

Morrisburg Wastewater Treatment System

Sewage Works #120000168

Annual Report

Prepared for: Municipality of South Dundas

Reporting Period of January 1st – December 31st 2019

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Operations and Compliance Reliability Indices

Compliance Event	# of Events
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Non-Compliance	0
Spills/Overflows/Bypasses	0
Sewer Main Blockages	0

System Process Description

Morrisburg's sewage collection system is a gravity fed sanitary sewage collection system. There is one pumping station which pumps wastewater from the collection system to the wastewater treatment facility.

Morrisburg's wastewater treatment plant (WWTP) is a Class II wastewater treatment system owned and operated by the Municipality of South Dundas. Raw sewage is pumped to the WWTP from the plant pumping station which is equipped with four submersible pumps. From the pumping station, wastewater passes through the inlet works, including fine screens with a screw compactor and a grit removal and disposal system. Aluminum Sulphate is added to assist in phosphorous removal. The wastewater then moves through either of two parallel Sequencing Batch Reactors (SBRs) equipped with individual aeration systems, mixers, decanters and sludge removal pumps. Effluent decanted from the SBRs is treated by UV disinfection and subsequently passes through an outfall pipe to the St. Lawrence River.

The Morrisburg WWTP can receive septage. Septage can be transferred to the influent fine screens from the onsite holding tank by two dry-pit pumps.

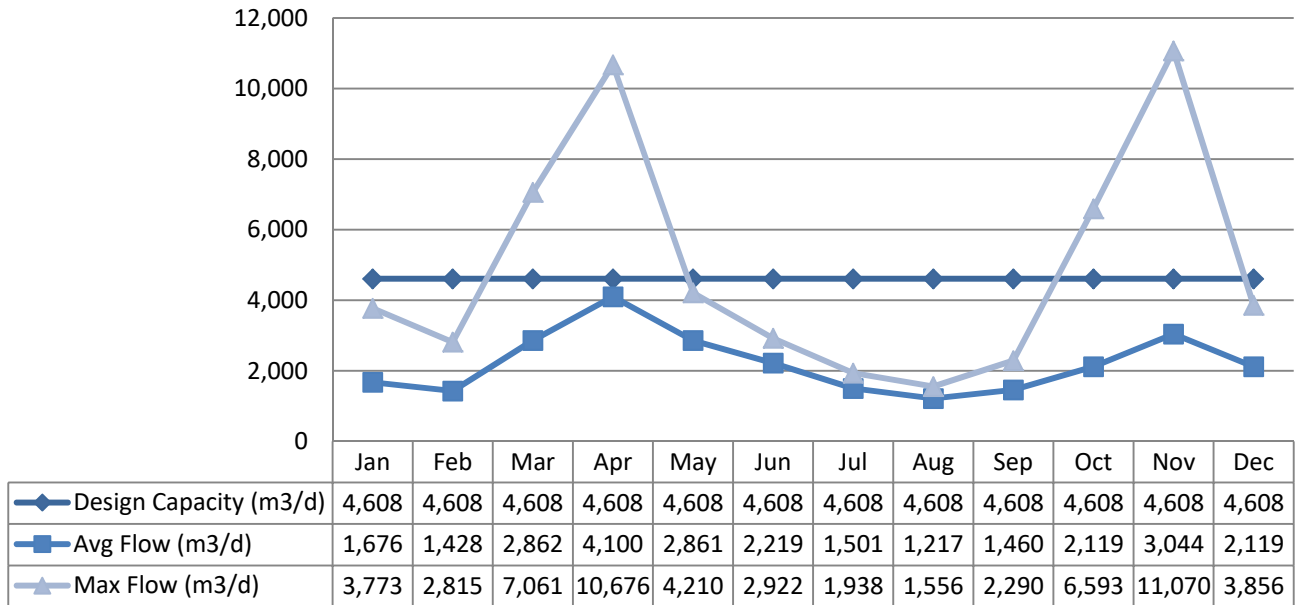
Sludge removed from the SBRs is transferred to a 140 m³ storage tank. From the tank, the sludge enters a gravity belt thickener. The thickened sludge is then pumped to an Autothermal Thermophilic Aerobic Digestion (ATAD) system for stabilization. The digested sludge is subsequently pumped to a 1480 m³ biosolids storage tank. From the storage tank, biosolids are hauled off site to be utilized as soil conditioner.

Wastewater System Flows

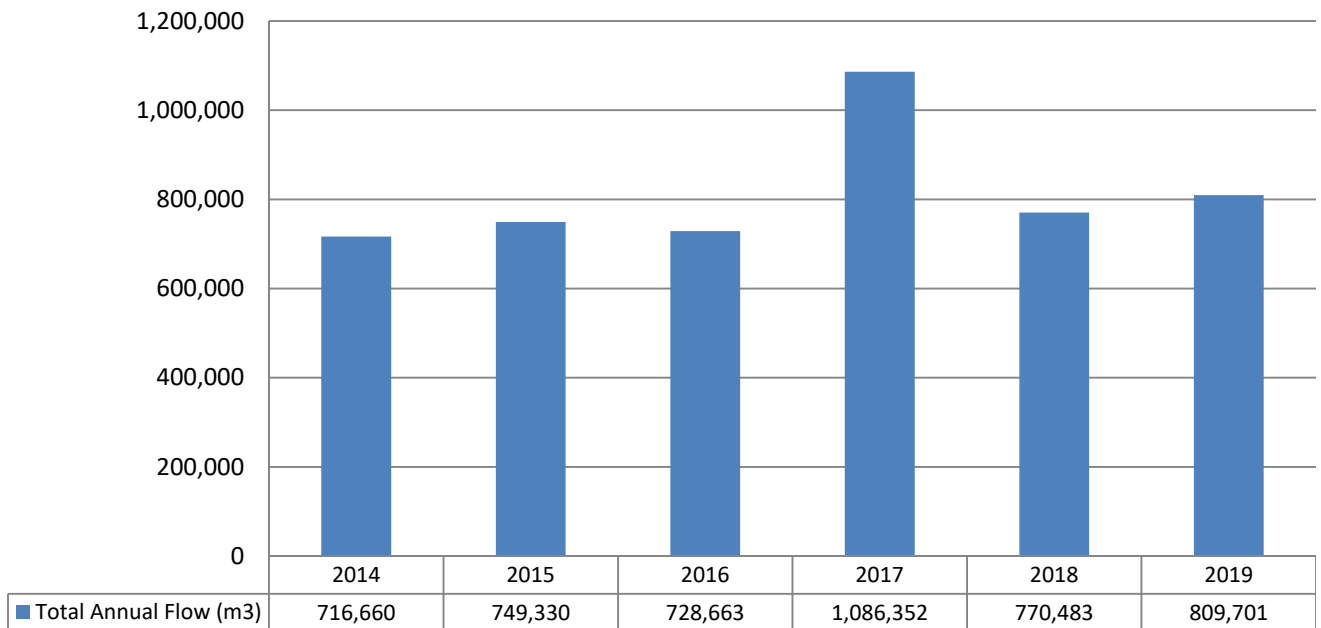
The hydraulic flows reaching the treatment facility in 2019 averaged 2,217 m³/day which represents 48% of the 4,608 m³/day design.

Raw Flows

2019 Raw Flows:



Annual Raw Flow Comparison:



Effluent Flow

A total of 809,701 m³ of effluent was discharged from Morrisburg's WWTP in 2019.

Effluent Quality Assurance or Control Measures

Effluent control measures include in-house sampling and testing for operational parameters. In-house testing provides real time results which are then used to enhance process and operational performance. Samples are collected by the Municipality of South Dundas' competent and licensed staff using approved methods and protocols for sampling including those specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

Effluent samples collected during the reporting period were submitted to Caduceon laboratory in Ottawa for analysis, with the exception of pH, temperature and unionized ammonia. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA). Accredited labs must meet strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Municipality of South Dundas is ensuring appropriate control measures are undertaken during sample analysis.

The pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators to ensure accuracy and precision of the results obtained. Un-ionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility's Certificate of Approval.

Effluent Quality

The monthly average concentrations of carbonaceous biochemical oxygen demand (CBOD₅) and total suspended solids (TSS) remained below the effluent objectives and limits outlined in the facility's Certificate of Approval during 2019. The geometric mean density of E. coli in the effluent also remained below the limit and objective in 2019. In addition, effluent pH remained within the limits and objectives throughout the year.

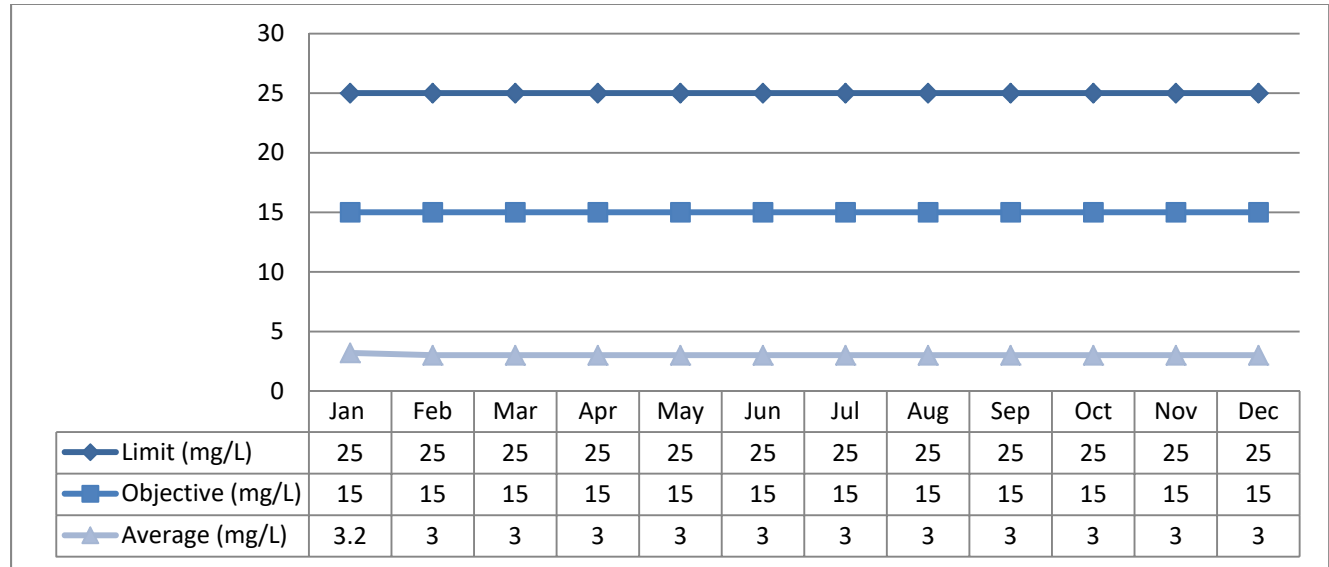
The monthly average concentration of total phosphorus (TP) remained below the limit and objective throughout 2019, with the exception of the months of June and July when the objective was slightly exceeded.

Effluent results from the wastewater treatment facility for 2019 are tabulated below. Additional data can be found in the Performance Assessment Reports attached in Appendix A.

Carbonaceous Biochemical Oxygen Demand (5-Day)

Monthly Average	C of A Limit	C of A Objective	Exceedance
Concentration (mg/L)	25	15	No

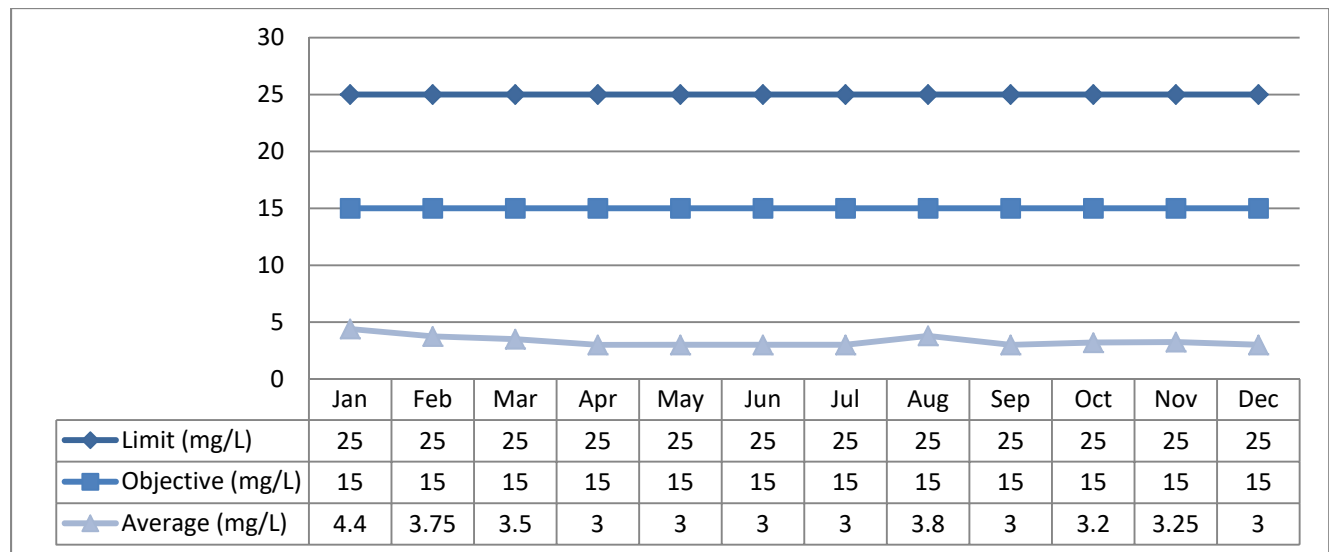
CBOD₅ Effluent Monthly Average Concentration:



Total Suspended Solids

Monthly Average	C of A Limit	C of A Objective	Exceedance
Concentration (mg/L)	25	15	No

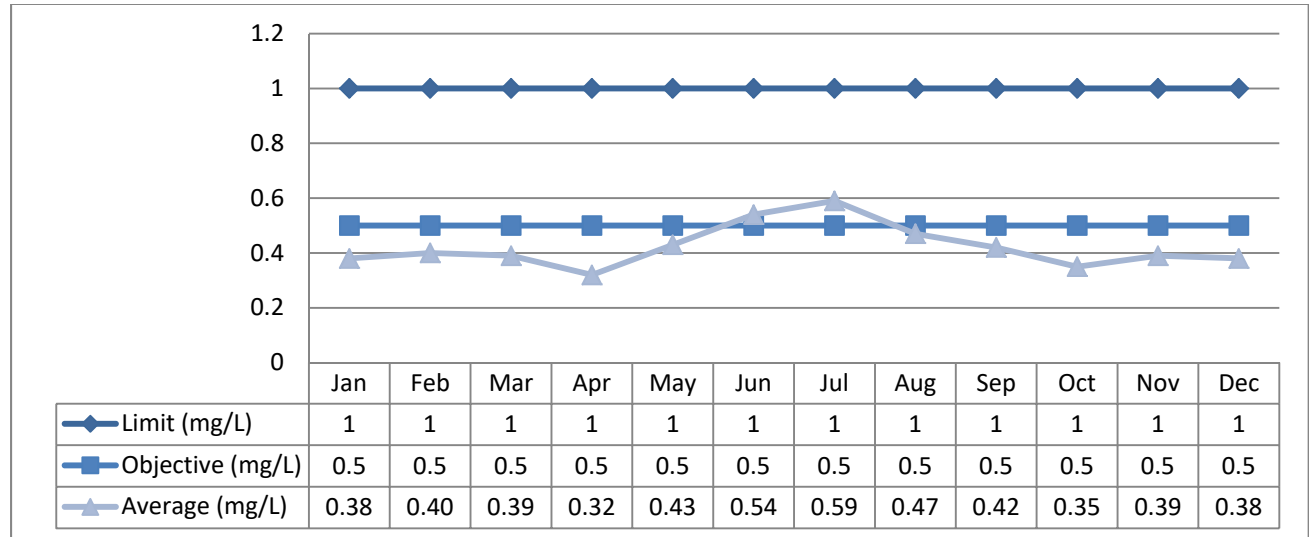
TSS Effluent Monthly Average Concentrations:



Total Phosphorus

Monthly Average	C of A Limit	C of A Objective	Exceedance
Concentration (mg/L)	1.0	0.5	Yes – Objective

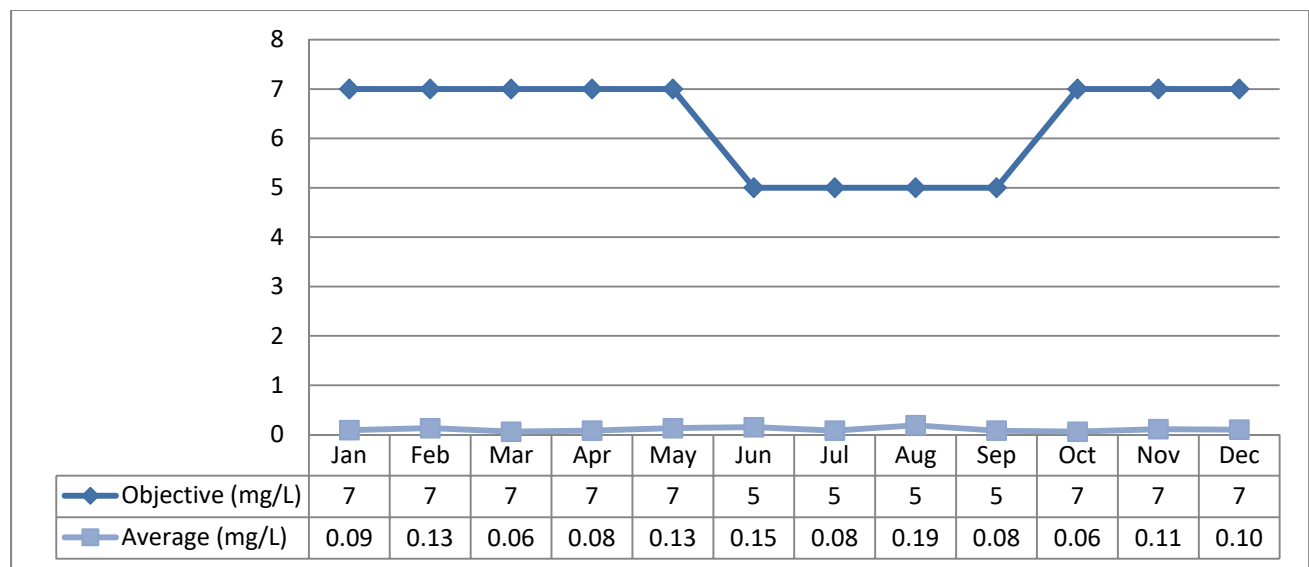
TP Effluent Monthly Average Concentrations:



Total Ammonia Nitrogen

Discharge Period	C of A Limit	C of A Objective	Exceedance
June 1 – Sept 30	n/a	5.0	No
Oct 1 – May 31	n/a	7.0	No

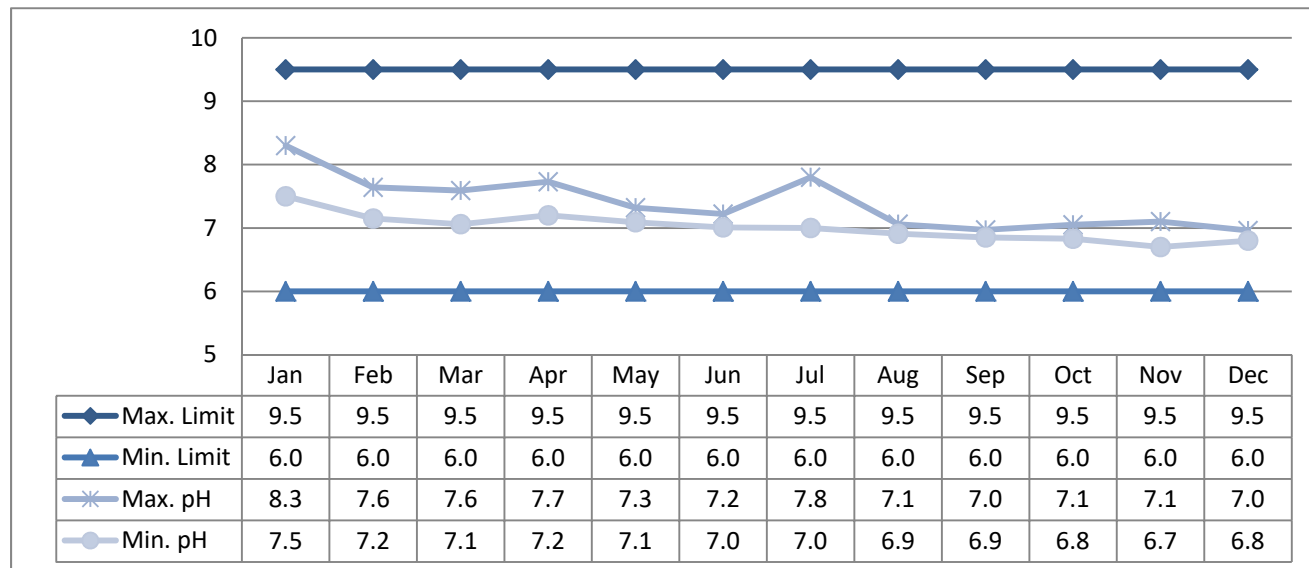
TAN Effluent Monthly Average Concentrations:



pH

Reporting Period	C of A Limit	C of A Objective	Exceedance
All results	6.0 – 9.5	6.0 – 9.5	No

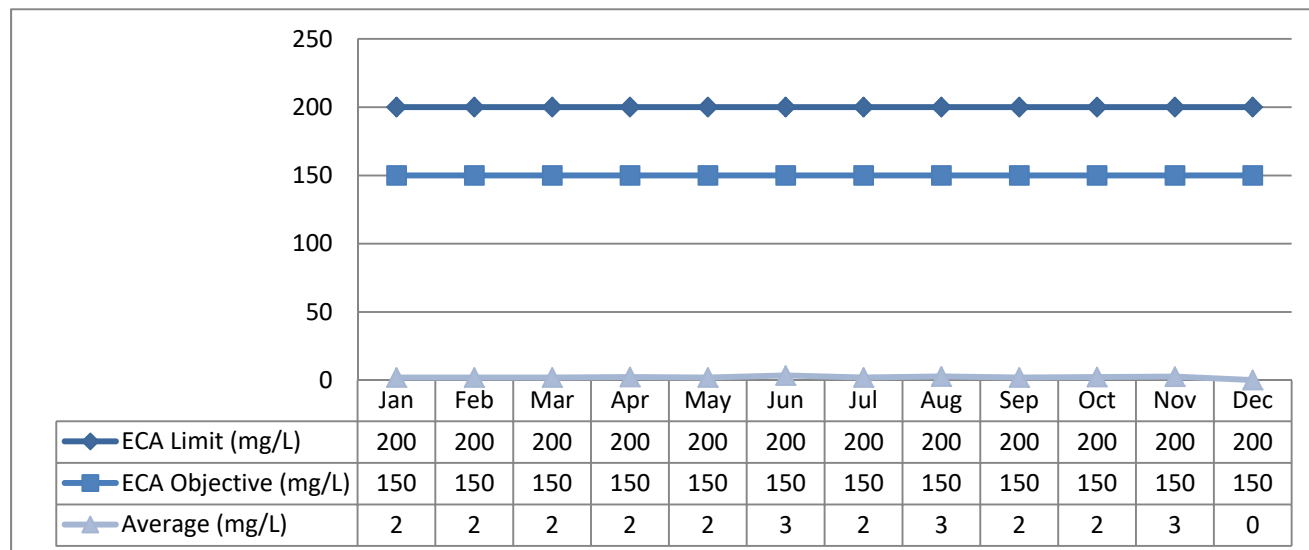
Monthly Minimum and Maximum Effluent pH Results:



E. Coli

Monthly Average	C of A Limit	C of A Objective	Exceedance
Geometric Mean Density	200	150	No

E. Coli Monthly Geometric Mean Density (cfu/100 mL):



Acute Lethality

Four samples were collected in 2019 and tested for acute lethality to Rainbow Trout and Daphnia Magna. Results are displayed as % mortality. An adverse result is indicated by a > 50% mortality rate.

Date	Rainbow Trout	Daphnia Magna
01-29-2019	0 %	0 %
04-09-2019	0 %	0 %
07-09-2019	0 %	0 %
10-01-2019	0 %	0 %

Operating Issues

The effluent objective for total phosphorus was slightly exceeded in June and July 2019. Operational staff will continue to review results and adjust the dosage of aluminum sulphate as needed in an effort to ensure the concentration of phosphorus in the effluent remains below the objective.

The maximum recorded flows during the months of March, April, October, November and December exceeded the average day design for the Morrisburg WWTP. Based on a historical review of flows, it appears this system is impacted by inflow and infiltration.

Maintenance

Flow Meter Calibration and Maintenance

Copies of the flow meter calibration certificates for 2019 are attached in Appendix B.

Maintenance Summary

Description
<ul style="list-style-type: none"> - removed and cleaned biofilter drain lines - replaced ballasts on UV banks - replaced wiring (Rack 3, Bank A) and ballast card (Bank B) - installed new level sensor in ATAD 1 - installed new low level float in wet well - rebuilt motor in ATAD 1 (P610) - replaced polyblend mixer motor - changed MUA and EAU filters - replaced biofilter fan belts - rebuilt wet well pump P203 - cleaned wet well

Notice of Modifications

Date	Process	Modification	Status
None to report.			

Sludge Generation

In 2019, a total of 715 m³ of liquid sludge was utilized as soil conditioner. The sludge was removed from the WWTP by Terrapure Environmental in November (NASM Plan #22900). It is anticipated that approximately the same volume of sludge will be generated in 2020.

Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
No complaints were received during the reporting period.			

Summary of Abnormal Discharge Events**Bypass/Overflow**

No bypasses or overflows occurred during the reporting period.

Spills

No spills occurred during the reporting period.

Appendix A

Performance Assessment Reports

2019 - IROQUOIS WWTP EFFLUENT SAMPLING MONTHLY AVERAGES

MONTH	DATE	CBOD (mg/L)	TSS (mg/L)	TP (mg/L)	NH ₃ (mg/L)	E. Coli (CFU/100ml)
January	01/03/2019	< 3	< 3	0.19	0.04	< 2
	01/10/2019	< 3	< 3	0.25	0.02	< 2
	01/17/2019	< 3	< 3	0.23	0.12	< 2
	01/24/2019	< 3	12	0.24	0.1	< 2
	01/31/2019	5	< 3	0.21	0.12	< 2
	Monthly Average	3.4	4.8	0.22	0.08	2
Compliant?	YES	YES	YES	YES	YES	
February	02/07/2019	< 3	6	0.21	0.07	< 2
	02/14/2019	< 3	< 3	0.21	0.05	< 2
	02/21/2019	< 3	7	0.18	0.09	< 2
	02/28/2019	4	5	0.2	0.11	< 2
	Monthly Average	3.3	5.3	0.20	0.08	2
Compliant?	YES	YES	YES	YES	YES	
March	03/07/2019	< 3	3	0.2	0.06	< 2
	03/14/2019	< 3	< 3	0.15	0.07	< 2
	03/21/2019	< 3	3	0.14	0.62	< 2
	03/28/2019	< 3	3	0.2	0.06	< 2
	Monthly Average	3.0	3.0	0.17	0.20	2
Compliant?	YES	YES	YES	YES	YES	
April	04/04/2019	< 3	< 3	0.26	0.06	< 2
	04/11/2019	< 3	7	0.21	0.08	< 2
	04/17/2019	< 3	< 3	0.43	0.08	< 2
	04/25/2019	< 3	< 3	0.19	0.07	< 2
	Monthly Average	3.0	4.0	0.27	0.07	2
Compliant?	YES	YES	YES	YES	YES	
May	05/02/2019	< 3	< 3	0.22	0.11	< 2
	05/09/2019	< 3	< 3	0.25	0.1	< 2
	05/16/2019	< 3	< 3	0.26	0.06	< 2
	05/23/2019	< 3	< 3	0.33	0.08	< 2
	05/30/2019	< 3	3	0.4	0.06	< 2
	Monthly Average	3.0	3.0	0.29	0.08	2
Compliant?	YES	YES	YES	YES	YES	
June	06/06/2019	< 3	5	0.38	0.09	< 2
	06/13/2019	< 3	< 3	0.39	0.08	< 2
	06/20/2019	< 3	< 3	0.32	0.12	< 2
	06/27/2019	< 3	5	0.55	0.06	< 2
	Monthly Average	3.0	4.0	0.41	0.09	2
Compliant?	YES	YES	YES	YES	YES	
July	07/04/2019	< 3	4	0.56	0.11	< 2
	07/11/2019	< 3	< 3	0.41	0.07	< 2
	07/18/2019	< 3	3	0.33	0.07	< 2
	07/25/2019	< 3	< 3	0.22	0.08	< 2
	Monthly Average	3.0	3.3	0.38	0.08	2
Compliant?	YES	YES	YES	YES	YES	
August	08/01/2019	52	34	0.2	0.05	2
	08/08/2019	< 3	3	0.17	0.12	< 2
	08/15/2019	< 3	3	0.21	0.08	< 2
	08/22/2019	< 3	< 3	0.24	0.08	< 2
	08/29/2019	< 3	< 3	0.28	0.11	< 2
	Monthly Average	12.8	9.2	0.22	0.09	2
Compliant?	YES	YES	YES	YES	YES	
September	09/05/2019	< 3	< 3	0.26	0.06	< 2
	09/12/2019	< 3	5	0.39	0.06	< 2
	09/19/2019	< 3	< 3	0.35	0.09	< 2
	09/26/2019	< 3	4	0.33	0.10	4
	Monthly Average	3.0	3.75	0.33	0.08	2
Compliant?	YES	YES	YES	YES	YES	
October	10/03/2019	< 3	< 3	0.29	0.12	< 2
	10/10/2019	< 3	< 3	0.38	0.12	< 2
	10/17/2019	< 3	< 3	0.26	0.11	< 2
	10/24/2019	< 3	4	0.23	0.08	< 2
	10/31/2019	< 3	< 3	0.26	0.08	10
	Monthly Average	3	3.2	0.28	0.10	2
Compliant?	YES	YES	YES	YES	YES	
November	11/07/2019	< 3	6	0.25	0.08	< 2
	11/14/2019	< 3	5	0.33	0.08	< 2
	11/21/2019	< 3	3	0.39	0.09	< 2
	11/28/2019	< 3	8	0.35	0.06	< 2
	Monthly Average	3.0	5.5	0.33	0.08	2
Compliant?	YES	YES	YES	YES	YES	
December	12/05/2019	< 3	9	0.33	0.05	< 2
	12/12/2019	< 3	< 3	0.3	0.1	2
	12/19/2019	< 3	3	0.31	0.06	0
	12/23/2019	< 3	< 3	0.51	0.06	2
	Monthly Average	3.0	4.5	0.36	0.07	0
Compliant?	YES	YES	YES	YES	YES	

2019 - IROQUOIS WWTP LOADING CALCULATIONS

MONTH	Total Effluent Flow (m ³)		BOD	TSS	TP	NH ₃
January	51,714	Monthly Average (mg/L)	3.4	4.8	0.2	0.08
		Loading (kg/d)	5.67	8.01	0.37	0.13
		Compliant?	YES	YES	YES	YES
February	41,700	Monthly Average (mg/L)	3.3	5.25	0.20	0.08
		Loading (kg/d)	4.37	7.06	0.27	0.11
		Compliant?	YES	YES	YES	YES
March	107,041	Monthly Average (mg/L)	3.0	3.0	0.17	0.20
		Loading (kg/d)	10.36	10.36	0.60	0.70
		Compliant?	YES	YES	YES	YES
April	122,802	Monthly Average (mg/L)	3.0	4	0.27	0.07
		Loading (kg/d)	11.88	15.85	1.08	0.29
		Compliant?	YES	YES	YES	YES
May	80,057	Monthly Average (mg/L)	3.0	3	0.29	0.082
		Loading (kg/d)	7.75	7.75	0.75	0.21
		Compliant?	YES	YES	YES	YES
June	54,091	Monthly Average (mg/L)	3.0	4	0.41	0.09
		Loading (kg/d)	5.23	6.98	0.72	0.15
		Compliant?	YES	YES	YES	YES
July	30,295	Monthly Average (mg/L)	3.0	3.3	0.38	0.08
		Loading (kg/d)	2.93	3.18	0.37	0.08
		Compliant?	YES	YES	YES	YES
August	20,329	Monthly Average (mg/L)	12.8	9.2	0.22	0.09
		Loading (kg/d)	8.39	6.03	0.14	0.06
		Compliant?	YES	YES	YES	YES
September	23,655	Monthly Average (mg/L)	3.0	3.75	0.33	0.08
		Loading (kg/d)	2.29	2.86	0.25	0.06
		Compliant?	YES	YES	YES	YES
October	41,531	Monthly Average (mg/L)	3.0	3.2	0.28	0.10
		Loading (kg/d)	4.02	4.29	0.38	0.14
		Compliant?	YES	YES	YES	YES
November	77,597	Monthly Average (mg/L)	3.0	5.5	0.33	0.08
		Loading (kg/d)	7.51	13.77	0.83	0.19
		Compliant?	YES	YES	YES	YES
December	59,212	Monthly Average (mg/L)	3.0	4.5	0.36	0.07
		Loading (kg/d)	5.73	8.60	0.69	0.13
		Compliant?	YES	YES	YES	YES

2019 - IROQUOIS WWTP EFFLUENT UN-IONIZED AMMONIA

Sample Date	Sample Temperature ° C	Sample Temp. Kelvin	Dissociation Constant pK _a	Effluent Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH ₃ + NH ₄ as N)	Un-ionized Ammonia (mg/L)
01/03/2019	10.0	283.15	9.73	8.0	0.0182	0.04	0.0007
01/10/2019	10.9	284.05	9.70	8.1	0.0245	0.02	0.0005
01/17/2019	10.2	283.35	9.72	8.1	0.0232	0.12	0.0028
01/24/2019	9.7	282.85	9.74	8.0	0.0178	0.1	0.0018
01/31/2019	9.8	282.95	9.74	8.3	0.0352	0.12	0.0042
02/07/2019	10.1	283.25	9.73	7.8	0.0117	0.07	0.0008
02/14/2019	9.6	282.75	9.75	8.2	0.0277	0.05	0.0014
02/21/2019	9.4	282.55	9.75	8.2	0.0273	0.09	0.0025
02/28/2019	8.8	281.95	9.77	8.3	0.0326	0.11	0.0036
03/07/2019	8.4	281.55	9.79	8.4	0.0395	0.06	0.0024
03/14/2019	9.6	282.75	9.75	8.2	0.0277	0.07	0.0019
03/21/2019	8.3	281.45	9.79	8.3	0.0314	0.62	0.0194
03/28/2019	7.7	280.85	9.81	8.1	0.0191	0.06	0.0011
04/04/2019	7.3	280.48	9.82	8.3	0.0291	0.06	0.0017
04/11/2019	7.8	280.95	9.81	8.2	0.0241	0.08	0.0019
04/17/2019	8.6	281.75	9.78	7.5	0.0052	0.08	0.0004
04/25/2019	10.6	283.75	9.71	7.8	0.0121	0.07	0.0008
05/02/2019	11.6	284.75	9.68	8.1	0.0258	0.11	0.0028
05/09/2019	11.2	284.35	9.69	7.8	0.0127	0.1	0.0013
05/16/2019	12.4	285.55	9.65	7.7	0.0111	0.06	0.0007
05/23/2019	13.5	286.65	9.61	7.9	0.0190	0.08	0.0015
05/30/2019	12.3	285.45	9.65	7.7	0.0110	0.06	0.0007
06/06/2019	12.5	285.65	9.65	7.7	0.0112	0.09	0.0010
06/13/2019	13.1	286.25	9.63	7.9	0.0184	0.08	0.0015
06/20/2019	13.3	286.45	9.62	7.6	0.0095	0.12	0.0011
06/27/2019	13.6	286.75	9.61	7.9	0.0191	0.06	0.0011
07/04/2019	13.8	286.95	9.60	7.9	0.0194	0.11	0.0021
07/11/2019	14.1	287.25	9.59	7.8	0.0158	0.07	0.0011
07/18/2019	13.9	287.05	9.60	7.6	0.0099	0.07	0.0007
07/25/2019	14.6	287.75	9.58	7.6	0.0104	0.08	0.0008
08/01/2019	16.8	289.95	9.51	7.5	0.0098	0.05	0.0005
08/08/2019	16.6	289.75	9.51	7.7	0.0152	0.12	0.0018
08/15/2019	16.9	290.05	9.50	7.7	0.0155	0.08	0.0012
08/22/2019	17.1	290.25	9.50	7.7	0.0158	0.08	0.0013
08/29/2019	17.8	290.95	9.47	7.9	0.0260	0.11	0.0029
09/05/2019	17.1	290.25	9.50	7.7	0.0158	0.06	0.0009
09/12/2019	18	291.15	9.47	7.8	0.0211	0.06	0.0013
09/19/2019	18.1	291.25	9.46	7.9	0.0266	0.09	0.0024
09/26/2019	18.1	291.25	9.46	7.9	0.0266	0.1	0.0027
10/10/2019	16.5	289.65	9.52	7.9	0.0237	0.12	0.0028
10/17/2019	16.4	289.55	9.52	8.0	0.0294	0.11	0.0032
10/24/2019	16	289.15	9.53	7.4	0.0079	0.08	0.0006
10/31/2019	15.4	288.55	9.55	7.4	0.0069	0.08	0.0005
11/07/2019	14.1	287.25	9.59	7.4	0.0059	0.08	0.0005
11/14/2019	13.5	286.65	9.61	6.9	0.0019	0.08	0.0002
11/21/2019	13.9	287.05	9.60	7.5	0.0086	0.09	0.0008
11/28/2019	13.3	286.45	9.62	7.7	0.0108	0.06	0.0007
12/05/2019	15.6	288.75	9.54	7.5	0.0084	0.05	0.0004
12/12/2019	14.2	287.35	9.59	7.8	0.0163	0.1	0.0016
12/19/2019	11.7	284.85	9.67	7.7	0.0105	0.06	0.0006
12/23/2019	12.5	285.65	9.65	7.6	0.0093	0.06	0.0006

$pK_a = 0.09018 + 2729.92/T$, where pK_a is the dissociation constant of ammonia at a given temperature.

$T = (K = \text{degrees C} + 273.16)$, where T is the ambient water temperature in Kelvin.

2019 - IROQUOIS WWTP AEROBIC BIOSOLIDS RESULTS

SLUDGE RESULTS		03-Jan-19	07-Feb-19	07-Mar-20	04-Apr-19	02-May-19	06-Jun-19	11-Jul-19	08-Aug-19	05-Sep-19	03-Oct-19	07-Nov-19	05-Dec-19
Ammonia	mg/L	1350	1450	1570	899	1270	981	997	1420	1100	959	1050	1300
Nitrate	mg/L	< 3	< 3	4.4	< 5	< 1	5.9	< 1	2.6	3.7	< 10	< 1	1.8
Ammonia + Nitrate	mg/L	1353	1453	1574	904	1271	987	998	1423	1104	969	1051	1302
Total Phosphorus	mg/L	1880	1730	1460	1360	1580	1130	970	1410	1230	1070	1070	1140
Total Solids	mg/L	38400	56200	44100	43900	72000	38000	82300	38900	35000	26600	32000	33300
Aluminum	mg/L	2350	1570	1580	1990	1940	1970	1720	1540	1110	1090	1260	1410
Arsenic	mg/L	0.20	0.20	0.10	0.20	0.20	0.20	0.2	0.3	0.1	0.1	0.20	0.19
Cadmium	mg/L	0.050	0.040	0.040	< 0.030	0.040	0.040	0.04	0.05	0.030	< 0.03	0.040	0.040
Chromium	mg/L	1.63	0.86	0.86	0.99	1.11	1.55	1.5	2.14	1.03	0.83	0.76	1.10
Cobalt	mg/L	0.19	0.13	0.090	0.12	0.20	0.20	0.22	0.21	0.12	0.06	0.10	0.13
Copper	mg/L	73.00	51.00	53.00	63.50	62.50	67.00	62	79.5	44.3	31.9	47.8	44.90
Lead	mg/L	1.40	1.00	1.00	1.20	1.40	1.80	1.6	1.7	1	0.6	0.90	1.00
Mercury	mg/L	0.02	0.05	0.02	0.01	0.01	0.04	0.057	0.029	0.011	0.016	0.012	0.01
Molybdenum	mg/L	0.49	0.36	0.34	0.49	0.53	0.52	0.56	0.63	0.35	0.26	0.38	0.37
Nickel	mg/L	1.62	1.05	1.13	1.40	1.53	1.69	1.65	1.87	1.05	0.84	0.94	1.10
Selenium	mg/L	0.20	0.10	0.10	0.20	0.20	0.20	0.2	0.2	0.1	0.1	0.10	0.20
Zinc	mg/L	36.0	25.40	24.80	31.0	31.80	29.00	28.4	27	21.9	17.1	24.6	25.90

Appendix B

Flow Meter Calibration Reports

CapitalControls

Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

3 Morrisburg W.P.C.P

CapitalControls

Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Callibrations

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

3.1 FIT-370 East Influent Channel Flow:

FIELD EQUIPMENT VERIFICATION / CALIBRATION REPORT						
DESCRIPTION : Raw Sewage Influent.					MODEL: OCF 4.0-A1A1M2C	
MANUFACTURER : Greyline					TAG: FIT-370	
Client Name: Township of South Stormont.					Serial # 38588	
					Device Output Signal : 4.00 - 20.0 mA	
INSTALLATION INSPECTION						
	DESCRIPTION	FINDINGS				COMMENTS
		OK	FIXED	N/A	FAULTY	
GENERAL						
1	TAGGING			X		Calibration by means of Simulating Channel Level Grey Line OCF 4.0 Configuration
2						Flume Type = Parshall Size = 12"
MECHANICAL						
3	MOUNTING: check for proper fastening, etc.	X				Range = 547 LOE= 60 Sec. Mode = Flow Damping = 10%
4	ORIENTATION: check for proper angle, etc.)	X				Max. Range = 1.078 m Min. Range = 0.291 m
5	POSITION: relative position to other components (ie. for proper flow, blanking distance), etc.	X				Units = m Volume = m3 Time =Day Echo = 72% to 87%
6						Range = 42,043 m3/day
ELECTRICAL						
7		X				Relay 1 = Off Relay 2 = Off Relay 2 = Off
8	WIRE TAGGING: (exists and proper wire type)	X				
9	QUALITY OF CONNECTIONS:	X				Head _(Max) = Max. Range - Min. Range
10	GROUNDING:	X				Head _(Max) = (1.085m - 0.298m) =.787.m
11	SHIELDING: (check if grounded only at PLC end of wire)	X				Q _(Max) = 42,043 m3/day
12	CERTIFICATION CSA, ULC:	X				
13						
SET-UP/CALIBRATION						
DIGITAL		ADJUSTMENT USING		VERIFIED USING		SETPOINT / RANGE
14	SETPOINT ADJUSTMENT	MECHANICAL TYPE		Level Target		
		ELECTRONIC TYPE		Fluke 725 callibrator S/N 8759025		0 – 42043m ³ /d
Configuration Parameters:			Calibration Data Test Tolerance: 15.00%			
		<i>Input Variable</i>	<i>Transmitter Var.</i>	<i>Cal. Value</i>	<i>% Error</i>	<i>Notes</i>
		(Calibration Jig set to 0.219 m)	0.25 m	7441 m3/d	7107.8 m3/d	0.80% Passed
		(Calibration Jig set to 0.064 m)	0.064m	952 m3/d	860 m3/d	0.22 % Passed
		(Calibration Jig set to 0.00 m)	0.001 m	57 m3/d	0 m3/d	0.13 % Passed
Error (% Full Scale) = ((Transmitter Value - Calculated Value) / Full Scale) * 100						
= ((7441-7107.8 / 42043) *100						
= 0.80 % of full scale						
				Checked By: <i>Tim Stewart</i>		
				Cell: 613 325 9213		
				Email: tim.stewart@capitalcontrols.ca		

CapitalControls

Electrical/Control Panels – PLC/SCADA Programming – Instrumentation Calibrations

830 Industrial Ave. Ottawa, ON K1G-4B8 Ph. 613 248-1999 Fax: 613 248-1997

3.2 FIT-380 West Influent Channel Flow:

FIELD EQUIPMENT VERIFICATION / CALIBRATION REPORT						
DESCRIPTION : Raw Sewage Influent.				MODEL: OCF 4.0-A1A1M2B		DATE: August 9 / 2019
MANUFACTURER : GreyLine				Serial # 38587		TAG: FIT-380
Client Name: Township of South Stormont.					Device Output Signal : 4.00 - 20.0 mA	
INSTALLATION INSPECTION						
	DESCRIPTION	FINDINGS				COMMENTS
		OK	FIXED	N/A	FAULTY	
GENERAL						
						Calibration by means of Simulating Channel Level
1	TAGGING			X		Grey Line OCF 4.0 Configuration
2						Flume Type = Parshall Size = 12"
MECHANICAL						
3	MOUNTING: check for proper fastening, etc.	X				Range = LOE= 60 Sec.
4	ORIENTATION: check for proper angle, etc.)	X				Mode = Flow Damping = 10%
5	POSITION: relative position to other components (i.e. for proper flow, blanking distance), etc.	X				Max. Range = 1.09 m Min. Range = 0.282 m
6						Units = m Volume = m3 Time =Day Echo quality = Good
ELECTRICAL						
7						Range = 43794 m3/day Relay 1 = Off Relay 2 = Off Relay 2 = Off
8	WIRE TAGGING: (exists and proper wire type)	X				Actual process = 1.94 m ³ /d @ 4.02 mA
9	QUALITY OF CONNECTIONS:	X				Head _(Max) = Max. Range - Min. Range
10	GROUNDING:	X				Head _(Max) = (1.09m - 0.292m) = 0.808 m
11	SHIELDING: (check if grounded only at PLC end of wire)	X				Q _(Max) = 43,794 m3/day
12	CERTIFICATION CSA, ULC:	X				
SET-UP/CALIBRATION						
DIGITAL		ADJUSTMENT USING		VERIFIED USING		SETPOINT / RANGE
14	SETPOINT ADJUSTMENT	MECHANICAL TYPE		Level Target		0 - 43794 m ³ /d
		ELECTRONIC TYPE		Fluke 725 calibrator S/N 8759025		
Configuration Parameters:		Calibration Data Test Tolerance: 15.00%				
		Input Variable	Transmitter Value.	Cal. Value	% Error	Notes
	(Calibration Jig set to 0.071 m)	0.25 m	7323 m3/d	7107.8 m3/d	0.49%	Passed
	(Calibration Jig set to 0.064 m)	0.064m	914 m3/d	860 m3/d	0.12 %	Passed
	(Calibration Jig set to 0.00 m)	0.001 m	1.542 m3/d	0 m3/d	0.01 %	Passed
Error (% Full Scale) = ((Transmitter Value - Calculated Value) / Full Scale) * 100 = ((7323-7107.8)/ 43794)*100 = 0.49 % of full scale				Checked By: <i>Tim Stewart</i> Cell: 613 325 9213 Email: tim.stewart@capitalcontrols.ca		