2		3.5	34.2	4.3	0.31	20.6	20.9	4.2	0.54	152	60%		9.38
17-Oct-07	6.8	20.4		4		5		4.6	28.7	5.6	0.33	24.7	25	1.4	0.57	2	60%		11.81
24-Oct-07	6.3	19.4		5		7		2.2	23.5	2.5	0.23	23.8	24	2.36	0.5	6	65%		1.66
31-Oct-07				3		1		1.6	32.3	3.4	0.28	28.1	28.4	3.75	0.5	2	120%		
07-Nov-07	6.8	18.4	141	4	204	8		1.4	28	2.3	0.22	24.4	24.6	3.66	0.6	12	60%		3.10
14-Nov-07	7.1	17.8		4		7		0.6	31.4	0.6	0.16	25.4	25.6	2.31	0.61	16	60%		2.53
21-Nov-07	6.6	17.7		3		4		2.7	31.1	3.1	0.24	26.1	26.3	2.85	0.59	10	60%		3.59
28-Nov-07	7.5	15.2		2		1		0.5	24.2	1.2	0.19	21	21.2	3.24	0.36	4	60%		4.34
05-Dec-07	7.2	13.5	88	0.5	102	6		0.1	19.6	0.9	0.06	17	17	2.26	0.24	4	60%		0.38
12-Dec-07	7.1	13.5		3		4		2.6	22.4	3.7	0.36	19.6	20	1.5	0.56	1	76%		7.95
19-Dec-07	7.1	13.8	68	3	45	3		1	29	1.5	2.1	22.3	22.5	2.72	0.61	18	60%		3.13
27-Dec-07	6.5	12.7		1		4		0.2	20.2	0.25	0.07	17.1	17.2	2.3	0.29	2	60%		0.14
02-Jan-08	6.8	12	79	5	59	7		0.2	18.4	0.25	0.08	18.5	18.6	1.77	0.43	22	60%	0.00	0.27
09-Jan-08	7.2	10.9		3		7		0.5	16.7	1.4	0.58	17.9	18.5	1.97	0.55	244	160%		1.57
16-Jan-08	7.2	12.2		3		5		0.1	18.2	0.5	0.24	18.5	18.7	2.27	0.54	4			0.35
23-Jan-08	6.8	11.3		3		6		0.2	26.5	0.25	0.22	22.3	22.5	3.92	0.52	42	60%		0.26
30-Jan-08	6.4	10.6		0.5		10		0.2	19	2	0.32	19.6	19.9	1.95	0.73	58	64%		0.10
06-Feb-08	6.5	8.8	49	6	44	8		0.3	11	0.5	0.43	14.7	15.1	1.1	0.56	74	184%		0.16
13-Feb-08	6.4	10.5		2		9		0.2	23.1	1.8	1.26	18.9	20.2	2.91	0.54	1	160%		0.10
18-Feb-08																120	0%		
19-Feb-08				3		11		1.1	10.7	1.6	1.29	10.5	11.8	1.52	0.53	2200	0%		
20-Feb-08				9		7		0.3	17.4	1.3	1.1	13	14.1	1.41	0.33	8	100%		
27-Feb-08	7.1	10.1		9		3		1.4	23.9	2.5	1.76	17.1	18.9	1.71	0.5	4	100%		3.29

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The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
05-Mar-08	6.3	9.9	48	0.5	49	2		0.8	16.5	1.2	1.52	11.8	13.3	1.48	0.38	16	80%		0.29
12-Mar-08	7	10.5		3		4		1.1	22.5	1.9	2.78	17	19.8	2.55	0.63	2	96%		2.12
19-Mar-08	6.9	8.3		6		10		0.2	10.8	1	1.24	12.3	13.5	1.42	0.5	126	160%		0.26
26-Mar-08	7.7	10.3		4		10		1.6	12.9	1.5	3.08	12.4	15.5	1.79	0.5	2	160%		15.10
02-Apr-08	6.4	9.4	48	8	78	12		0.2	9.6	0.5	1.39	8.34	9.73	1.98	0.5	72	180%		0.09
09-Apr-08	6.6	13.1		3		7		0.6	15.4	1.6	1.9	13.4	15.3	2.08	0.63	14	124%		0.56
16-Apr-08	6.8	11		5		6		0.7	16	1.2	1.04	14.7	15.7	2.35	0.56	4	176%		0.89
23-Apr-08	6.9	13.5		2		4		0.4	21	0.8	0.55	21	21.6	2.76	0.64	1	196%		0.77
29-Apr-08																2940	0%		
30-Apr-08	7.2	13.2		4		4		1.4	23.3	1.2	0.54	22.3	22.8	2.46	0.66	74	96%		5.26
07-May-08	7	14	127	3	144	3		0.5	27.5	0.25	0.26	21.5	21.8	2.75	0.4	10	60%		1.26
14-May-08	6.9	14.3		3		4		0.2	24.3	0.25	0.19	21.4	21.6	2.65	0.39	1	60%		0.41
21-May-08	7.3	14.1		4		3		0.3	25.4	2	0.23	19	19.2	2.59	0.35	4	60%		1.52
28-May-08	7.8	15.5		3		6		0.2	26.9	0.8	0.33	23.1	23.4	3.2	0.65	24	60%		3.52
04-Jun-08	6	16.3	110	3	156	3		0.6	21.9	1.4	0.34	21.4	21.7	2.88	0.7	8	60%		0.18
11-Jun-08	6.1	17.1	93	4	474	4		0.3	21.2	2.1	0.22	14.4	14.6	2.27	0.63	46	96%		0.12
18-Jun-08	6.6	17.7	129	6	197	6		0.6	32.5	1.1	0.34	23.5	23.8	2.86	0.76	2	60%		0.80
25-Jun-08	6.4	18.4		5		3		0.05	24.8	0.5	0.03	22.9	22.9	3.49	0.75	4	60%		0.04
02-Jul-08	6.3	20.3	130	2	282	2		0.9	29.2	2.2	0.3	18.9	19.2	7.82	0.54	4	60%		0.73
09-Jul-08	6.4	19.3		4		4		0.5	23.8	1.8	0.48	23.8	24.3	2.92	0.44	6	60%		0.47
16-Jul-08	6.4	21.4		4		4		0.5	28.2	2	0.16	24.9	25.1	1.74	0.54	20	60%		0.55
23-Jul-08	6.7	19.8		4		4		0.7	19.8	1.2	0.13	19.8	19.9	2.28	0.5	2	60%		1.37
30-Jul-08	6.8	20.6		8		4		1.1	29.9	3.3	0.27	22	22.3	5.21	0.74	4	65%		2.86
06-Aug-08	6.7	21	120	3	155	6		0.2	25.4	3.7	0.18	23.3	23.5	3.26	0.75	42	60%		0.43
13-Aug-08	6.8	20.7		2		5		0.05	22.1	0.7	0.11	22.9	23	2.53	0.6	32	60%		0.13
20-Aug-08	6.85	20.3		8		4		2.3	23.5	3	0.36	20.5	20.9	3.1	0.64	90	60%		6.57
27-Aug-08				3		7		1.4	24.8	4	0.25	24.2	24.5	3.57	0.82	22			

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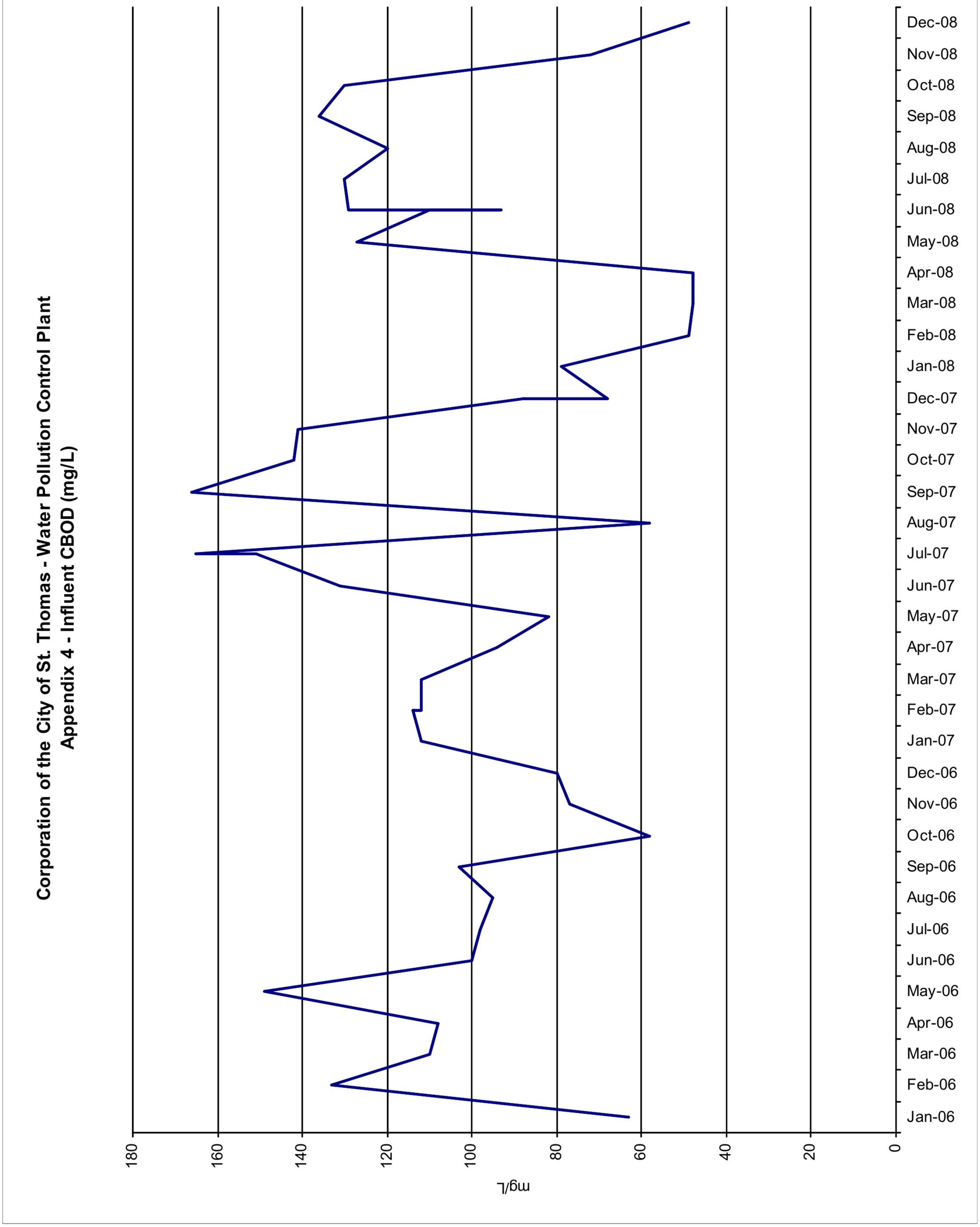
The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 3 - Historical Plant Certified Analytical Data

Date	pH	Temp C Eff	CBOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	Pb Inf.	Ul Amm Eff. (19 ug/L)
03-Sep-08	6.9	21.6		2		4		1.5	21.6	2.2	0.16	18.9	19.1	3.65	0.96	12	60%		5.28
10-Sep-08	6.9	20.2		3		4		0.2	19.8	1.5	0.03	17.3	17.3	2.41	0.55	10	60%		0.64
17-Sep-08	6.8	20.4		3		3		0.05	18.3	0.9	0.03	14.3	14.3	1.42	0.42	6	60%		0.13
24-Sep-08	7.5	20.9		3		3		0.05	28	1.7	0.03	20.8	20.8	3.51	0.46	2	60%		0.66
30-Sep-08			136		248												60%		
01-Oct-08			130	3	128	3		3.4	28.9	3.9	0.09	14.8	14.9	3.16	0.45	6			
08-Oct-08	6.85	19.7		5		8		5	14.8	6.2	0.16	15.9	16.1	3.88	0.55	18	60%		13.68
15-Oct-08	7.3	19.9		2		7		4.7	33.4	5.3	0.23	16.4	16.6	4.76	0.62	10	60%		36.58
22-Oct-08	7.3	18.6		4		4		3.2	28.7	3.9	0.21	16.3	16.5	3.46	0.4	4	60%		22.65
29-Oct-08	7	17		5		8		2.3	23.8	2.1	0.41	14.8	15.2	2.94	0.53	10	60%		7.28
05-Nov-08	7.3	17.1		6		10		1.6	21.5	1.9	0.5	17	17.5	2.15	0.71	20	60%		10.14
12-Nov-08	7.5	16.1		4		4		0.2	40	4.2	0.44	18	18.4	4.34	0.53	8	60%		1.86
20-Nov-08	7.4	15	72	3	124	7		0.2	17.4	1.3	0.03	14.3	14.3	2.33	0.4	8	64%		1.36
26-Nov-08	7.4	14.2		4		10		0.2	12	0.44	0.12	13.2	13.3	0.82	0.44	4	174%		1.28
03-Dec-08	7.4	13.5	49	3	54	7		0.05	13.2	0.6	0.08	12.3	12.4	0.73	0.36	18	74%		0.30
10-Dec-08	7.4	11.2		3		2		0.4	9.8	0.9	0.38	13.5	13.9	1.14	0.3	28	160%		2.04
17-Dec-08	7.6	12.1							11.6					1.5		172	65%		
18-Dec-08				1		4		0.05		0.25	0.15	14.2	14.4		0.34				
22-Dec-08	7.3	11.9		3		7		0.05	18.1	0.9	0.08	16.9	17	2.35	0.38	30	60%		0.21
29-Dec-08	7.4	10.6		5		12		0.4	6.3	0.5	0.17	9.57	9.74	0.69	0.25	72	160%		1.95

Tuesday, February 02, 2010


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 4 - Influent CBOD (mg/L)
mg/L
180
160
140
120
100
80
60
40
20
0
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
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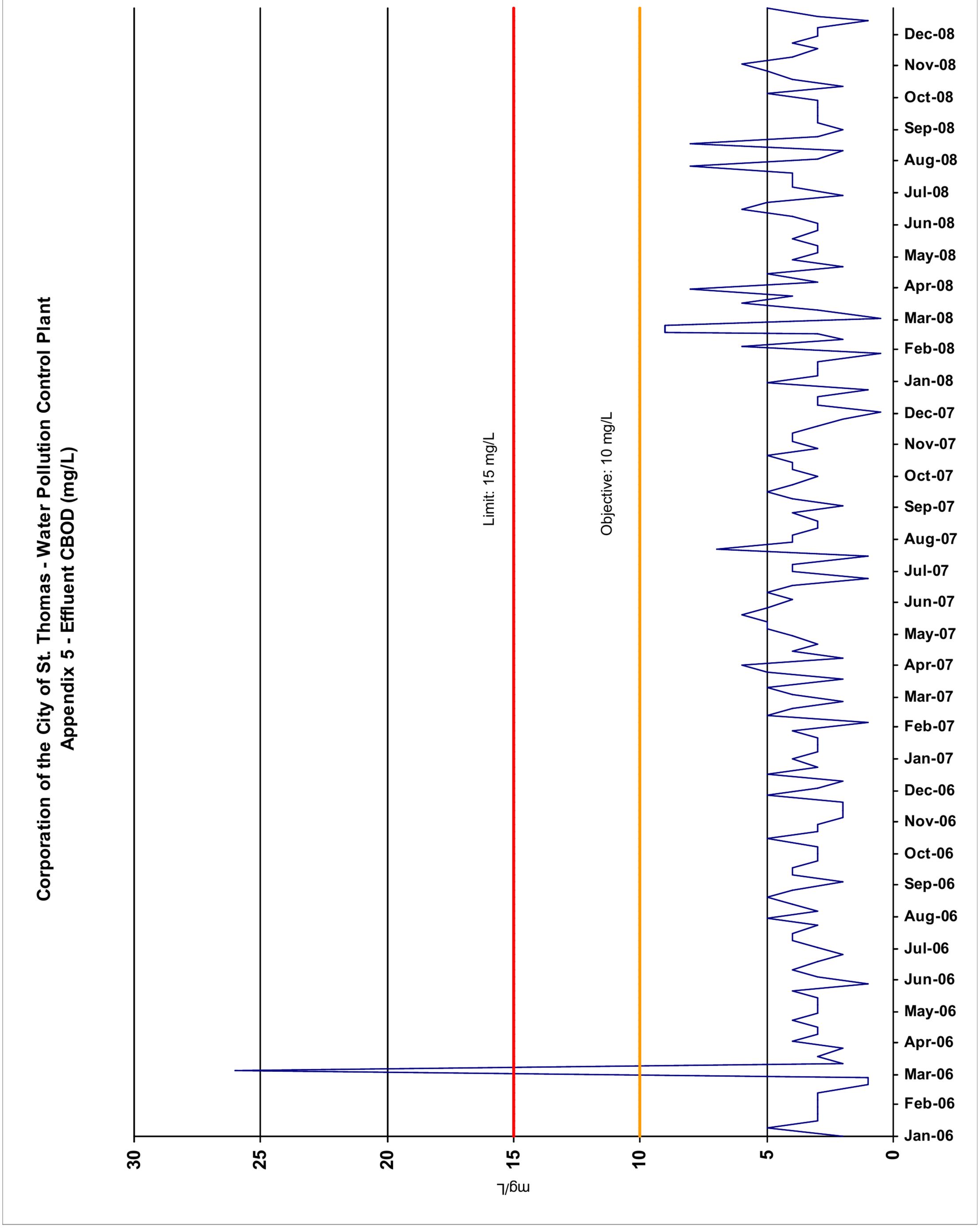
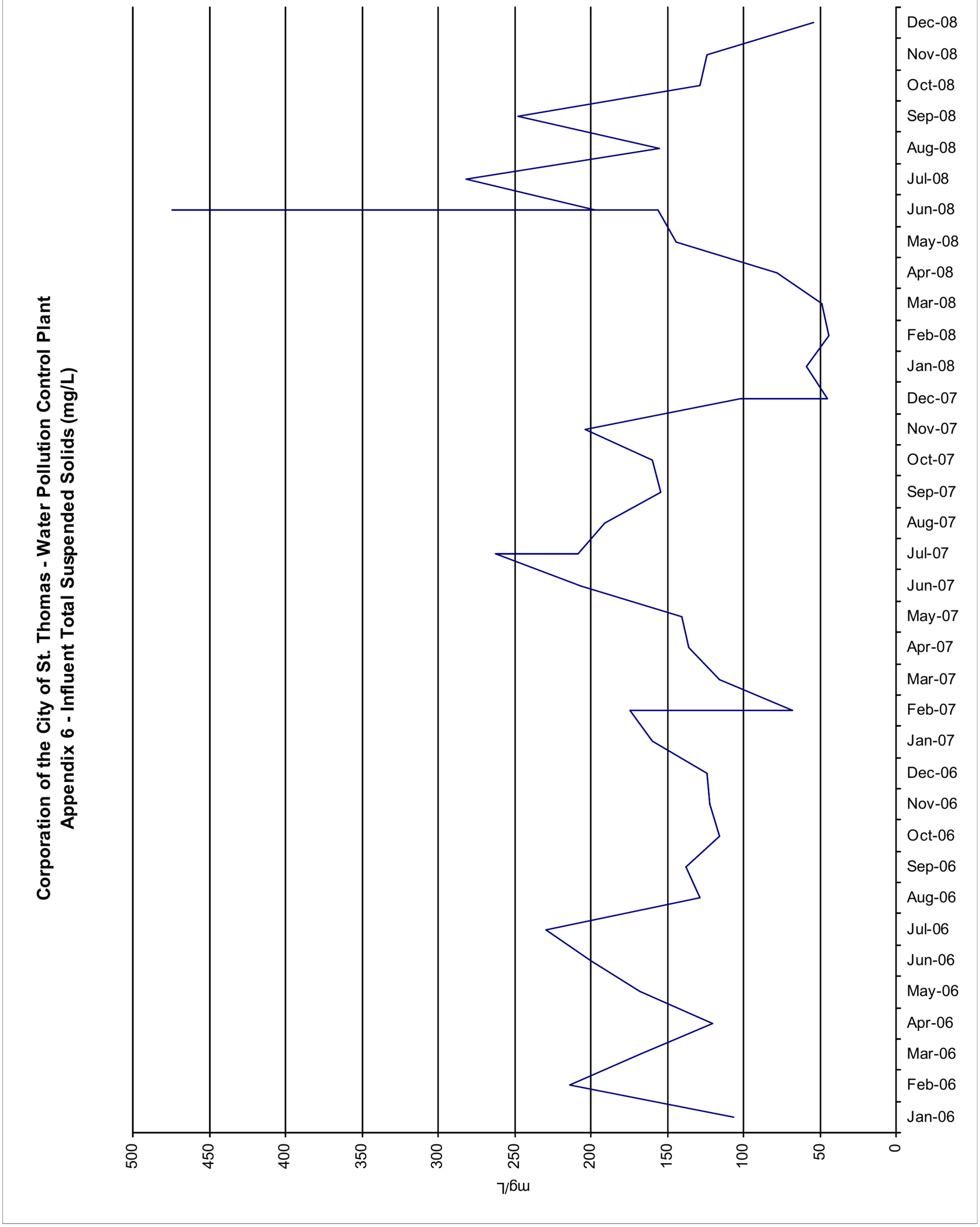
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 5 - Effluent CBOD (mg/L)
Limit: 15 mg/L
Objective: 10 mg/L
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
Sep-06
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06
30
25
20
15
10
5
0
mg/L


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 6 - Influent Total Suspended Solids (mg/L)
mg/L
500
450
400
350
300
250
200
150
100
50
0
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
Sep-06
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06

Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 7 - Effluent Total Suspended Solids (mg/L)
Limit: 20 mg/L
Objective: 15 mg/L
mg/L
80
70
60
50
40
30
20
10
0
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
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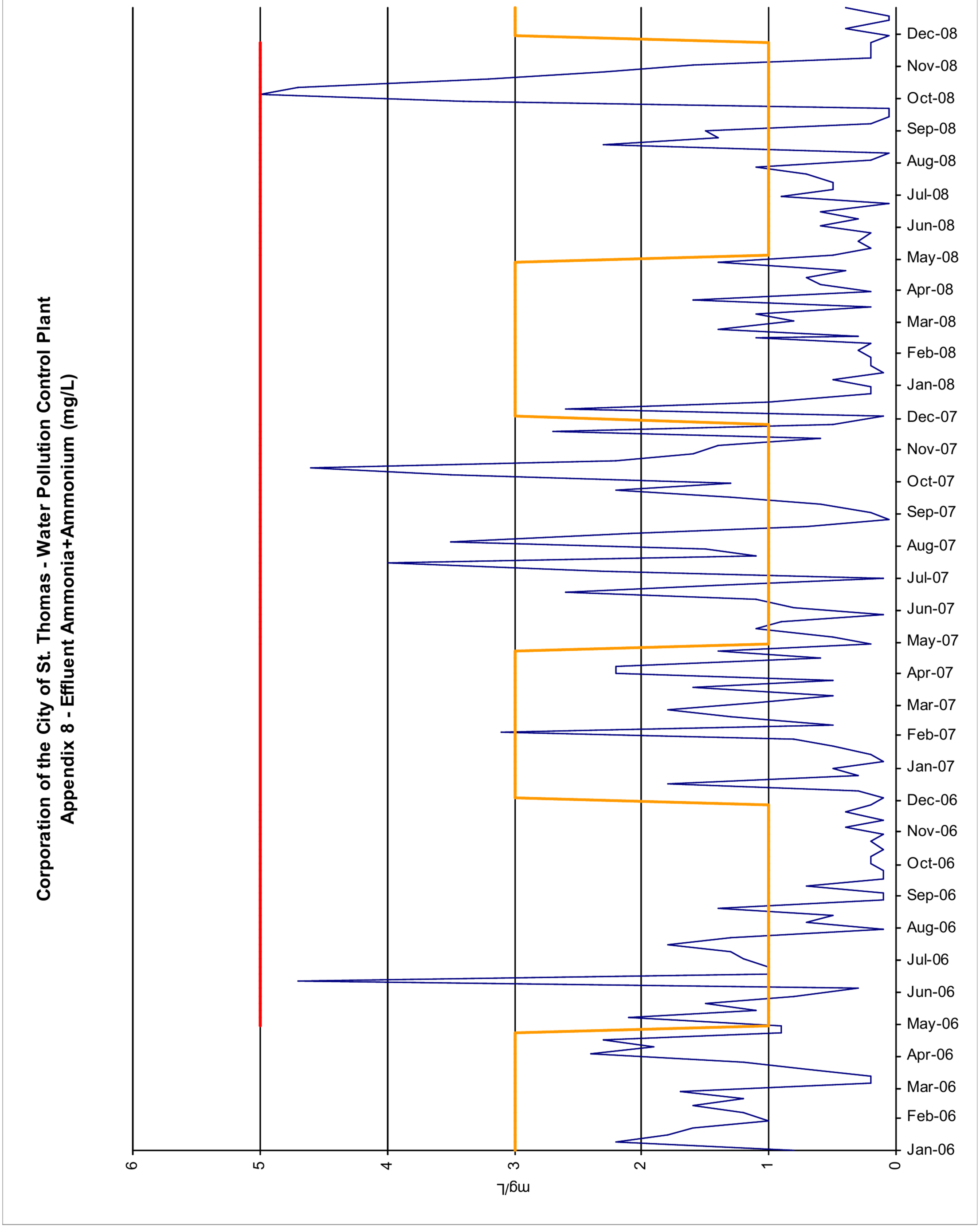
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 8 - Effluent Ammonia+Ammonium (mg/L)
mg/L
0
1
2
3
4
5
6
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
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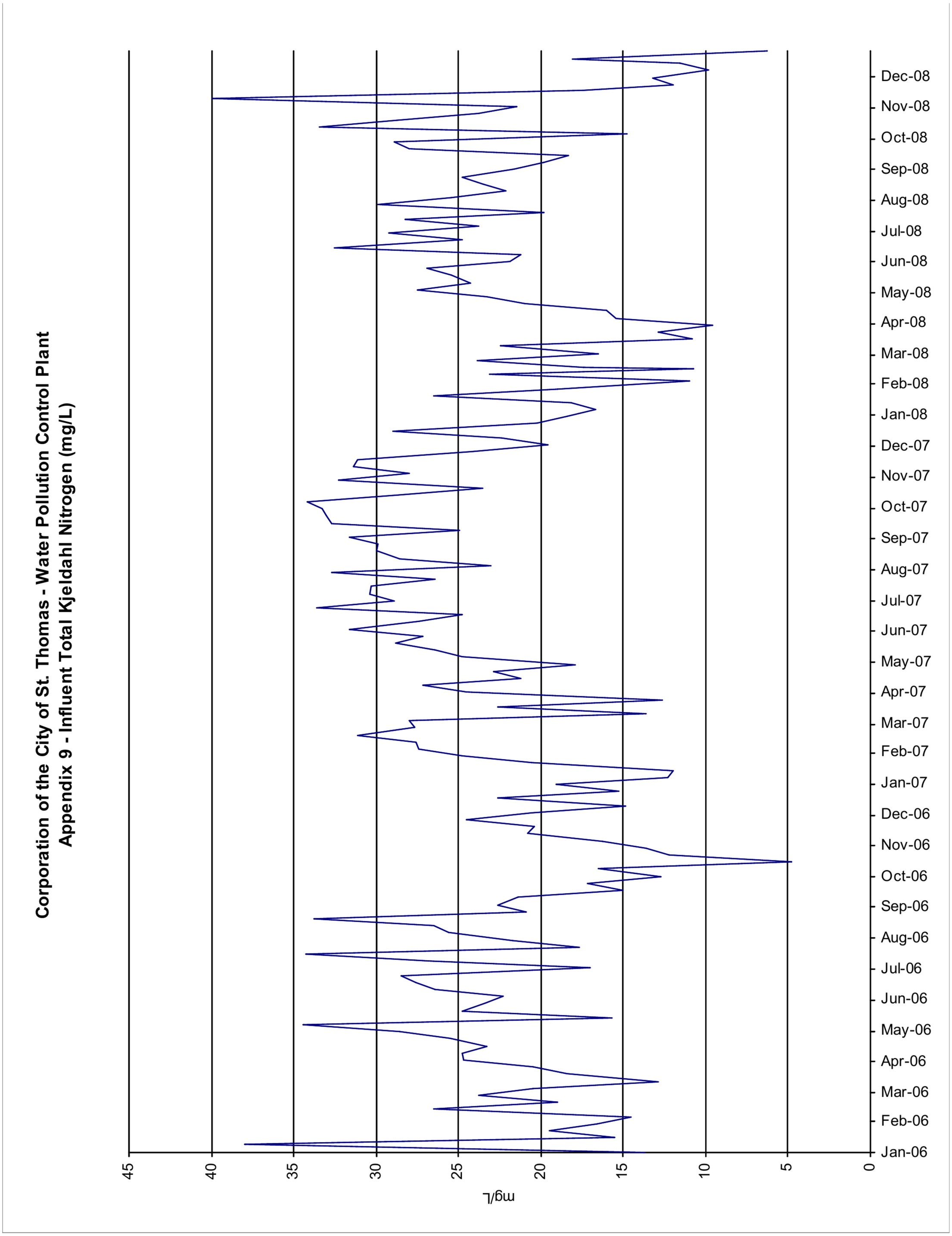
Oct-08
Nov-08
Dec-08


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 9 - Influent Total Kjeldahl Nitrogen (mg/L)
mg/L
45
40
35
30
25
20
15
10
5
0
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
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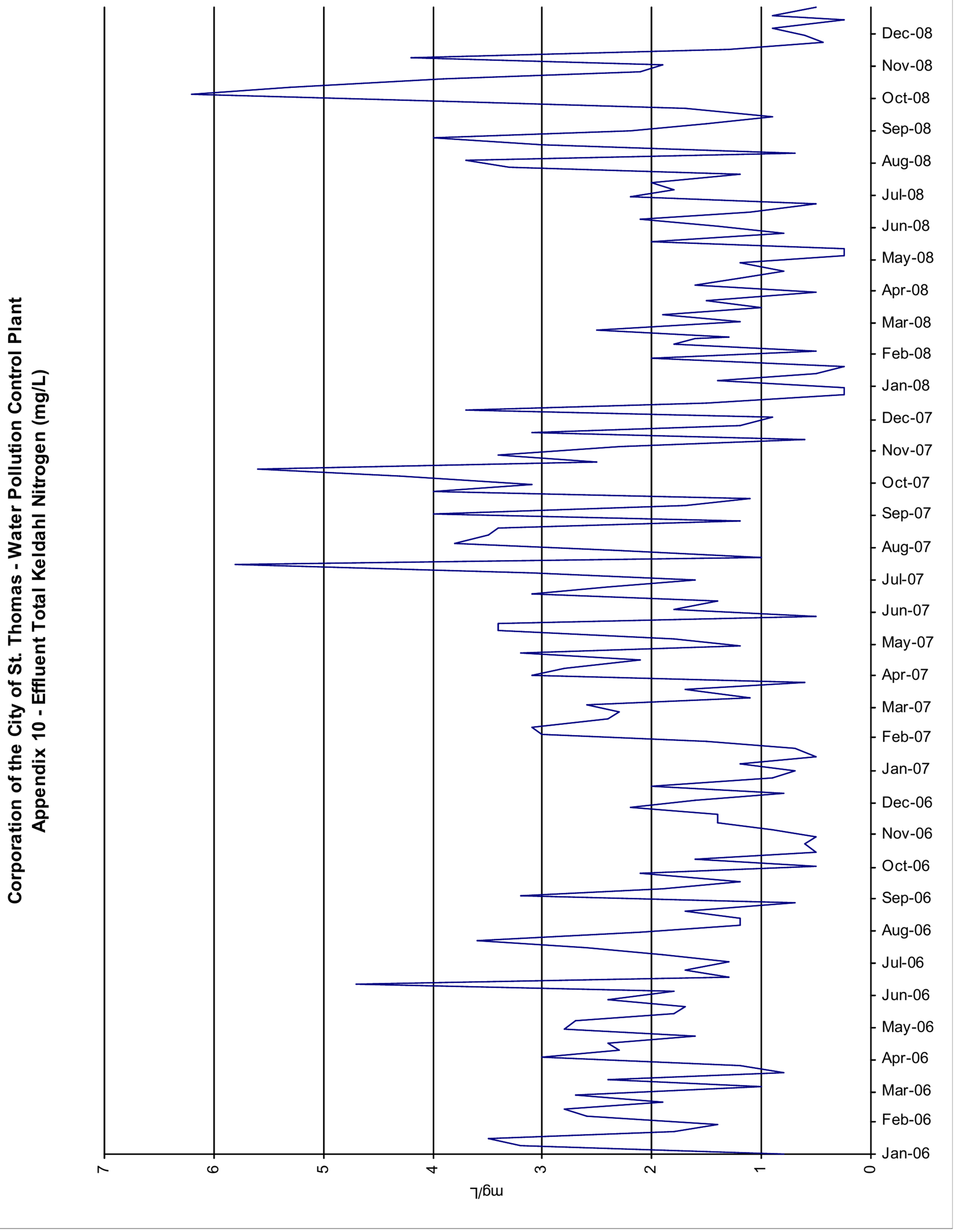
Apr-06
Mar-06
Feb-06
Jan-06


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 10 - Effluent Total Keldahl Nitrogen (mg/L)
mg/L
0
1
2
3
4
5
6
7
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
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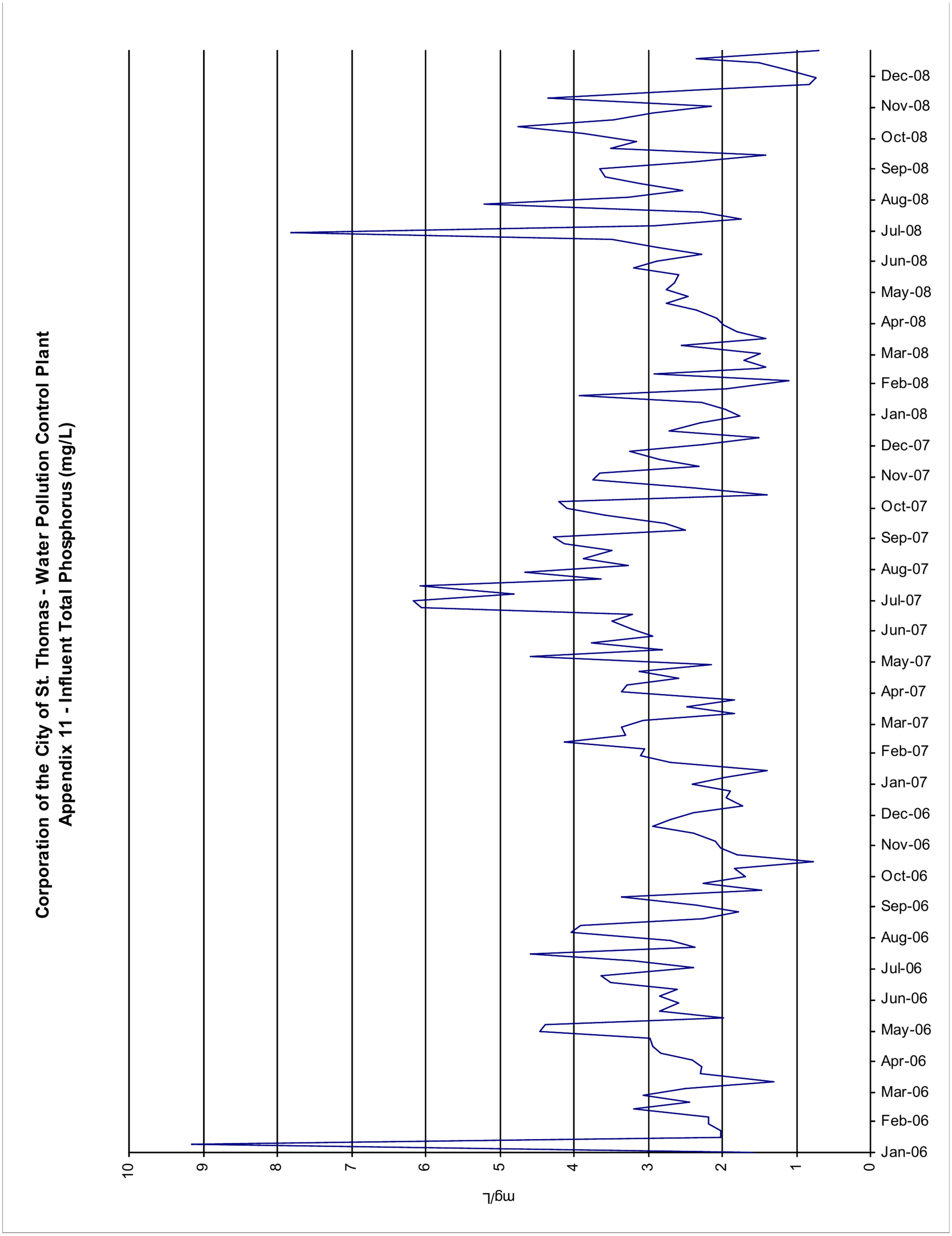
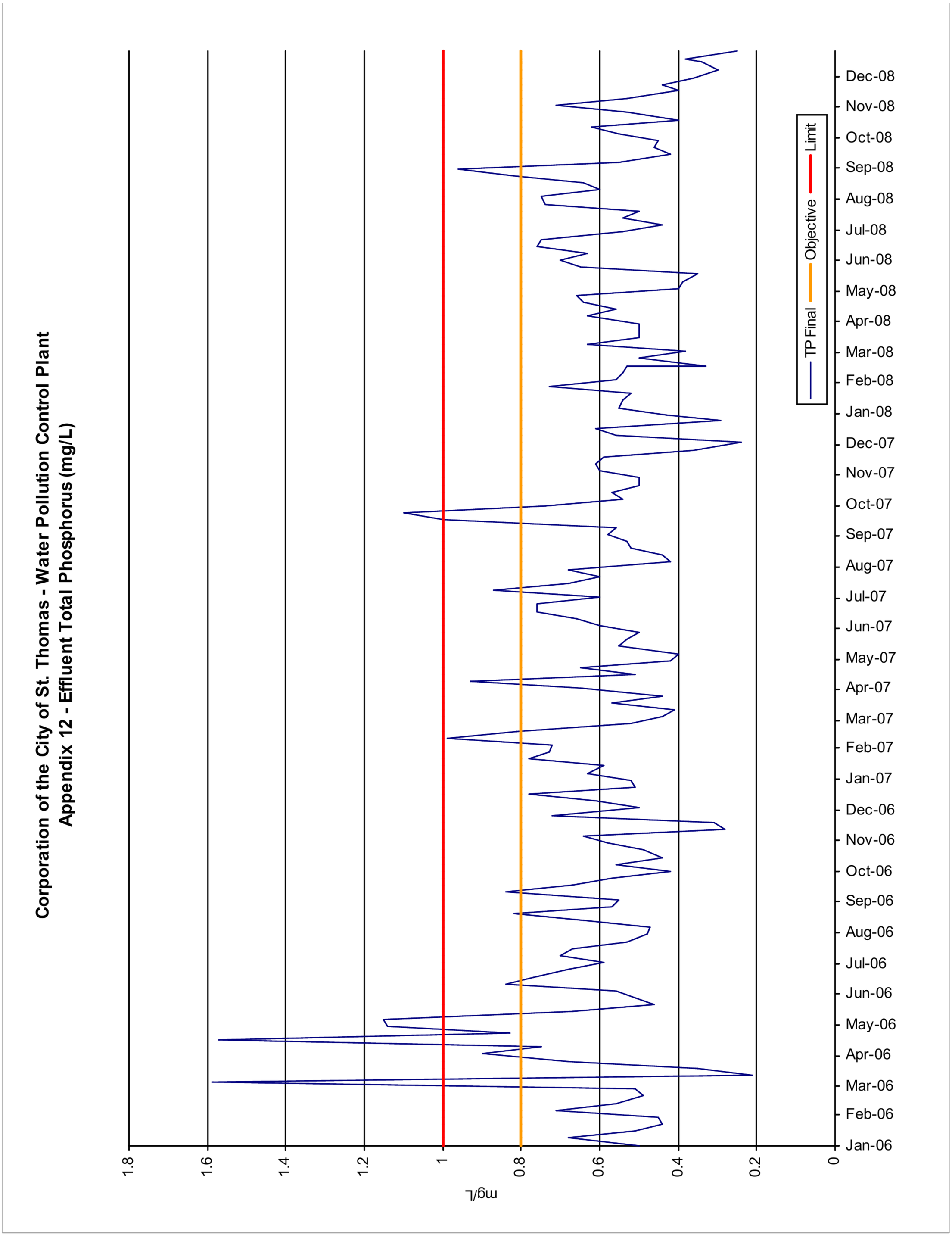
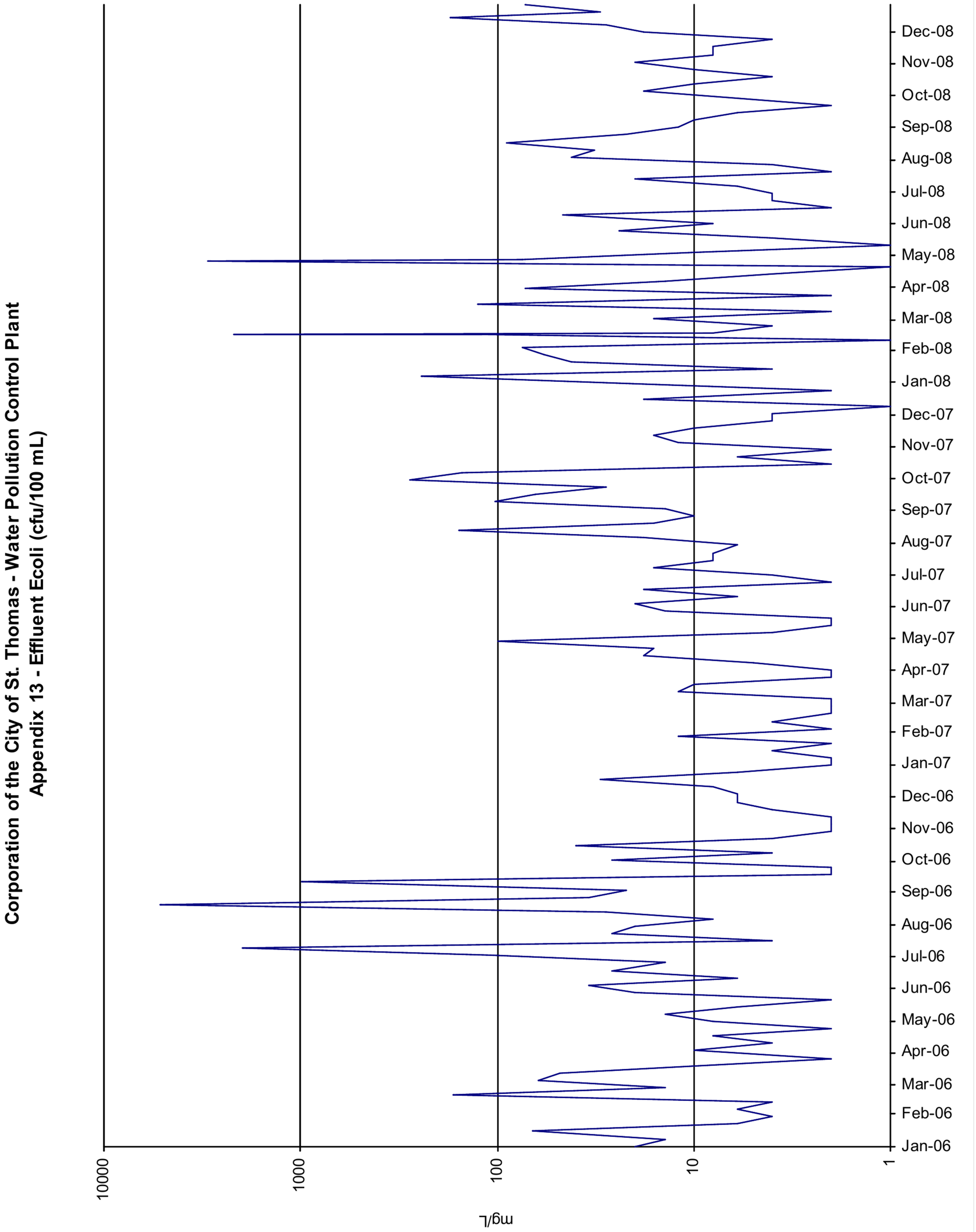
Oct-08
Nov-08
Dec-08


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 11 - Influent Total Phosphorus (mg/L)
mg/L
0
1
2
3
4
5
6
7
8
9
10
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 12 - Effluent Total Phosphorus (mg/L)
TP Final
Objective
Limit
mg/L
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
Sep-06
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06


Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 13 - Effluent Ecoli (cfu/100 mL)
mg/L
10000
1000
100
10
1
Dec-08
Nov-08
Oct-08
Sep-08
Aug-08
Jul-08
Jun-08
May-08
Apr-08
Mar-08
Feb-08
Jan-08
Dec-07
Nov-07
Oct-07
Sep-07
Aug-07
Jul-07
Jun-07
May-07
Apr-07
Mar-07
Feb-07
Jan-07
Dec-06
Nov-06
Oct-06
Sep-06
Aug-06
Jul-06
Jun-06
May-06
Apr-06
Mar-06
Feb-06
Jan-06

The Corporation of the City of St. Thomas

Appendix 14 - % Reduction of Volatile Solids in Digested Sludge

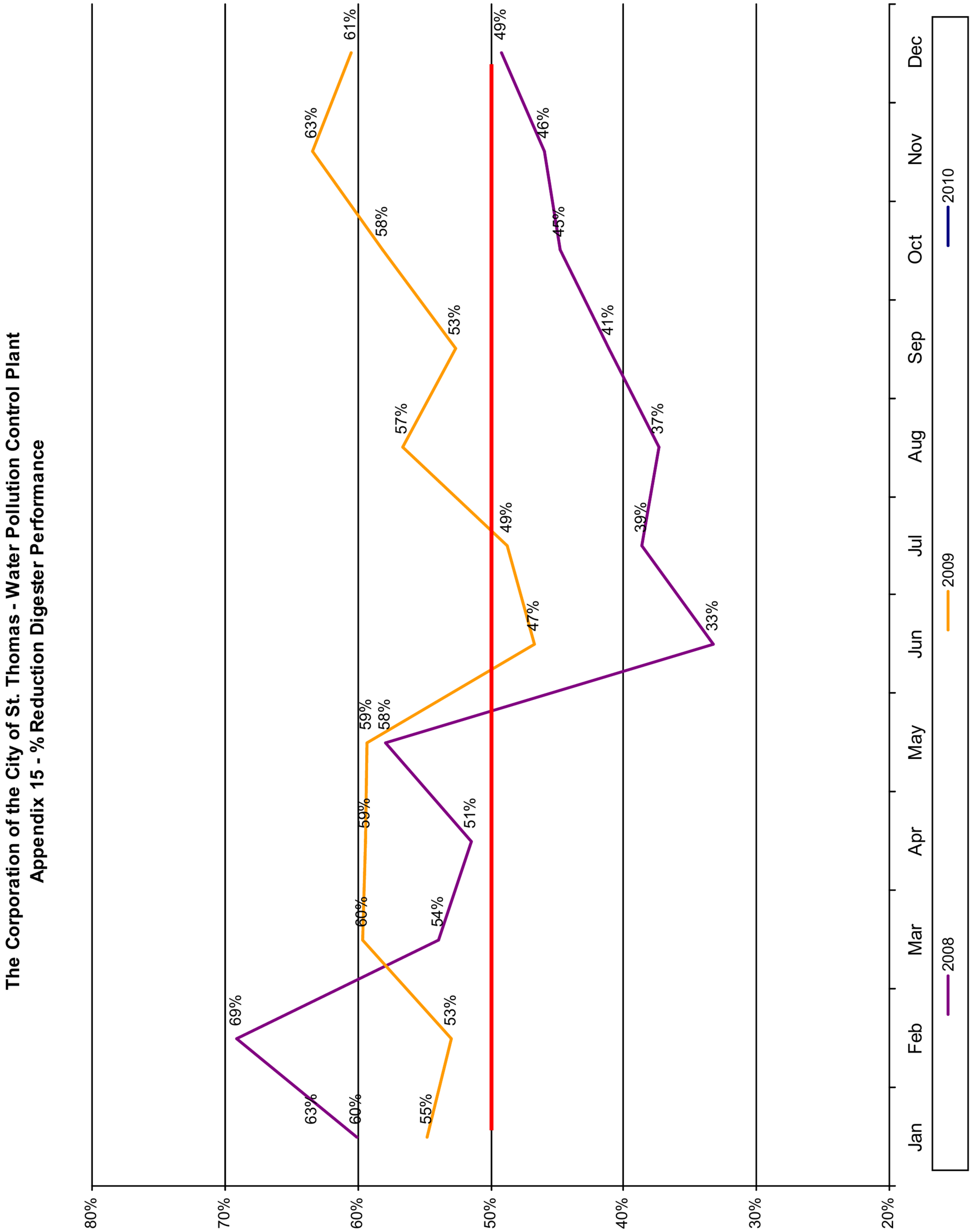
Year: 2010

Month	Average of Raw Total Solids	Avgerage of Raw Volatile Solids	Average of Digested Total Solids	Average of Digested Volatile	Average of Dewatered Total Solids	% Reduction	Number of Samples
01 January	3.99%	79.99%	2.66%	59.38%	19.92%	63.44%	7
Average:	**3.99%**	**79.99%**	**2.66%**	**59.38%**		**63.44%**	
Minimum:						**63.44%**	
Maximum:						**63.44%**	

Year: 2009

Month	Average of Raw Total Solids	Avgerage of Raw Volatile Solids	Average of Digested Total Solids	Average of Digested Volatile	Average of Dewatered Total Solids	% Reduction	Number of Samples
01 January	4.23%	76.70%	2.53%	59.81%	20.06%	54.79%	7
02 February	4.40%	74.07%	2.38%	57.30%	17.51%	53.01%	7
03 March	5.46%	79.24%	2.90%	60.62%	24.92%	59.66%	8
04 April	4.42%	78.44%	2.56%	59.64%	19.80%	59.38%	8
05 May	4.20%	77.72%	2.70%	58.68%	19.15%	59.29%	6
06 June	4.79%	73.28%	2.25%	59.39%	19.98%	**46.67%**	9
07 July	4.42%	72.79%	2.81%	57.81%	20.52%	**48.77%**	8
08 August	4.31%	74.04%	2.78%	55.30%	20.90%	56.64%	7
09 September	3.50%	72.99%	2.79%	56.14%	18.99%	52.63%	5
10 October	4.04%	74.72%	2.91%	55.29%	22.15%	58.15%	7
11 November	3.61%	78.14%	2.58%	56.67%	21.73%	63.42%	7
12 December	4.40%	78.53%	2.39%	59.08%	21.06%	60.52%	7
Average:	**4.31%**	**75.89%**	**2.63%**	**57.98%**		**56.08%**	
Minimum:						**46.67%**	
Maximum:						**63.42%**	

Friday, January 29, 2010


The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 15 - % Reduction Digester Performance
80%
70%
60%
50%
40%
30%
20%
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2008
2009
2010
63%
60%
69%
60%
55%
53%
59%
60%
54%
51%
59%
58%
57%
53%
49%
47%
49%
46%
45%
41%
39%
37%
33%

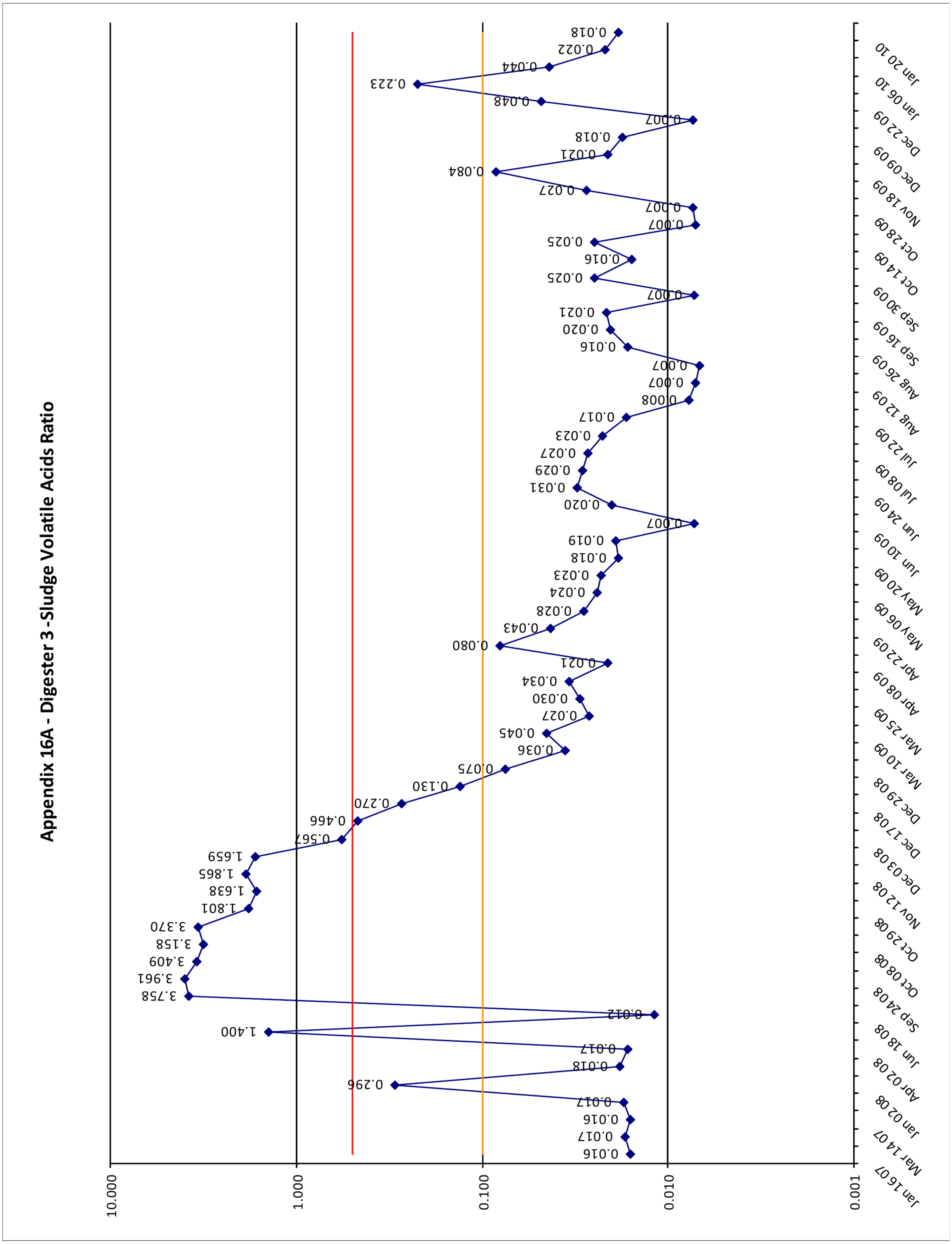
City of St. Thomas Water Pollution Control Plant

Appendix 16 - Digester Sludge Volatile Acids Ration

Note: <0.1 Acceptable, >0.5 Indicates Possible Upset

Date	Digester	Volatile Acids mg/L	Alkalinity mg/L as CaCO3	pH Units	Volatile Acids Ratio	
07-Jan-09	3	92	2580	7.35	0.0357	
10-Mar-09	3	120	2659	7.21	0.0451	
20-Mar-09	3	65	2440	7.23	0.0266	
25-Mar-09	3	83	2770	7.28	0.0300	
01-Apr-09	3	89	2600	7.22	0.0342	
08-Apr-09	3	57	2700	7.47	0.0211	
15-Apr-09	3	200	2500	7.17	0.0800	
22-Apr-09	3	119	2790	7.16	0.0427	
29-Apr-09	3	82	2890	7.17	0.0284	
06-May-09	3	72	3010	7.18	0.0239	
13-May-09	3	66	2890	7.16	0.0228	
20-May-09	3	64	3460	7.39	0.0185	
27-May-09	3	53	2770	7.57	0.0191	
10-Jun-09	3	20	2790	7.37	0.0072	
17-Jun-09	3	56	2770	7.35	0.0202	
24-Jun-09	3	85	2780	7.23	0.0306	
02-Jul-09	3	81	2830	7.29	0.0286	
08-Jul-09	3	89	3300	7.43	0.0270	
15-Jul-09	3	76	3370	8.06	0.0226	
22-Jul-09	3	58	3440	8	0.0169	
29-Jul-09	3	20	2610	7.34	0.0077	
12-Aug-09	3	20	2830	6.81	0.0071	
20-Aug-09	3	20	2980	7.44	0.0067	
26-Aug-09	3	49	2990	7.33	0.0164	
02-Sep-09	3	59	2880	7.35	0.0205	
16-Sep-09	3	71	3340	7.55	0.0213	
23-Sep-09	3	20	2750	8.02	0.0073	
30-Sep-09	3	64	2580	7.55	0.0248	
07-Oct-09	3	42	2660	7.5	0.0158	
14-Oct-09	3	70	2810	7.46	0.0249	
21-Oct-09	3	20	2830	7.28	0.0071	
28-Oct-09	3	20	2730	7.19	0.0073	
13-Nov-09	3	70	2560	7.16	0.0273	
18-Nov-09	3	67	796	7.25	0.0842	
25-Nov-09	3	52	2480	7.2	0.0210	
09-Dec-09	3	48	2740	7.39	0.0175	
16-Dec-09	3	20	2730	7.39	0.0073	
22-Dec-09	3	136	2840	7.3	0.0479	
29-Dec-09	3	71	318	6.6	0.2233	X

Friday, January 29, 2010


Appendix 16A - Digester 3 -Sludge Volatile Acids Ratio
10.000
1.000
0.100
0.010
0.001
Jan 16 07
Mar 14 07
Jan 02 08
Apr 02 08
Jun 18 08
Sep 24 08
Oct 08 08
Oct 29 08
Nov 12 08
Dec 03 08
Dec 17 08
Dec 29 08
Mar 10 09
Mar 25 09
Apr 08 09
Apr 22 09
May 06 09
May 20 09
Jun 10 09
Jun 24 09
Jul 08 09
Jul 22 09
Aug 12 09
Aug 26 09
Sep 16 09
Sep 30 09
Oct 14 09
Oct 28 09
Nov 18 09
Dec 09 09
Dec 22 09
Jan 06 10
Jan 20 10
0.016
0.017
0.016
0.017
0.296
0.017
0.018
0.017
1.400
0.012
3.758
3.961
3.409
3.158
3.370
1.801
1.638
1.865
1.659
0.567
0.466
0.270
0.130
0.075
0.036
0.045
0.027
0.030
0.034
0.021
0.080
0.043
0.028
0.024
0.023
0.018
0.019
0.007
0.020
0.031
0.029
0.027
0.023
0.017
0.008
0.007
0.007
0.007
0.007
0.007
0.021
0.016
0.025
0.007
0.025
0.007
0.027
0.084
0.021
0.018
0.007
0.048
0.223
0.044
0.022
0.018

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 17 - Sludge Analytical Data

Digester 1

Date	Total Solids mg/L	SG	Ammonia as N mg/L	As mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Hg mg/L	Mo mg/L	Ni mg/L	P mg/L	Pb mg/L	Se mg/L	Zn mg/L	Ecoli (cfu/1gm dry wht):	Ecoli (cfu/100 gm)
06-Feb-08	162000	1.1	1300	0.25	0.17	0.6	8.7	120	0.200	1.5	4	6700	23	0.35	110	25123	370000
01-Oct-08	29600	1	588	0.11	0.05	0.09	1.4	17	0.027	0.2	0.5	830	4.5	0.1	17	676	2000
03-Dec-08	7550	1	540	0.047	0.015	0.025	0.3	3.8	0.003	0.05	0.05	270	1.3	0.025	4.5	13200	10000
04-Feb-09	13000	1	978	0.08	0.015	0.025	0.8	10	0.017	0.05	0.3	570	2.4	0.07	10	9231	12000
04-Nov-09	26800	1	1020	0.005	0.03	0.09	2	18	0.019	0.2	0.5	959	2.8	0.025	18	6343	17000
06-Jan-10	25500	1	813	0.095	0.04	0.08	2	20	0.012	0.3	0.6	900	3.1	0.14	17	27451	70000

The Corporation of the City of St. Thomas - Water Pollution Control Plant

Appendix 18 - Digester 1 MOE Criteria Requirements

	Averages 04-Feb-09 to 06-Jan-10 (mg/L)		
Total Solids	21766.67		
Specific Gravity	1.00		
Phosphorus as P	809.67		
Ammonia as N	937.00		
		Nitrogen to Metal Ratio	**Minimum Acceptable Nitrogen to Metal Ratio**
Arsenic as As	0.06	15617	100
Cadmium as Cd	0.03	33071	500
Cobalt as Co	0.07	14415	50
Chromium as Cr	1.60	586	6
Copper as Cu	16.00	59	10
Mercury as Hg	0.02	58563	1500
Molybdenum as Mo	0.18	5111	180
Nickel as Ni	0.47	2008	40
Lead as Pb	2.77	339	15
Selenium as S	0.08	11962	500
Zinc as Zn	15.00	62	4

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 19 - Sludge Analytical Data

Dewatered Sludge

Date	Total Solids mg/L	SG	Ammonia as N mg/L	As mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Hg mg/L	Mo mg/L	Ni mg/L	P mg/L	Pb mg/L	Se mg/L	Zn mg/L	Ecoli (cfu/1gm dry wht):	Ecoli (cfu/100 gm)
07-May-08	217000	1.2	2300	0.3	0.36	0.8	13	180	0.300	1.9	6	7800	44	0.4	160	34839	630000
01-Oct-08	212000	1.2	910	0.8	0.23	0.7	9.7	130	0.200	1.8	4	6800	32	1.1	130	1415	25000
18-Nov-08	251000	1.3	1570	0.25	0.31	0.7	13	170	0.600	2.4	7	8800	70	0.35	170	6215	120000
03-Dec-08	226000	1.2	1750	1.4	0.36	0.8	12	170	0.200	1.9	3	9200	65	1.8	160	2973451	56000000
17-Mar-09	234000	1.2	2000	2	0.27	0.9	14	170	0.500	1.7	5	9100	32	2.3	170	107692	2100000
03-Jun-09	246000	1.3	2100	1.2	0.28	0.6	12	180	0.300	1.7	4	8700	27	1.7	160	1373984	26000000
05-Aug-09	225000	1.1	1600	0.25	0.36	1.1	20	240	0.400	2.1	6	11000	56	0.9	240	1564444	32000000
09-Sep-09	223000	1.1	1500	0.25	0.2	0.7	16	160	0.200	1.2	4	7600	36	0.35	160	1529148	31000000
02-Dec-09	244000	1.3	2100	1.2	0.29	0.8	20	200	0.200	2.7	4	9700	27	1.2	170	10123	190000

The Corporation of the City of St. Thomas - Water Pollution Control Plant
Appendix 20 - Land Application Criteria

Data Collected: 17-Mar-09 to 02-Dec-09

Data Compiled From: Dewatered

Number of Samples: 5

	Averages (mg/L)		
Total Solids	234400.00	**Application Rate at 8 tones of solids/hectare:**	34.13 cubic meters/hectare
Specific Gravity	1.20		
Phosphorus as	9220.00		
Ammonia as N	1860.00	**Metal Concentration (mg/Kg of Solids)**	**Maximum Metal Concentration (mg/Kg of Solids)**
Arsenic as As	0.98	4.18	170
Cadmium as Cd	0.28	1.19	34
Cobalt as Co	0.82	3.50	340
Chromium as Cr	16.40	69.97	2800
Copper as Cu	190.00	810.58	1700
Mercury as Hg	0.32	1.37	11
Molybdenum as Mo	1.88	8.02	94
Nickel as Ni	4.60	19.62	420
Lead as Pb	35.60	151.88	1100
Selenium as S	1.29	5.50	34
Zinc as Zn	180.00	767.92	4200

Ecoli	**(cfu/1gm dry wht)**	
	917078.2	
	(cfu/100 gm):	
	18258000	

City of St. Thomas - Water Pollution Control Plant
Appendix 21 - Hauled Sewage Volumes

Date	Contractor	Source	Address	Volume (gal)	Comments
08-Jan-09	Erie Excavating	Elgin Transmission	1241 Talbot St.	1500	
13-Jan-09	Erie Excavating	Kwikway Storage	50 Burwell Rd.	1500	
22-Jan-09	Erie Excavating	Elgin Transmission	1241 Talbot St.	1500	
02-Feb-09	Erie Excavating	Elmdale Cemetary	190 Sunset Drive	1500	
05-Feb-09	Erie Excavating	Elgin Transmission	1241 Talbot St.	2300	
06-Feb-09	Erie Excavating	Fairview Auto	1254 Talbot St.	1500	
12-Feb-09	Chitters Prana	Sparta Public School	45885 Sparta Line	3000	
12-Feb-09	Chitters Prana	Sparta Public School	45885 Sparta Line	3000	
12-Feb-09	Chitters Prana	Sparta Public School	45885 Sparta Line	3000	
17-Mar-09	Erie Excavating	Elgin Transmission	1241 Talbot St.	1500	
25-Mar-09	Erie Excavating	Rapley	19 Sunset Drive	1500	
27-Mar-09	Erie Excavating	Payne	16 Hill Street	800	
01-May-09	Erie Excavating	Elmdale Cemetary	190 Sunset Drive	1500	
14-May-09	Erie Excavating	Elgin Transmission	1241 Talbot St.	1500	
02-Jun-09	Erie Excavating	Kwikway Storage	50 Burwell Rd.	1500	
12-Jun-09	Erie Excacating	Fairview Auto	1254 Talbot St.	1500	
29-Jun-09	Erie Excacating	Elgin Transmission	1241 Talbot St.	1500	
20-Jul-09	Erie Excacating	Rapley	19 Sunset Drive	1500	
29-Jul-09	Erie Excacating	Elgin Transmission	1241 Talbot St.	1500	
29-Jul-09	Erie Excacating	Elmdale Cemetary	190 Sunset Drive	1500	
25-Aug-09	Erie Excacating	Darren Harvey	156 Hughes St	800	
28-Sep-09	Erie Excacating	Fairview Auto	1254 Talbot St.	1500	
29-Sep-09	Erie Excacating	Elgin Transmission	1241 Talbot St.	1500	
23-Oct-09	Erie Excacating	Ambrose Plumbing		1500	
02-Nov-09	Erie Excacating	Cardy	15 Hill Street	2000	
03-Nov-09	Erie Excacating	Rapley	19 Sunset Drive	1500	
05-Nov-09	Erie Excacating	Elmdale Cemetary	190 Sunset Drive	1500	
20-Nov-09	Erie Excacating	Elgin Transmission	1241 Talbot St.	1500	
15-Dec-09	Erie Excacating	Kwikway Storage	50 Burwell Rd.	1500	
23-Dec-09	Erie Excacating	Elgin Transmission	1241 Talbot St.	1500	
				49400	(gal)
				187	(cubic meters)

City of St Thomas - Water Pollution Control Plant
Appendix 22 - Hauled Sewage Summary

Year	Total Volume (gal)	# of Loads	Total Volume (cubic meters)
2001	78000	40	295
2002	66500	32	252
2003	2232000	596	8449
2004	80800	35	306
2005	98100	39	371
2006	53500	32	203
2007	53000	35	201
2008	63000	44	238
2009	49400	30	187