

Town of St. Marys Wastewater Operations Report 2018 FIRST QUARTER

Submitted by:
Ontario Clean Water Agency
Date: January 1 – March 31, 2018

Facility Description

Facility Name:	St. Marys Wastewater Treatment Plant & Collection System
Senior Operations Manager:	Renee Hornick (519) 274-0997
Business Development Manager:	Jackie Muller (519) 643-8660
Facility Type:	Municipal
Classification:	Class 3 Wastewater Treatment & Collection System
Title Holder:	The Corporation of the Town of St. Marys

Service Information

Area(s) Serviced:	Separated Town of St. Marys
Population Serviced:	7,200

Capacity Information

Total Design Capacity:	5,560 (m ³ /day)
Total Annual Flow (2017 Data):	1,542,384 (m ³ /year)
Average Day Flow (2017 Data):	4,228.26 (m ³ /day)
Average Daily Capacity (2017 Data):	76%
Maximum Day Flow (2017 Data):	13,055 (m ³ /day)

Operational Description

Treatment Process

Raw sewage flows by gravity throughout the system to the wastewater treatment plant. Where gravity flow is not possible due to elevation restrictions, raw sewage flows to one of the three pump stations.

Inlet Works:

Sewage flows from the collection system and pump stations into the wet well through automatic bar screens then through a grit tank and communitor, the grit is conveyed to a bin which is then sent to a landfill. Sewage then flows by gravity to the anoxic tanks.

Anoxic Tanks:

Sewage is split between two circular tanks with submersible mixers.

Aeration Tanks:

Sewage enters an inlet chamber where flows are split to three distribution chambers which feed three aeration basins operating in parallel.

Phosphorus Removal:

Aluminum sulphate is added to the channel of the outlet of the aeration tanks in order to reduce the phosphorus.

Secondary Clarifiers:

Sewage is split in to four centre feed round clarifiers. Waste activated sludge collected here can be transferred from the clarifiers to the aeration, anoxic tanks or waste activated equalization tanks.

Disinfection and Discharge:

Effluent passes through two ultraviolet banks containing a total of 112 lamps. A sodium hypochlorite liquid feed system is provided for backup chlorination in the event of UV failure.

Final effluent is discharged via pipe to a concrete structure on the bank of the Thames River.

Sludge Handling:

Waste activated sludge is transferred to one of the two sludge storage tanks on site. Currently one of the storage tanks is out of service. Digester supernatant can be directed to the aeration or anoxic tanks inlet.

The sludge is dosed with polymer and passes through a rotary drum thickener prior to transfer to the sludge storage tank. The sludge storage is the holding tank for the centrifuge. The dewatered sludge produced by the centrifuge is then run through the Lystek process. Sludge is mixed with potassium hydroxide in a heated mixing tank and processed. Product from the mixing tank is pumped to a sludge storage tank equipped with an odour control system. Sludge is then loaded to a tanker from an overhead fill pipe.

COMPLIANCE AND EXCEEDANCES SUMMARY:

There have been no compliance or exceedances issues reported to date.

OCCUPATIONAL HEALTH & SAFETY:

There have been no health and safety issues reported to date.

GENERAL MAINTENANCE AND PLANT ACTIVITIES:

General maintenance includes monthly generator tests, greasing equipment and preventative maintenance.

FIRST QUARTER

January

03: Unplugged thickened waste activated sludge line which was frozen

05: Thawed frozen alum line

17: Installed an emergency stop button on the generator to prevent vandalism

17: Annual inspections for fire extinguishers completed

18: Annual inspection of lifting devices completed

24: Repairs to the heater in the digester building

24: Ongoing painting of pipes in wet well

February

07: Installed emergency exit signs at doors in digester building as noted from an H&S inspection

14: Hauled Lystek out of storage tank

18: High level wet well due to heavy rain – monitored the system closely

18: Robinson Street Pump Station close to overflowing – pumped sewage out using Vac truck

18: Re-built unit heater for garage and re-installed

22: Re-installed baffle in aeration tank cell

23: Issues with Lystek mixer resolved by OCWA IT department

28: Cleaned out sludge tank to repair broken line

March

15: Connected discharge pipe flange in sludge loading tank

23: Replacement pump head on polymer pump for centrifuge

PREVENTATIVE MAINTENANCE WORK ORDERS GENERATED												
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
42	34	34										110

All work orders were completed on schedule.

ALARMS / CALL-INS:

FIRST QUARTER

JANUARY

06: Operator received two generator running alarms at the WPCP due to a turbo blower fault which was related to the air intake freezing over due to extreme cold temperatures

10: Operator received a high level alarm at Robinson Street PS

21: Operator received a call for a broken gate lock at the WPCP

FEBRUARY

08: Operator received a power failure and a generator running alarm at the WPCP

23: Operator received a call for high water levels at Robinson Street PS and the WPCP

COMPLAINTS & CONCERNS:

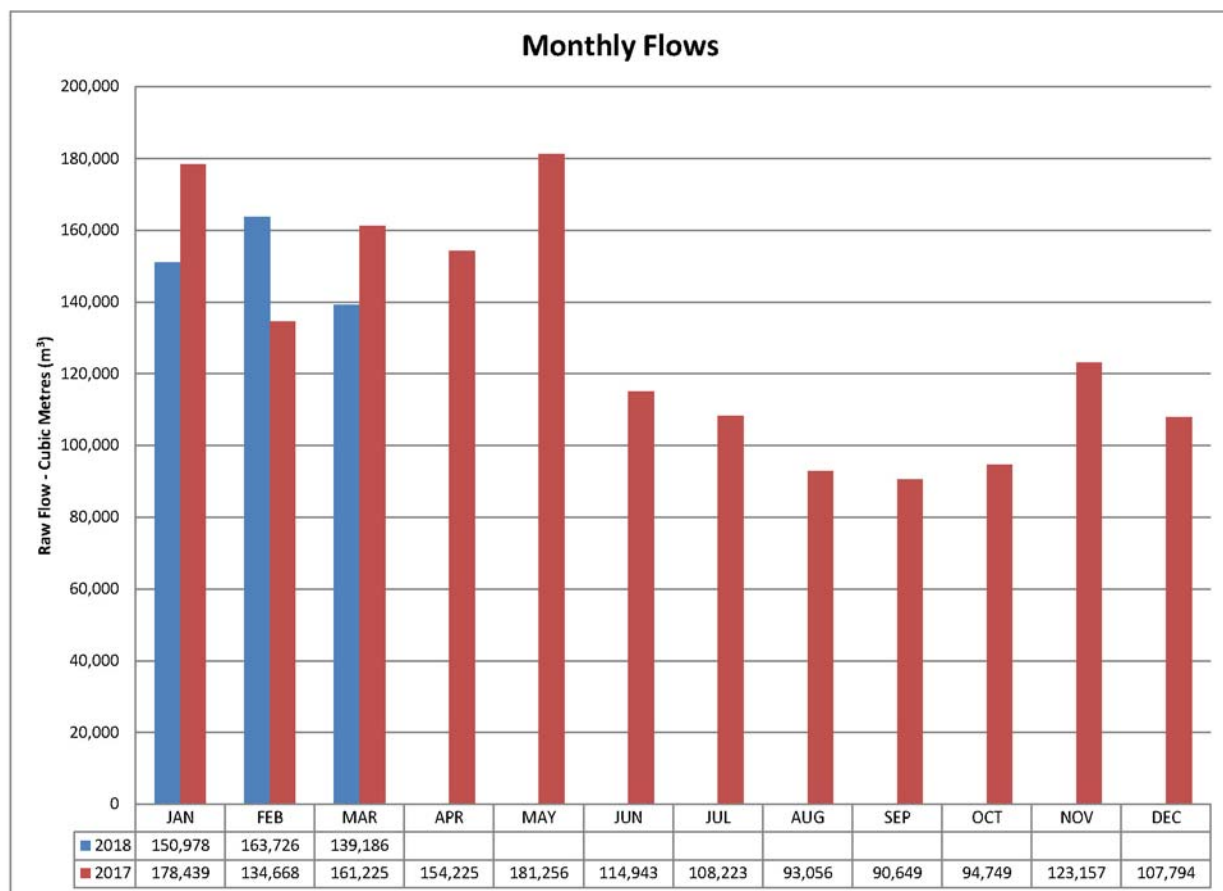
There have been no complaints or concerns reported to date.

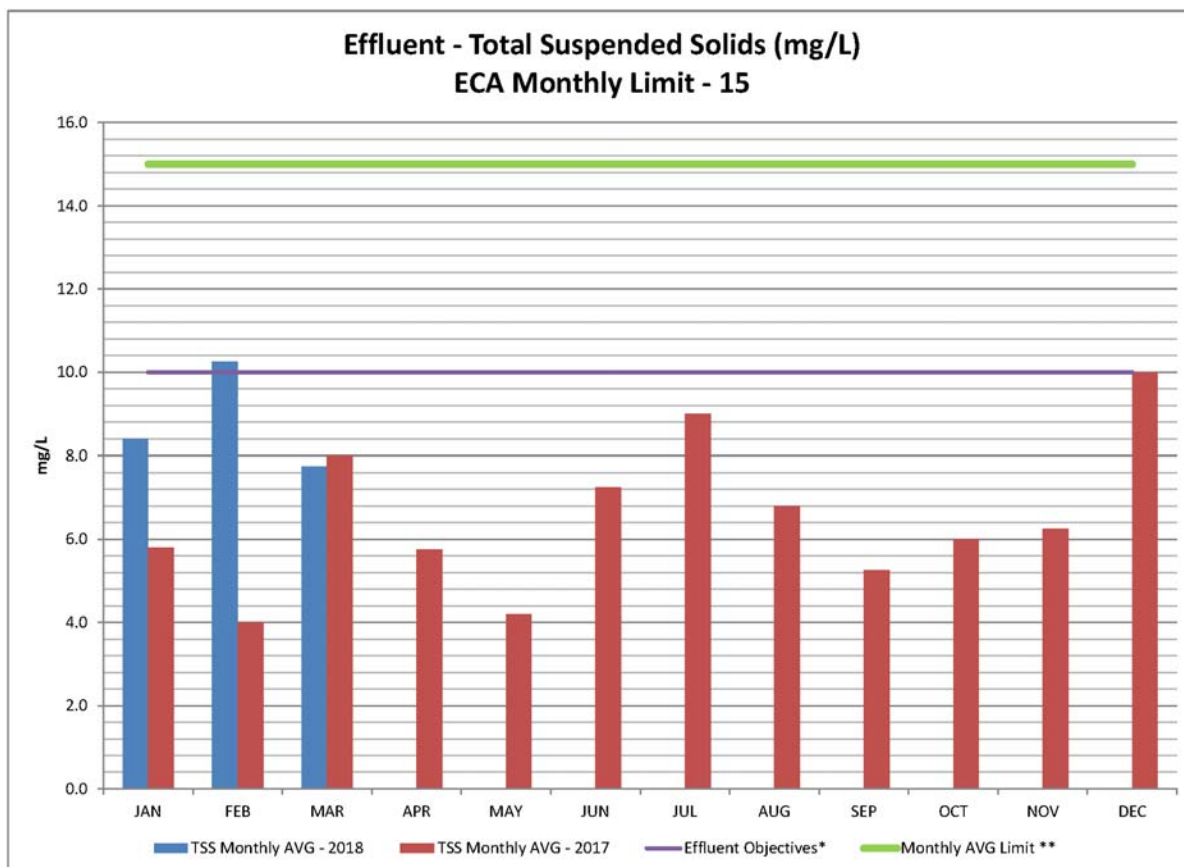
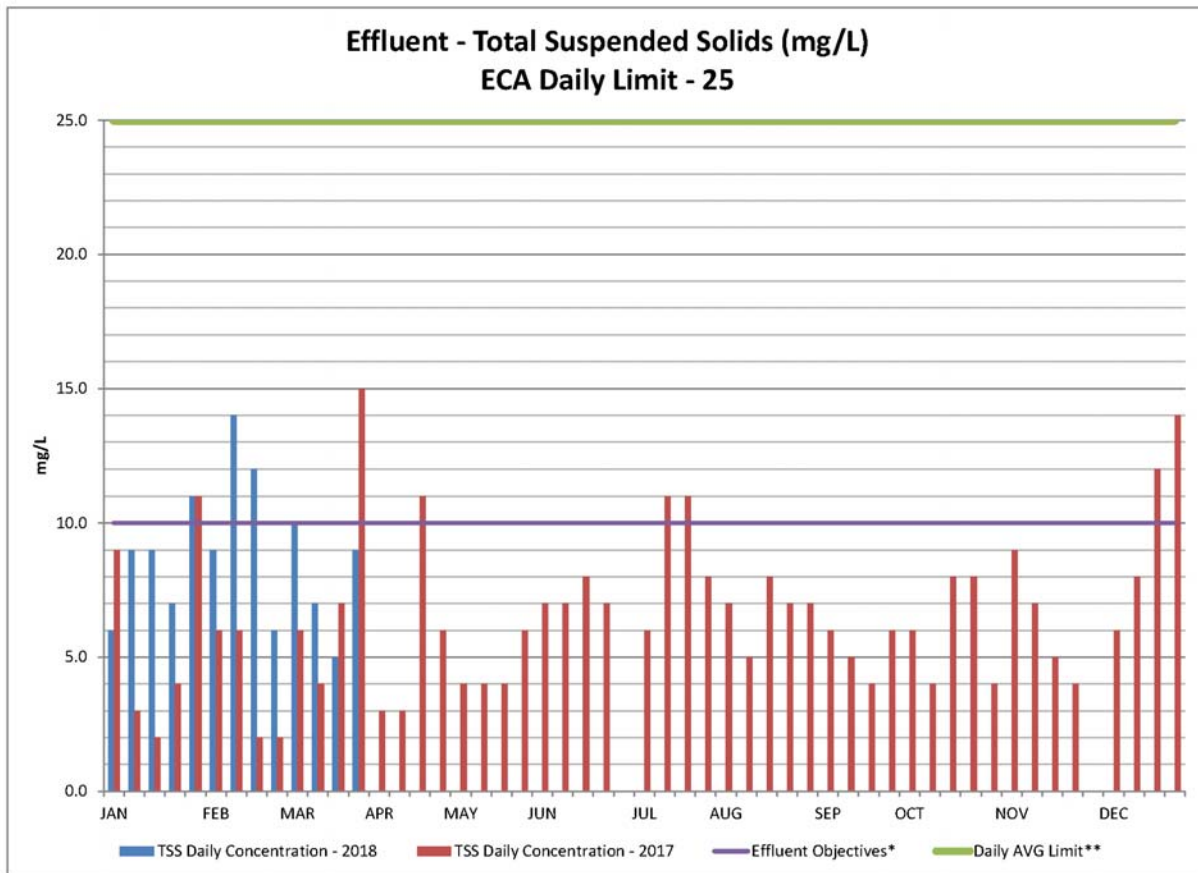
REGULATORY INSPECTIONS:

The last MOECC Inspection occurred on December 7, 2017.

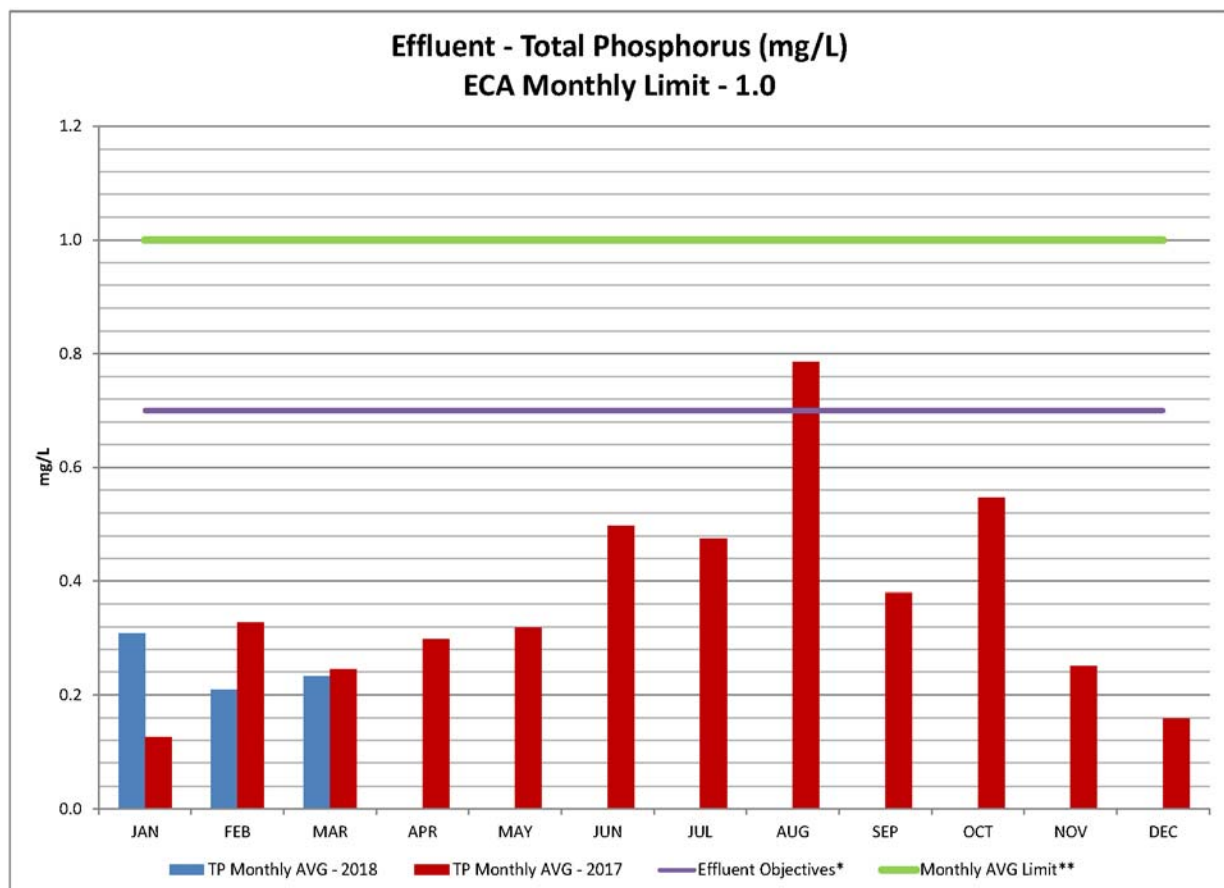
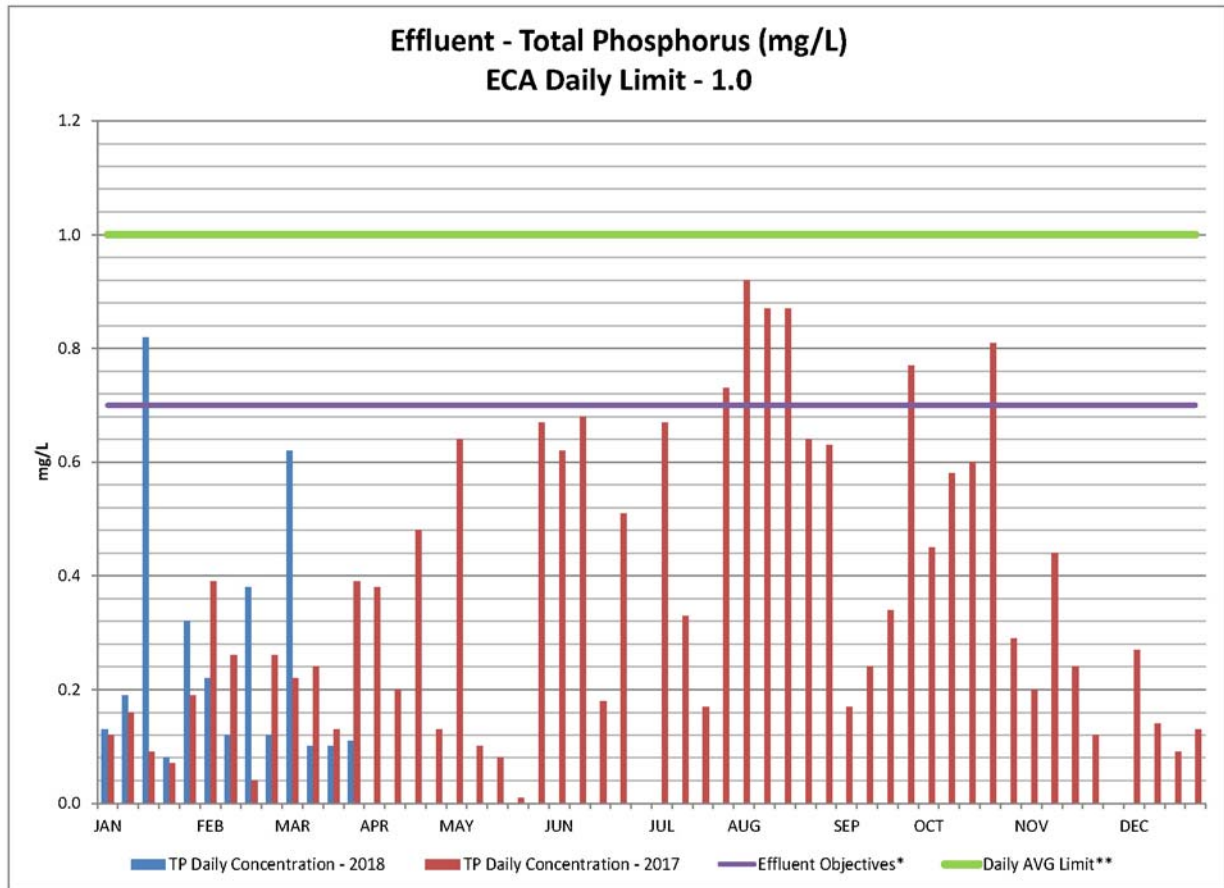
PERFORMANCE ASSESSMENT REPORT:

The average daily flow in 2018 for the January to March reporting period is 5,069.16 m³/day.

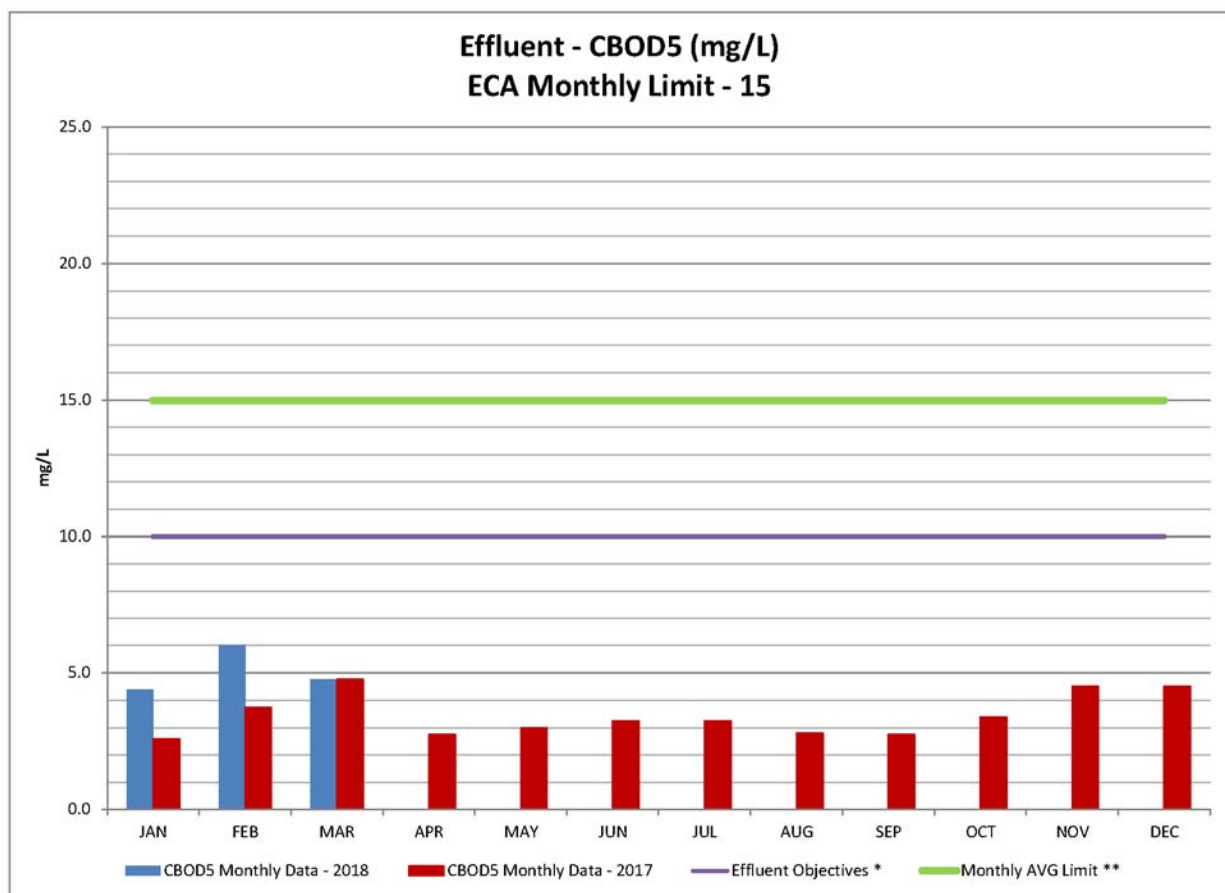
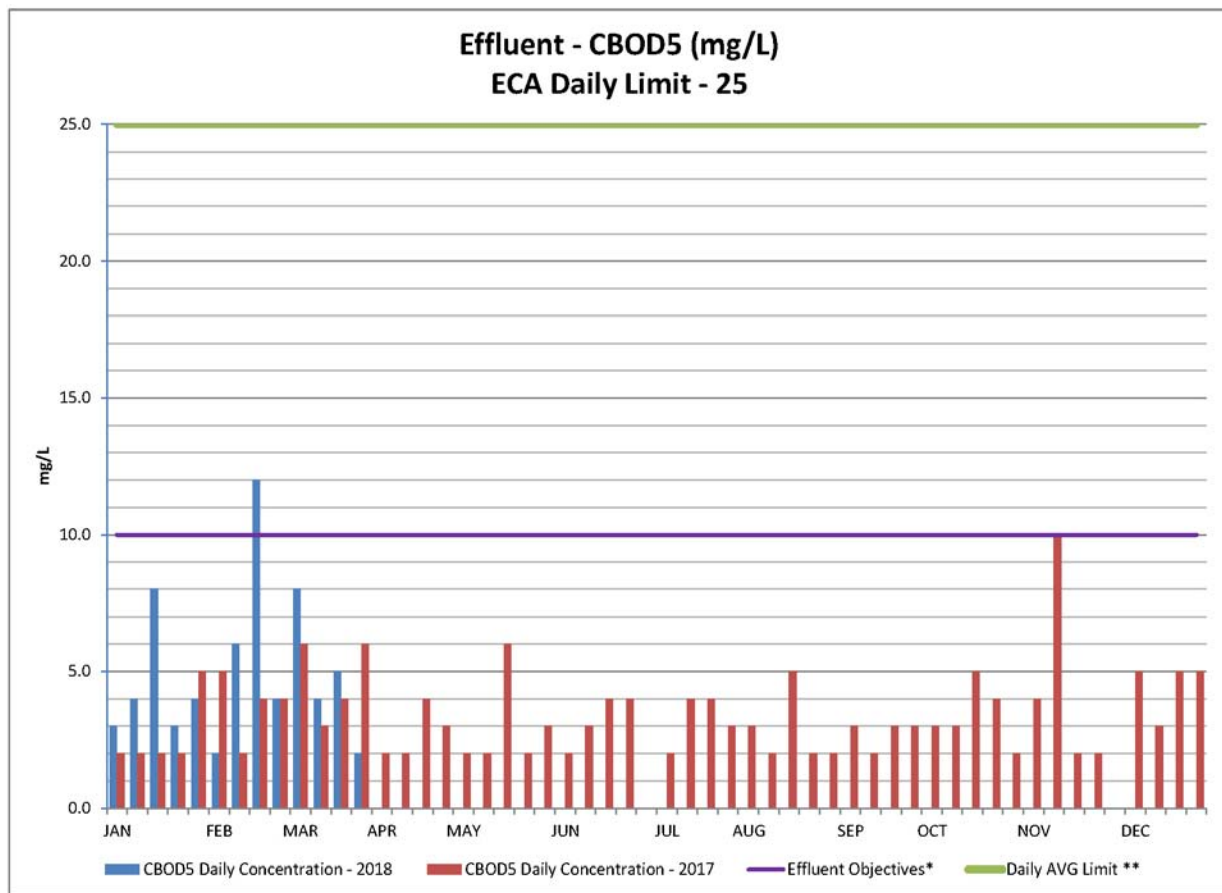




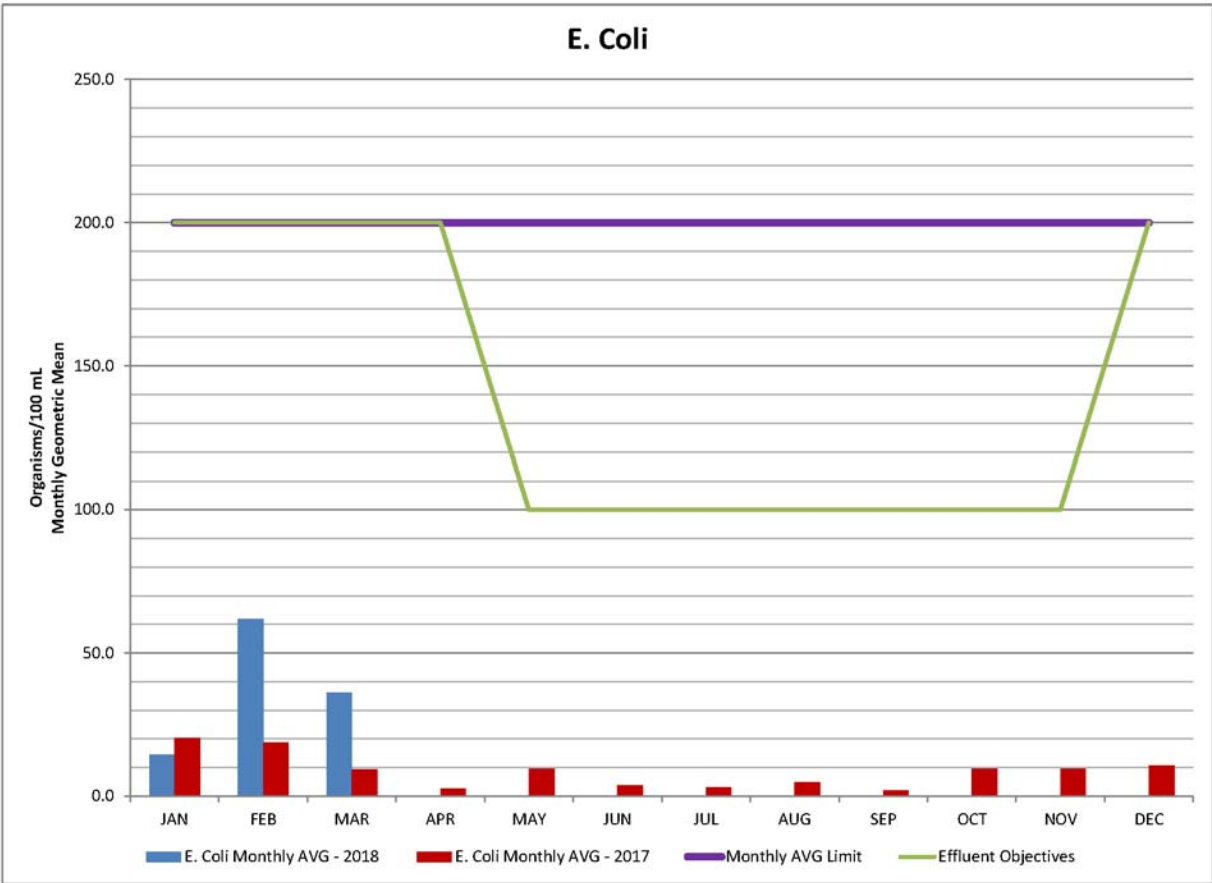
The monthly average suspended solids are in compliance for the first quarter.



The monthly average for total phosphorus is in compliance for the first quarter.



The monthly average cBOD5 is in compliance for the first quarter.



The monthly geometric mean is in compliance for the first quarter.

APPENDIX A – PERFORMANCE ASSESSMENT REPORT:

See attached.

APPENDIX B – FLOW REPORT:

See attached.

APPENDIX A

PERFORMANCE ASSESSMENT REPORT

Ontario Clean Water Agency
Performance Assessment Report Wastewater/Lagoon

Report extracted 04/19/2018 09:02

From: 01/01/2018 to 31/03/2018

Facility: [5520] ST MARYS WASTEWATER TREATMENT FACILITY

Works: [110001275]

	01/2018	02/2018	03/2018	<--Total-->	<--Avg-->	<--Max-->	<--Criteria-->
Flows:							
Raw Flow: Total - Raw Sewage (m³)	150978	163726	139186	453890			
Raw Flow: Avg - Raw Sewage (m³/d)	4870.26	5847.36	4489.87		5069.16		
Raw Flow: Max - Raw Sewage (m³/d)	11605	18095	6042			18095	
Eff. Flow: Total - Final Effluent (m³)	162198	165898	170352	498448			
Eff. Flow: Avg - Final Effluent (m³/d)	5232.19	5924.93	5495.23		5550.78		
Eff. Flow: Max - Final Effluent (m³/d)	23575	33848	15010			33848	
Carbonaceous Biochemical Oxygen Demand: CBOD:							
Eff: Avg cBOD5 - Final Effluent (mg/L)	4.4	6	4.75		5.05	6	
Eff: # of samples of cBOD5 - Final Effluent (mg/L)	5	4	4	13			
Loading: cBOD5 - Final Effluent (kg/d)	23.022	35.55	26.102		28.225	35.55	
Biochemical Oxygen Demand: BOD5:							
Raw: Avg BOD5 - Raw Sewage (mg/L)	260	153.25	300		237.75	300	
Raw: # of samples of BOD5 - Raw Sewage (mg/L)	5	4	4	13			
Eff: Avg BOD5 - Final Effluent (mg/L)	6	7	< 5		< 6	7	15
Loading: BOD5 - Final Effluent (kg/d)	31.393	41.475	< 27.476		< 33.448	41.475	
Percent Removal: BOD5 - Raw Sewage (mg/L)	97.692	95.432	98.333			98.333	
Total Suspended Solids: TSS:							
Raw: Avg TSS - Raw Sewage (mg/L)	183.2	93.5	175.75		150.817	183.2	
Raw: # of samples of TSS - Raw Sewage (mg/L)	5	4	4	13			
Eff: Avg TSS - Final Effluent (mg/L)	8.4	10.25	7.75		8.8	10.25	15
Eff: # of samples of TSS - Final Effluent (mg/L)	5	4	4	13			
Loading: TSS - Final Effluent (kg/d)	43.95	60.731	42.588		49.09	60.731	
Percent Removal: TSS - Raw Sewage (mg/L)	95.415	89.037	95.59			95.59	
Total Phosphorus: TP:							
Raw: Avg TP - Raw Sewage (mg/L)	2.908	2.968	3.768		3.214	3.768	
Raw: # of samples of TP - Raw Sewage (mg/L)	5	4	4	13			
Eff: Avg TP - Final Effluent (mg/L)	0.308	0.21	0.232		0.25	0.308	1
Eff: # of samples of TP - Final Effluent (mg/L)	5	4	4	13			
Loading: TP - Final Effluent (kg/d)	1.612	1.244	1.278		1.378	1.612	
Percent Removal: TP - Raw Sewage (mg/L)	89.409	92.923	93.829			93.829	
Nitrogen Series:							
Raw: Avg TKN - Raw Sewage (mg/L)	23.44	18.7	24.675		22.272	24.675	
Raw: # of samples of TKN - Raw Sewage (mg/L)	5	4	4	13			
Eff: Avg TAN - Final Effluent (mg/L)	< 1.12	< 0.525	< 0.15		< 0.598	< 1.12	
Eff: # of samples of TAN - Final Effluent (mg/L)	5	4	4	13			
Loading: TAN - Final Effluent (kg/d)	< 5.86	< 3.111	< 0.824		< 3.265	< 5.86	
Eff: Avg NO3-N - Final Effluent (mg/L)	7.666	5.948	7.03		6.881	7.666	
Eff: # of samples of NO3-N - Final Effluent (mg/L)	5	4	4	13			
Eff: Avg NO2-N - Final Effluent (mg/L)	0.616	< 0.285	0.213		< 0.371	0.616	
Eff: # of samples of NO2-N - Final Effluent (mg/L)	5	4	4	13			
Disinfection:							
Eff: GMD E. Coli - Final Effluent (cfu/100mL)	14.562	61.941	36.074		37.525	61.941	200
Eff: # of samples of E. Coli - Final Effluent (cfu/100mL)	5	4	4	13			

APPENDIX B

FLOW REPORT

2018 Flows

