



## Blyth Sewage Treatment Plant 2022 Annual Report

Owned by the Township of North Huron and Operated by Veolia Water Canada

## Blyth Sewage Treatment Plant 2022 Annual Report

### Blyth STP Environmental Compliance Approval #9189-A6UPSM

The Following is a summary and discussion of the 2022 Blyth Sewage treatment plant operation and summary of compliance limits as set forth in the ECA.

#### **The Annual Average Rated Capacity of the Treatment Unit is 730 m<sup>3</sup>/d with Peak Capacity of 2730 m<sup>3</sup>/d.**

Based on Raw Sewage Flows, the 2022 annual average flows were 475m<sup>3</sup>/day which represents 65.1% of the annual 730 m<sup>3</sup>/day capacity. The Peak flow of 2350m<sup>3</sup>/d occurred in December 2022 represents 86% of the Peak Capacity of the plant, this high flow resulted in a secondary bypass.

#### **Bypass Events**

There were 7 bypass events for the Blyth Sewage Treatment plant in 2022, all of the bypasses were measured secondary bypasses. The bypasses occurred due to heavy precipitation and/or spring runoff. The longest bypass was in March with 38.4 hours of secondary bypassing. The total number of bypass hours for 2022 were: 152.65 Secondary bypass hours with a total measured volume of 9.893/1000m<sup>3</sup>

#### **Compliance limits**

The plant consistently removed 98.5% Biological Oxygen demand, 97.8% total suspended solids, 94.2% phosphorous and 96.8% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

### **Operational problems**

The Blyth Sewage treatment plant has been dechlorinating the final effluent using calcium thiosulfate since April 2022, prior to April the Township was utilizing Vita-D-Chlor. While using the Vita-D-Chlor we had a max chlorine residual of 0.05mg/L, however since using the Calcium thiosulfate we our max chlorine residual was 0.03mg/L with an average of 0.01mg/L. The Township has Engineering working on The UV system and sand filters for the Blyth Sewage treatment plant which should be installed and completed in the future.

### **Maintenance**

Routine maintenance was performed throughout the year, according to the computerized maintenance program Jobsplus.

### **Quality Control Monitoring**

Monitoring includes an online dissolved oxygen sensor which indicates loading and raw sewage quality, aeration basin solids content and proper operations of the aerators. Secondary clarifier effluent is monitored for dissolved phosphorous to determine adequate ferric chloride dosage in aeration basins as well as general clarity and surface debris which indicates proper solids removal. Adequate return to the aeration and wasting rates.

The flowmeter measures the flow out of the treatment plant and is used to base dosages and treatment plant capacity. Results of monitoring activities can be viewed on the monthly spreadsheets.

### **Calibration and Maintenance**

The flowmeters are calibrated annually in 2022. Iconix Waterworks calibrated the flow meters and the V-Notch weir, the certificates are stored at the PUC Office. The pH analyzer is calibrated monthly and recorded in the log books.

### **Efforts to meet effluent objectives**

As described in the quality control monitoring section, analytic and visual parameters are used as indicators of process efficiency and should fall within the critical control points. A summary of values was developed and is in the Blyth sewage treatment facility operations manual for reference and historically have been adequate to maintain compliance.

### **Biosolids Generated**

A total of 1069cubic meters were utilized in 2022 and hauled/applied by Ontario Greenways Inc to agriculture lands.

The 2022 amount hauled was more then we usually apply as the previous year (2021) there was less sludge removed from the sewage plant due to not having land to apply it to. In 2021 had to take it to the Wingham Sewage plant therefore in 2022 we had to haul more sludge to make up the difference. We would predict roughly 900m3 will be utilized, hauled and applied in 2023 as there may be a slight increase with some new service hookups to happen in 2023.

### **Complaints**

There were no complaints to report during the 2022 operating year.

### **Tables**

Attached in the report are:

Data summary; compliance summary; sludge metals summary; Bypass and overflow events

**Blyth Sewage Treatment Plant**

**2022 DATA SUMMARY**

Flows	January	February	March	April	May	June	July	August	September	October	November	December	Total	Avg Flow	Maximum	% Cap
<b>Total Flows</b>	12617	16398	22232	20705	13905	11164	9341	9892	9776	12764	15320	19241	173355	475	22232	65.1
<b>Avg</b>	407	586	717	690	449	372	301	319	326	412	511	621			476	
<b>Max</b>	874	1520	1292	1184	636	539	376	391	533	1093	1213	2350			2350	86

Raw Sewage	January	February	March	April	May	June	July	August	September	October	November	December		Average	Max.	Removal Efficiency%
<b>BOD</b>	195	149	101	104	230	83	226	125	143	97	148	129		143.93	230	98.5
<b>SS</b>	168	143	77	128	164	94	113	88	104	151	105	79		117.65	168	97.8
<b>TP</b>	3.42	4.16	2.40	2.97	3.12	2.91	4.05	3.45	3.43	3.55	3.48	2.65		3.30	4.16	94.2
<b>TKN</b>	25.45	30.15	20.00	20.65	27.45	27.80	35.30	32.53	30.10	32.25	28.70	21.25		27.64	35.30	96.8
<b>pH</b>	7.63	7.68	7.84	7.71	7.47	7.68	7.54	7.61	7.57	7.54	7.49	7.58		7.61	7.84	

Final Effluent	January	February	March	April	May	June	July	August	September	October	November	December		Average	Max.
<b>CBOD</b>	3.0	2.0	3.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.19	3.3
<b>SS</b>	2.5	2.0	2.7	4.0	3.0	2.5	2.0	4.0	2.0	2.0	3.0	2.0		2.64	4.00
<b>Ammonia</b>	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10
<b>TKN</b>	1.35	0.90	1.07	0.70	0.60	0.85	0.80	0.70	1.25	1.15	0.60	0.50		0.87	1.35
<b>TP</b>	0.17	0.13	0.16	0.11	0.13	0.24	0.21	0.19	0.17	0.21	0.29	0.30		0.19	0.30
<b>NO2</b>	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03		0.03	0.05
<b>NO3</b>	16.15	12.90	10.40	6.53	7.24	12.80	12.50	10.44	12.70	10.42	13.80	11.15		11.42	16.15
<b>pH</b>	7.47	7.45	7.46	7.37	7.34	7.34	7.47	7.57	7.59	7.52	7.45	7.46		7.46	7.59
<b>E. Coli</b>	25	93	58	197	2	11	186	47	91	37	37	61		70	197
<b>Tot Cl Res.</b>	0.14	0.19	0.20	0.14	0.11	0.14	0.13	0.13	0.13	0.17	0.17	0.17		0.15	0.20

**Blyth STP Compliance Summary 2022**

Flows	January	February	March	April	May	June	July	August	September	October	November	December
<b>Peak Flow</b>	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730
<b>Actual</b>	874	1520	1292	1184	636	539	376	391	533	1093	1213	2350
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>Av Day Flow</b>	730	730	730	730	730	730	730	730	730	730	730	730
<b>Actual</b>	407	586	717	690	449	372	301	319	326	412	511	621
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>CBOD&amp;TSS</b>	15	15	15	15	5	5	5	5	5	5	15	15
<b>CBOD</b>	3.0	2.0	3.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
<b>TSS</b>	2.5	2.0	2.7	4.0	3.0	2.5	2.0	4.0	2.0	2.0	3.0	2.0
<b>Loading Kg</b>	11	11	11	11	3.7	3.7	3.7	3.7	3.7	3.7	11	11
<b>CBOD Kg</b>	1.22	1.17	2.39	1.38	0.90	0.74	0.60	0.64	0.65	0.82	1.02	1.24
<b>TSS Kg</b>	1.02	1.17	1.91	2.76	1.35	0.93	0.60	1.28	0.65	0.82	1.53	1.24
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>Tot P</b>	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	1	1
<b>Actual</b>	0.17	0.13	0.16	0.11	0.13	0.24	0.21	0.19	0.17	0.21	0.29	0.30
<b>TP Load Kg</b>	0.7	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.7	0.7
<b>Act. TP Kg</b>	0.07	0.07	0.12	0.07	0.06	0.09	0.06	0.06	0.06	0.09	0.15	0.18
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>NH 3&amp;4</b>	17	21	14	6	3	1	1	1	1	3	3	11
<b>Actual</b>	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

<b>NH 3</b>	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>Actual</b>	0.0004	0.0005	0.0004	0.0004	0.0005	0.0006	0.0009	0.0012	0.0014	0.0010	0.0007	0.0006
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

<b>Tot Cl Res (limit)</b>	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Month Max.</b>	0.21	0.19	0.20	0.19	0.19	0.23	0.19	0.19	0.19	0.22	0.20	0.20
<b>Monthly Average</b>	0.14	0.15	0.13	0.14	0.11	0.14	0.13	0.13	0.13	0.17	0.17	0.17
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

<b>pH</b>	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9	6.5-9
<b>Min</b>	7.36	7.27	6.97	7.18	7.17	7.13	7.26	7.46	7.42	7.29	7.22	7.12
<b>Max</b>	7.88	7.55	8.44	7.79	7.44	7.96	7.54	7.60	7.69	7.69	7.78	7.70
<b>Average</b>	7.47	7.46	7.46	7.37	7.34	7.34	7.47	7.57	7.59	7.52	7.45	7.46
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

<b>E. Coli</b>	200	200	200	200	200	200	200	200	200	200	200	200
<b>Actual GMD</b>	25	93	58	197	2	11	186	47	91	37	37	61
<b>Comp. Y/N</b>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Quarterly Metals Calculations Report 2022									
Parameter									
Date	Jan 18-22	Apr 12-22	May 24-22	Jun 7-22	Jul 5-22	Jul 19-22	Aug 9-22	Oct 25-22	Average
Total Solids	24700	14100	28500	27500	28200	27300	27000	36600	25050
TKN	1140	843	1790	1690	1750	1620	1190	1520	1472.166667
NH 3&4	341	217	334	402	524	545	570	157	393.8333333
NO2	2.7	2.2	0.3	8.7	2	1.2	0.8	0.2	2.85
NO3	< 0.3	0.3	0.3	0.6	0.3	0.3	0.3	0.3	0.35
NO2+NO3	2.7	2.2	0.3	9.3	2	1.2	0.8	0.3	2.95
Arsenic	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1833333333
Cadmium	0.018	0.009	0.02	0.02	0.021	0.021	0.021	0.017	0.01816666667
Cobalt	0.17	0.07	0.15	0.17	0.17	0.19	0.15	0.21	0.1533333333
Chromium	2.7	1.2	2.5	2.7	2.8	2.9	2.6	3	2.466666667
Copper	9.7	4.3	10	10	9.8	11	9.1	11	9.133333333
Mercury	0.004	0.001	0.003	0.005	0.004	0.005	0.004	0.006	0.003666666667
Potassium	110	89	120	100	116	110	119	103	107.5
Molybdenum	0.25	0.11	0.24	0.24	0.31	0.29	0.26	0.32	0.24
Nickel	0.85	0.39	0.79	0.88	0.87	0.88	0.77	0.9	0.7766666667
Phosphorous	730	330	850	810	950	790	888	985	743.3333333
Lead	0.3	0.2	0.4	0.4	0.4	0.5	0.4	0.6	0.3666666667
Selenium	< 0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Zinc	13	5	12	13	13	13	12	16	11.5
Ecoli DW	105263	283688	105263	32364	177305	15385	10370	57377	119878
Ecoli /100 ml	260000	400000	300000	89000	500000	42000	28000	210000	265166.6667



**Table 1 BYPASS AND OVERFLOW EVENTS Blyth STP**

FACILITY NAME:		Blyth STP								YEAR:		2022					Sample Results	Ref #
Date (dd/mm/yy)	Location	Type (See Legend for description)	Start Time	Duration (hours)	Volume (1000m3)	M/E	Disinfection (Y/N)	Treatment (Y/N)	Reason Code*	CBOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	N (mg/L)	E.Coli (/100ml)	Ref #			
17/02/22	Blyth	SB	3:10 AM	20.75	1.561	M	Y	Y	1	8	18	0.35	0.5	6900	1-1M614V			
23/02/22	Blyth	SB	8:33 AM	6.5	0.615	M	Y	Y	1	7	11	0.23	1.8	128	1-1M05GA			
06/03/22	Blyth	SB	13:38	15	0.804	M	Y	Y	2	8	10	0.38	7.3	1700	1-1NLK8W			
24/03/22	Blyth	SB	1:50 AM	38.4	3.019	M	Y	Y	1, 2	3	7	0.24	1.4	10	1-1P86K2			
06/04/22	Blyth	SB	19:55	10	0.435	M	Y	Y	1	4	10	0.48	3.2	800	1-1R78EA			
18/10/22	Blyth	SB	19:30pm	11	0.423	M	Y	Y	1	<2	3	0.32	1.3	13	1-28101Q			
31/12/22	Blyth	SB	11:16	51	3.036	M	Y	Y	1	13	10	0.62	3.6	70	1-2FQ1PI			
				152.65	9.893													

Legend

PB = Primary Bypass

SB = Secondary Bypass

STPO = Sewage Treatment Plant Overflow

CSO = Combined Sewer Overflow

SSO = Sanitary Sewer Overflow

STWO = Satellite Treatment Works Overflow

M = Measured

E = Estimated

Y = Yes

N = No

**\*Reason Codes:**

1 = Heavy Precipitation

2 = Spring Runoff

3 = Infiltration

4 = Mechanical/Equipment Failure

5 = Pipe

Failures(break/leak/plugged)

6 = Process

Upsets

7 = Power

Outages

8 = Unknown

9 = Other, please

comment below.

**Comments:**

*Report Completed by: Veolia Water*

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