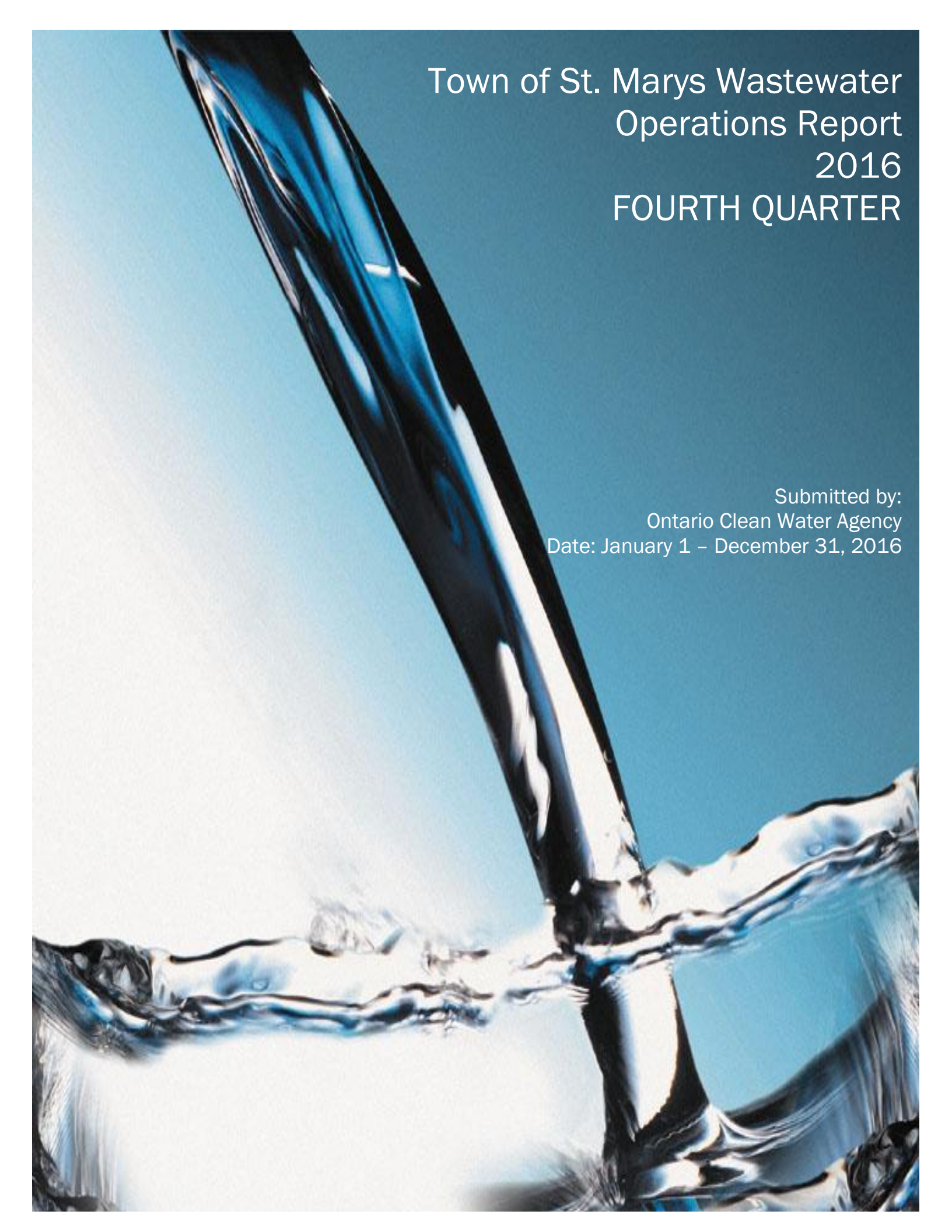




Town of St. Marys Wastewater Operations Report 2016 FOURTH QUARTER

Submitted by:
Ontario Clean Water Agency
Date: January 1 – December 31, 2016

Facility Description

Facility Name: St. Marys Wastewater Treatment Plant & Collection System
Operations Manager: Renee Hornick (519) 274-0997
Business Development Manager: Jackie Muller (519) 643-8660
Facility Type: Municipal
Classification: Class 2 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: 6,800

Capacity Information

Total Design Capacity: 5,560 (m³/day)
Total Annual Flow (2015 Data): 1,374,753 (m³/year)
Average Day Flow (2015 Data): 3,764 (m³/day)
Maximum Day Flow (2015 Data): 9,102 (m³/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:

FIRST QUARTER

The final effluent phosphorus at the St. Marys WWTP daily limit was exceeded on March 30, 2016. The result was 1.42 mg/l and the daily limit is 1 mg/l.

This can be related to the high flows above the average daily rated capacity that have been occurring for a period of 7 days.

Flows from March 1 – 2 and March 25 – March 31 are shown below indicating consistently high flows over the average daily rated capacity.

Date	Raw Sewage Flow
March 1	5,776
March 2	5,581
March 25	8,120
March 26	10,318
March 27	8,923
March 28	6,419
March 29	7,541
March 30	7,757
March 31	6,836

The phosphorus removal system is currently not flow-paced which resulted in the daily phosphorus being exceeded.

SECOND QUARTER

There were no exceedances or non-compliances this quarter.

THIRD QUARTER

The final effluent phosphorus at the St. Marys WWTP daily limit was exceeded on July 29, 2016. The result was 2.26 mg/l and the daily limit is 1 mg/l. The aluminum sulphate dosage has been increased which rectified the issue.

The total ammonia nitrogen at the St. Marys WWTP daily limit was exceeded on September 27, 2016. The result was 9.00 mg/l and the daily limit is 6 mg/l. This was a result of the blower not running due to a power failure. Air was restored and the system recovered.

FOURTH QUARTER

There were no exceedances or non-compliances this quarter.

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

5: Turner Plumbing was onsite to perform a camera inspection at 142 Queen Street East and 178 Queen Street East.

11:

- OCWA electrician installed wiring to the heat circulation pump in the boiler room. The electrician unseized the motor, tested the pump, and put it back into service.
- Konecranes was onsite to complete the annual inspection of the lifting devices
- Mobile Fire & Safety was onsite to do the annual inspection of the fire extinguishers from the plant and pumping stations

13: Operational staff checked the manholes on South Service Road as there was a report of sewer gas inside, everything was ok.

14: OCWA electrician was onsite to install a new light pole cover and cable support for the hot water heater cable. This was completed as per a request from the ESA (Electrical Safety Authority). A 600 volt disconnect cover was installed for the boiler room circulation pump.

15: OCWA operational staff put return activated sludge pump #5 back into service after the mechanical seal and impeller were replaced.

18: OCWA operational staff, management, and town staff were onsite for the commissioning of the new Robinson Street Pumping Station emergency generator. Training of the generator was provided by Forman Electric.

28: OCWA electrician and operations staff installed a new detritor rake arm and put it into service. The old detritor arm had corroded and had broken at the shaft of the equipment.

February

1: Operator installed a new polymer injector for the chemical pump used to pump polymer to the Rotating Drum Thickener (RDT).

2: OCWA operational staff checked the manhole in the vicinity of Glass Street and Trailside Court for possible methane leak – none detected.

3: OCWA electrician onsite at the Queen Street Pumping Station due to pump #2 not running. Electrician identified fault starter as the problem. Electrician installed a new starter for the pump with no issues and put back into service.

19: Operator installed rebuilt return activated sludge (RAS) pump #3 and put back into service. The pump had a new wear ring and impeller installed.

22: Operational staff repaired the sanitary line at 110 Ontario Street North. Damage was caused by directional boring.

23: Forman Electric onsite to install a light over the Robinson Street Pumping Station control panel and emergency generator.

29: Operations staff reinstalled a part of the grit rake arm assembly which was sent away for repair. Equipment was installed and the grit rake arm was put back into service.

March

1: Operational staff removed RAS #4 base for repairs. Wired and tested Thomas Street emergency generator alarms.

3: Operations staff repaired spool between pump to waste activated sludge tank.

4: Hetek was on-site to replace faulty gas sensor in bar screen room.

9: OGI hauled 10 loads of sludge to Maple Leaf Foods (approximately 380 m3).

10: One tote of poly was delivered. There was a very small diesel spill from the delivery truck, cleaned up and advised SAC of spill.

11: Operational staff installed new impeller and put RAS pump #4 back into service. Gerber removed foam from F. clarifier diversion chamber.

14:

- Operational staff worked with the Town of St. Marys vac truck to flush sanitary on Widder Street West from above William Street, to Robinson Street pumping station to locate a broken piece from the power router. Staff was unable to find the broken piece.
- OCWA staff took RAS pump #5 out of service for repairs.

15: Pump p404 was jammed due to a plunger stuck inside. OCWA staff removed the plunger and put the pump back in service.

23: OCWA Electrician ran new conduit to outdoor odour control unit fan.

28: There was a power outage at the plant due to bad weather. Genset was running and all three pumps in wet well were pumping. The outage lasted from 01:00-07:00. Operational staff ran centrifugal blower after outage for the day due to turbo not starting.

30: Operational staff completed conduit and pulled wire for odour control unit. RAS pump #1 faulted out, putting #2 into service. OCWA staff received a high level alarm in wet well.

31: Operational staff noticed headworks high level float issue due to blown fuse in CP, later sourced and replaced. The odour control fan feeds meggered fan back in service. RAS pump #2 water line was repaired and the roof drain was unclogged.

SECOND QUARTER

April

1: Bartels were onsite hauling sludge.

1: Repaired waterline to #2 RAS pump.

4: Operator discovered a hole in the bottom of RAS sink causing mixed liquor to spill onto the surrounding area this was repaired same day with piece of steel.

11: Operator repaired leaking gearbox on old clarifier.

12: Operator replaced solenoid valve in Lystek building.

18: Operator replaced backflow preventer in aeration building basement due to it leaking.

21: Replaced solenoid valve on muffin monster.

25: RAS pumps were off due to power outage. They reset and went back into service. Operator pumped out both small clarifiers.

27: Relocated raw composite sampler plug and exchanged two MCC brackets in Lystek electrical room to comply with ESA defects.

28: Operator ran new wire to sludge storage tank for a temporary mixer to assist with pumping thick sludge.

29: Installed new temporary mixer in cell #1 of sludge storage tank.

May

3: Pulled supernate pump to remove blockage.

6 & 9: Bartels were onsite hauling sludge.

10: Pulled sludge pump and changed the oil.

12: Changed VFD parameters on return activated sludge pump to see if this will resolve issues with pumps shutting off on low voltage.

19: Repaired waterline on the internal recirculation pump.

24: Pumped out aeration tank for cleaning.

25: Worked on cleaning anoxic tanks.

26: Pulled both mixer pumps.

30: Isolated aeration tank #1 and began pumping down to clean.

June

2: Fixed leak in aeration drain pump.

3: Installed new belts on odour control unit for sludge tank

6: Continuing to clean out anoxic tanks

8: Shut down aeration cell #1 for repair on air leak in the cell.

9: Replaced couplers for 8" air pipe in aeration cell and cleaned out transfer structure between aeration cells and 4 final clarifiers.

17: Changed ballast in UV lamps.

21: Replaced fuse in supernate pump.

27: Pulled and replaced mixer #1 in anoxic tank – sent in for rebuild

28: Disconnected raw sewage pump #2 for repairs.

29: Worked with OCWA IT to resolve communication fault for raw sewage pumps.

THIRD QUARTER

July

- 12:** Camera work at 139 King Street North due to sink hole in driveway.
- 14:** Replaced ballast on UV lights for disinfection.
- 19:** Pumped down anoxic tank to do repairs to the support beams for the walkway.
- 25:** Replaced leaking backflow preventer in WAS (waste activated sludge) equalization building.

August

- 8:** Waterloo Manufacturing on-site to replace blow-off valve on steam and gas boilers.
- 9:** Replaced fuse in UV system. Annual generator maintenance serviced by Sommers
- 12:** Installed raw sewage pump #2 that had servicing done on it
- 16:** Annual milltronics calibrations done by Pierce Services. Site inspection by electrical engineer from Runge & Associates for sludge pump upgrades.
- 25 & 29:** Bartels hauling sludge to land and applying to field.

September

- 1 & 2:** Annual manhole inspections performed.
- 6:** RAS pump #3 faulted out due to rage – removed rags and placed back into service.
- 9:** Camera inspection for 106 Water Street North sewage back-up.
- 15:** Repairs to leaking pipe for Muffin Monster.
- 21:** Set-up level indicator for alum tank.
- 26:** Turbo blower not running due to internal faults. Blower may have been off over the weekend causing the plant upset due to no oxygen in the aeration tank. This has been rectified by creating an alarm for when the blower fails.
- 27:** Faulty UPS for headworks building. Rewired the system to run without the UPS – new UPS was installed on September 30th.
- 28:** Old compressor on top of the building was removed with a crane by the roofers.
- 30:** New UPS installed at headworks building

FOURTH QUARTER

October

- 3:** Fixed air lock in recirculation pump.
- 11:** Sludge storage odour control unit not working – replaced belt – all ok.
- 12:** Turbo blower did not alarm out during routine testing – worked with OCWA SCADA department and is now working.
- 12:** Bartels hauling Lystek to farmers' field.
- 14:** Bartels hauling Lystek to farmers' field.
- 18:** Backflow preventer for internal recirculation pumps leaking – replaced with new backflow preventer.
- 24:** Installed re-built exhaust fan unit for Raw Sewage building.
- 28:** Digester building exhaust unit not working – replaced belt – all ok.

November

- 10:** Hetek on-site doing calibrations for gas monitoring equipment.
- 14:** Return Activate Sludge Pump plugged with rags – took out of service to remove and put back in service.

December

- 13:** Hetek on-site to check faulty sensors for gas monitoring equipment
- 19:** Issues with Turbo Blower freezing at the intake – took screen off and is now working fine

PREVENTATIVE MAINTENANCE WORK ORDERS GENERATED												
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
76	80	76	75	73	91	69	85	72	78	78	39	892

All work orders were completed on schedule.

ALARMS / CALL-INS:

FIRST QUARTER

February

2: Operator was called in for a possible methane leak in the Trailside and Glass intersection area. Operators checked several manholes and took gas meter readings. No gas levels were found from the readings by the operators. Event took place after normal operating hours.

March

17: RAS Pump alarm – Both RAS pumps failed due to power flicker, reset VFD's and alarms on SCADA.

24: Operators received a high level in wet well alarm due to high flows caused by heavy rains.

25: Operators received a high level in wet well alarm due to high flows caused by heavy rains.

SECOND QUARTER

April

4: Operator received a high level alarm at Emily Street pump station.

June

20: Operator received a call for a sewer back up at 223 Station Street.

THIRD QUARTER

August

13: Operator received a high level alarm at Robinson Street pump station.

24: Operator received a call for a sanitary blockage at 17 Industrial Road.

FOURTH QUARTER

There were no alarms or call-ins to report this quarter.

COMPLAINTS & CONCERNS:

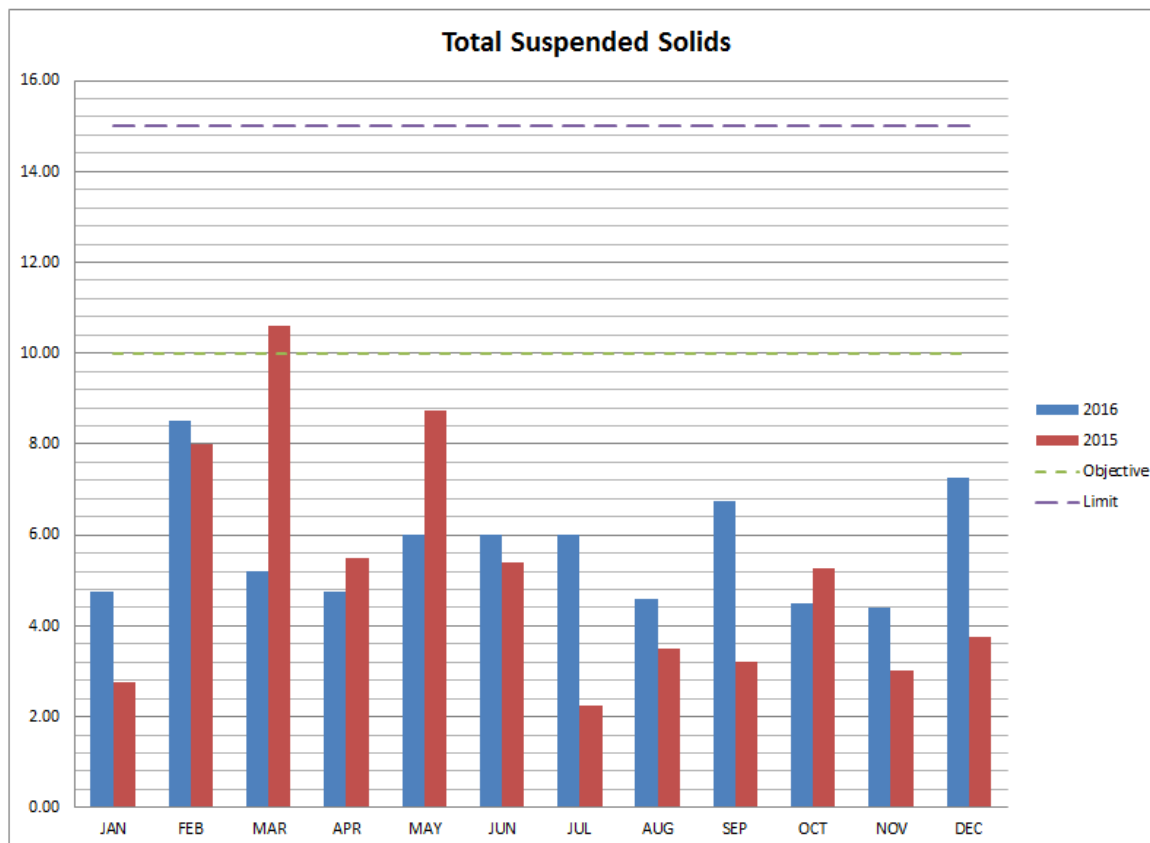
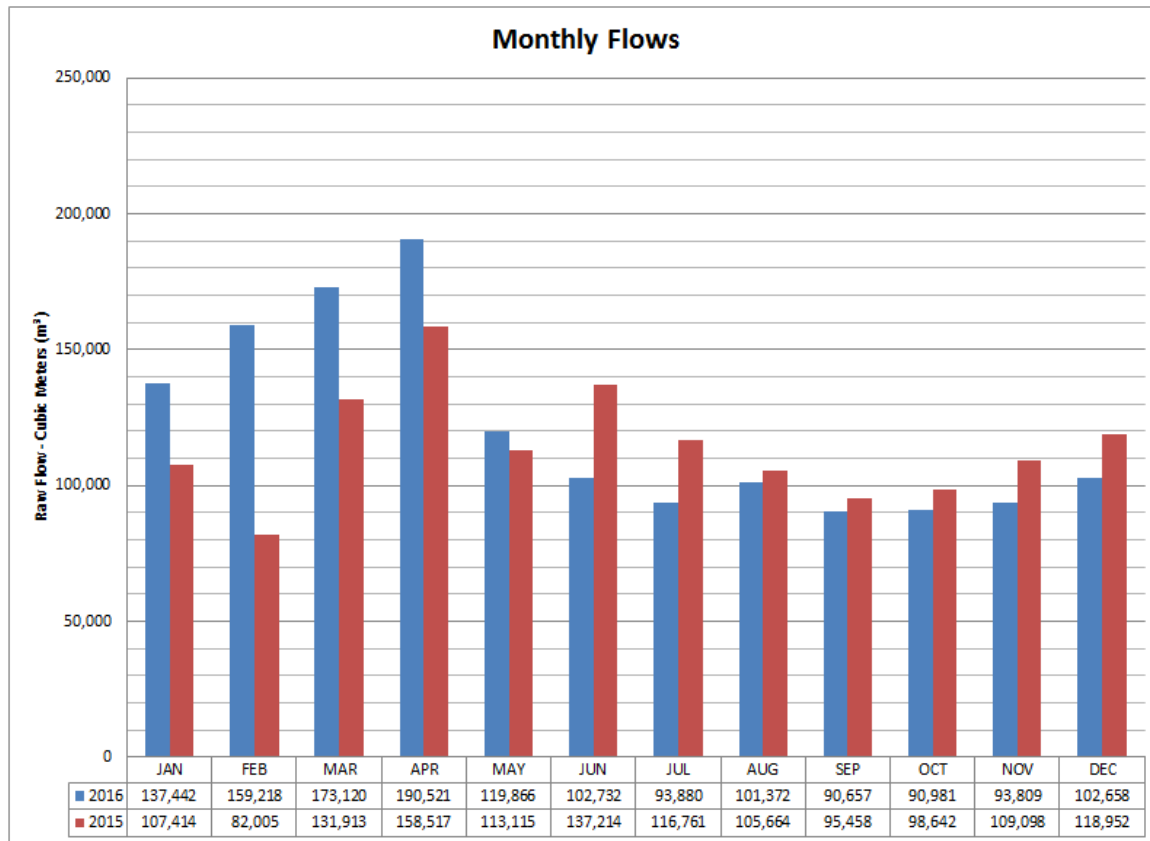
There have been no complaints or concerns reported to date.

REGULATORY INSPECTIONS:

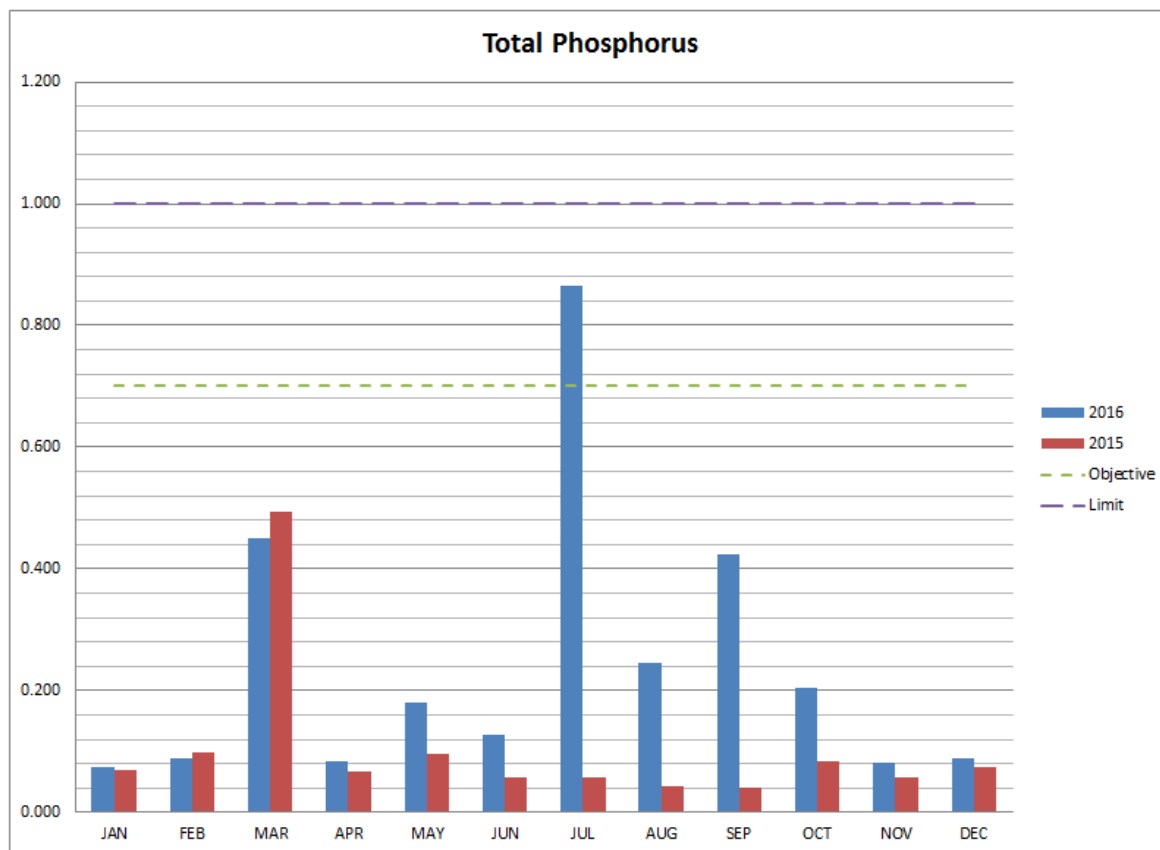
The last MOECC Inspection occurred on July 4, 2012.

PERFORMANCE ASSESSMENT REPORT:

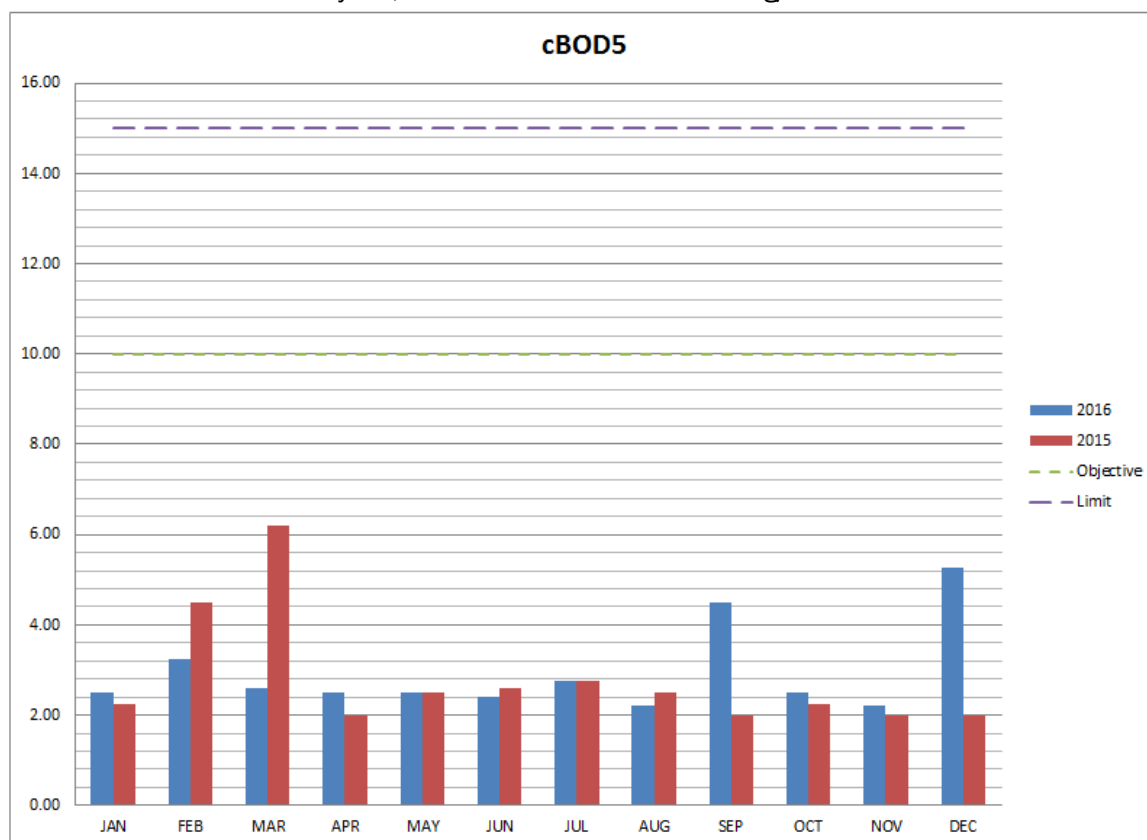
The average daily flow in 2016 for the January to December reporting period is 3987 m³/day.



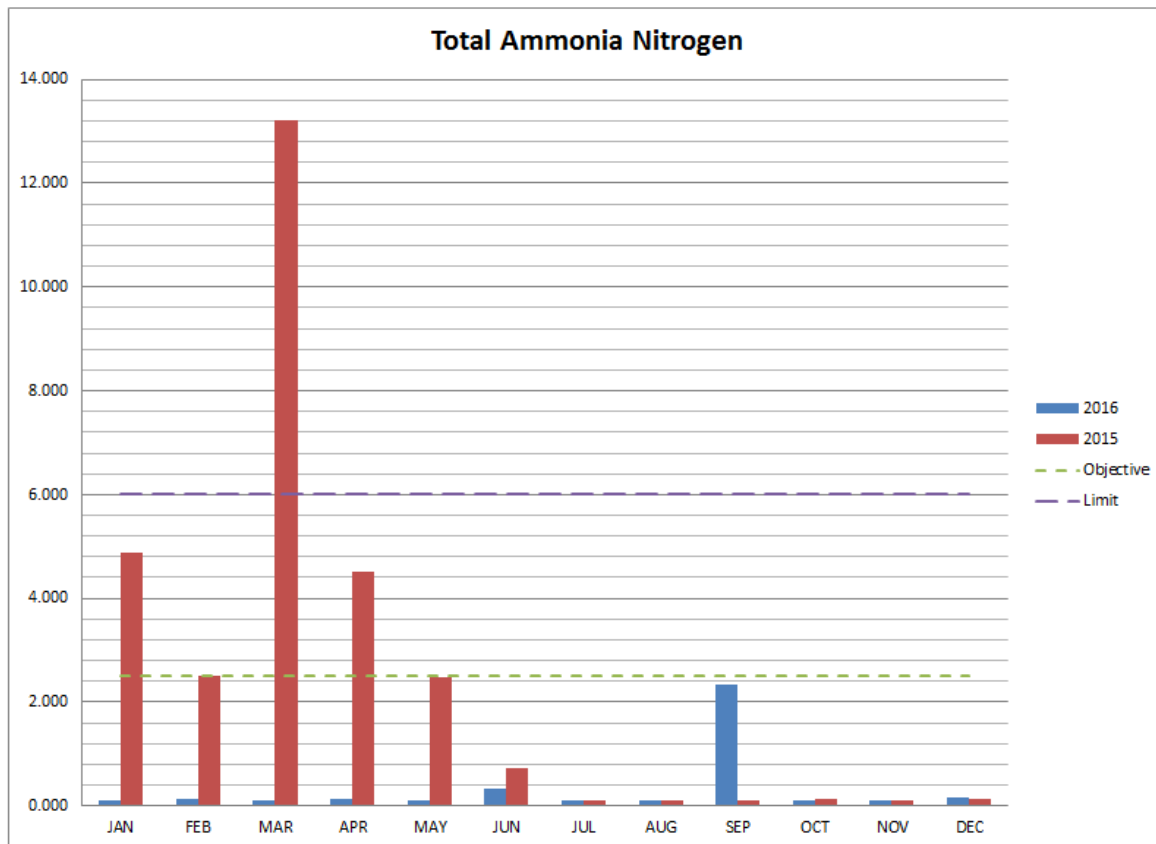
The monthly average suspended solids are in compliance for the fourth quarter.



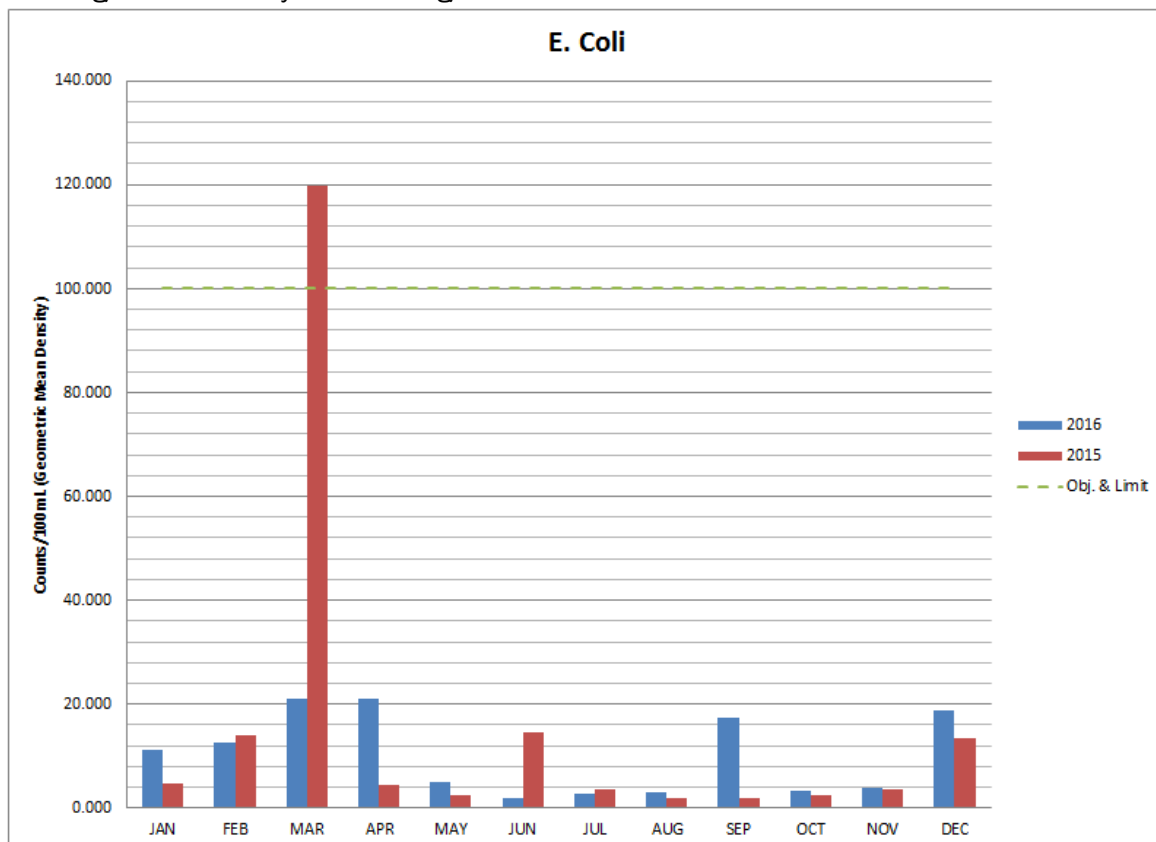
The monthly average for total phosphorus was not exceeded although the final effluent phosphorus daily limit was exceeded on March 30, 2016. The result was 1.42 mg/l and the daily limit is 1 mg/l. It was also exceeded on July 29, 2016 with a result of 2.26 mg/l.



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



The monthly average for total ammonia nitrogen was not exceeded although the total ammonia nitrogen at the St. Marys WWTP daily limit was exceeded on September 27, 2016. The result was 9.00 mg/l and the daily limit is 6 mg/l.



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

APPENDIX A – FLOW REPORT:

See attached.

APPENDIX A

FLOW REPORT

2016 Flows

