Barry's Bay Wastewater System

Sewage Works # 110001854

Annual Report

Prepared For: The Township of Madawaska Valley

Reporting Period of January 1st – December 31st 2021

Issued: March 16th, 2022

Revision: 0

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

This report has been prepared to meet the requirements set out in the facility Certificate of Approval #2702-7TKNBE issued August, 31, 2009.

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Operations and Compliance Reliability Indices

Compliance Event	# of Events
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Environment Canada Inspections	0
Non-Compliance	4 - see Operating Issues for details
Bypass/Overflows/Spills	0 / 0 / 0
Community Complaints	1 - see Summary of Complaints for details
Sewer Main Blockages	0

System Process Descripton

The Barry's Bay sewage collection system is a gravity fed collection system consisting of separated sewers and three pumping stations discharging to the wastewater treatment facility.

The Barry's Bay wastewater treatment plant is a Class III treatment facility. The incoming wastewater receives primary treatment consisting of fine screen with screw auger and grinder. Secondary treatment is achieved through two sequencing batch reactors (SBR) equipped with a fixed decanter using the ISAM™ (Integrated Surge Anoxic Mix) system. Sludge is wasted to the ISAM™ tank while mixed liquor is returned to the SAM™ tank. One equalization tank (effluent tank) connected to both SBRs, provides equalization storage prior to filtration.

PAS-8 (Polyaluminum sulfate) is used for phosphorus removal and is dosed in two locations within the process, at the SBR and pre-filtration. Soda ash is used for alkalinity control and is dosed in two locations within the process, at the inlet headworks and the SAM™ tank. Two UV banks provide disinfection, capable of peak flow rate of 4400 m^3/day. Effluent is discharged to Kamaniskeg Lake.

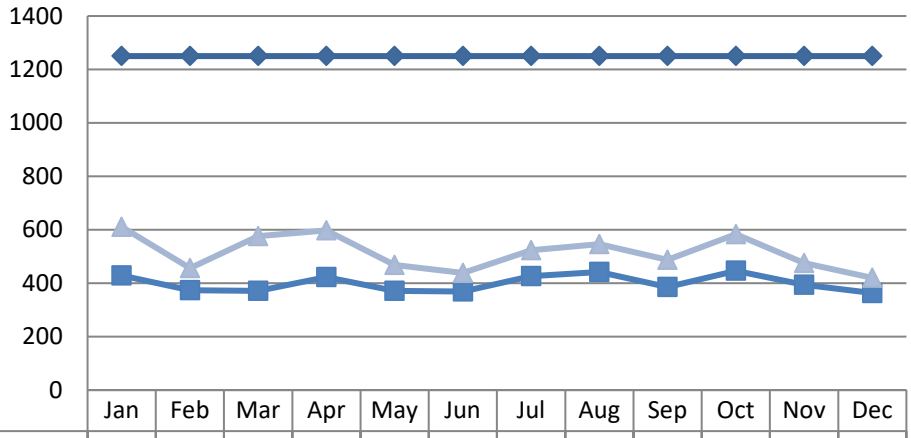
Activated sludge which has been removed from the SBR's is pumped into a 100 m^3 two-celled aerobic sludge digesto. Activated sludge that is stabilized (or digested) is sent to a 350 m^3 storage tank. Supernatant from the biosolids holding tank is returned to head of plant. Sludge is hauled offsite for land application semi-annually.

Wastewater System Flows

The annual average daily flow for 2021 was 399 m^3/d, which represents 32% of the facility's 1250 m^3/d rated capacity.

Raw Flow

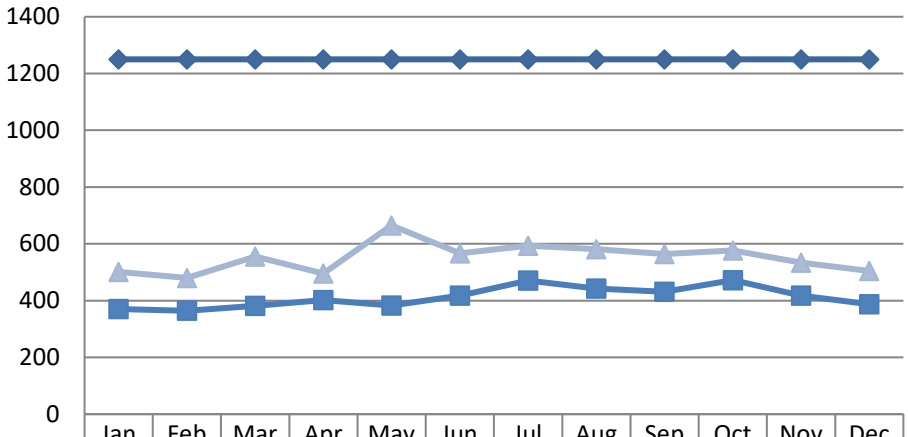
2021 Raw Flows:



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Average Daily Flow (m3/d)	429	374	372	423	371	368	426	442	386	446	395	364
Maximum Daily Flow (m3/d)	611	456	576	598	468	438	524	546	488	583	475	420

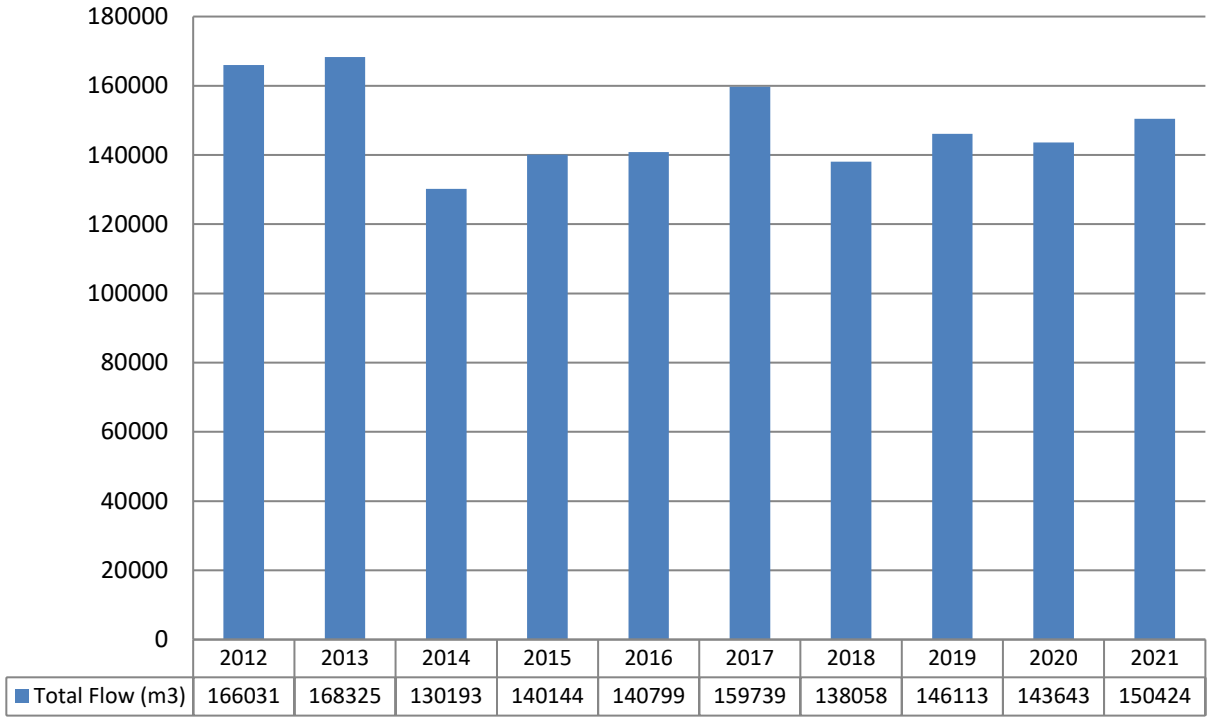
Effluent Flow

2021 Effluent Flow



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
Average Daily Flow (m3/d)	371	364	381	402	383	418	471	443	432	472	418	388
Maximum Daily Flow (m3/d)	501	480	555	495	665	566	594	581	564	577	534	505

Annual Effluent Flow Comparison



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Flow (m3)	166031	168325	130193	140144	140799	159739	138058	146113	143643	150424

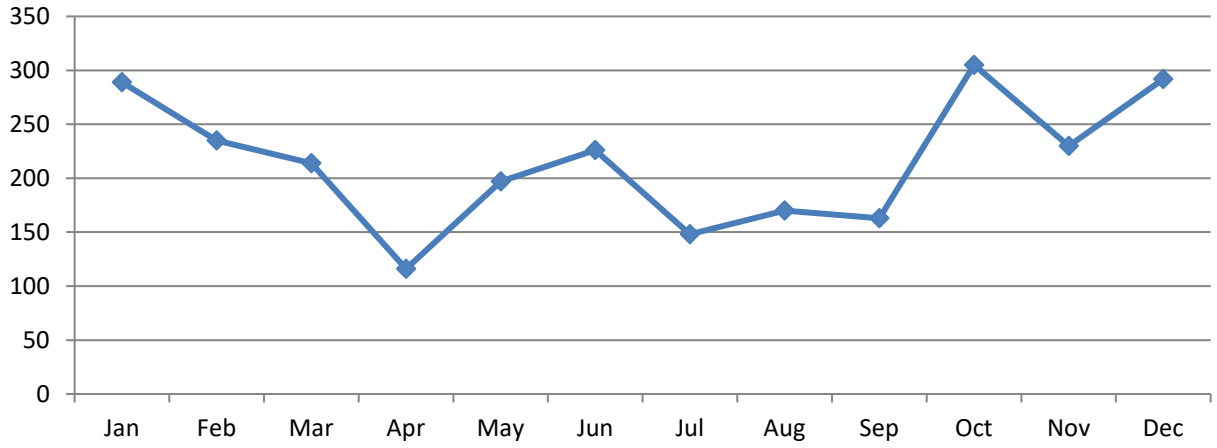
Imported Sewage

Septage Flow (m3/d)

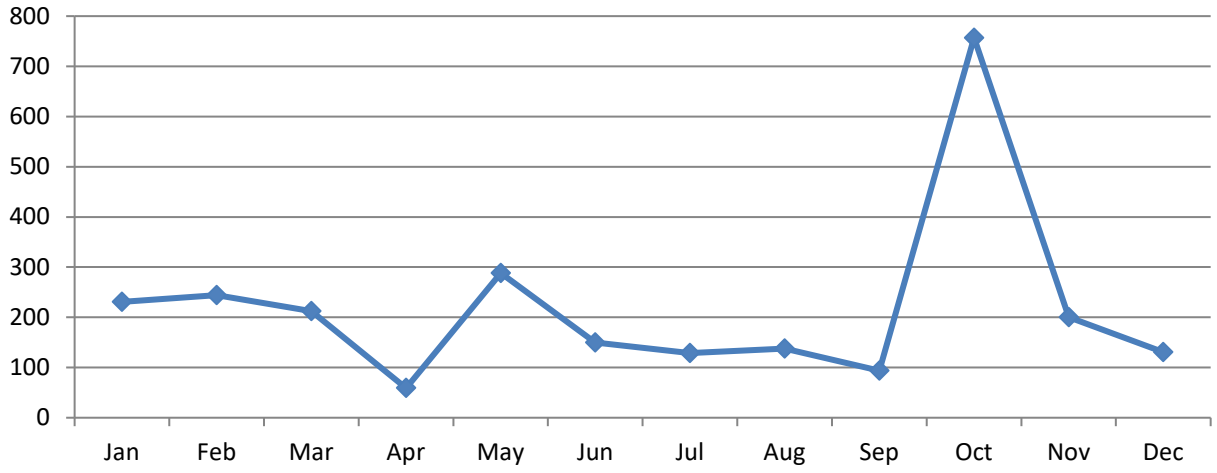
There was no septage accepted at this facility in 2021.

Raw Sewage Quality

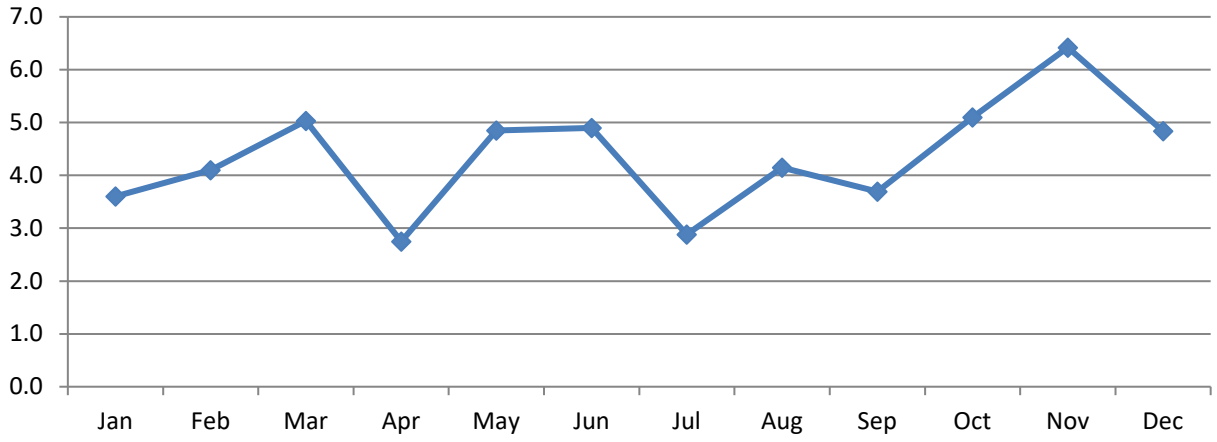
BOD5 Influent Monthly Average Concentration (mg/L)



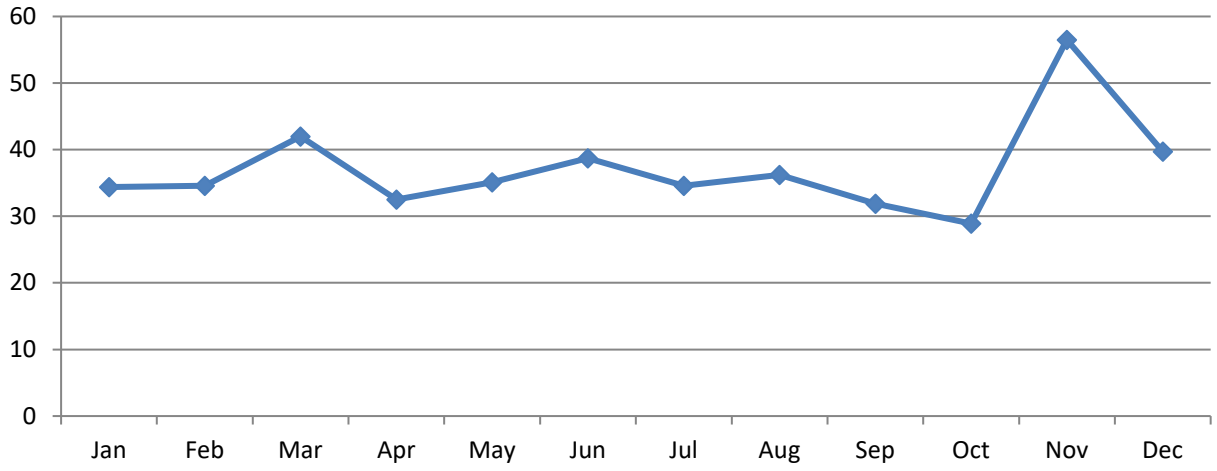
Total Suspended Solids Influent Monthly Average Concentration (mg/L)



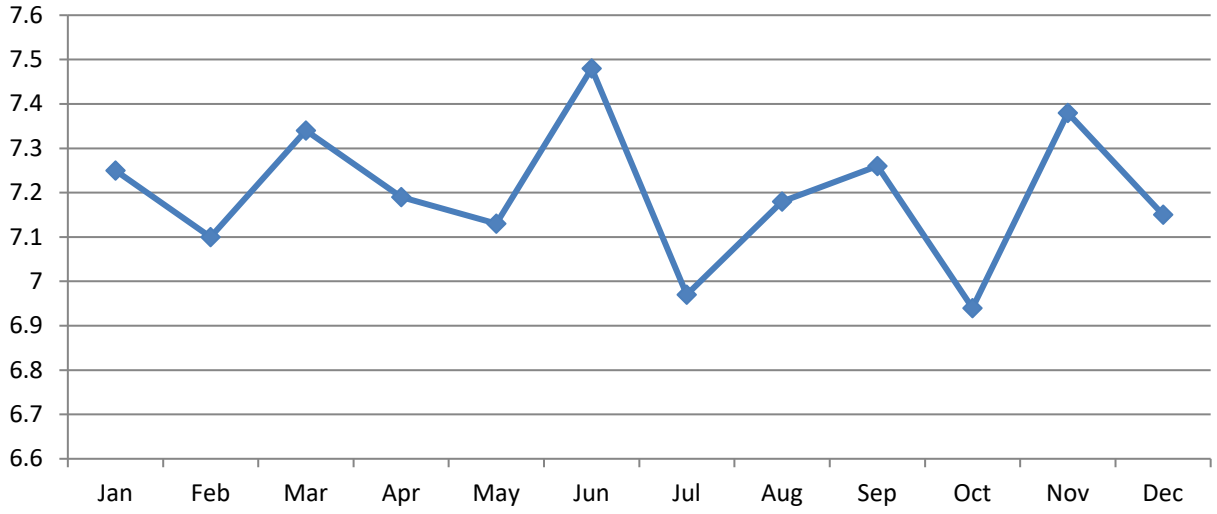
Total Phosphorus Influent Monthly Average Concentration (mg/L)



TKN Influent Monthly Average Concentration (mg/L)



pH Influent Monthly Average Concentration



Effluent Quality Assurance or Control Measures

Effluent control measures include in-house sampling and testing for operational parameters such as suspended solids, pH, soluble phosphorus, and ammonia nitrogen. In-house testing provides real time results which are then used to enhance process and operational performance. All in-house sampling and analysis is performed by certified operations staff utilizing approved methods and protocols for sampling, analysis and recording as 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*.

All final effluent samples collected during the reporting period to meet ECA sampling requirements were submitted to SGS Lakefield Research Ltd. Laboratory in Lakefield, Ontario for analysis, with the exception of pH, temperature, and unionized ammonia. SGS Lakefield Research has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency 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. The unionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility's Environmental Compliance Approval.

Effluent Quality

The monthly average concentration of the carbonaceous biochemical oxygen demand, 5-day (CBOD5) and the monthly average geometric mean density of E. Coli remained below the effluent objectives and limits outlined in the facility's ECA during 2021.

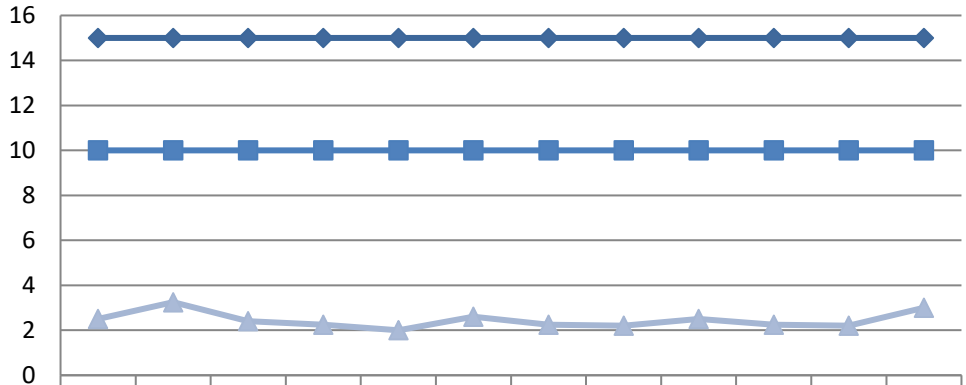
The effluent pH remained within the limits and objectives throughout the year, with the exception of a single sample collected on January 28th 2021 due to an analyzer failure. See the "Operating Issues" section of this report for further details and corrective actions taken. The total suspended solids (TSS), total ammonia nitrogen (TAN), and total phosphorus (TP) objectives were met or exceeded on several occasions in 2021. For objective exceedance details, please see the "Effluent Objective Monitoring" section of this report. The TSS and TP limits were both exceeded in December 2021. See the "Operating Issues" section of this report for further details and corrective actions taken. It should be noted that the monthly average loadings for all parameters were not exceeded during the reporting year.

Effluent results from the Barry's Bay wastewater treatment facility for 2021 are tabulated below.

Carbonaceous Biochemical Oxygen Demand (5-Day)

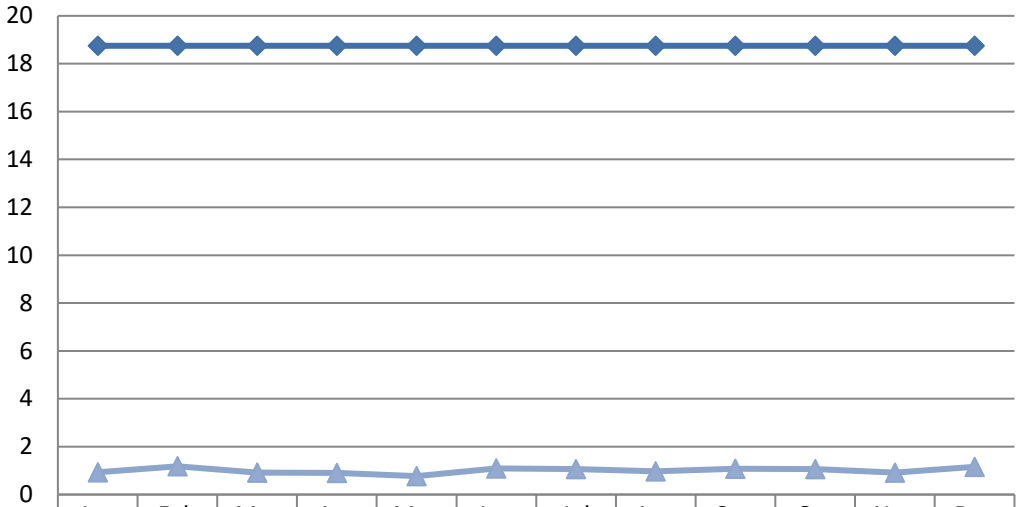
Monthly Average	ECA Limit	Exceedance	ECA Objective	Exceedance
Concentration (mg/L)	15	No	10	No
Loading (kg/d)	18.75	No	-	No

CBOD5 Effluent Monthly Average Concentration



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (mg/L)	15	15	15	15	15	15	15	15	15	15	15	15
ECA Objective (mg/L)	10	10	10	10	10	10	10	10	10	10	10	10
Average (mg/L)	2.5	3.3	2.4	2.3	2.0	2.6	2.3	2.2	2.5	2.3	2.2	3.0

CBOD5 Monthly Average Loading

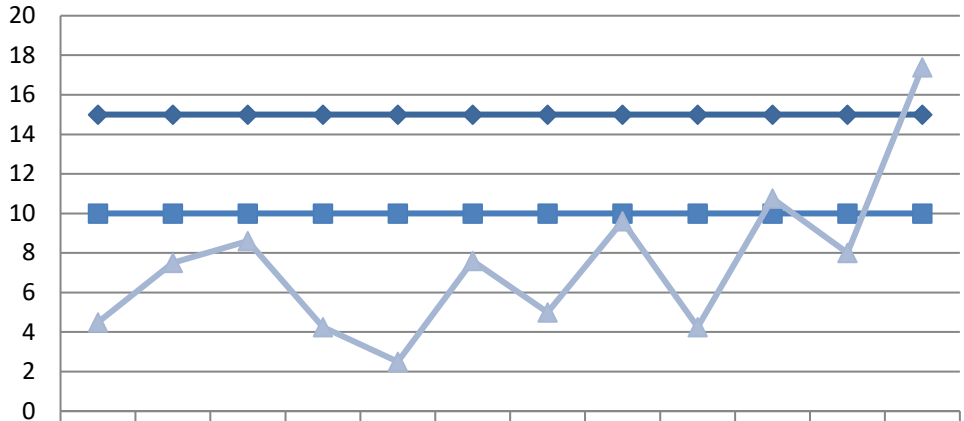


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (kg/d)	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75
Average (kg/d)	0.93	1.18	0.92	0.90	0.77	1.09	1.06	0.97	1.08	1.06	0.92	1.16

Total Suspended Solids

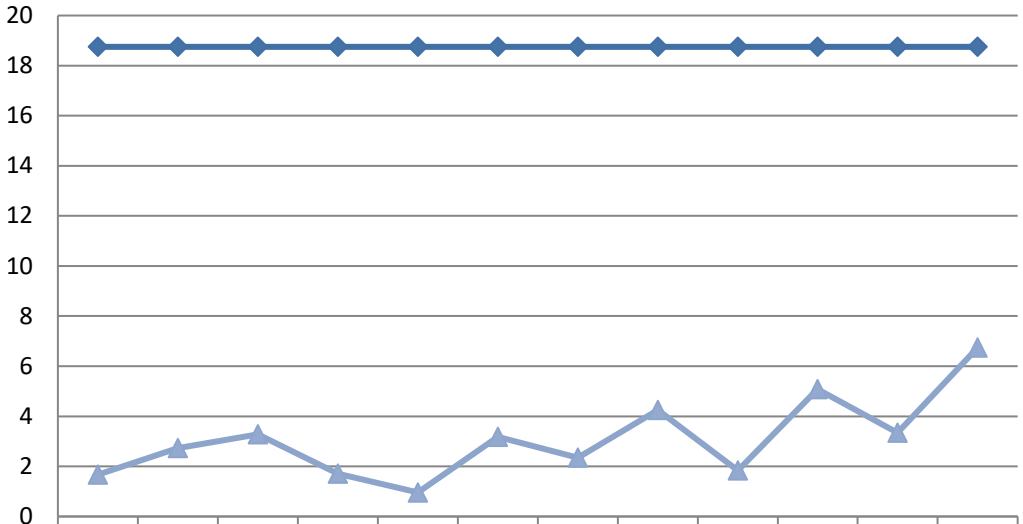
Monthly Average	ECA Limit	Exceedance	ECA Objective	Exceedance
Concentration (mg/L)	15	Yes	10	Yes
Loading (kg/d)	18.75	No	-	No

TSS Effluent Monthly Average Concentration)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (mg/L)	15	15	15	15	15	15	15	15	15	15	15	15
ECA Objective (mg/L)	10	10	10	10	10	10	10	10	10	10	10	10
Average (mg/L)	5	8	9	4	3	8	5	10	4	11	8	17

TSS Monthly Average Loading

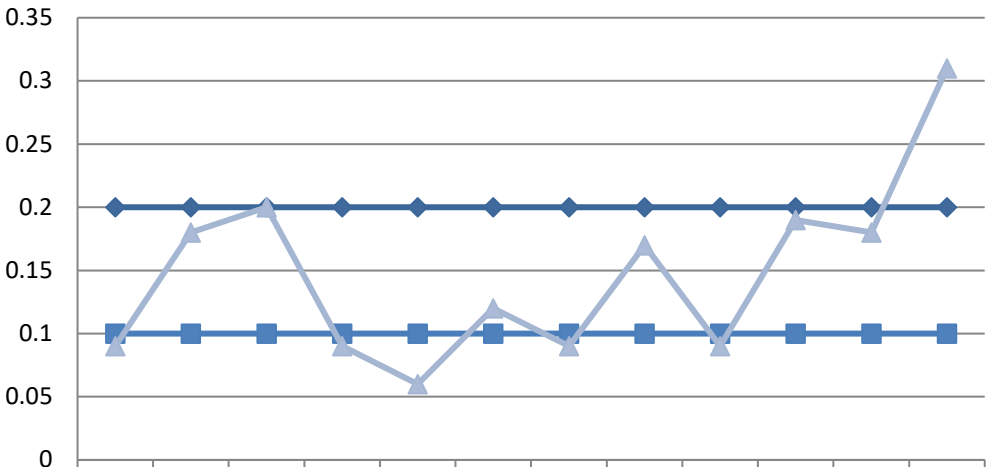


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (kg/d)	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75	18.75
Average (kg/d)	1.67	2.73	3.28	1.71	0.96	3.18	2.35	4.25	1.83	5.08	3.34	6.74

Total Phosphorus

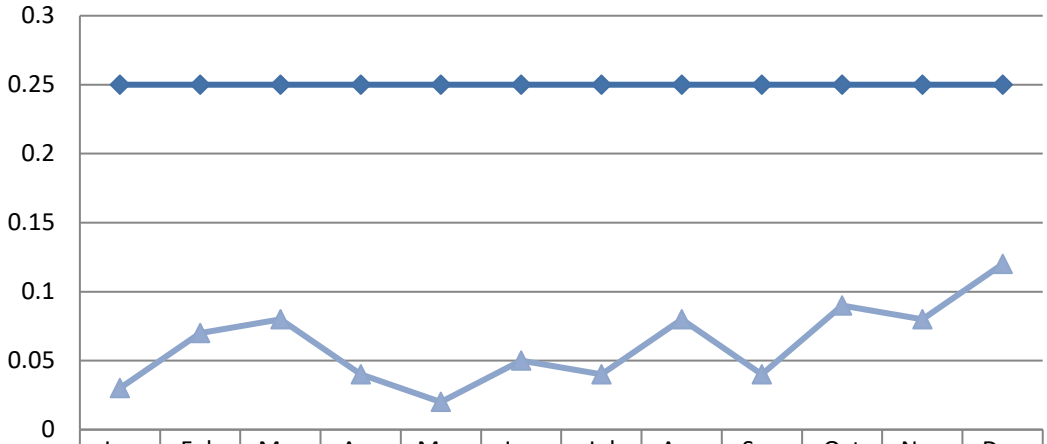
Monthly Average	ECA Limit	Exceedance	ECA Objective	Exceedance
Concentration (mg/L)	0.2	Yes	0.1	Yes
Loading (kg/d)	0.25	No	-	No

TP Effluent Monthly Average Concentration



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (mg/L)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ECA Objective (mg/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Average (mg/L)	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3

TP Monthly Average Loading

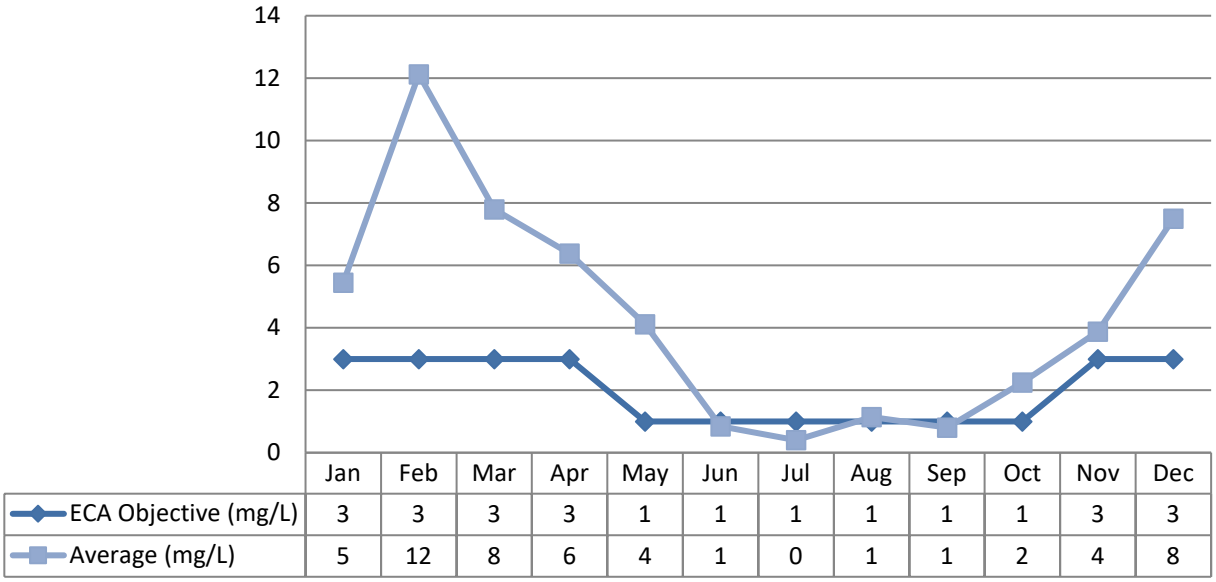


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (kg/d)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Average (kg/d)	0.03	0.07	0.08	0.04	0.02	0.05	0.04	0.08	0.04	0.09	0.08	0.12

Total Ammonia Nitrogen

Monthly Average	ECA Limit	ECA Objective	Exceedance
Concentration (mg/L)	-	May – Oct: 1 mg/L	Yes
	-	Nov – Apr: 3 mg/L	Yes

TAN Effluent Monthly Average Concentration

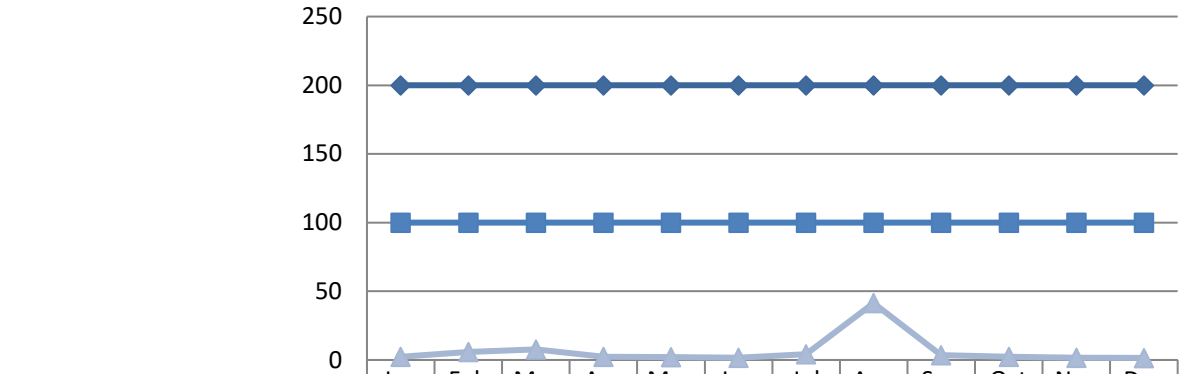


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Objective (mg/L)	3	3	3	3	1	1	1	1	1	1	3	3
Average (mg/L)	5	12	8	6	4	1	0	1	1	2	4	8

E-coli

Monthly Average	ECA Limit	Exceedance	ECA Objective	Exceedance
Geometric Mean Density (CFU/100 mL)	200	No	100	No

E.Coli Monthly Geometric Mean Density

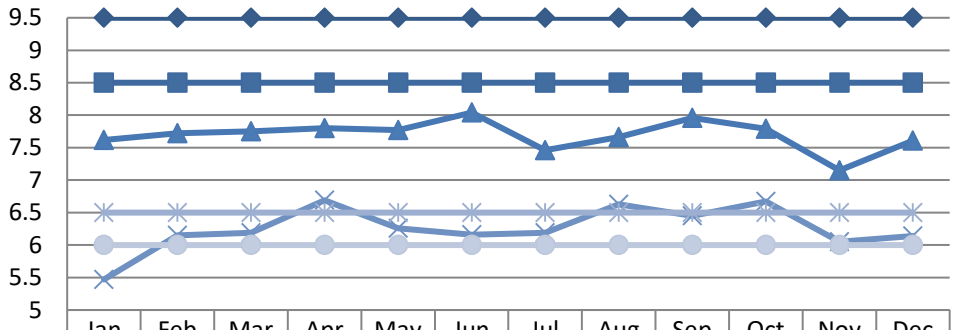


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit (cfu/100mL)	200	200	200	200	200	200	200	200	200	200	200	200
ECA Objective (cfu/100mL)	100	100	100	100	100	100	100	100	100	100	100	100
Average (cfu/100mL)	2	6	8	2	2	2	4	41	4	2	2	2

pH

Monthly Average	ECA Limit	Exceedance	ECA Objective	Exceedance
All results	6.0 – 9.5	Yes	6.5 – 8.5	Yes

Monthly minimum and maximum pH results



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum Limit	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Maximum Objective	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Maximum	7.62	7.72	7.75	7.8	7.77	8.04	7.46	7.66	7.96	7.79	7.15	7.61
Minimum	5.47	6.15	6.19	6.69	6.26	6.16	6.19	6.63	6.45	6.67	6.05	6.14
Minimum Objective	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Minimum Limit	6	6	6	6	6	6	6	6	6	6	6	6

Acute Lethality

There were four (4) samples collected in 2021 and tested for acute lethality (Rainbow Trout and Daphnia Magna). This sampling is required both provincially and federally. Results are displayed as % mortality. An adverse result is a > 50% mortality rate.

Quarter	Rainbow Trout	Daphnia Magna
1st Quarter	0%	0%
2nd Quarter	0%	0%
3rd Quarter	0%	0%
4th Quarter	0%	0%

Effluent Objective Monitoring

The effluent objectives are based on current requirements in the facility's Environmental Compliance Approval (ECA). ECA objective exceedances are non-reportable, and are used as an operational target. As the operating authority we shall use our best efforts to operate the facility in a manner that ensures the objectives are not exceeded in the treated effluent. Additionally, OCWA has jar tested the ISAM effluent to find the optimal coagulant dosage, are collecting additional samples throughout the process to ensure a healthy and functioning biomass is working as designed within the facility to process the wastewater.

The following table is a summary of objective exceedances and the efforts made to meet the objectives.

Date	Parameter	Objective	Value	Corrective Action
January 2021	Total Ammonia Nitrogen	3 mg/L	5.5 mg/L	Increased Aeration Time
February 2021	Total Phosphorus	0.1 mg/L	0.2 mg/L	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	3 mg/L	12.1 mg/L	Increased Aeration Time
March 2021	Total Phosphorus	0.1 mg/L	0.2 mg/L	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	3 mg/L	7.8 mg/L	Increased Aeration Time
April 2021	Total Ammonia Nitrogen	3 mg/L	6.4 mg/L	Increased Aeration Time
May 2021	Total Ammonia Nitrogen	1 mg/L	4.1 mg/L	Increased Aeration Time
August 2021	Total Phosphorus	0.1 mg/L	0.2 mg/L	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	1.0 mg/L	1.1 mg/L	Increased Aeration Time
October 2021	Total Phosphorus	0.1 mg/L	0.2 mg/L	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	1.0 mg/L	2.1 mg/L	Increased Aeration Time
	Total Suspended Solids	10 mg/L	11 mg/L	Increased SBR waste rate to lower MLSS
November 2021	Total Phosphorus	0.1 mg/L	0.3 mg/L	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	3.0 mg/L	6.7 mg/L	Increased Aeration Time
December 2021	Total Phosphorus	0.1 mg/L	0.3 mg/L*	Adjusted the coagulant dosage
	Total Ammonia Nitrogen	3.0 mg/L	7.5 mg/L	Increased Aeration Time
	Total Suspended Solids	10 mg/L	17 mg/L*	Increased SBR waste rate to lower MLSS

*Note the reported value exceeded an ECA Limit, for further details please refer to "Operating Issues

Operating Issues

During the 2021 reporting year, the contributor to operational issues was the addition of the ISAM effluent to the process. Ensuring the added effluent did not deplete the plant's alkalinity needed to settle out solids and phosphorus proved difficult throughout the 2021 reporting year.

The following table is a summary of limit exceedances as a result of additional operation issues.

Date	Exceedance of	Limit	Value	Details
January 28, 2021	Effluent pH	6.0	5.47	The online dissolved oxygen analyzer in the SBR failed causing the blowers to run longer, the additional aeration time depleted the alkalinity in the process resulting in a low pH
December 29, 2021	Legislative Non-Compliance	N/A	N/A	Sample was not collected over a 24 hour period as specified in Condition 9(3) Table 5 – Effluent Monitoring of the Barry's Bay WPCP ECA #2702-7TKNBE
December 2021	Effluent Total Suspended Solids Monthly Average Concentration	0.2 mg/L	0.3 mg/L	The elevated Total Suspended Solids was a result of a non-representative composite sample collected December 29th 2021.
	Effluent Total Phosphorus Monthly Average Concentration	15 mg/L	17 mg/L	The elevated Total Phosphorus was a result of a non-representative composite sample collected December 29th 2021.

Major Maintenance Summary

Flow Meter Calibrations and Maintenance

Copies of the flow meter calibration certificate for 2021 is attached in Appendix B

Effluent Flow Meter

The effluent flow meter was calibrated on February 2, 2021 by Franklin Empire.

Maintenance Summary

WO#	Details
2093186	Sewage Pumping Station #1 pump replacement
2093358	Bio-solids hauling system piping extension
2093362	Dissolved oxygen probe maintenance and calibration by manufacturer
2317778	Sewage Pumping Station #1 pump #1 replacement
2312772	X-Site Hydrovac removed sediment in Digester #1 for aeration maintenance and repairs
2316220	WPCP Outfall Inspection by Dundee Marine
2225282	UV Lamp replacement
2270332	Sewage Pumping Station #2 pump #2 replacement
2317778	Sewage Pumping Station #1 pump #1 replacement
2361066	Anoxic tank submersible aspirator pump #1 in anoxic chamber #1 replaced & repaired
2445135	Jet motive submersible pump #1 in anoxic chamber #1 replaced & repaired
2579846	OCWA Wonderware monitoring program upgrades
2580209	Jet Motive Pump #1 repaired by manufacturer
2543310	Replaced Jet Aspirator Pump #2 impeller
2580534	ESA facility Inspection

Notice of Modifications

Date	Process	Modification	Status
None to report.			

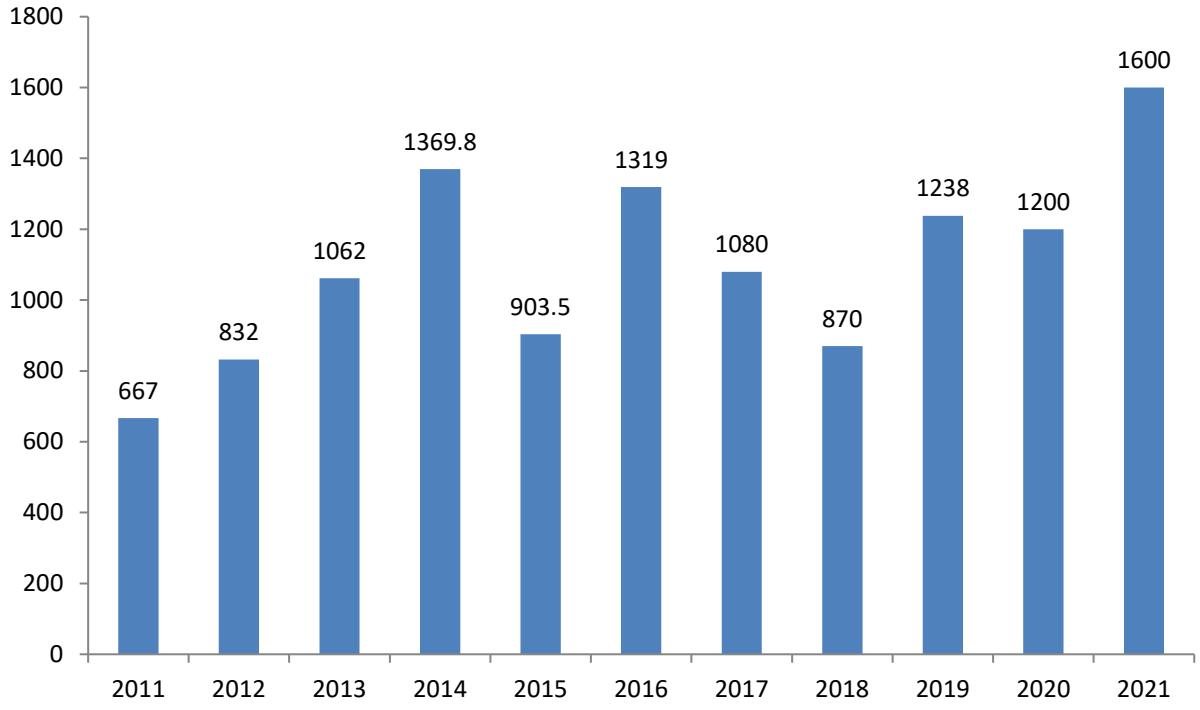
Sludge Generation

In 2021, a total of 1600 m^3 of liquid bio-solids was hauled offsite by Terrapure Organics Solutions and utilized as soil conditioner or hauled to processing facility. It is anticipated that approximately the same volume of sludge will be generated in 2022.

Sludge Disposal Summary

Date	Landowner / Disposal Location	NASM # / ECA #	Total Volume (m3)
April 26, 2021	Terrapure Storage Facility	S-3708-42	80
May 10, 2021	Pauls, Rick - Home	24580	80
May 11-12, 2021	Trotter - Graham	23904	320
May 12, 2021			80
May 12-13, 2021			120
September 3 & 10, 2021	Parks, David - Home	24817	400
September 10 & 13, 2021			360
October 26 & 27, 2021	Terrapure Storage Facility	S-3708-42	160
		Total Annual Volume (m3)	1600

Annual Sludge Disposal Comparison (m3/year)



Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
58 Dorhan Street	November 15th 2021	Sewer Blockage	Checked flow at maintenance holes before and after blockage, no sign of blockage in main trunk sewer, advised customer to call plumber

Summary of Abnormal Discharge Events

Bypass/Overflow/Spills

No bypass, overflow, or spill events during the reporting period.

Appendix A

Biosolids Quality Report

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Solids and Nutrients

Facility: BARRY'S BAY WASTEWATER TREATMENT FACILITY
Works: 5979
Period: 01/01/2021 to 12/31/2021

Facility Works Number: *1.10001854E8*
Facility Name: *BARRY'S BAY WASTEWATER TREATMENT FACILITY*
Facility Owner: *Municipality: Madawaska Valley Township*
Facility Classification: *Class 3 Wastewater Treatment*
Receiver: *Kamaniskeg Lake*
Service Population: *1055.0*
Total Design Capacity: *1250.0 m3/day*

Note: all parameters in this report will be derived from the Bslq Station

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	**BARRY'S BAY WASTEWATER TREATMENT FACILITY**									
Station	**Bslq Station only**									
Parameter Short Name	**HauledVol**	**TS**	**VS**	**TP**	**NH3p_NH4p_N**	**NO3-N**	**NO2-N**	**TKN**	**calculation in report - no T/S**	**K**
T/s	**IH Month.Total**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**		**Lab Published Month Mean**
Jan		27,400.000	20,200.000	650.000	34.200	0.300	0.400	1,370.000	17.250	45.000
Feb		26,200.000	18,900.000	710.000	10.900	5.400	7.200	1,340.000	8.150	52.000
Mar		25,000.000	18,200.000	680.000	7.100	100.000	13.000	1,440.000	53.550	45.000
Apr	80.000	25,800.000	19,700.000	650.000	16.400	0.300	0.300	1,460.000	8.350	45.000
May	600.000	26,300.000	19,500.000	650.000	48.300	0.300	1.000	1,670.000	24.300	46.000
Jun		24,400.000	17,500.000	660.000	112.000	41.000	37.000	1,500.000	76.500	50.000
Jul		14,200.000	9,750.000	330.000	83.300	110.000	0.200	854.000	96.650	23.000
Aug		16,300.000	11,300.000	430.000	30.200	200.000	4.600	906.000	115.100	29.000
Sep	760.000	16,700.000	11,500.000	570.000	129.000	210.000	0.900	1,020.000	169.500	38.000
Oct	160.000	15,400.000	10,600.000	600.000	17.500	240.000	9.100	683.000	128.750	35.000
Nov		20,500.000	14,800.000	590.000	2.600	8.000	1.600	1,040.000	5.300	35.000
Dec		25,100.000	18,500.000	800.000	19.900	0.300	0.700	1,520.000	10.100	50.000
Average	400.000	21,941.667	15,870.833	610.000	42.617	76.300	6.333	1,233.583	59.458	41.083
Total	1,600.000	263,300.000	190,450.000	7,320.000	511.400	915.600	76.000	14,803.000	713.500	493.000

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Metals and Criteria

Facility: BARRY'S BAY WASTEWATER TREATMENT FACILITY
Works: 5979
Period: 01/01/2021 to 12/31/2021

Note: all parameters in this report will be derived from the Bslq Station

Month	Arsenic (mg/L)	Cadmium (mg/L)	Cobalt (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)
Site	**BARRY'S BAY WASTEWATER TREATMENT FACILITY**										
Station	**Bslq Station only**										
Parameter Short Name	**As**	**Cd**	**Co**	**Cr**	**Cu**	**Hg**	**Mo**	**Ni**	**Pb**	**Se**	**Zn**
T/s	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**
Jan	0.100	0.019	0.030	0.250	14.000	0.043	0.130	0.220	0.300	0.100	10.000
Feb	0.100	0.020	0.030	0.340	18.000	0.052	0.120	0.230	0.300	0.100	10.000
Mar	0.100	0.020	0.030	0.240	13.000	0.043	0.120	0.200	0.300	0.100	9.000
Apr	0.100	0.018	0.030	0.230	13.000	0.041	0.100	0.190	0.300	0.100	9.000
May	0.100	0.017	0.030	0.250	13.000	0.043	0.110	0.210	0.200	0.100	10.000
Jun	0.100	0.016	0.030	0.240	12.000	0.052	0.090	0.190	0.200	0.100	9.000
Jul	0.100	0.007	0.020	0.130	5.400	0.030	0.050	0.090	0.100	0.100	4.000
Aug	0.100	0.011	0.020	0.200	7.000	0.039	0.060	0.130	0.200	0.100	6.000
Sep	0.100	0.012	0.030	0.240	8.700	0.038	0.110	0.110	0.200	0.100	8.000
Oct	0.100	0.012	0.030	0.210	8.300	0.034	0.090	0.170	0.200	0.100	9.000
Nov	0.100	0.014	0.030	0.260	11.000	0.046	0.100	0.210	0.200	0.100	9.000
Dec	0.100	0.015	0.030	0.340	15.000	0.042	0.110	0.250	0.300	0.100	12.000
Average	0.100	0.015	0.028	0.244	11.533	0.042	0.099	0.183	0.233	0.100	8.750
Max. Permissible Metal Concentrations (mg/kg of	170.000	34.000	340.000	2,800.000	1,700.000	11.000	94.000	420.000	1,100.000	34.000	4,200.000
Metal Concentrations in Sludge (mg/kg)	4.558	0.687	1.291	11.128	525.636	1.910	4.520	8.355	10.634	4.558	398.785

Appendix B

Flow Meter Calibration Records

CALIBRATION REPORT

Report No.: OCWA CP FIT-100

Date: Feb. 2, 2021

SITE:	Barry's Bay WWTP	**SERVICE DATE:**	Feb. 2, 2021
PROCESS AREA:	WWTP		
INSTR. TAG:	FIT-100	**TECHNICIAN:**	M Manley
MANUFACTURER:	Siemens		
MODEL:	OCM III	**JOB REFERENCE:**	OCWA CP
SERIAL No.:	PBDA6291269		

Input	**(Test)**		**Output**	**(Signal)**	**(Process)**
Type:	Head meters		**Type or EGU:**	mA	L/s
Min:	0.0000		**Min:**	4.00	0.00
Max:	0.6098		**Max:**	20.00	251.20
Weir Width (in.)	9	**Parshall Flume**			
exponent	1.53				
constant	535.4000				

			Before Calibration		**After Calibration**	
Input (m)	**Calc flow (l/s)**	**Calc. O/P (mA)**	**Output (mA)**	**%Error**	**Output (mA)**	**%Error**
0.000	0.000	4.00	4.01	0.25%	4.01	0.25%
0.200	45.630	6.91	6.83	-1.16%	6.93	0.29%
0.400	131.774	12.39	12.28	-0.89%	12.50	0.89%
0.600	245.047	19.61	19.47	-0.71%	19.71	0.51%

Calibration Equipment

Type:	OCM Test Stand	DMM	Tape Measure
Manufacturer:		Fluke	
Model:		Model 87	
Serial No.:		134409128	
Last Cal. Date:		Mar. 25, 2020	

Comments: AF at zero -0.004 reading 0.00, 4.01
ED 103.50 adj to 103.85

Changed totalizer from /1000 to +1000, to have the local display totalize in cubic meters.