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2018

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# ST. THOMAS WATER POLLUTION CONTROL PLANT

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Annual Performance Report

Amended Environmental Compliance Approval -  
NUMBER 8264-AKVR34

For the Period:  
January 1st to December 31st, 2018

*Prepared by: Cailyn Kampers*



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## 1 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, Conservation and Parks Amended Environmental Compliance Approval 8264-AKVR34 shall be referred to as the ‘ECA’.

The average and peak daily sewage flow limits, 27,300 m<sup>3</sup>/day/year and 54,600 m<sup>3</sup>/day respectively, as set out in the ECA, were maintained at all times throughout 2018, with an annual average day flow of 17,406 m<sup>3</sup>/day and a peak day flow of 40,992 m<sup>3</sup>/day in November 2018.

Throughout 2018 the St. Thomas Water Pollution Control Plant was operated within the limits and objectives for CBOD5, Ammonia + Ammonium, TP, pH and E.Coli as set out in the ECA.

The Total Suspended Solids (TSS) Limit of 20mg/L was maintained at all times throughout 2018. Despite the use of best efforts, the Total Suspended Solids monthly average objective was not achieved in April 2018, as detailed in the table below:

Month	Average Monthly TSS - Effluent (Result / Loading)	ECA Average Monthly TSS Objective	ECA Average Monthly TSS Limit
April 2018	17 mg/L / 404 kg/day	15 mg/L / 409.5 kg/day	20 mg/L / 546 kg/day

The Suspended Solids were above the objective for April 2018, due to ongoing wet weather and a higher than normal presence of filamentous microorganisms within the treatment train. A list of Operational and Maintenance Items are detailed in section 3.1 Table 5 – Summary of Effluent Quality Control and Environmental Operating Issues.

There were 26 odour complaints in 2018; the resulting plant odour survey indicated that the solids treatment process was the source of the odour. Process changes were made that affected the odour throughout 2018.

There were 10 instances most of which were momentary where disinfection was not continuous as detailed in the Table 5- Summary of Effluent Quality Control and Environmental Operating Issues. There were no other diversions of sewage from any portion of the Water Pollution Control Plant.

As indicated by the data presented in this report, the operations of the St. Thomas Water Pollution Control Plant was both adequate and successful throughout 2018.

The following tables, Table 1 through 4, represent a summary of monitoring data collected at the plant throughout 2018:

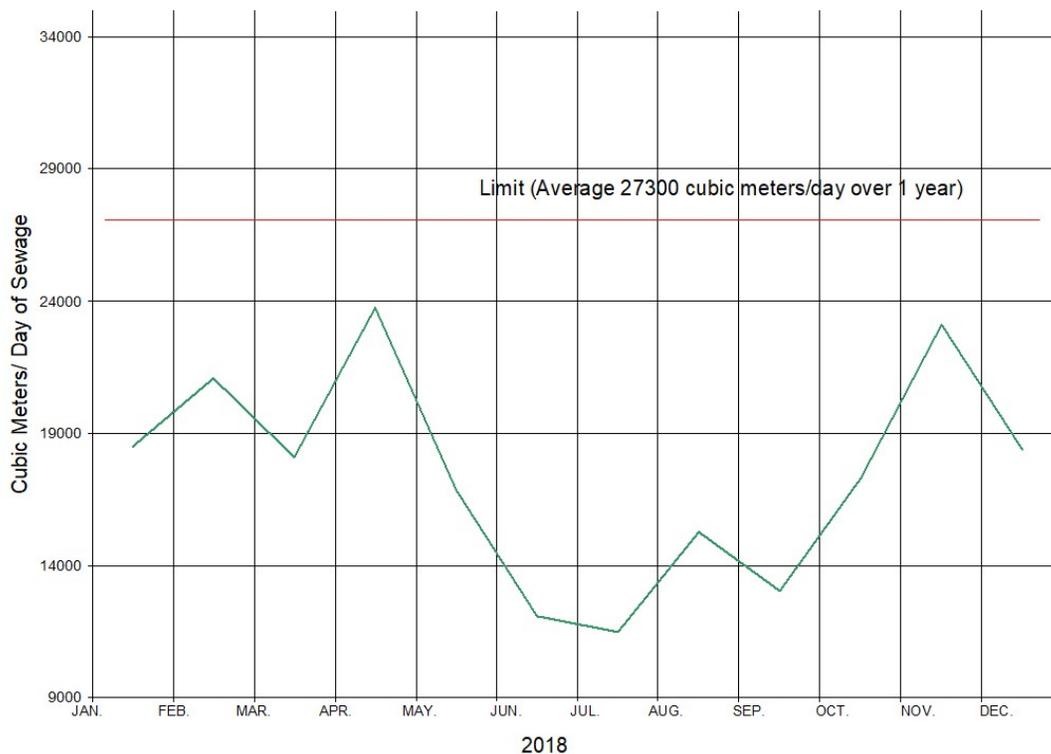
**1.1 Table 1 – Daily Sewage Flow Summary**

	January Flow (M3)	February Flow (M3)	March Flow (M3)	April Flow (M3)	May Flow (M3)	June Flow (M3)	July Flow (M3)	August Flow (M3)	September Flow (M3)	October Flow (M3)	November Flow (M3)	December Flow (M3)
<b>Min:</b>	10839	12292	13264	17237	12793	10663	8628	8798	10662	11997	15459	14227
<b>Max:</b>	40695	36610	31791	39156	25648	15666	25364	32187	25034	32833	40992	37808
<b>Avg:</b>	18481	21089	18100	23767	16846	12057	11488	15246	13032	17280	23099	18384
<b>Total:</b>	572899	590482	561088	713008	522212	361697	356124	472612	390963	535691	692980	569906
1	11212	14751	22900	22407	16690	12984	10320	12287	10662	22163	32205	19365
2	11137	14239	23839	19756	16431	12645	10758	11575	10662	27345	40992	21302
3	10941	14466	23354	20503	19071	15325	10742	11060	14058	17801	35207	20264
4	11914	14416	22398	39156	21969	13230	10661	9095	12878	18295	26619	18472
5	10839	13317	20498	25598	17837	12358	10528	8798	13227	15375	27000	17604
6	11291	12895	19646	24732	18974	12175	10408	18504	12731	32833	29579	17421
7	11794	12783	20589	22941	18096	11924	10180	17015	12341	28911	24199	16733
8	10857	12665	19820	21216	16725	11816	10213	32187	12274	20968	21310	16581
9	11060	12292	19132	19295	16385	11638	10105	92029	12388	19074	24415	16706
10	13178	12714	19095	18308	16349	12003	9519	16673	16184	17122	23114	15688
11	35827	113735	17485	18041	16006	12298	9557	14657	13598	15907	21088	15308
12	39322	121275	17289	19088	25648	11443	9824	14520	12132	14613	19047	15073
13	34458	12391	16462	17597	18593	11113	9914	13488	12486	14826	19119	14965
14	25731	15264	16204	23834	16835	10839	9978	12638	12214	14490	17795	15420
15	20650	29074	15790	30096	24937	10775	10211	11190	12325	14800	17301	15571
16	17669	30476	15321	38153	18937	10663	10185	1620983	12316	13743	21264	14713
17	16702	20992	15666	38427	16951	170920	9577	23267	11998	13325	21038	14541
18	15883	18146	15525	34875	15946	12618	9577	19447	11663	12561	19964	14227
19	15462	24416	14603	27025	15793	190940	8628	15403	11767	194467	18443	15780
20	15820	27646	14532	23952	14767	11079	9926	2011852	11414	2013848	2017548	2037808
21	15318	28018	14232	22406	15172	10686	219420	18755	11675	2112483	2116615	2122931
22	15318	33252	14171	21290	16170	12490	16702	14807	11451	2212483	2216149	2219929
23	40695	36610	13955	19815	2314577	12534	11909	2313798	2311565	2312467	2315459	2318500
24	28976	36141	14016	20254	14057	2415666	2425364	2413014	2411852	2412415	2422613	2416702
25	17367	34801	14066	27863	13684	12872	13326	2513349	2525034	2512076	2520828	2516262
26	18530	31617	13264	21494	13822	11621	12178	2612020	2616328	2611997	2631602	2616262
27	18530	25945	14000	19722	17882	12704	2713881	2722100	2713352	2718504	2731795	2717350
28	18530	24695	15521	19214	14254	11964	2815029	2812948	2812833	2818248	2823132	2824369
29	17110		22859	18713	13675	11424	2912114	2911855	2912979	2916838	2918329	2919977
30	15553		31791	17237	13186	10950	3013260	3012718	3014576	3014786	3019211	3019432
31	15225		23065		12793		3112130	3112180		3130927		3124650

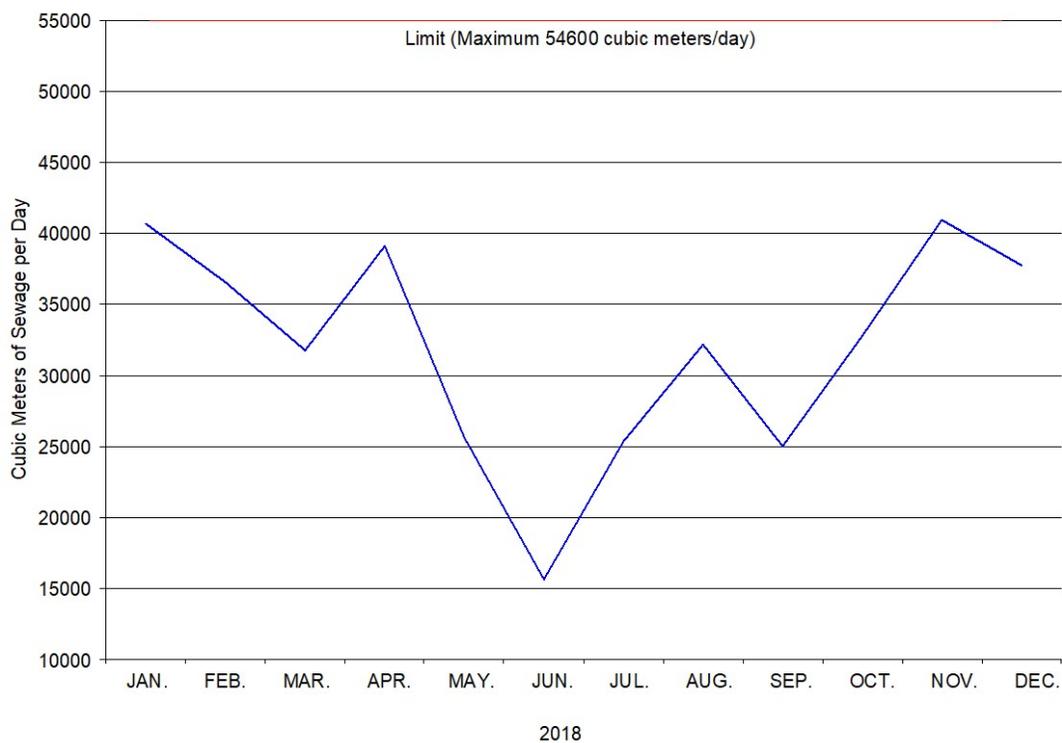
**1.2 Table 2 – Monthly Average Sewage Flow Summary**

Month of:	2018	Total Flow (m3)	Average Flow (m3)	Min. Flow (m3)	Max. Flow (m3) 54,600 m3/day
January	2018	572899	18481	10839	40695
February	2018	590482	21089	12292	36610
March	2018	561088	18100	13264	31791
April	2018	713008	23767	17237	39156
May	2018	522212	16846	12793	25648
June	2018	361697	12057	10663	15666
July	2018	356124	11488	8628	25364
August	2018	472612	15246	8798	32187
September	2018	390963	13032	10662	25034
October	2018	535691	17280	11997	32833
November	2018	692980	23099	15459	40992
December	2018	569906	18384	14227	37808
<b>Totals:</b>		6339662	17406	8628	40992

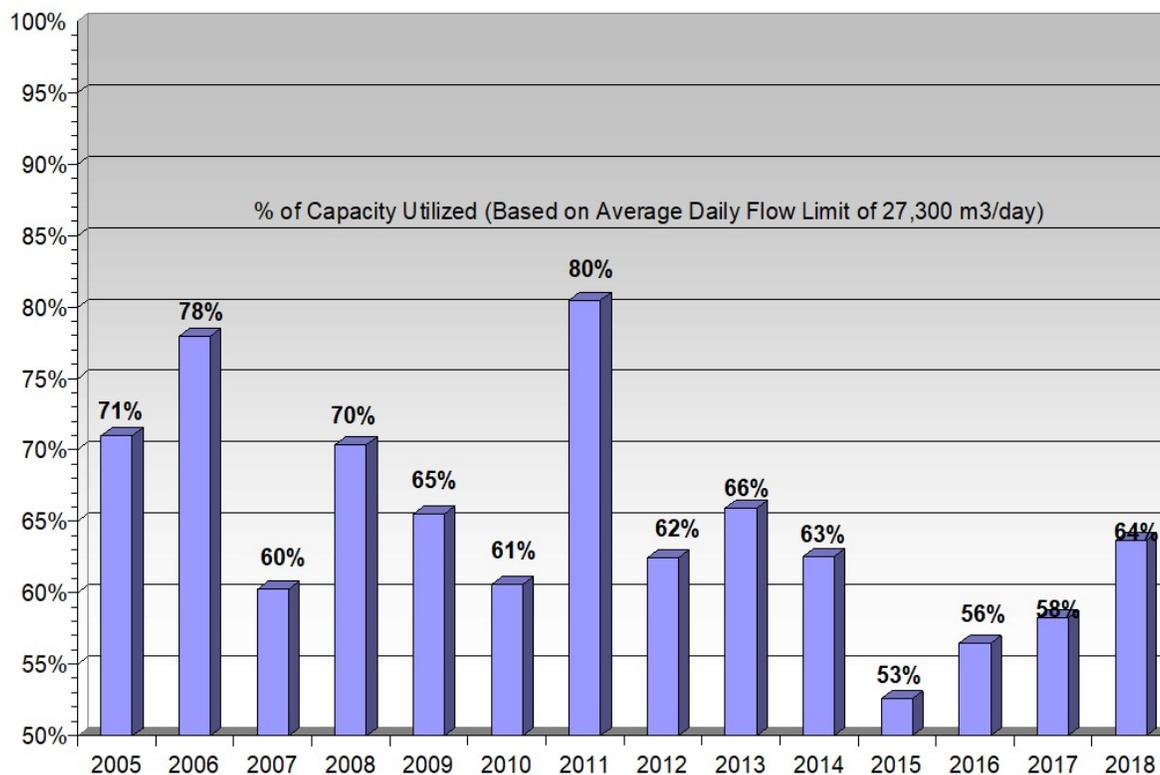
**1.3 Chart 1 – Monthly Average Day Sewage Flow**



**1.4 Chart 2 – Monthly Maximum Day Sewage Flow**



1.5 Chart 3 – Annual Average Day as a percent of WPCP Average Day Flow Capacity



1.6 Table 3 – Weekly Laboratory Analytical Data and Un-ionized Ammonia

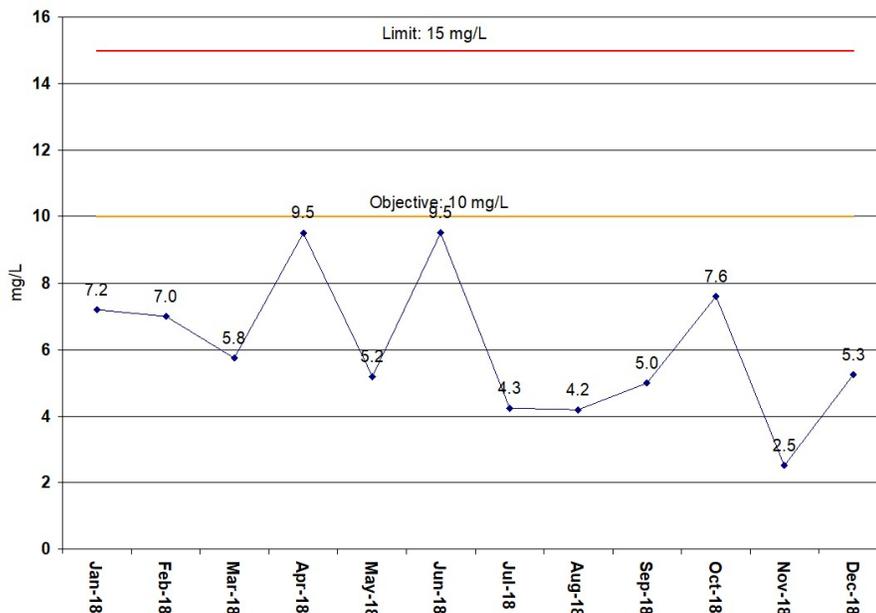
Date	pH	Temp C Eff	BOD (mg/L) Inf.	CBOD (mg/L) Eff.	TSS (mg/L) Inf.	TSS (mg/L) Eff.	Amm (mg/L) Inf.	Amm (mg/L) Eff.	TKN (mg/L) Inf.	TKN (mg/L) Eff.	NO2 Eff.	NO3 Eff.	NO2NO3 Eff.	TP (mg/L) Inf.	TP (mg/L) Eff.	Ecoli Final Eff.	UV% Power	UI Amm Eff. (ug/L)
03-Jan-18	7.2	12.9	302	5.0	200	9	36.2	0.9	51.3	4.4	0.39	29.2	29.6	5.8	0.76	42	60%	3.31
10-Jan-18	7.5	12.9	250	7.0	336	7	30.3	0.05	40	3.9	0.26	26.1	26.4	4.96	0.77	68	60%	0.37
17-Jan-18	7.5	11.4	230	6.0	80	9	19.7	0.8	24.4	1.7	0.45	16.3	16.8	2.37	0.39	92	68%	5.21
24-Jan-18	7.5	11.6	64	11.0	63	18	11.4	1.3	14.1	2.5	0.74	10	10.7	1.35	0.58	440	96%	8.59
31-Jan-18	7.3	11.9	179	7.0	144	10	18.3	0.2	24.5	1.8	1.21	18.3	19.5	2.51	0.84	152	64%	0.86
<b>AVERAGE :</b>			<b>205</b>	<b>7.2</b>	<b>165</b>	<b>10.6</b>	<b>23.18</b>	<b>0.65</b>	<b>30.86</b>	<b>2.86</b>	<b>0.61</b>	<b>19.98</b>	<b>20.60</b>	<b>3.40</b>	<b>0.67</b>			<b>3.67</b>
07-Feb-18	7.3	10.8	205	4.0	185	9	22.8	0.1	28.2	1.3	2.19	18.8	21	3.18	0.88	94	68%	0.39
14-Feb-18	7.3	11.4	153	7.0	186	6	23.1	0.1	27.6	0.25	3.49	19.1	22.6	2.91	0.83	56	60%	0.41
21-Feb-18	7.5	7.9	28	8.0	27	13	2.3	0.05	3.3	1	0.13	7.35	7.48	0.4	0.3	76	92%	0.25
28-Feb-18	7.4	11.2	115	9.0	75	9	14	0.5	13.5	1.3	1.81	11.4	13.2	1.54	0.54	36	96%	2.55
<b>AVERAGE :</b>			<b>125.3</b>	<b>7.0</b>	<b>118</b>	<b>9.3</b>	<b>15.55</b>	<b>0.19</b>	<b>18.15</b>	<b>0.96</b>	<b>1.91</b>	<b>14.16</b>	<b>16.07</b>	<b>2.01</b>	<b>0.64</b>			<b>0.90</b>
07-Mar-18	7.4	10.5	143	5.0	118	6	14.7	0.05	20.8	0.6	1.71	15.5	17.2	1.64	0.61	50	72%	0.24
14-Mar-18	7.3	10.5	155	6.0	102	4	15.1	0.3	21.9	4.2	1.34	16.5	17.8	2.04	0.7	202	68%	1.15
21-Mar-18	7.1	11	120	6.0	94	4	19.4	0.4	24.5	2.4	0.96	18.8	19.8	2.25	0.77	22	68%	1.01
28-Mar-18	7.2	11.9	222	6.0	251	7	18.5	0.9	22.2	1.7	1.12	18.9	20	2.97	0.75	20	60%	3.06
<b>AVERAGE :</b>			<b>160</b>	<b>5.8</b>	<b>141</b>	<b>5.3</b>	<b>16.93</b>	<b>0.41</b>	<b>22.35</b>	<b>2.23</b>	<b>1.28</b>	<b>17.43</b>	<b>18.70</b>	<b>2.23</b>	<b>0.71</b>			<b>1.37</b>
04-Apr-18	7	9.5	84	8.0	57	15	13	0.4	16	1.2	0.66	14.1	14.8	1.34	0.57	32	160%	0.71
11-Apr-18	7	13.7	174	8.0	157	16	19	0.6	22.7	1	0.56	17	17.6	2.33	0.49	82	72%	1.48
18-Apr-18	7.1	9.6	40	16.0	35	22	8.2	2.2	10.7	2.6	0.57	9.73	10.3	0.74	0.48	396	144%	4.97
25-Apr-18	7.2	11.6	63	6.0	162	15	12.2	0.4	19	1	0.26	16.7	17	2.02	0.6	74	128%	1.33
<b>AVERAGE :</b>			<b>90.25</b>	<b>9.5</b>	<b>103</b>	<b>17.0</b>	<b>13.10</b>	<b>0.90</b>	<b>17.10</b>	<b>1.45</b>	<b>0.51</b>	<b>14.38</b>	<b>14.93</b>	<b>1.61</b>	<b>0.54</b>			<b>2.12</b>

Date	pH	Temp C Eff	BOD (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	UI Amm Eff. (ug/L)
02-May-18	7.1	13.1	169	7.0	230	13	16.9	0.2	22	0.9	0.11	18.6	18.7	2.34	0.51	20	72%	0.59
09-May-18	7.1	13.8	94	2.0	87	5	17.4	0.1	21.6	3.5	0.15	17	17.2	2.34	0.37	124	78%	0.31
16-May-18	7.2	13.6	142	6.0	140	13	12.5	0.6	14.4	1.4	0.14	13.8	13.9	1.42	0.45	38	78%	2.32
23-May-18	7.1	14.7	190	5.0	202	6	18.3	0.4	22.1	0.25	0.14	17	17.1	2.31	0.53	22	76%	1.34
30-May-18	7.1	16.1	156	6.0	230	8	21.1	0.1	23.6	0.6	0.14	17.5	17.6	2.5	0.65	44	68%	0.37
<b>AVERAGE :</b>			<b>150.2</b>	<b>5.2</b>	<b>178</b>	<b>9.0</b>	<b>17.24</b>	<b>0.28</b>	<b>20.74</b>	<b>1.33</b>	<b>0.14</b>	<b>16.78</b>	<b>16.90</b>	<b>2.18</b>	<b>0.50</b>			<b>0.99</b>
06-Jun-18	6.9	16	197	2.0	318	9	23.6	0.05	33.3	0.25	0.1	20.9	21	3.9	0.58	26	68%	0.12
13-Jun-18	6.8	17.9	213	7.0	330	6	25.5	0.4	33	1.7	0.52	21.6	22.1	4	0.63	28	64%	0.85
20-Jun-18	6.9	18.1	254	7.0	823	8	22.6	1.3	43.7	2.7	0.44	20.5	20.9	4.2	0.74	32	60%	3.55
27-Jun-18	6.96	18.4	250	22.0	283	7	22.7	0.05	37.1	0.6	0.2	19.5	19.7	4.9	0.58	14	60%	0.16
<b>AVERAGE :</b>			<b>228.5</b>	<b>9.5</b>	<b>439</b>	<b>7.5</b>	<b>23.60</b>	<b>0.45</b>	<b>36.78</b>	<b>1.31</b>	<b>0.32</b>	<b>20.63</b>	<b>20.93</b>	<b>4.25</b>	<b>0.63</b>			<b>1.17</b>
04-Jul-18	6.8	19.5	214	5.0	456	4	25.3	0.2	31.6	1.1	0.45	21.5	22	4.14	0.48	26	60%	0.48
11-Jul-18	6.8	19.4	130	2.0	159	3	28.2	0.1	37.1	0.25	0.07	24.3	24.4	2.86	0.66	8	60%	0.24
18-Jul-18	7.1	20.6	434	4.0	782	4	23.8	0.1	33.9	3.4	0.07	24.2	24.3	3.77	0.6	74	60%	0.52
25-Jul-18	6.8	20.6	188	6.0	566	11	11.7	0.1	16.6	1	0.07	13.9	14	2.4	0.35	98	60%	0.26
<b>AVERAGE :</b>			<b>241.5</b>	<b>4.3</b>	<b>491</b>	<b>5.5</b>	<b>22.25</b>	<b>0.13</b>	<b>29.80</b>	<b>1.44</b>	<b>0.17</b>	<b>20.98</b>	<b>21.18</b>	<b>3.29</b>	<b>0.52</b>			<b>0.37</b>
01-Aug-18	6.9	20.6	181	2.0	303	8	22.5	1.2	26.3	2.3	0.25	18.5	18.5	2.76	0.49	640	64%	3.93
08-Aug-18	6.8	20.6	176	4.0	252	11	13.7	0.2	13.7	0.6	0.06	15	15.1	1.56	0.35	620	80%	0.52
16-Aug-18	7	21.1	257	9.0	318	9	19.9	0.05	22.6	1.2	0.06	19.1	19.2	2.04	0.62	98	60%	0.21
21-Aug-18																98	92%	
22-Aug-18	7.2	20.5	134	2.0	217	12	10.9	0.1	25.7	0.25	0.04	14.9	14.9	4.1	0.68	114	64%	0.65
28-Aug-18																39	60%	
30-Aug-18	7.1	21.1	138	4.0	322	11	14.1	0.1	18.5	1	0.08	15.9	16	2.33	0.49	38	60%	0.54
<b>AVERAGE :</b>			<b>177.2</b>	<b>4.2</b>	<b>282</b>	<b>10.2</b>	<b>16.22</b>	<b>0.33</b>	<b>21.36</b>	<b>1.07</b>	<b>0.10</b>	<b>16.68</b>	<b>16.74</b>	<b>2.56</b>	<b>0.53</b>			<b>1.17</b>
05-Sep-18	6.9	21.9	121	7.0	137	9	19.1	0.2	26.4	1.4	0.1	15.2	15.3	3.06	0.56	54	60%	0.72
12-Sep-18	7.6	21.8	210	6.0	288	14	17.4	0.1	29.1	1.7	0.04	20.8	20.8	3.2	0.52	50	60%	1.77
19-Sep-18	7.1	20.7	186	5.0	370	12	20.4	0.05	20.2	1.6	0.03	24.3	24.3	3.24	0.54	1	60%	0.26
26-Sep-18	6.9	20.7	222	2.0	291	12	11.8	1	16	2.2	0.22	14.1	14.3	2.46	0.56	16	60%	3.30
<b>AVERAGE :</b>			<b>184.8</b>	<b>5.0</b>	<b>272</b>	<b>11.8</b>	<b>17.18</b>	<b>0.34</b>	<b>22.93</b>	<b>1.73</b>	<b>0.10</b>	<b>18.60</b>	<b>18.68</b>	<b>2.99</b>	<b>0.55</b>			<b>1.51</b>
03-Oct-18	7.1	19.3	173	6.0	231	11	8.6	0.2	11.1	1.2	0.09	12.2	12.3	1.49	0.48	60	72%	0.94
10-Oct-18	6.9	20.4	181	4.0	231	11	11.1	1	14.9	2.3	0.2	0.12	0.32	2	0.41	18	60%	3.23
17-Oct-18	7.3	18.7	245	6.0	304	16	19.9	0.3	26	1.6	0.21	19.4	19.6	2.39	0.62	24	60%	2.14
24-Oct-18	7.3	18.2	129	7.0	324	13	21.1	0.2	25.8	1.6	0.32	22.6	22.9	2.74	0.64	28	60%	1.37
31-Oct-18	7.3	17.9	194	15.0	273	11	17.1	0.6	20.6	0.9	0.53	17.5	18	2.44	0.64	300	88%	4.03
<b>AVERAGE :</b>			<b>184.4</b>	<b>7.6</b>	<b>273</b>	<b>12.4</b>	<b>15.56</b>	<b>0.46</b>	<b>19.68</b>	<b>1.52</b>	<b>0.27</b>	<b>14.36</b>	<b>14.62</b>	<b>2.21</b>	<b>0.56</b>			<b>2.34</b>
07-Nov-18	7.4	16.6	150	4.0	171	14	7.9	0.2	13.8	1	0.3	11.1	11.4	1.8	0.59	21	86%	1.54
14-Nov-18	7.5	15.7	46	2.0	240	10	14.4	0.05	21.8	2.4	0.05	17.2	17.3	1.93	0.75	44	72%	0.45
21-Nov-18	7.3	15.2	139	2.0	159	6	24.2	0.05	30.4	0.6	0.06	16.4	16.5	2.9	0.59	18	72%	0.28
28-Nov-18	7.8	9.5	73	2.0	288	11	9.3	0.05	12.4	0.25	0.23	12	12.2	1.3	0.47	30	80%	0.56
<b>AVERAGE :</b>			<b>102</b>	<b>2.5</b>	<b>215</b>	<b>10.3</b>	<b>13.95</b>	<b>0.09</b>	<b>19.60</b>	<b>1.06</b>	<b>0.16</b>	<b>14.18</b>	<b>14.35</b>	<b>1.98</b>	<b>0.60</b>			<b>0.70</b>
05-Dec-18	7.2	15.2	136	2.0	162	8	16.1	0.2	20.3	1.6	0.26	16.9	17.2	1.63	0.74	22	70%	0.87
12-Dec-18	7.2	13.9	185	2.0	224	7	21.2	0.1	25.6	1	0.27	19.9	20.2	2.35	0.76	44	60%	0.40
19-Dec-18	7.4	13.6	302	13.0	286	9	20.7	0.3	36.2	0.025	0.54	20.7	21.2	3.8	0.72	22	60%	1.84
27-Dec-18	7.7	9.5	279	4.0	128	3	18.4	1.1	23.9	0.7	1.04	18.5	19.5	2.83	0.71	14	62%	9.76
<b>AVERAGE :</b>			<b>225.5</b>	<b>5.3</b>	<b>200</b>	<b>6.8</b>	<b>19.10</b>	<b>0.43</b>	<b>26.50</b>	<b>0.83</b>	<b>0.53</b>	<b>19.00</b>	<b>19.53</b>	<b>2.65</b>	<b>0.73</b>			<b>3.22</b>

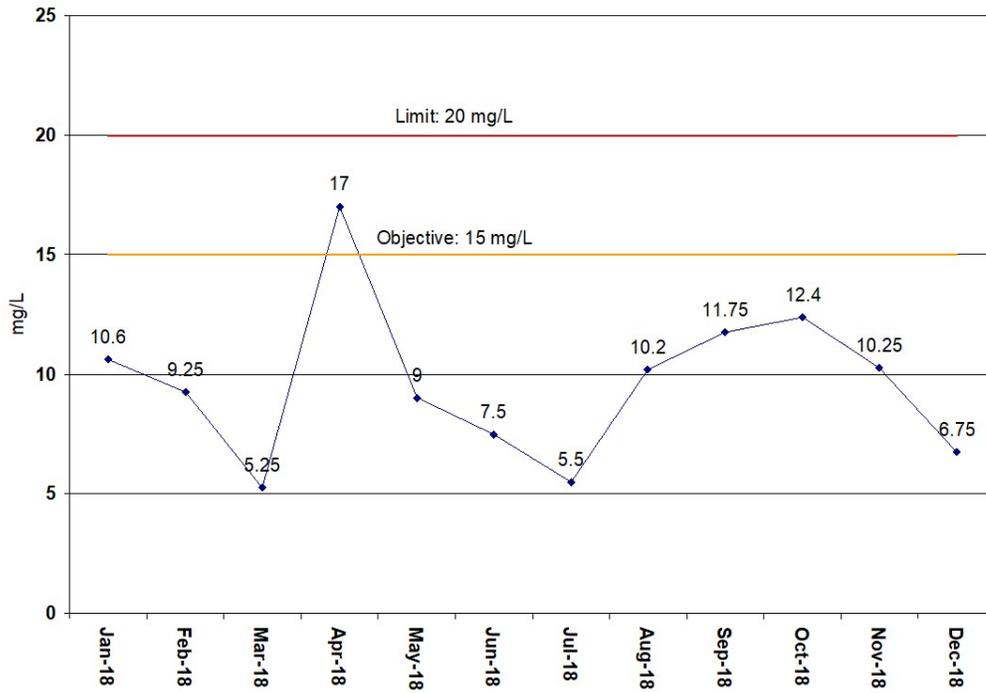
1.7 Table 4 – Monthly Average Influent/Effluent Concentrations and Loadings

Date	# of Days	Total Flow (m3)	# of Samples	Inf.	Eff.	CBOD		TSS		Eff. Amm		TKN		TP		E.coli	pH
						15(10)mg/L	20(15)mg/L	D-A (3) M-N 5(1)mg/L	M-N 136.5 (27.3)	D-A 81.9 kg/d	Inf.	Eff.	Inf.	Eff.	1(0.8)mg/L	27.3(21.8 kg/d)	Geomean cfu/100mL
January 2018	31	572899	5	5	(mg/L):	205	7.2	165	10.6	0.65	30.86	2.86	3.4	0.67	112	7.2	
					(kg/day):	3789	133	3042	196	12.0			63	12.3		7.5	
February 2018	28	590482	4	4	(mg/L):	125	7.0	118	9.3	0.19	18.15	0.96	2.0	0.64	62	7.3	
					(kg/day):	2641	148	2494	195	4.0			42	13.4		7.5	
March 2018	31	561088	4	4	(mg/L):	160	5.8	141	5.3	0.41	22.35	2.23	2.2	0.71	46	7.1	
					(kg/day):	2896	104	2557	95	7.5			40	12.8		7.4	
April 2018	30	713008	4	4	(mg/L):	90	9.5	103	17.0	0.90	17.10	1.45	1.6	0.54	94	7	
					(kg/day):	2145	226	2442	404	21.4			38	12.7		7.2	
May 2018	31	522212	5	5	(mg/L):	150	5.2	178	9.0	0.28	20.74	1.33	2.2	0.50	39	7.1	
					(kg/day):	2530	88	2995	152	4.7			37	8.5		7.2	
June 2018	30	361697	4	4	(mg/L):	229	9.5	439	7.5	0.45	36.78	1.31	4.3	0.63	24	6.8	
					(kg/day):	2755	115	5287	90	5.4			51	7.6		6.96	
July 2018	31	356124	4	4	(mg/L):	242	4.3	491	5.5	0.13	29.80	1.44	3.3	0.52	35	6.8	
					(kg/day):	2774	49	5638	63	1.4			38	6.0		7.1	
August 2018	31	472612	5	5	(mg/L):	177	4.2	282	10.2	0.33	21.36	1.07	2.6	0.53	130	6.8	
					(kg/day):	2702	64	4305	156	5.0			39	8.0		7.2	
September 2018	30	390963	4	4	(mg/L):	185	5.0	272	11.8	0.34	22.93	1.73	3.0	0.55	14	6.9	
					(kg/day):	2408	65	3538	153	4.4			39	7.1		7.6	
October 2018	31	535691	5	5	(mg/L):	184	7.6	273	12.4	0.46	19.68	1.52	2.2	0.56	47	6.9	
					(kg/day):	3186	131	4711	214	7.9			38	9.6		7.3	
November 2018	30	692980	4	4	(mg/L):	102	2.5	215	10.3	0.09	19.60	1.06	2.0	0.60	27	7.3	
					(kg/day):	2356	58	4955	237	2.0			46	13.9		7.8	
December 2018	31	569906	4	4	(mg/L):	226	5.3	200	6.8	0.43	26.50	0.83	2.7	0.73	23	7.2	
					(kg/day):	4146	97	3677	124	7.8			49	13.5		7.7	
<b>Totals</b>		<b>365</b>	<b>6339662</b>	<b>52</b>	<b>52</b>	Avg.(mg/L):	<b>173</b>	<b>6.1</b>	<b>240</b>	<b>9.6</b>	<b>0.39</b>	<b>23.82</b>	<b>1.48</b>	<b>2.6</b>	<b>0.60</b>		
						Avg.(kg/day):	<b>2861</b>	<b>106</b>	<b>3803</b>	<b>173</b>	<b>7</b>			<b>43</b>	<b>10</b>		

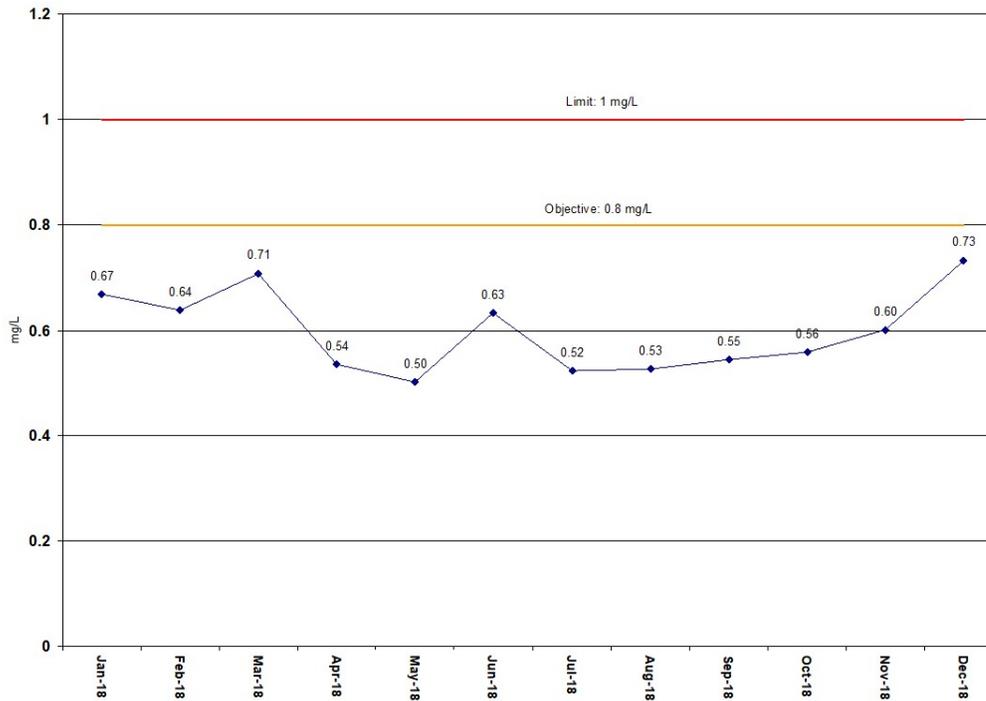
1.8 Chart 4 – Monthly Average Effluent CBOD (mg/L)



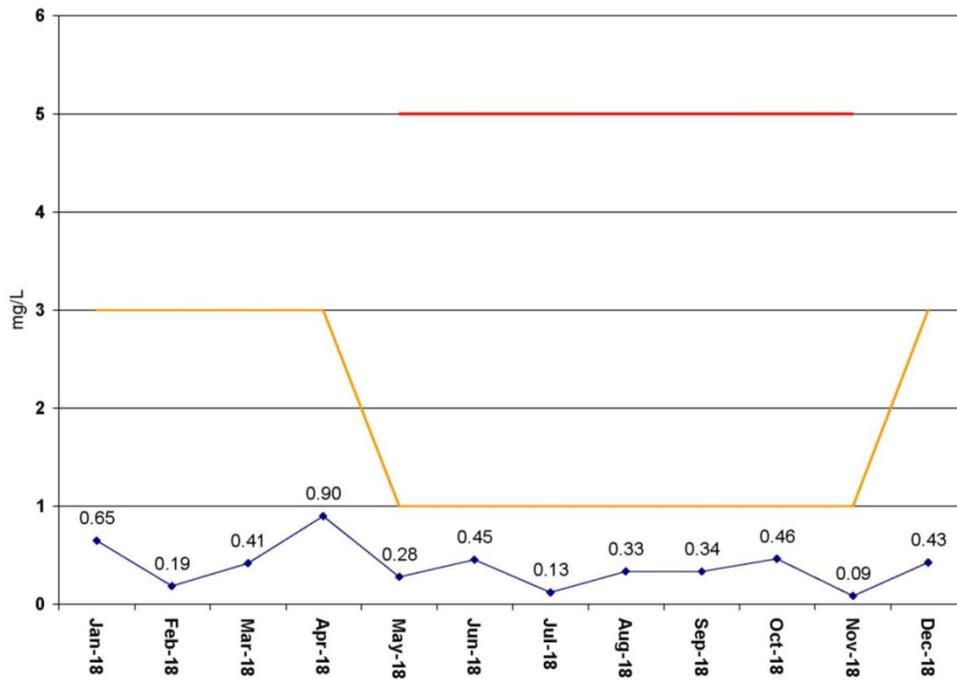
**1.9 Chart 5 – Monthly Average Effluent Total Suspended Solids (mg/L)**



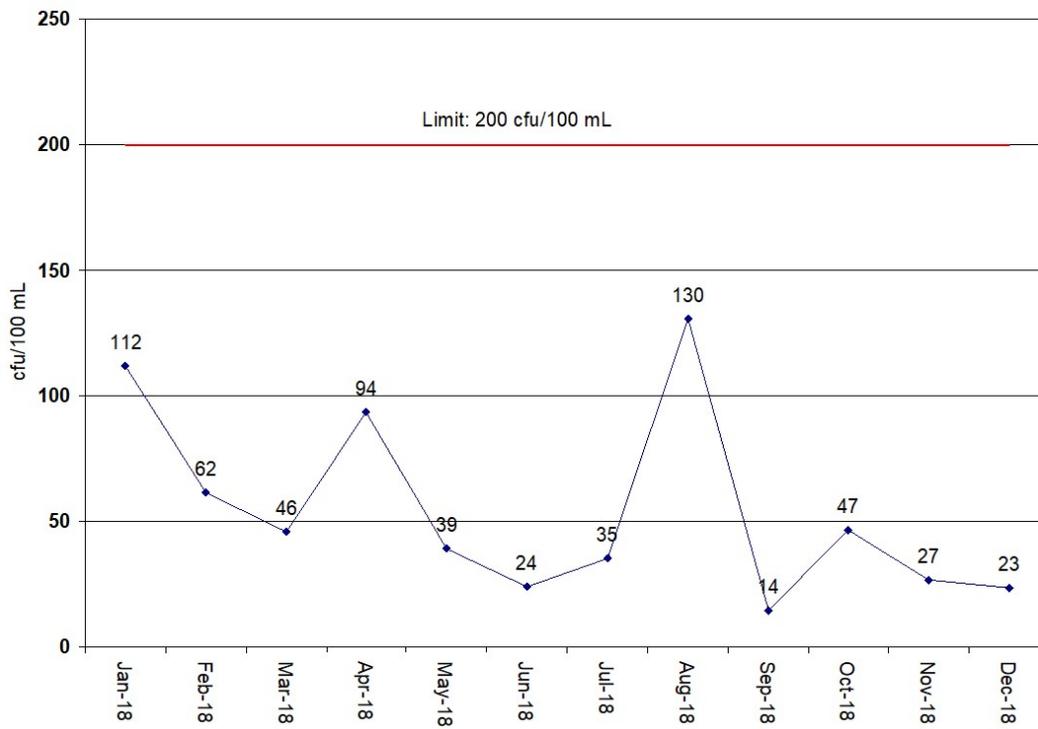
**1.10 Chart 6 – Monthly Average Effluent Total Phosphorus (mg/L)**



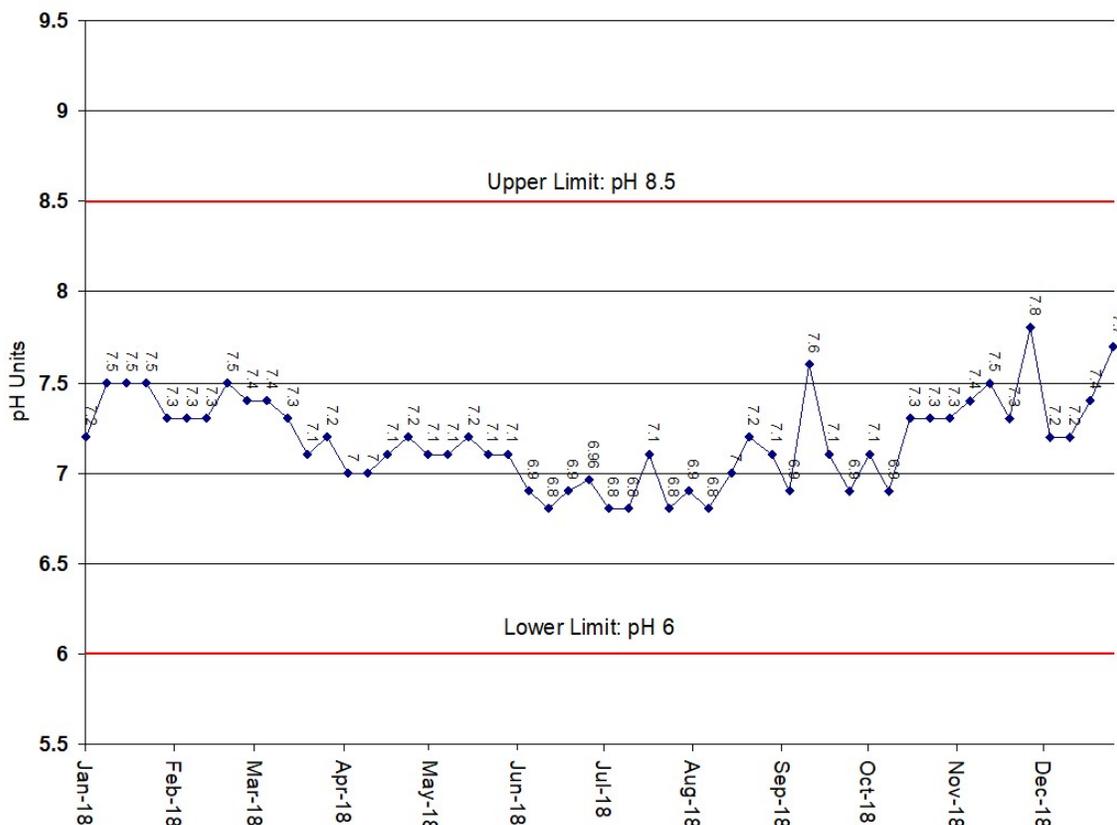
**1.11 Chart 7 – Monthly Average Effluent Ammonia + Ammonium (mg/L)**



**1.12 Chart 8 – Monthly Geomean Effluent E.Coli. (cfu/100 mL)**



### 1.13 Chart 9 – Weekly Effluent pH



## 2 Data Interpretation:

The following represents a comprehensive interpretation of all monitoring and certified analytical data obtained during the 2018 reporting period, comparing plant effluent quality and quantity to the criteria stipulated in the ECA.

### Peak Flow:

The peak day flow measured through the plant was 40,992 m<sup>3</sup>/day in November 2018. This represents 75% of the ECA peak day rating of 54,600 m<sup>3</sup>/day.

### Average Daily Flow:

The average daily flow for the year measured through the plant in 2018 was 17,406 m<sup>3</sup>/day. This represents 64% of the ECA average day rating of 27,300 m<sup>3</sup>/day for any period greater than one (1) calendar year. A three year average daily flow for 2016–15,436 m<sup>3</sup>/day and 2017–15,923 m<sup>3</sup>/day and 2018–17,406 m<sup>3</sup>/day is 16,255 m<sup>3</sup>/day or 60% of plant capacity.

### **Overflow, Bypass and Occurrences:**

5 miscellaneous spills occurred in 2018 as detailed in Table 5- Summary of Effluent Quality Control and Environmental Operating Issues. There were no other diversions of sewage from any portion of the Water Pollution Control Plant. Diversions of sewage of this nature are prohibited.

Wet weather overflow events from the Combined Sewer Overflow Facility (ECA#3-1839-98-996) and Sewage Pumping Stations are detailed in Table 6- Summary of Overflows, Bypasses and Spills.

### **Carbonaceous Biochemical Oxygen Demand (5 day):**

The highest monthly average CBOD<sub>5</sub> in effluent was 9.5 mg/L in April and June of 2018 with an annual average of 6.1 mg/L. Effluent CBOD<sub>5</sub> loadings were highest in April of 2018 at 226 kg/d, and averaged 106 kg/d over the reporting period. As per the ECA, 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 2018.

### **Total Suspended Solids:**

The highest monthly average Total Suspended Solids in effluent was 17 mg/L in April of 2018 with an annual average of 9.6 mg/L. Effluent TSS Loadings were highest in April of 2018 at 404 kg/d and averaged 173 kg/d over the reporting period. As per the ECA, the monthly average limit of 20 mg/L with annual average loading limits of 546 kg/d were not exceeded at any time in 2018.

### **Total Phosphorus:**

The highest monthly average Total Phosphorus in effluent was 0.73 mg/L in December of 2018 with an annual average of 0.60 mg/L. Effluent Total Phosphorus Loadings were highest in November of 2018 at 13.9 kg/d and averaged 10 kg/d over the reporting period. As per the ECA, 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 2018.

### **(Ammonia + Ammonium) Nitrogen:**

The highest monthly average (Ammonia + Ammonium) Nitrogen in effluent was 0.90 mg/L in April of 2018 with an annual average of 0.39 mg/L. Effluent (Ammonia + Ammonium) Nitrogen Loadings were highest in April at 21.4 kg/d and averaged 7 kg/d over the reporting period. As per the ECA, 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 2018.

### **Effluent pH:**

The effluent pH ranged from 6.8 to 7.8 throughout 2018. As per the ECA, the range limit of 6.0 to 8.5 was maintained throughout the reporting period.

### **Disinfection:**

The highest monthly geomean E.coli was 130 cfu/100 ml in August of 2018. As per the ECA, the monthly geomean limit of 200 cfu/100 ml was not exceeded at any time during the reporting period.

### **Complaints:**

There were 26 odour complaints in 2018. The resulting plant odour survey indicated that the solids treatment process was the source of the odour. Process changes were made that affected the odour throughout 2018.

### 3 Operational Summaries:

The following tables, Table 5 through 9, represent a summary of effluent quality assurance/control measures, major maintenance conducted at the plant, measures taken to mitigate environmental and operational problems, future plant alterations and upgrades and monitoring equipment calibration/maintenance procedures:

#### 3.1 Table 5 – Summary of Effluent Quality Control and Environmental Operating Issues

Date	Details or Response	Type	Description	Details or Response
17-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaints were called in from residents	Recorded the two odour concerns and contacted the MOECC. An Environmental Specialist has been contacted to assist with odour.
19-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaint from resident	Recorded the odour concern and contacted the MOECC. An Environmental Specialist was on site working on this issue on January 19, 2018.
20-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	A one minute power failure caused the UV treatment to go down resulting in no disinfection for 3 minutes and approximately 54 m3	Record event and report to MOECC SAC. Because the power failure was shorter than the reset time of the UV bulbs there was only one bypass.
21-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaints were called in from residents	Recorded the odour concern and contacted the MOECC. An Environmental Specialist was on site working on this issue on June 19, 2018. Further odour monitoring will be conducted this week.
23-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaints was called in from resident	Recorded the odour concern and contacted the MOECC. An Environmental Specialist is still working to assist with odour and is attending again this week to add remedial measures.
23-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaints was called in from resident	Recorded the odour concern and contacted the MOECC. An Environmental Specialist is still working to assist with odour and is attending again this week to add remedial measures.
31-Jan-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	UV Banks turned off while being cleaned. Banks were off for approximately 20 minutes at approximately 1:40 PM. Approximately 258 cubic meters with UV banks off.	Reset second UV bank and it started. Report spill to MOECC SAC. Investigate issue with maintenance.
11-Feb-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Trojan UV system turned off at 12:48 am on Feb 11, 2018 for approximately 102 minutes at 120 L/s for an estimated spill of 734 m3.	MOECC SAC was contacted. Maintenance was contacted. The sensor was bypassed to force the UV system to remain on. A new sensor is being ordered and will be installed as soon as it arrives.
01-Mar-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Wet test with potable water was being conducted between a freshly cleaned Digester 3 and the new Lystek system when a transfer pipe pumping potable water from digester ruptured and water	The transfer was stopped. A Vac-Truck was contacted to suck up pooled water. MOECC was contacted as a precautionary measure. Pipe to be repaired on March 02, 2018 in the AM.
19-Mar-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	When the dump truck backed out of the centrifuge bay - dirty water leaked out of the tailgate and leaked onto the gravel roadway trickling towards a catch basin. <100 L of contaminated water. It	Contain the area with dirt using the bobcat. Operators very little if any water entered the catch basin. Contact MOECC SAC and Badger Vacuum truck service to cleanout the catch basin as a cautionary measure.

Date	Details or Response	Type	Description	Details or Response
23-Mar-18	Confederation Pumping Station - 39 Confederation Drive	Spill	Dry weather spill - an unknown malfunction caused the station to pump too low and air lock the pumps. The spill was 8.3 cubic meters for 54 minutes	A new ladder is being fabricated. Once the new ladder is installed we can proceed with station cleaning.
12-Apr-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	On call staff was called in on a UV Major Alarm. The UV system had turned off for 45 min. Flow was 250 l/s. This calculates to 675 m3. At 8:25 AM it was determined the system had turned off	Debris was removed from probe and system was put back into service as soon as possible. MOECC was contacted. Maintenance staff forced the system on at 8:25 am. Repair contractor has been contacted (H2Flow).
16-Apr-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	During cleanout of digester 1 <100L of sludge was spilled to gravel roadway. Sludge was contained to area and did not leave gravel roadway area adjacent to digester 1.	Contractor cleaned up sludge and roadway. Waste was returned to process for treatment.
17-Apr-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	<100 L of sludge leaked to the gravel roadway from a transfer hose. It was contained and cleaned up immediately. It did not enter a drain.	Contact MOECC SAC to report. Contain and cleanup affected area.
30-Apr-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Compliance	Total Suspended Solids objective of 15 mg/L was exceeded with a monthly average of 17 mg/L.	Objective was exceeded with a monthly average of 17 mg/L due to ongoing wet weather and the presence of filamentous.
04-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaints were called in from resident	Recorded the odour concern and contacted the MOECC. Conducted odour survey of area. Odour was emanating from Lystek main building. Contact Lystek to follow up on odour issue to determine source.
07-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Vac Truck leaked <100 L of sewage from sewer cleanings to the ground. Was contained to gravel roadway. Did not enter a catch basin.	Inspect area. Have bobcat clean up affected area for disposal. Contact MOECC to report spill.
25-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from resident	A Biorem odour control system is in place. A formal report was completed and forwarded to the MOECC.
26-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaint received from resident	A Biorem odour control system is in place. A formal report was completed and forwarded to the MOECC.
28-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Several odour complaints have been received from residents.	Several odour control measures are being investigated. The MOECC has been notified via this report.
29-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Several odour complaints have been received from residents.	Several odour control measures are being investigated. The MOECC has been notified via this report. Several specialist will be on site this week to work with Lystek to remediate the odour issue.
30-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from residents	Several odour treatment specialists are on site this week working on the issue. A new odour treatment system is being trialed now in the Lystek building.
31-May-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was emailed in from a resident	Environmental specialists have been on site this week sampling and reviewing systems to determine sources. Several process changes have been made to improve the issue. Update MOECC with complaints and progress.

Date	Details or Response	Type	Description	Details or Response
07-Jun-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from resident	An odour control plan has been implemented. A buffer tank and blower are ordered to improve the Biorem odour control system. Operational changes have been implemented to reduce the quantity of sulphur compounds present in the
08-Jun-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received via voice mail from a resident. The resident was contacted and updated on steps that are being taken and that odour control is our top priority.	A biorem odour control system is in place. Odour control specialist are working on a strategy. Additional odour control systems have been purchased for installation. Process changes are being implemented.
08-Jun-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received June 11, 2018 via email from a resident. The odour complaint was for the week of June 04, 2018. The resident was contacted and reported there has been	Additional odour control is being installed the week of June 11, 2018. A chemical treatment system is being tested. Process changes are being implemented to reduce odour.
12-Jun-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received. The resident was contacted informed of the corrective actions being taken.	Additional odour control is being installed the week of June 11, 2018. A chemical treatment system is being tested. Process changes are being implemented to reduce odour.
16-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	UV system was down for 1 minute. Blowers were down for 40 min. Approximately 12 cubic meters of sewage was partially treated.	On call staff mobilized and restarted the blowers. The UV system restarted automatically. Reported to the MECP.
17-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received by the MECP. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The system has an advance Biorem odour control system in place and an additional polishing tank of media has been added. Biorem has been contacted to inspect odour control
19-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from a resident. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The system has an advance Biorem odour control system in place and an additional polishing tank of media has been added. Biorem has been contacted to inspect odour control
20-Jul-18	Dalewood Pumping Station - 315 Burwell Road	Spill	Contractor was working on Dalewood PS and noted that one of the forcemain clamps was leaking. It was a small leak that had no known quantity.	An operator worked with the contractor to control the station flow while the repair was conducted. MECP SAC was contacted.
27-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Trojan UV system was down from 9:15 PM to 9:18 PM. With the UV System down 70 cubic meters spilled for 3 min.	On call staff attended the site and ensured systems had resumed. MECP SAC was contacted.
27-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from a resident. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The system has an advance Biorem odour control system in place and an additional polishing tank of media has been added. A new chemical addition system is being ordered.
28-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from a resident. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The odour control blower fan was reset.
29-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The odour control blower fan was reset.

Date	Details or Response	Type	Description	Details or Response
30-Jul-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Contact Lystek and inform them of the complaint. The odour control blower fan and blockage are being investigate and will be repaired. Note this complaint was received late (July 31) through our service request reporting
02-Aug-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received from. The odour is emanating from the new solids treatment Lystek process at the back of plant.	Repair the blower fan. Contact Lystek and inform them of the complaint. The system has an advanced Biorem odour control system in place and an additional polishing tank of media has been added. A new chemical addition system is
06-Aug-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Trojan UV System was down from 3:04 PM to 3:07 PM. With the UV System down 90 cubic meters spilled for 3 minutes.	On call staff attended the site and ensured systems has resumed. MECP SAC was contacted.
28-Aug-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	During UV bank maintenance a fault occurred that shut off both banks for approximately 18 min. This calculates to approximately 261 cubic meters of bypass flow without disinfection.	Operators manually turned on the UV system to resume disinfection. MECP SAC was contacted.
31-Aug-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	A faulty sensor caused the UV system to flicker off for an estimated 6 minutes and 49 seconds at about 100 L/s. 36 cubic meters of bypassed flow.	An oncall operator was dispatched. At that time the UV system was on. The faulty sensor was replaced. Further investigation the indicated that the banks may have gone off for up to 6 min and 49 seconds. MECP SAC was contacted.
31-Aug-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	An odour complaint was received.	The resident was contacted and made aware of the source of the odour. An advance odour control Biorem system is in operation. An additional chemical treatment system is on order and should be installed soon to further improve
08-Sep-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Spill	Trojan UV System was down from 8:24 AM to 8:27 AM. With the UV System down 34 cubic meters spilled for 3 minutes	Oncall staff was on-site and took corrective action
12-Sep-18	Woodworth Pumping Station - 4 Joyce Street	Spill	Contractor bored through forcemain at Edward and First Ave causing the forcemain to break.	Called contracts to haul sewage from Woodworth Pumping Station to Pollution Control Plant, to decrease volume of sewage being spilled. MECP was contacted at time of Spill and reported. In contact with ORO.
27-Sep-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaint was received. Resident was contacted to discuss issue.	Walked around plant, no odours coming from the plant. A slight odour from Biorem System.
28-Sep-18	40359 Bush Line - St. Thomas Water Pollution Control Plant	Odour	Odour complaint received from a resident.	Visit resident to discuss source of odour, no odour detected at this time.
02-Oct-18	South side ditch of Edward St at First Ave.	Spill	Rain water in excavated hole bubbling, bottom of dugout hole broke away and drained liquid. Small quantity of possible sewage leaking through soil and exciting underground.	Called contractor to vacuum possible contaminated soil, exposed old forcemain and discovered top of old forcemain pipe is broken. MECP contacted and reported. In contact with ORO.

3.2 Table 6 – Summary of Overflows, Bypasses and Spills

CSO Facility		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	1/11/2018 3:49:00 PM	57164.0	32.77	0.994	44	33.5	820000	0.00%	24.6	R#901742 - 24.6 mm Rain and Heavy snow melt
End	1/13/2018 1:26:00 AM									
Start	1/23/2018 2:03:00 AM	10460.0	25.18	0.939	126	41.1	114000	0.00%	25.0	R#901814 - 25 mm rain and snow melt
End	1/24/2018 12:48:00 AM									
Start	2/19/2018 6:41:00 PM	161692.0	74.63	0.92	38.2	16.4	70000	0.00%	58.0	R#901852 - 58 mm Rain and snow melt
End	2/23/2018 1:16:00 AM									
Start	2/23/2018 1:09:00 PM	3374.0	10.05	2.08	56.7	35	5000000	0.00%		R#901969 Ongoing Heavy snow melt.
End	2/23/2018 11:00:00 PM									
Start	4/4/2018 1:50:00 AM	488.0	1.97	0.803	46.5	30.3	0	0.00%	19.6	R#902009 - 19.58 mm Rain. Lab error on Ecoli.
End	4/4/2018 3:47:00 AM									
Start	4/15/2018 3:15:00 PM	63329.0	43.17	1.72	10.1	43.6	1	0.00%	20.8	R#902044 20.8 mm freezing rain. Lab error on Ecoli. 0% Mortality Trout
End	4/17/2018 8:49:00 PM									
Start	7/24/2018 1:00:00 AM	3320.0	1.70	1.55	137	57.4	3200000	0.00%	33.0	R#902362 Intense rainfall 33 mm
End	7/24/2018 2:42:00 AM									
Start	8/6/2018 3:45:00 PM	2708.0	1.75	1.91	185	52.7	960000	0.00%	34.0	R#902397 Intense Rain 34 mm - 0% for both RBT and Daphnia
End	8/6/2018 5:30:00 PM									
Start	8/8/2018 6:31:00 AM	13488.0	6.05	0.83	101	20.2	980000	0.00%	43.0	R#902411 Intense Rain 43 mm -
End	8/8/2018 12:34:00 PM									
Start	10/6/2018 7:51:00 AM	965.0	3.25	0.903	33.1	12.4	750000	0.00%	20.2	Ref# 902567- Heavy rain 20.2mm
End	10/6/2018 4:47:00 PM									
Start	10/31/2018 11:12:00 AM	861.0	2.13	1.64	54.9	33	500000	0.00%	23.0	Ref# 902631 - Heavy rain overnight, 23mm
End	10/31/2018 2:02:00 PM									
Start	11/1/2018 8:30:00 AM	33211.0	25.40	0.634	17.9	10	680000	0.00%	35.4	Ref#902642 - Heavy constant rain, 35.4mm
End	11/2/2018 8:18:00 PM									
Start	12/31/2018 8:39:00 PM	4325.0	2.85	0.786	18.2	24.4	2100000	0.00%	14.0	Ref#902747 - Snow melt and Heavy, constant rain
End	12/31/2018 11:32:00 PM									
Average:		27337	17.76	1.2	67	32		0.00%	29.2	
Total:		355385	230.90						350.6	

Confederation PS		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	3/23/2018 8:17:00 PM	8.3	0.95							R#2387-AX65KU - Pumped down station too low - air lock occurred.
End	3/23/2018 9:14:00 PM									
Average:		8	0.95							
Total:		8	0.95							

Dalewood Forcemain		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	7/20/2018 11:30:00 AM	0.0	1.00						0.0	A small leak was repaired on the forcemain - volume was small but
End										
Average:		0	1.00						0.0	
Total:		0	1.00						0.0	

Edward St. Sanitary		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	10/2/2018	1.0	1.00						0.0	Old Woodworth PS Forcemain break on Edward St. Not connected to sanitary
End										
Average:		1	1.00						0.0	
Total:		1	1.00						0.0	

St. George PS		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	2/20/2018 5:47:00 AM	3667.6	13.02						58.0	R#901909 - 58 mm Rain and snow melt
End	2/20/2018 11:00:00 PM									
Start	8/6/2018 3:11:00 PM	0.5	0.45						34.0	R#902397 Intense Rain 34 mm
End	8/6/2018 3:38:00 PM									
Average:		1834	6.73						46.0	
Total:		3668	13.47						92.0	

Sunset PS		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	2/20/2018 11:33:00 AM	861.8	13.08						58.0	R#901868 - 58 mm Rain and snow melt
End	2/21/2018 3:00:00 AM									
Start	5/27/2018 12:46:00 AM	6.1	0.12						10.0	R#902259 10 mm intense thunderstorm.
End	5/27/2018 12:53:00 AM									
Start	7/23/2018 11:42:00 PM	10.1	0.20						33.0	R#902360 Intense rainfall 33 mm
End	7/23/2018 11:50:00 PM									
Start	7/30/2018 6:07:00 PM	0.5	0.02						20.5	R#902390 20.5 mm intense rain
End	7/30/2018 6:08:00 PM									
Start	8/6/2018 2:37:00 PM	27.5	0.45						34.0	R#902397 Intense Rain 34 mm
End	8/6/2018 3:04:00 PM									
Start	8/8/2018 5:23:00 AM	17.4	0.20						43.0	R#902411 Intense Rain 43 mm
End	8/8/2018 5:35:00 AM									
Start	8/16/2018 10:59:00 AM	0.1	0.02						27.8	R#902429 Intense Rain Storm 27.8 mm
End	8/16/2018 11:00:00 AM									
Start	8/27/2018 4:54:00 AM	13.5	0.20						21.8	R#902474 Intense Rain Storm 21.8 mm
End	8/27/2018 5:06:00 AM									
Start	9/3/2018 3:09:00 PM	12.4	0.18						15.8	R#902492 15.8 Intense rainstorm
End	9/3/2018 3:20:00 PM									
Start	10/6/2018 6:05:00 AM	20.0	0.25						20.2	Ref # 902566- Heavy rain 20.2mm
End	10/6/2018 6:15:00 AM									
<b>Average:</b>		<b>97</b>	<b>1.47</b>						<b>28.4</b>	
<b>Total:</b>		<b>969</b>	<b>14.72</b>						<b>284.1</b>	

WPCP		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	1/20/2018 11:01:00 AM	54.0	0.02							R#901804 Spill- 1 min power down to UV due to generator run. UV bulbs
End	1/20/2018 11:02:00 AM									
Start	1/31/2018 1:40:00 PM	258.0	0.33							R#3748-AVJQZ8 Spill-Unknow UV fault-banks turned off while being cleaned.
End	1/31/2018 2:00:00 PM									
Start	2/11/2018 12:48:00 AM	734.0	1.70							R#6761-AVVCHP Spill-Faulty sensor shut down UV banks.
End	2/11/2018 2:30:00 AM									
Start	3/1/2018 4:48:00 PM	0.0								Ref#: 2032AWFUC3. Wet Test with potable water in bedline from Dig 3 to
End										
Start	3/19/2018 8:30:00 AM	0.1								Ref#: 1122-AWZHB3. Dump truck backed out of centrifuge bay- dirty water
End										
Start	4/12/2018 4:19:00 PM	13320.0	14.80							R#2808-AXRSG2 - UV Failure - did not alarm out to operator.
End	4/13/2018 8:25:00 PM									
Start	4/16/2018 11:15:00 AM	100.0								Contractor sludge spill < 100 L to gravel roadway. Cleaned up.
End										
Start	4/17/2018 7:00:00 AM	100.0								Contractor sludge spill < 100 L to gravel roadway. Cleaned up.
End										
Start	5/7/2018 9:00:00 AM	0.1								Ref#: 8044-AYJHX2. City Vac truck leaked <100 L of sewage from sewer
End										
Start	7/16/2018 7:50:00 PM	12.0	0.02						7.0	R#1611B2R2TY Spill. Thunder storm 7mm power blip.UV down blowers down
End	7/16/2018 7:51:00 PM									
Start	7/27/2018 9:15:00 PM	70.0	0.05						17.0	R#1360-B344UL UV Power blip - thunderstorm 17 mm rain.
End	7/27/2018 9:18:00 PM									
Start	8/6/2018 3:07:00 PM	90.0	0.05						34.0	R#2665-B3DSF8 Power outage - generator startup. Intense Rain 34 mm
End	8/6/2018 3:10:00 PM									
Start	8/28/2018 10:49:00 AM	261.0	0.30						0.0	R#4672-B43L UV Banks turned off during cleaning.
End	8/28/2018 11:07:00 AM									
Start	8/31/2018 3:50:00 AM	36.0	0.11						0.0	R#5331-B46KXP UV Banks probe fault
End	8/31/2018 3:56:49 AM									
Start	9/8/2018 8:24:00 AM	34.0	0.05						0.0	R#2660-B4EHS7 Power blip UV down.
End	9/8/2018 8:27:00 AM									
<b>Average:</b>		<b>1005</b>	<b>1.74</b>						<b>9.7</b>	
<b>Total:</b>		<b>15069</b>	<b>17.43</b>						<b>58.0</b>	
<b>Total:</b>		<b>377219</b>	<b>300.33</b>							

Woodworth PS		Volume (m3)	Duration (hours)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	CBOD (mg/L)	E Coli (cfu/100 mL)	Toxicity %	Rain (mm)	Comments
Start	1/11/2018 5:45:00 PM	3.4	1.40						24.6	R#901745 - 24.6 mm Rain and Heavy snow melt
End	1/12/2018 9:00:00 AM									
Start	2/19/2018 8:18:00 PM	756.8	6.90						58.0	R#901868 - 58 mm Rain and snow melt
End	2/20/2018 6:00:00 PM									
Start	7/24/2018	230.1	1.00						33.0	R#902360 Intense rainfall 33 mm
End	7/24/2018 1:15:00 AM									
Start	8/6/2018 3:01:00 PM	356.7	0.97						34.0	R#902397 Intense Rain 34 mm
End	8/6/2018 3:59:00 PM									
Start	8/8/2018 5:53:00 AM	362.2	2.20						43.0	R#902411 Intense Rain 43 mm
End	8/8/2018 8:05:00 AM									
Start	9/12/2018 12:24:00 PM	364.2	4.70						0.0	R#2335-B4JMEZ Woodworth PS Forcemain break
End	9/12/2018 6:23:00 PM									
Start	11/1/2018 10:30:00 PM	44.7	3.70						35.4	Ref#902651- Heavy constant rain, 35.4mm
End	11/2/2018 2:40:00 AM									
Average:		303	2.98						32.6	
Total:		2118	20.87						228.0	

### 3.3 Table 7 – Summary of Major Maintenance Items

Date	Description
17-Jan-18	Install rewind Electric Moter on #2 Flushing water Pump & rebuilt pump (seals leaking)
18-Jan-18	Install raised platform for access into Genset at Blower Building, Yarmouth
14-Feb-18	Replace angle that holds walkway grating in Screen room. Yarmouth
05-Apr-18	Replace Victaulic Gaskets in 4" Air line piping Plant 3 Finals A & B
12-Apr-18	Replace 1 1/2" piping in Plant 3 Final A & B tanks for air lift pumps
30-Apr-18	Replace 4" Piping in Plant 2 Finals. Millcreek & Yarmouth finished in June.
27-Jun-18	Repair & coat inside of Alum containment tank. (Repair cracks etc.)
29-Jun-18	Repaired Alum Containment
09-Jul-18	Install 6" sewage off load pipe in screen room. Yarmouth installed
09-Jul-18	Install walkway at Plant 3 Finals for safety to move pumps. Yarmouth installed
20-Jul-18	Install new air intake pipe for Blower 5 (less elbows) Yarmouth installed
16-Aug-18	Replace 2nd Gorman Rupp Pump for flushing water
28-Nov-18	Replaced aluminum Grating south end of Plant 4 Primary (Yarmouth Did work)

### 3.4 Table 8 – Summary of Future Upgrade Planning

Date	Description
30-Mar-19	UV level control weirs need repair. Shut CSO gate to commence work.
30-Jun-19	Replace #1 air compressor in blower building
31-Aug-19	Grit Tank actuators to be installed
31-Aug-19	Plant 3 Finals North and South: Replace Head shafts, sprockets and bearings.
30-Sep-19	New Wastewater and Pumping Station SCADA system
30-Sep-19	Replace four RAS Pump electric motors with VFDs.
31-Oct-19	Chains and Flights for Plant 2 finals
31-Dec-19	Grit and Screenings handling system
31-Dec-19	Replace four plant PLCs
31-Dec-19	Replace MCC in blower and main building
31-Dec-19	Replace raw sludge pump # 4 with new Komline Sanderson Pump.

3.5 Table 9 - Summary of Monitoring Equipment Calibrations

 6415 Northam Drive Mississauga, ON L4V 1J2 TEL: (905) 678-2882 FAX: (905) 293-9774	<b>VERIFICATION/CALIBRATION SUMMARY REPORT</b>	Report No.: 180636-0001
		Date: Aug. 29, 2018

**2 INSTRUMENT METER CALIBRATIONS**

**2.1 Task Description**

The 2018-meter calibrations are listed, for a total of (24) instruments.

**2.2 List of Instruments**

St. Thomas Calibration						
No.	Process Area	Instrument Tag	Manufacturer	Model Number	Serial Number	Instrument Range
1	Handheld Gas Detection (Admin Building)	Altair 4 Unit 2	MSA	Altair 4	00000001	Comb: 0-100 %LEL, O2: 0-25 %LEL, CO: 0-100 ppm, H2S: 0-50 ppm
2	Handheld Gas Detection (Admin Building)	Altair 4 Unit 1	MSA	Altair 4	00091384	Comb: 0-100 %LEL, O2: 0-25 %LEL, CO: 0-100 ppm, H2S: 0-50 ppm
3	Gas Bldg	MSA Channel B	MSA	A-ULTX-SENS-31-1-0	J11-3880729-10-002	Comb: 0-100 %LEL
4	Boiler Building	MSA Channel A	MSA	A-ULTX-SENS-31-1-0	J11-3880729-10-001	Comb: 0-100 %LEL
5	Screen Building	MSA Channel A	MSA	A-ULTX-SENS-31-1-0	E12-4058962-10-001	Comb: 0-100 %LEL
6	Raw Sludge Flow Meter (Admin Building)	FIT Q16	Krohne	IFC 100W	10634441	0-6.5 L/sec
7	Raw Sludge #1 (Primary)	FIT Q7	Krohne	IFC 010D	A01 24986	0-6.5 L/sec
8	Plant 4 East	FIT AQ4	Bailey	BNC2/3/4/5/6/8	--	0 - 6000 m3/hr
9	Plant 4 West	FIT AQ5	Bailey	BNC2/3/4/5/6/8	--	0 - 6000 m3/hr
10	Plant 2	FIT 2 AQ2	Bailey	BNC2/3/4/5/6/8	--	0 - 6000 m3/hr
11	Plant 3	FIT 3 AQ3	Foxboro	IDP10	--	0 - 6000 m3/hr
12	Centrate Wetwell Flow	FIT Centrate	ABB Kent Taylor	Mag Master	V/40221/1/1	0 - 70 L/s
13	Centrifuge Bldg Pump 4 Sludge	FIT 189	Krohne	IFC 010F	A01 26536	0-6.67 L/sec
14	Centrifuge Bldg Pump 3 Sludge	FIT 170	Krohne	IFC 010F	A01 24989	0-15.0 L/sec
15	FQ Polymer #1	FIT Poly #1	Endress + Hauser	Promag 30F	9V 756810	0 - 0.45 L/s
16	FQ Polymer #2	FIT Poly #2	Endress + Hauser	Promag 50	8801C518000	0 - 0.45 L/s
17	Plant 2	FIT P2 Q4	Endress + Hauser	Prosonic 91	C4061B02000	0 - 180 L/sec
18	Plant 3	FIT P3 Q5	Endress + Hauser	Prosonic 91	C4061C02000	0 - 280 L/sec
19	Plant 4	FIT P4 Q8	Endress + Hauser	Prosonic 93	C0407CE02000	0 - 380 L/sec
20	RAS	FIT 3+4 RAS P4 Q8	Greyline	DFM IV Doppler	17729	0 - 250 L/sec
21	WAS	FIT 3+4 WAS P4 Q8	Greyline	DFM IV Doppler	17730	0 - 125 L/sec
22	UV Effluent Flow Plants 2 & 3	FIT 211	Miltronics	OCM III	041102102PB	0 - 315.69 L/sec
23	UV Effluent Flow Plants 3 & 4	FIT 212	Miltronics	OCM III	041102103PB	0 - 475 L/sec
24	Influent Bypass	FIT-BYPASS	Miltronics	Hydroranger	--	0-1830 L/s

## **4 Sludge Management:**

### **4.1 Sludge Production:**

This activated sludge plant, transfers sludge to a raw sludge storage tank. The tank is 40' diameter; 25' deep (including the 5' cone bottom) with a capacity of 712 cubic meters. Raw sludge is processed through a belt press achieving approximately 3% solids using a polymer. It is anticipated that quantity of sludge produced during 2019 will be less than the sludge produced in 2018.

### **4.2 Sludge Disposal:**

A new solids treatment process called Lystek has been in production since April 2018, reducing organics to landfill. This process produces a Canadian certified fertilizer material which is land applied in order to contribute to a sustainable nutrient cycle.

In the month of January 2018, 1,814m<sup>3</sup> of sludge was taken to Green Lane Landfill. From January to March 2018, 6,120 m<sup>3</sup> of raw sludge was transported to the City of London for disposal. In 2018 37,793 m<sup>3</sup> of raw sludge was processed into a Canadian Food Inspection Agency (CFIA) approved fertilizer.