Blyth Sewage Treatment Plant

2016 Annual Report

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

Resourcing the world

Blyth Sewage Treatment Plant 2016 Annual Report

Blyth STP Certificate of Approval #8687-826L6Z Issued Feb 9 2010

The Following is a summary and discussion of the 2016 Blyth Sewage treatment plant operation and summary of compliance limits as set forth in the Certificate of Approval.

The Annual Average Rated Capacity of the Treatment Unit is 730 m3/d with Peak Capacity of 2760 m3/d.

Based on Raw Sewage Flows, the 2016 annual average flows were 393m3/day which represents 54% of the annual 730 m3/day capacity. The maximum Peak Monthly average flow of 2186m3/d occurred in March 2016 represents 79% of the peak capacity.

Bypass Events

There were five bypass events for the Blyth Sewage Treatment plant in 2016, all five of the bypasses were measured secondary bypasses and all five bypasses occurred due to heavy precipitation, the longest bypass was in December with a 29 hour bypass. The total number of bypass hours for 2016 was 73.3 hours with a total volume bypassed of 7894m3.

Compliance limits

The plant consistently removed 98.4% Biological Oxygen demand, 98.4% total suspended solids, 92.8% phosphorous and 95.4% total kjeldahl nitrogen which is well within the range of removals for a tertiary sewage plant and consistent with previous yearly operations.

Operational problems

There were no major problems encountered during the 2016 operating year. Secondary bypassing took place in 2016 where the raw sewage flows during significant rain and snowmelt events exceeded the capacity of the sand filters.

Maintenance

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

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 clarifiers effluent is monitored for dissolved phosphorous and ammonia to determine adequate

ferric chloride dosage and nitrification in aeration basins as well as general clarity and surface debris which indicates proper solids removal. Adequate solids 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 flowmeter is calibrated yearly by ICS instrumentation that certificate is 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 these 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 398.8 cubic meters was utilized in 2016 and hauled/applied by S&S Trucking.

Complaints

There were no complaints received as results of the operation of the sewage treatment facility.

Attached in the report is a data summary, compliance summary, sludge metals summary.

Report prepared by Veolia Water Canada

Blyth Sewage Treatment Plant 2016 Data Summary

Flow s	January	February	March	April	May	June	July	August	September	October	November	December	Total	Avg Flow	Maximum	% Cap
Total Flow s	12629	18040	21093	16203	9727	6818	7678	9899	8722	8511	9386	14879	143585	393	21093	53.9
Avg	407	622	680	540	314	227	248	319	291	275	313	480			680	
Max	881	1515	2186	1643	516	308	293	603	446	381	387	1488			2186	

Raw Sew ag	January	February	March	April	May	June	July	August	September	October	November	December	Average	Max.	Removal Efficiency%
CBOD	82	82	85	116	118	125	186	103	156	153	157	113	122.67	185.5	98.4
SS	93	84	93	120	144	158	121	145	152	159	148	126	128.36	158.5	98.4
TP	1.85	1.85	1.57	2.20	2.81	2.78	3.41	2.98	3.40	4.09	3.24	2.93	2.76	4.09	92.8
TKN	19.20	17.40	14.47	21.20	38.25	26.00	33.95	25.55	28.63	31.65	30.35	27.75	26.20	38.25	95.4
pH	7.92	7.93	8.03	8.08	7.56	7.71	7.53	7.59	6.65	7.61	7.56	8.01	7.68	8.075	

Final Effluent	January	February	March	April	May	June	July	August	September	October	November	December	Average	Max.
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.00	2
SS	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.00	2.00
Ammonia	0.10	0.40	0.10	0.10	0.10	0.10	0.20	0.20	0.17	0.10	0.20	0.20	0.16	0.40
TKN	2.35	0.60	0.50	0.50	1.05	0.65	1.00	3.65	1.87	0.80	0.65	0.70	1.19	3.65
TP	0.35	0.24	0.17	0.22	0.10	0.14	0.23	0.23	0.19	0.23	0.14	0.17	0.20	0.35
NO2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
NO3	23.70	19.05	13.00	15.15	12.25	21.00	36.15	41.45	31.13	23.10	20.20	17.50	22.81	41.45
pH	7.19	7.52	7.56	7.58	7.17	7.23	7.08	7.04	7.18	7.36	7.31	7.48	7.31	7.58
E. Coli	11	4	18	3	11	36	23	13	4	4	30	12	14	36
Tot Cl Res.	0.15	0.18	0.19	0.17	0.13	0.15	0.14	0.14	0.15	0.18	0.16	0.17	0.16	0.20

Blyth STP Compliance Summary 2016

Flows	January	February	March	April	May	June	July	August	September	October	November	December
Peak Flow	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730	2730
Actual(Avg)	881	1515	2186	1643	516	308	293	603	446	381	387	1488
Comp.Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Av Day Flow	730	730	730	730	730	730	730	730	730	730	730	730
Actual	407	622	680	540	314	227	248	319	291	275	313	480
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

CBOD&TSS	15	15	15	15	5	5	5	5	5	5	15	15
CBOD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
TSS	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Loading Kg	11	11	11	11	3.7	3.7	3.7	3.7	3.7	3.7	3.7	11
CBOD Kg	0.81	1.24	1.36	1.08	0.63	0.45	0.50	0.64	0.58	0.55	0.63	0.96
TSS Kg	0.81	1.24	1.36	1.08	0.63	0.45	0.50	0.64	0.58	0.55	0.63	0.96
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Tot P	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	1	1
Actual	0.35	0.24	0.17	0.22	0.10	0.14	0.23	0.23	0.19	0.23	0.14	0.17
TP Load Kg	0.7	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7
Act. TP Kg	0.14	0.15	0.11	0.12	0.03	0.03	0.06	0.07	0.05	0.06	0.04	0.08
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

NH 3&4	17	21	14	6	3	1	1	1	1	3	3	11
Actual	0.10	0.15	0.13	0.12	0.12	0.12	0.14	0.08	0.11	0.10	0.11	0.23
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

NH 3	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Actual	0.0002	0.0010	0.0005	0.0006	0.0004	0.0005	0.0004	0.0004	0.0006	0.0007	0.0005	0.0005
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Tot Cl Res	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Month Max.	0.19	0.18	0.19	0.19	0.18	0.19	0.20	0.20	0.20	0.20	0.20	0.20
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

pH	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5	6 - 9.5
Actual	7.19	7.52	7.56	7.58	7.17	7.23	7.08	7.04	7.18	7.36	7.31	7.48
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

E. Coli	200	200	200	200	200	200	200	200	200	200	200	200
Actual GMD	11	4	0	3	11	36	23	13	4	4	30	12
Comp. Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Quarterly Metals Calculations Report					2016		
Parameter							
Date		Jan 20-16	Apr 13-16	Jul 20-16	Aug 31-16	Oct 12-16	Average
Total Solids		10400	14600	30000	38900	43500	27480
NH 3&4		6.3	6.3	486	500	379	275.52
TKN		452	802	1540	1300	2030	1224.8
NO2		0.2	0.3	1.3	0.2	0.2	0.44
NO3	<	0.3	0.3	0.3	0.3	0.3	0.3
NO2+NO3		0.3	0.3	1.3	0.3	0.3	0.5
Arsenic	<	0.1	0.1	0.2	0.3	0.3	0.2
Cadmium	<	0.005	0.007	0.014	0.03	0.034	0.018
Cobalt		0.05	0.04	0.22	0.32	0.36	0.198
Chromium		0.42	0.49	2.1	3.3	3.6	1.982
Copper		2.4	9.6	9.7	16	17	10.94
Mercury		0.001	0.019	0.012	0.017	0.023	0.0144
Potassium		85	60	130	140	130	109
Molybden	<	0.06	0.14	0.21	0.37	0.34	0.224
Sodium							
Nickel		0.17	0.28	0.8	1.1	1.2	0.71
Phosphorous		240	310	890	1300	1400	828
Lead		0.1	0.3	0.7	1	0.9	0.6
Selenium	<	0.1	0.1	0.1	0.1	0.1	0.1
Zinc		3.2	5.1	13	19	21	12.26
Ecoli DW		1125000	31507	1333	1285	10805	233986
Ecoli /100 ml		1170000	46000	4000	5000	47000	254400
pH							
Tank in " to Top							
Volume in m3		941	941	941	941	941	
Volume at 4%		245	344	706	915	1024	0
Solids Kg		9788	13742	28236	36613	40942	0

Table 1 BYPASS AND OVERFLOW EVENTS

FACILITY NAME: Blyth STP **YEAR:** 2016

DATE:

Date (dd/ mm/ yy)	Location	Type (See Legend for description)	Start Time	Duration (hours)	Volume (1,000m3)	M/ E	Disinfection (Y/ N)	Treatment (Y/ N)	Reason Code*	Sample Results BOD5 (mg/ L)	SS (mg/ L)	TP (mg/ L)	TKN	E.Coli (/ 100ml)	Ref #
2/ 29/ 2016	Blyth STP	SB	6:10am	13.5	917	M	Y	Y	1	5	5	0.19	0.7	18UAL	128436
3/ 24/ 2016	Blyth Stp	SB	6:40	24	1729	M	Y	Y	1	4	11	0.35	2.6	780	128716
28-Mar-16	Blyth Stp	SB	7:20	19	1640	M	Y	Y	1	6	9	0.49	2.6	40	128793
Mar 31-Apr 1-16	Blyth Stp	SB	7:20	25	2293	M	Y	Y	1	4	10	0.34	0.6	2	128876
Dec 26-16	Blyth STP	SB	7:00pm	29.3	2232	M	Y	Y	1	9	18	0.54	2.6	116	900298
				73.3	7894										

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: