Wastewater Treatment Facility

249 Bradford Street

2020 Annual Monitoring Report

Environmental Compliance Approval 0284-B2ML52

March 26, 2021

The City of Barrie
Wastewater Operations Branch
P.O. Box 400 Barrie, Ontario L4M 4T5
Telephone 705-739-4220 ▪ Fax 705-739-4251 ▪ www.barrie.ca

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Review and Sign-Off

WwTF 2020 Annual Report Reviewed by:	Signature	Date
B. Araniyasundaran, Director, Infrastructure		3/18/2021
S. Coulter, Senior Manager, Operational Development	Sandy Coulter	3/22/2021
G. Jorden, Manager, Wastewater Operations		3/23/2021
K. Quigley, Supervisor, Operational Technology	Kevin Quigley	3/23/2021
M. Shaw, Supervisor, Technical Services	M. Shaw	3/23/2021
D. Reynolds, Senior Wastewater Optimization Engineer	Dane Reynolds	3/24/2021
D. O'Neill, Supervisor, Wastewater Capital Works	Dan O'Neill	3/24/2021
A. Baker, Wastewater Operations Foreperson	Allen Baker	3/24/2021
J. Hamilton, Wastewater Maintenance Foreperson	john hamilton	3/24/2021

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Overview and Summary

The City of Barrie's Wastewater Treatment Facility (WwTF) is located at 249 Bradford Street and in 2020 operated under Amended Environmental Compliance Approval No. 0284-B2ML52 ("the ECA") dated August 24th, 2018 issued by the Ministry of the Environment, Conservation and Parks (MECP). Compliance for 2020 will be evaluated against section 11 reporting requirements of the ECA; a copy of which is attached in Appendix "A".

Amended Environmental Compliance Approval (ECA) No. 0284-B2ML52 granted approval to add three more mixers to the selector and two more heat exchangers to Primary Digester #3. The Ministry of Environment, Conservation and Parks (MECP) were notified February 6, 2020 that the Proposed Works had been commissioned (copy of communication in Appendix A).

On December 19, 2019, the City applied for an amendment to Amended Certificate of Approval (Air) 1316-5MKTGU dated October 23, 2006 ("the Air ECA") to update operations of air pollution control equipment, noise levels and dispersion modelling.

On July 4, 2019, the City submitted a Notice of Modification of Sewage Works No. 2019-01 for a new sludge transfer pipe. As of February 3, 2020, the new piping is in service and the contract has been substantially performed.

In 2020 sewage treatment processes included:

- Mechanical Bar Screens,
- Grit removal,
- Primary settling,
- Selector tank,
- High purity oxygen activated sludge treatment (UNOX process),
- Dual point chemical addition for removal of phosphorus and suspended solids,
- Secondary settling,
- Nitrification by rotating biological contactors (RBC),
- Sand filtration,
- Ultraviolet disinfection,
- Treated effluent is discharged to Kempenfelt Bay through a staged diffuser,
- Biosolids are separated from the liquid sewage and are processed via dual digestion of sludge (aerobic & anaerobic), and
- Methane gas generated from this process is 'scrubbed' and used for co-generation of heat and electricity to offset plant energy demands.

In 2020, the effluent average daily flow of 50.4 mega litres per day (MLD) of sewage was treated representing approximately 66.4% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 86.3 MLD on January 11, 2020 due to heavy rains, warm weather and snowmelt and runoff accessing the sanitary collection system.

Small volumes of imported sewage were received from the Bear Creek development in January and February and from Royal Victoria Hospital in December.

Despite additional challenges posed by the COVID-19 pandemic, the WwTF was in full compliance with all effluent concentration limits and loading limits. In addition, the plant met all ECA Objectives on a monthly average basis and, with few exceptions, on a daily basis.

In November 2020, the City began submitting MUMPS reports on-line using the new digital reporting system.

Over the reporting period the Wastewater Treatment Facility functioned exceptionally well, producing high quality treated effluent as indicated by minimal effluent nutrient levels. The effluent phosphorous monthly average concentrations all met the 0.18 mg/L monthly average compliance limit, and the effluent annual average phosphorous concentration of 0.03 mg/L met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.1 mg/L. The 2020 final effluent phosphorous annual loading was 554 kg/year which is 20% of the annual

compliance loading limit of 2,774 kg. The average ammonia-N effluent concentration based on all samples was 0.29 mg/L and all ammonia-N limits, objectives and loadings were consistently met.

In 2020, some effluent pollutants such as total phosphorus, dissolved phosphorus, $cBOD_5$ and *E. coli* were often below analytical detection limits.

The WwTF had no sewage overflows and one partial bypass of sewage on January 11 due to high levels of precipitation and snowmelt accessing sewers. In addition, one odour complaint was received in February and two emergency releases of biogas (5 m^3 on Sept 22 and 40 m^3 on October 29). As regulated, notification was provided to the MECP in all cases.

The reporting sections in this report follow the specific reporting requirements of section 11(4) of the ECA. Copies of relevant ECAs, Notices of Modifications and communications with MECP are contained in Appendix "A".

Effluent reporting statistics such as monthly average or yearly average concentrations in this report are calculated as per Schedule F of the ECA (i.e arithmetic mean of all single sample results obtained during a month or calendar year respectively).

Reporting Section 11(4) (a): Summary/Interpretation of Influent & Imported Sewage Quality and Flows and Historical Trends

WwTF influent sampling for 2020 was conducted as per the requirements of the ECA and results are presented in Table 1:

Table 1 WwTF 2020 Monthly Average Influent Concentrations and Total Flows

Month (2020)	Total Effluent Flow (m^3)	BOD_5 (mg/L)	Total Suspended Solids (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Phosphorus (mg/L)	Dissolved Reactive Phosphorus (mg/L)	$cBOD_5$ (mg/L)	NH3-N (mg/L)
January	1,707,403	184	240	40.61	5.1	1.23	100	25.32
February	1,426,325	237	329	46.77	5.7	1.45	132	28.61
March	1,700,458	187	234	41.21	4.7	1.11	111	26.37
April	1,541,438	218	270	41.46	5.5	1.13	128	25.97
May	1,574,515	191	271	37.25	4.8	1.10	117	21.38
June	1,509,320	202	267	38.75	4.8	0.93	108	22.11
July	1,478,073	171	257	39.82	4.9	0.93	105	22.89
August	1,597,585	173	254	36.73	4.7	0.87	111	22.30
September	1,471,302	171	207	37.34	4.6	0.95	116	23.51
October	1,465,667	189	221	38.05	4.6	1.15	142	23.00
November	1,434,593	200	305	36.58	5.1	1.11	139	21.21
December	1,556,854	155	212	41.19	4.7	1.18	121	24.60
Average	1,538,628	190	256	39.65	4.9	1.10	119	23.94
Sum	18,463,533							

Table 1 sampling and flow monitoring data was previously sent to MECP in monthly R1 and R2 Municipal Utility Monitoring Program (MUMP) reports. Influent concentrations appear to be typical of domestic sewage.

In 2020, imported sewage originating from the Bear Creek Ridge Development was received in January and February at the WwTF. Samples were taken from the discharge of sewage from the bottom of the truck which hauls the sewage or from the receiving tank. Sewage from the Bear Creek Ridge Development was hauled by Region of Huronia Environmental Services (ROHES). Sewage from Royal Victoria Hospital was also hauled in December by Pump My Tank. The results of sampling and analyses are shown in Table 2.

Table 2 Results of Sampling and Analysis of Imported Sewage

Date	Vol. Received (m^3)	BOD_5 (mg/L)	TSS (mg/L)	TKN (mg/L)	TP (mg/L)	Ammonia-N (mg/L)
From Bear Creek Ridge Development to WwTF						
Jan. 3	13.6					
Jan. 6	13.6	401	1930	203	35.5	89.9
Jan. 10	27.3					
Jan. 11	36.4					
Jan. 17	27.3					
Jan. 24	27.3					
Jan. 27	36.4					
Jan. 29	4.5					
Jan. 29	20.5					
Jan. 31	20.5					
Feb. 2	27.3					
Feb. 5	20.5					
Feb. 7	20.5					
Feb. 12	22.7	1170	1040	129	18.8	100
From RVH to WwTF						
Dec. 4	12.7					
Dec. 4	12.7					
Dec. 11	12.3					
Dec. 13	13.6					
Dec. 14	14.5					
Dec. 21	13.6					
Dec. 28	12.7					
Dec. 29	0 (tank)	133	212	40	5.56	

With the exception of the RVH December 29 sample, the imported sewage sampling data indicate that all sampling parameters are higher than WwTF influent sewage values possibly due to the nature of the waste and the state it is collected in, sampling limitations, septicity or a combination thereof. All imported sewage received full treatment and did not create any process issues or concerns.

Five years of historical trending of WwTF influent concentrations and flow data is shown in Figures 1- 4 below.

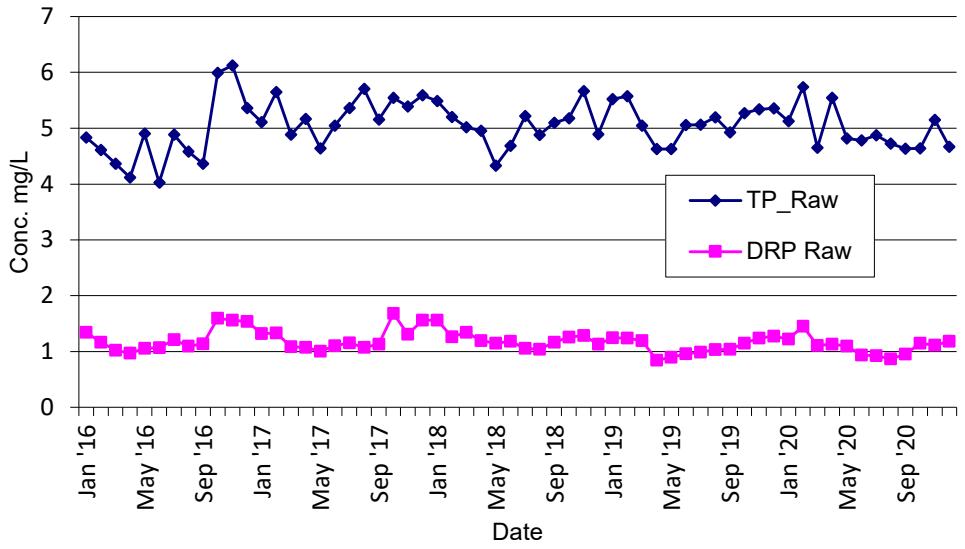

Figure 1 WwTF Average Monthly Influent Total Phosphorus (TP) and Dissolved Reactive Phosphorus (DRP) (mg/L)

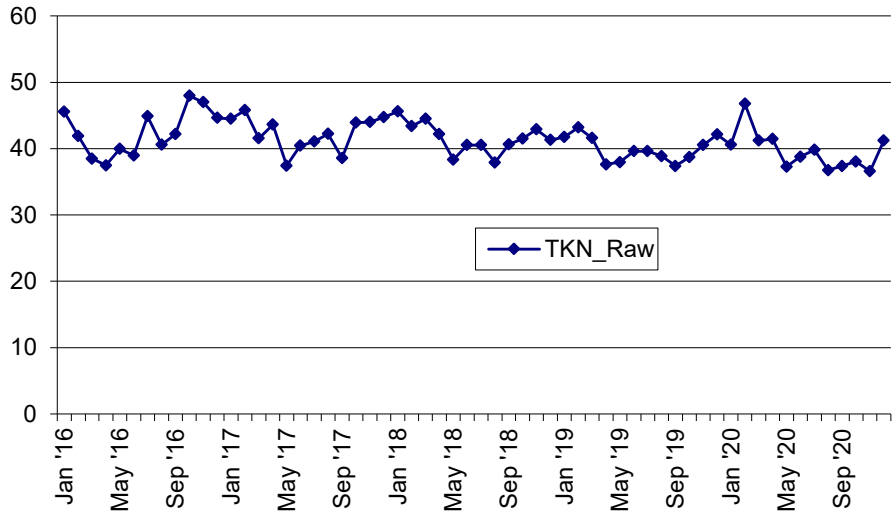

Figure 2 WwTF Average Monthly Influent Total Kjeldahl Nitrogen (TKN) (mg/L)

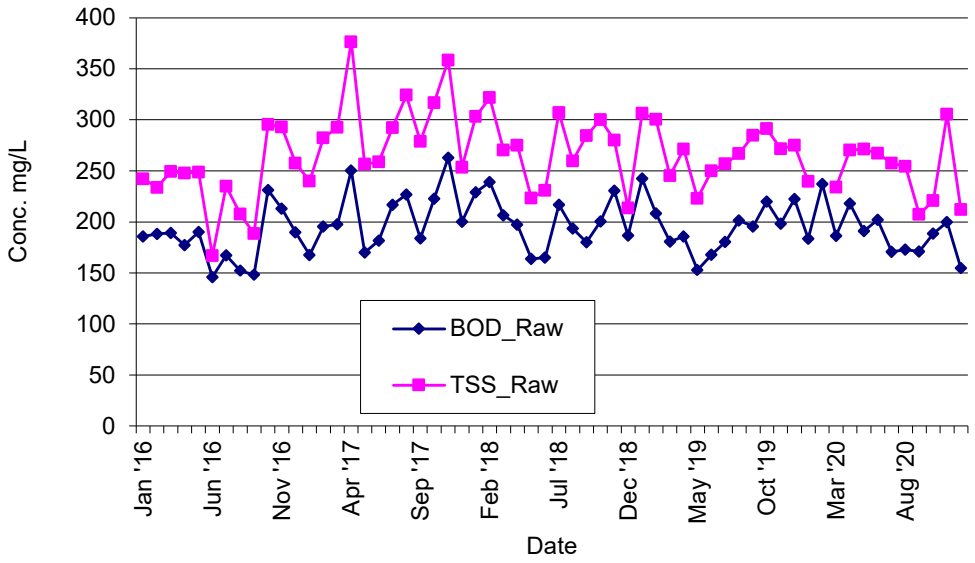

Figure 3 WwTF Average Monthly Influent Five-Day Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) (mg/L)

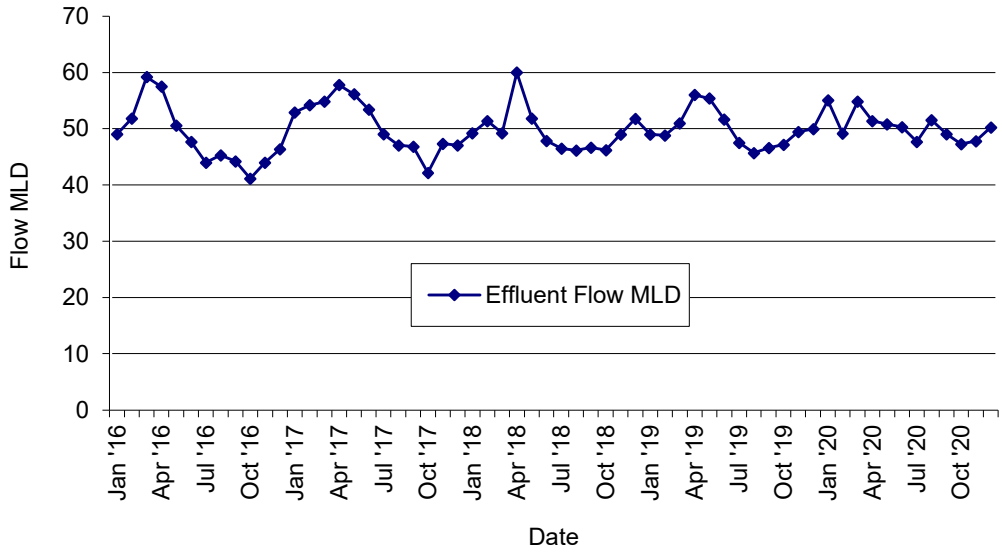

Figure 4 WwTF Average Monthly Effluent Flow (MLD)

No strong trends are discernible over the past five years except that flows are usually highest in January to April usually as a result of a warming spell in conjunction with rain which causes excess inflow and infiltration to sewers. In early 2020, perhaps due to COVID-19 lockdowns and more people staying at home, it was noticed that weekday morning diurnal flow peaks were delayed by a few hours. Weekends seemed no

different than normal. This returned to normal in the fall of 2020. Weekend flow patterns seemed no different than normal all year.

Table 3 compares average daily flow per month with maximum daily flow for that month. A maximum daily effluent flow of 86.3 MLD occurred on January 11, 2020 due to heavy rains, warm weather and snowmelt accessing the sanitary collection system.

Table 3 WwTF 2020 Monthly Average and Monthly Maximum Daily Flows (MLD)

Month (2020)	Average Daily Flow (MLD)	Maximum Daily Flow (MLD)
January	55.0775	86.3371
February	49.1836	52.9289
March	54.853	72.2367
April	51.3812	54.310
May	50.7908	60.4674
June	50.3107	55.2464
July	47.6798	51.6351
August	51.5350	73.9005
September	49.0434	55.5345
October	47.2796	49.4632
November	47.8198	51.5481
December	50.2211	57.7337
Average	**50.431**	

Reporting Section 11(4) (b): Summary and Interpretation of All Final Effluent Monitoring Data and Comparison to Design Objectives and Limits

In computing averages on final effluent parameters, results are often below the analytical detection limits of laboratory methods. Detection limits for target parameters are as follows: total phosphorus (TP), 0.02 mg/L; dissolved reactive phosphorus (DRP), 0.01 mg/L; carbonaceous biochemical oxygen demand ($cBOD_5$), 2.0 mg/L and ammonia-N, 0.03 mg/L. E. coli counts of <1 CFU/100 mL are recorded as 1.0 CFU/100 mL to allow calculation of the geometric mean. E. coli is monitored in two locations; the North UV effluent channel and the South UV effluent channel. The higher monthly average E. coli result is used for comparison with regulatory requirements.

The City of Barrie assumes that non-detect results are at the limit of detection for averaging purposes. Hence, the average effluent concentrations stated for $cBOD_5$, TP, dissolved reactive P and E. coli are usually an over-estimation of the actual effluent concentration. Effluent ammonia-N concentrations are usually above detection limits.

The fact that effluent target parameters are frequently below detection reflects the City of Barrie's commitment to continuous improvement and an effluent quality that far surpasses standards of a secondary treatment facility. The WwTF design objectives were based on achieving 0.15 mg/L effluent total phosphorus

and 3 - 8 mg/L ammonia-N depending on season. WwTF effluent easily meets and exceeds these objectives on average by an order of magnitude for ammonia and by almost an order of magnitude for total phosphorus.

Tables 4, 5 and 6 summarize all effluent monitoring results, flow rates and loadings and evaluate compliance with all effluent limits, objectives and loadings stipulated in the ECA. As noted above, where concentrations of pollutants are below detection limits the concentration is assumed to be at the limit of detection.

Table 4 shows that no monthly average effluent concentration limits were exceeded in 2020.

Table 4 WwTF 2020 Monthly Effluent Concentrations vs Effluent Limits

Month (2020)	Avg. $cBOD_5$ (mg/L)	Avg. TSS (mg/L)	Avg. NH_3 - N (mg/L)	Avg. NH_3 - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Avg. pH	Min. pH	Max. pH
January	2.3	7.5		0.57	0.09	1.08	6.80	6.48	7.00
February	2.0	3.6		0.49	0.03	1.00	6.71	6.38	6.93
March	2.0	3.5		0.61	0.03	1.00	6.81	6.61	7.01
April	2.0	2.1		0.20	0.02	1.00	6.78	6.51	7.07
May	2.0	2.3		0.23	0.05	1.00	6.75	6.45	6.97
June	2.0	1.6	0.11		0.03	1.50	6.84	6.54	7.09
July	2.0	1.7	0.12		0.03	1.00	6.79	6.58	6.99
August	2.0	1.4	0.41		0.02	1.00	6.79	6.57	6.98
September	2.0	2.0	0.07		0.02	1.05	6.91	6.78	7.00
October	1.9	1.0	0.21		0.02	1.12	6.94	6.63	7.16
November	2.0	1.0		0.40	0.02	1.00	6.87	6.51	7.10
December	1.9	1.5		0.10	0.02	1.00	6.73	6.39	7.08
ECA Sch. "C" Limit	15	15	4	10	0.18	200		6.0	9.5
Number of ECA Limit exceedances	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**

Table 5 evaluates compliance with effluent objectives for the WwTF. In terms of meeting monthly effluent objectives on a daily basis, three (3) results (46 mg/L on January 12, 31 mg/L on January 13 and 14 mg/L on May 25) exceeded the TSS objective of 10 mg/L, four results (1.25 mg/L on January 12, 0.75 mg/L on January 13, 0.32 mg/L on May 25 and 0.52 mg/L on May 26) exceeded the TP objective of 0.12 mg/L, and five results (January 5, February 2, May 16, December 10 and December 11), the lowest being 6.39, did not meet the minimum pH objective of 6.5 which is attributed to normal process variation. On a monthly average basis, no effluent objectives were exceeded.

Table 5 WwTF 2020 Compliance with Effluent Objectives

	Avg. $cBOD_5$ (mg/L)	Avg. TSS (mg/L)	Avg. NH_3 - N (mg/L)	Avg. NH_3 - N (mg/L)	Avg. Total P (mg/L)	Log Avg. E. coli CFU per 100 ml	Min. pH	Max. pH
ECA Sch. "B" Objective	10	10	3	8	0.12	100	6.5	8.5
Number of ECA Objective exceedances*	**0**	**3**	**0**	**0**	**4**	**0**	**5**	**0**

*Compliance with Concentration objectives is based on any single sample.

In Table 6 the Monthly Average Daily Effluent Loadings = Monthly Average Effluent Concentrations (from Table 4) x the corresponding Average Daily Flow for that month (from Table 6). ECA Schedule C Loading Limits are shown and the number of exceedances summarized at the bottom of the table. Hence there were no exceedances of monthly loading limits. Also, none of the monthly average flows exceeded the plant rated capacity of 76 MLD.

Table 6 WwTF 2020 Monthly Average Daily Effluent Loadings

Month (2020)	Avg. Daily Flow (MLD)	$cBOD_5$ (kg/d)	TSS (kg/d)	NH_3 - N (kg/d)	NH_3 -N (kg/d)	Total Phosphorus (kg/d)
January	55.078	128	413		31	5.0
February	49.184	98	176		24	1.5
March	54.853	110	190		33	1.6
April	51.381	103	106		10	1.0
May	50.791	102	114		12	2.5
June	50.311	101	82	6		1.5
July	47.680	95	81	6		1.4
August	51.535	103	71	21		1.0
September	49.043	98	98	3		1.0
October	47.280	91	47	10		0.9
November	47.820	98	48		19	1.1
December	50.221	97	75		5	1.2
ECA Schedule "C" Limit	**76***	**1140**	**1140**	**304**	**760**	**13.7**
Number exceeding Schedule "C" Limit	**0**	**0**	**0**	**0**	**0**	**0**

*Rated Capacity

Table 7 summarizes compliance with the Lake Simcoe Phosphorus Reduction Strategy (LSPRS) Compliance Limits set forth in Schedule C of the ECA. The average annual effluent concentration of total phosphorus is the arithmetic mean of all single sample results. The total flow is the sum of monthly total flow volumes. The annual loading is the product of these two quantities. The result is that the WwTF met effluent phosphorus concentration and loading compliance limits set by the ECA and the LSPRS.

Table 7 WwTF 2020 Final Effluent Quality Comparison with Lake Simcoe Phosphorus Reduction Strategy (LSPRS) Total Phosphorus (TP) Loading Limits

Effluent Parameter	Annual Average TP Concentration (mg/L)	Annual Total TP Loading (kg/yr)
WwTF (2020)	0.03	554
ECA Schedule" C" Limit	0.1	2,774
Number exceeding Schedule "C" Limit	**0**	**0**

Table 8 shows that monthly and yearly average effluent un-ionized ammonia concentrations are, on average, more than an order of magnitude below Provincial Water Quality Objectives.

Table 8 Average WwTF Effluent Un-ionized Ammonia Concentrations

Month (2020)	Monthly Average Effluent Un-ionized Ammonia (ug/L)
January	0.9
February	0.6
March	0.9
April	0.3
May	0.4
June	0.3
July	0.3
August	0.8
September	0.3
October	0.9
November	0.4
December	0.2
Average	0.6
PWQO	20

Quarterly sampling of leachate-related parameters in final effluent began in the third quarter of 2018 when the requirement was imposed in the new ECA. The results of 2020 sampling and analysis are shown in Table 9:

Table 9 WwTF 2020 Sampling and Analytical Results for Leachate Parameters in Final Effluent

Effluent Parameter	Detection Limit (mg/L)	Result (Mar. 4, 2020)	Result (June 3, 2020)	Result (Sept. 3, 2020)	Result (Dec. 3, 2019)
Bis (2-ethyhexyl) phthalate	0.002	<0.002 mg/L	<0.002 mg/L	<0.002 mg/L	<0.002 mg/L
Boron	0.05	0.132 mg/L	0.150 mg/L	0.171 mg/L	0.161 mg/L
Cobalt	0.007	<0.007 mg/L	<0.007 mg/L	<0.007 mg/L	<0.007 mg/L
Magnesium	0.2	17.4 mg/L	17.2 mg/L	17.4 mg/L	17.4 mg/L
Manganese	0.02	0.047 mg/L	0.048 mg/L	0.038 mg/L	0.036 mg/L
Potassium	0.5	16.0 mg/L	17.9 mg/L	15.5 mg/L	10.2 mg/L
Strontium	0.02	0.374 mg/L	0.380 mg/L	0.387 mg/L	0.358 mg/L

Except for strontium, the leachate parameter values appear to be consistent with expected contributions from domestic water use and consistent with 2018 and 2019 sample results. The typical value of strontium in domestic sewage is unknown however it is a common element in the earth's crust and has widespread commercial uses.

Effluent acute lethality monitoring was conducted quarterly in 2020 in accordance with the federal Wastewater Systems Effluent Regulations (WSER). Sampling dates were February 12, April 22, July 8, and October 7. All four quarterly effluent samples were determined to be not acutely lethal according to methods EPS 1/RM/14 and EPS 1/RM/13.

Laboratory data sheets have been omitted for brevity but are available upon request.

Figures 5 and 6 offer a 12-year overview of WwTF final effluent nutrient level trends which demonstrate the ongoing success and adequacy of the sewage works in protecting the Lake Simcoe aquatic habitat. The average annual effluent concentration shown is the arithmetic mean of all single sample results for the year.

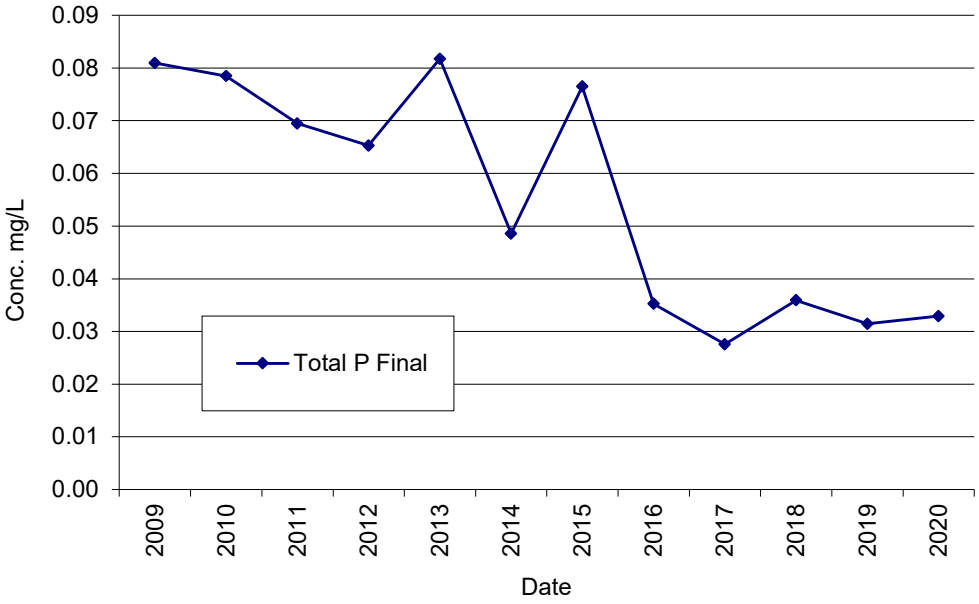

Figure 5 WwTF Average Annual Effluent Total Phosphorus Concentration (mg/L)

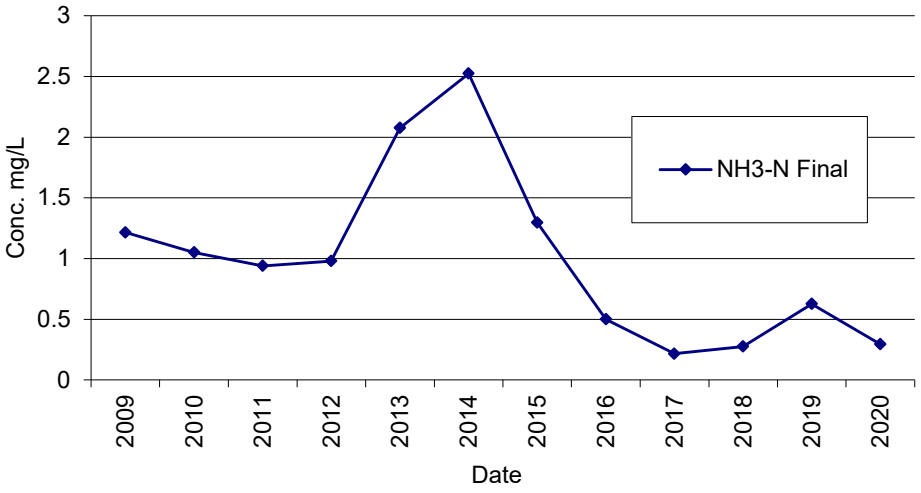

Figure 6 WwTF Average Annual Effluent Ammonia-N Concentration (mg/L)

It is evident from the figures and tables above that in 2020 the Barrie WwTF achieved aggressive removal of two nutrients – total phosphorus and ammonia-N. These target parameters have the potential to cause toxicity and eutrophication in the aquatic environment of Lake Simcoe.

In summary, final effluent from the Barrie WwTF in 2020 was of very high quality in comparison with provincial and federal regulatory standards.

Reporting Section 11(4) (c): Summary of Deviations from Monitoring Schedule

It should be noted that the City of Barrie exceeds the minimum sampling requirements stipulated by Schedule "D" of the ECA. For example, the City of Barrie monitors effluent phosphorus daily including weekends and holidays. Although this ensures that the City meets its sampling requirements, it raises the number of potential exceedances of effluent objectives which are applied daily for purposes of compliance. However, it also provides a more accurate estimate of pollutant concentrations and loadings.

Section 9 of the ECA requires that a sampling schedule for Schedule D parameters be created and rotated annually except where sampling is conducted 3 or more times per week. In 2018, the City of Barrie began sampling and analysis of all Schedule "D" parameters at least 3 times per week except for the leachate parameters. This program continued through 2019 and into 2020. In 2020 ECA minimum sampling requirements were 100% fulfilled. In addition, the City fulfilled its obligation to sample 3x week for all parameters with two exceptions:

- an autosampler failure on July 9 resulted in only two final samples being taken in the week of July 5.
- holiday schedules and sample holding time limitations resulted in only two effluent E. coli samples being taken in the week of December 27.

The sampling schedule utilized for Schedule D parameters is shown in Table 10.

Table 10 WwTF Schedule 'D' Sampling Schedule

Day	Total Suspended Solids	$CBOD_5$	BOD_5	E. coli	Total Kjeldahl Nitrogen	Total Ammonia Nitrogen	Nitrate as Nitrogen	Total Phosphorus	Dissolved Reactive Phosphorus
Influent									
Monday	X		X		X			X	X
Tuesday	X		X		X			X	X
Wednesday	X		X		X			X	X
Thursday	X		X		X			X	X
Friday									
Saturday									
Sunday									
Effluent									
Monday	X	X		X	X	X	X	X	X
Tuesday				X		X		X	X
Wednesday	X	X		X	X	X	X	X	X
Thursday	X	X			X	X	X	X	X
Friday								X	
Saturday								X	
Sunday								X	

Deviation from the schedule may arise due to a variety of factors (holidays, issue with autosampler, issues with sample, etc.). For weekly influent sampling, a fourth raw sample was not obtained January 22, February 3, February 25, April 9, May 20, July 9 and December 24 for reasons stated. For effluent sampling, schedule deviations occurred January 8 and 29, February 17, 28 and 29, March 16, April 6, 9 and 13, June 30, July 9, August 3, 6, 24 and 26, September 10, October 30, and December 15, 24, 28 and 31. Although the same factors apply, the effluent sampling schedule is also more ambitious and prone to a greater number of re-scheduled samples. Despite occasional rescheduling, regulatory requirements were maintained at all times.

Leachate parameters were sampled the first Wednesday of the last month of each quarter in 2020 and the last quarter of 2019. This schedule was adjusted after one year (in September 2020) to sample leachate parameters the first Thursday of the last month of each quarter. This program proposed for 2021 is to rotate the schedule at the beginning of each year and for 2021, rotate to the last Wednesday of the middle month of each quarter as follows:

Table 11 Final Effluent Leachate Related Regulatory Sample Schedule 2021

Quarter	Date	Parameters
First	Wednesday, February 24, 2021	Boron, Cobalt, Magnesium, Manganese, Potassium, Strontium, Bis (2-ethylhexyl) Phthalate
Second	Wednesday, May 26, 2021	
Third	Wednesday, August 25, 2021	
Fourth	Wednesday, November 24, 2021	

Sampling of imported sewage cannot be routinely scheduled as deliveries are infrequent and randomly received.

Reporting Section 11(4) (d): Summary of All Operating Issues and Corrective Actions

There were no major sewage treatment operating challenges in 2020 as is evidenced by the performance data in Reporting Section 11(4) (b). Some less significant issues that arose in 2020 included

1. COVID-19 precautions resulted in restrictions on meetings, training and staff communications, delayed backfilling of vacancies, prevented hiring of some summer students, resulted in staggered shifts, increased expenditures on personal protective equipment and generally hindered workflow but did not affect final effluent quality.
2. The CMMS work order system was improved to allow use with cell phones.
3. A project to control fugitive odour emissions is ongoing.
4. On the opinion of the Ministry of Labour, Training and Skills Development, the frequency of plant-wide safety inspections was increased to monthly.
5. Several structures require extensive and costly replacement of brick veneers. Limited progress in 2020. Plans are in place to strip the secondary digester and temporarily re-clad until re-bricking can be completed.
6. Plant security was augmented by renewing controls for fob-controlled entrance gates and adding a surveillance camera system.
7. As a result of restructuring, the wastewater operations branch acquired the Wastewater Collections crew from the Roads Department which improved communications on sewer issues but increased workload and responsibilities on wastewater operations management.
8. Fair weather permitted the emptying of the Oro Biosolids Facility over the summer maximizing storage space for winter 2021 but resulting in cost overruns.

9. The cost of aluminum sulfate (alum) increased dramatically causing budget shortfalls.

See also ss. 11(4)(j) (Complaints) and 11(4)(k) (Abnormal events).

Reporting Section 11(4) (e): Normal and Emergency Repair Summary on Major Equipment Items

In 2020, 310 work orders were completed for repairs. A detailed summary is provided in Schedule B.

Reporting section 11(4) (f): Summary of Effluent QA/QC Program

The City of Barrie currently uses a member of the Canadian Association for Laboratory Accreditation (CALA), E3 Labs Inc. laboratories, for analysis of all samples taken for regulatory reporting purposes. The following chapter is excerpted from E3 Labs Quality Manual dated September 1st, 2015 and describes QA/QC procedures that were in place for 2020.

7.0 QUALITY CONTROL

Quality Control Samples are used, as appropriate, to ensure that the analytical process is in control. The various types of quality control samples and the characteristics they monitor are summarized as follows:

Type of Quality Control Samples	Characteristic Monitored
Standards/Lab QC	verify
Reference	calibration/stability
Material*	method accuracy
Duplicate	method precision
Samples Analyte	method recovery
Spike Reagent	contamination
Blank	(chemical)
Matrix Spike	sample recovery

* Reference materials may be either certified reference materials or can be prepared by the laboratory using the same compound as the calibration standards but using a different lot# or manufacturer of the chemical.

These Quality Control samples are defined as follows:

Standards/ Lab QC: A solution prepared by the use of a primary standard or purchased pre-made from a supplier who certifies its concentration. The analyst performing the applicable tests for which that standard will be used usually prepares standards. Standard preparation is documented in the Standard Logbook.

Certified Reference Material: A sample that contains the analytes of interest in concentrations that are known from a previous in-house analysis or provided by an outside source. In-house reference material preparation is documented in the Standard Logbook.

Analyte Spike: A sample prepared by adding a measured amount of a reference standard to reagent water or sample.

Reagent Blank: A sample containing laboratory high quality water which is analyzed as though it were a sample.

The quality control results for each run are monitored and verified by the analyst against the established control limits, which have been determined for the tests and/or specific parameters analyzed. The Laboratory Manager reviews quality control results on a regular basis. The values outside the established limits are automatically flagged by LTMS to warn the analysts of the outlier results. The Laboratory Manager will review all flagged data. The analyst in consultation with the Laboratory Manager reviews raw data and the steps followed in the test procedure and take the appropriate action(s) to identify and resolve the situation.

If any quality control sample results fall outside the control limits, the acceptance or rejection of the results is at the discretion of the analyst in consultation with the Laboratory Manager. The Laboratory Manager has the final authority to accept or reject results.

If necessary, the analysis will be repeated, if sufficient sample remains. The Laboratory Manager will review the repeated test results.

7.1 Proficiency Testing and Inter-/Intra-laboratory Studies

An important part of our Quality Assurance program is the participation in proficiency testing and inter- and intra-laboratory studies. The Laboratory Manager ensures that the lab participates in external proficiency testing.

These include proficiency samples for CALA and other PT sample suppliers.

If a proficiency test study provides results that cause doubt concerning test method performance, the Laboratory Manager may initiate a Quality Audit. Based on the audit findings, corrective action is initiated.

The results of this audit and any actions taken shall be documented and maintained on file by the Laboratory Manager.

7.2 Control Charts and Control Limits

7.2.1 Control Charts

Control charts are used, as appropriate, to monitor and evaluate the quality of the QC data generated. Such charts relate on-going test method performance to either statistically defined (±3 STD) or protocol defined control limits. The values that are outside these limits are automatically or manually flagged to notify the analyst of the deviation. The supervisor or senior analyst designated to the co-ordination/supervision of the respective test is responsible to ensure the continual monitoring of the method's performance. Prescribed control charting practices are contained in the method SOP. All control charts are maintained by the LIMS.

7.2.2 Control Limits

Control limits, or other specified limits, when exceeded, are automatically or manually flagged. The analyst responsible for the test or reviewing the data is then expected to intervene and document the reason for the non-conformity or outlier result. This is realized through the LIMS or recorded in the appropriate logbook. Action limits may be assigned by the Laboratory Manager for results that impact the customer or regulatory limits.

Reporting Section 11(4) (g): Calibration and Maintenance on Influent, Imported Sewage and Effluent Monitoring Equipment

Influent/effluent monitoring consists of using automatic samplers and handheld pH/temp meters. These are checked or calibrated daily by operators. In addition, effluent monitoring equipment consists of using an in-line pH/temp meter as a check and various flow meters used to record flow volumes from which final effluent flow is calculated. A summary of these calibration activities in 2020 is shown in Table 12.

Table 12 Calibration Summary of Monitoring Equipment

Activity	Date (2020)	By
Calibrate hand-held temp/pH meter & check autosampler volumes	daily	operator
Clean and disinfect raw and final autosampler sample jugs	weekly	operator
Clean and disinfect raw and final autosampler sample tubing	monthly	operator
Calibrate in-line final temp/pH meter AIT_2156	monthly	Lacey Inst.
Calibrate Biosolids flow meter FIT_1969	Oct. 15	Induscontrol Inc.
Calibrate Raw Sewage flow meters FIT0812_01/02/03/04/05/06	Oct. 13	Induscontrol Inc.
Calibrate HPEW flow meter FIT_2157	Oct. 14	Induscontrol Inc.
Calibrate WAS flow meter FIT_6145_01/02/03	Oct. 14/29/30	Induscontrol Inc.
Calibrate TWAS flow meter FIT 6162_01	Oct. 14	Induscontrol Inc.
Calibrate Bioaugmentation tank flow meter FIT_1491	Oct. 14	Induscontrol Inc.
Calibrate Grit tank flow meters FIT_2420_01/02/03/04	Oct. 14	Induscontrol Inc.
Calibrate Septage tank flow meter FIT_1293	Oct. 30	Induscontrol Inc.

Imported sewage was sampled and quantified manually; not automatically.

Calibration certificates and/or proof of calibration are available upon request.

Reporting Section 11(4) (h): Efforts Made in Meeting Effluent Objectives

The WwTF normally meets and surpasses all design objectives and the average annual daily flow has not reached 80% of design flow (=60.8 MLD). Efforts made in 2020 to maintain this high level of service included:

1. A major capital project is underway to implement membrane bioreactor (MBR) technology. This will enhance a continued ability to produce final effluent that will meet the effluent limit of 0.10 mg/L total phosphorus imposed by the Lake Simcoe Phosphorus Reduction Strategy. The Pre-design is done and the consultant for final design is presently being selected

2. In 2015 under a Notice of Modification #2 to MECP the main alum addition point was moved from pre-aeration to post-aeration resulting in much better nutrient removal. This innovation resulted in a dramatic improvement in treatment and effluent quality. A design for permanent facilities including dedicated pumps for each secondary clarifier will further improve the ability to balance and monitor chemical addition. The design is presently being finalized with tendering and construction expected in 2021.

3. A dedicated process optimization engineer and analyst is kept on permanent staff.

4. Annual voluntary participation in national benchmarking (NWWBI) initiatives took place in 2020.

Reporting Section 11(4) (i): Biosolids Volumes and Disposal Locations

In 2020 biosolids generated at the Wastewater Treatment Facility (WwTF) were transported to the Oro-Medonte Biosolids Storage Facility (BSF) or directly to appropriate agricultural land in accordance with the Nutrient Management Act. Supernatant from the BSF is returned on empty trucks to the WwTF for treatment. WESSUC Inc., the City's Biosolids contractor, conducted all biosolids land application activities and transported biosolids and supernatant between the WwTF, BSF and Non-Agricultural Source Material (NASM) application sites. Biosolids laboratory analysis and land application was completed in accordance with the Nutrient Management Act and O. Reg. 267/03.

Table 13 summarizes the volumes of biosolids produced, hauled and land applied by month over the 2020 reporting period. Over the 2020 reporting period, the WwTF produced a total of 131,050 cubic meters (m^3) of biosolids of which 51,829 m^3 were applied directly to land and 79,222 m^3 were sent to storage at the BSF. From the BSF 61,993 m^3 biosolids were applied to land while 36,302 m^3 supernatant was returned to the WwTF.

Table 13 2020 Biosolids Haulage Volume Summary

Month (2020)	Plant to Field (m^3)	Plant to Storage (m^3)	Storage to Field (m^3)	Total from Plant (m^3)	Total to Field (m^3)	Supernatant Returned to WwTF (m^3)
January	0	11,953.8	0	11,953.8	0	8,365
February	0	10,795	0	10,795	0	7,562.5
March	0	12,368.0	0	12,368.0	0	7,323
April	5,027.4	6,364.5	9,577.8	11,391.9	14,605.2	5,030.5
May	7,657.3	3,074.2	11,557. 6	10,731.5	19,214.9	2,447.5
June	6,102.1	4,724.6	7,279.8	10,826.7	13,381.9	222.5
July	3,206.9	7,830.2	3,415.6	11,037.1	6,622.5	5,350.5
August	7,421.9	1,737.2	9,393.8	9,159.1	16,815.7	0.0
September	7,801.3	3,073.5	5,305.5	10,874.8	13,106.8	0.0
October	7,887.1	2,763.4	9,472.0	10,650.6	17,359.1	0.0
November	6,724.6	3,297.2	5,991.0	10,021.8	12,715.6	0.0
December	0.0	11,239.9	0.0	11,239.9	0.0	0.0
Total	51,829	79,222	61,993	13,1050	11,3822	36,302

Table 14 below outlines the 2020 biosolids land application summary and identifies associated NASM Plan application sites, biosolids sources, total volume of biosolids applied and application dates.

Site	Farm	NASM#	Expiry	Lot	Conc	Township	Area Spread (ha)	Sources to field		Total m^3 Applied	Dates Spread
								Barrie WwTF	BSF Storage		
S2011	Kerr Farm	24020	2020	2	7	Innisfil	7.6	1201.69		1201.69	April 16-17
S12006	Rix Farm	22957	2021	2	14	Oro Medonte	30.5		4149.99	4149.99	April 16-20
S2015	Shed Farm	23586	2022	4	3	Innisfil	3.4	534.26		534.26	April 20
S11080	Szabo Farm	22866	2021	8	3	Springwater	30.8	1509.01	2714.91	4223.92	April 21-23
S11081	Asaph Farm	22866	2021	27	2	Springwater	23.7	1782.44	2712.78	4495.22	April 24-28
S12046	Tony Farm	22540	2020	11, 12	8	Oro Medonte	27.0	1333.99	2483.86	3817.85	May 4-6
S12053	4th Line Farm	22944	2021	25	5	Oro Medonte	30.0	1824.62	2087.33	3911.95	May 7-11
S12026	Ross Farm	24122	2024	15	7	Oro Medonte	17.7	623.52	1430.41	2053.93	May 12
S12077	Caldwell Farm	23714	2023	24, 25	3	Oro Medonte	49.6	2494.43	3892.15	6386.58	May 13-22
S12037	Barry's Farm	22927	2020	24, 25	7	Oro Medonte	27.9	1380.73	1663.81	3044.54	May 26, 28
S11069	Home Farm	22504	2020	8	3	Springwater	10.1	534.80	533.22	1068.02	June 8
S11082	Nadeau Farm	22907	2021	26	2	Springwater	37.9	1157.83	3160.69	4318.52	June 9-12
S11035	Home Farm	23454	2022	23	1	Springwater	5.5	667.88	0.00	667.88	June 18
S11038	Neighbour Farm	23453	2022	24	1	Springwater	7.2	668.04	177.76	845.80	June 19
S12027	Chalmers Farm	23847	2023	8	3	Oro Medonte	28.0	1291.66	1571.34	2863.00	June 22-23
S12083	Home Farm	23897	2023	8	4	Oro Medonte	12.8	534.68	754.01	1288.69	June 25
S12010	Mortson Farm	22939	2021	17, 18	6	Oro Medonte	17.7	668.28	1082.74	1751.02	June 26
S5024	Home Farm	24086	2023	23	8	Essa	4.4	578.97	0	578.97	June 29, 30
S12101	Brant Farm	24283	2024	6	12	Oro Medonte	21.2	712.60	1481.77	2194.37	July 7, 9
S5048	Upton Farm	23827	2023	5	10	Essa	5.0	623.48	0	623.48	July 9
S5039	Home Farm	22787	2020	26	3	Essa	6.0	712.82	0	712.82	July 13
S11022	Bowman Farm	23443	2022	1	8	Springwater	10.7	578.99	672.51	1251.50	July 29
S5001	8th Line Farm	23313	2022	8, 9	8	Essa	2.7	311.81	0	311.81	July 31
S11055	Stone Farm	23137	2021	10	2	Springwater	26.8	267.18	2952.19	3219.37	July 31, August 1
S11011	Golf Course Farm	23138	2021	3, 4	8	Springwater	35.5	1599.47	2727.36	4326.83	August 5, 6, 7, 12
S11008	Moreau Farm	23918	2021	18, 19	3	Springwater	23.7	87.77	2986.82	3074.59	August 7, 11
S2013	Cunningham	23457	2022	20	7	Essa	7.0	1777.21	0.00	1777.21	August 10-13
S2012	Home Farm	23456	2022	19, 20	8	Essa	12.5	1373.33	0.00	1373.33	August 14, 18, 19
S2026	Sherbrooke Farm	23130	2021	24, 25	13	Innisfil	20.8	2316.86	0	2316.86	August 20, 21, 24, 25
S12086	Edna's Farm	24181	2024	21, 22	3	Oro Medonte	32.2	2890.92	3623.77	6514.69	August 26, 31, September 3, 4, 8, 11, 12
S12009	Other Farm	22980	2021	16, 17	5	Oro Medonte	17.3	222.86	2366.67	2589.53	September 16, 17
S11075	Murray's Farm	24084	2023	6	1	Springwater	15.1	1113.02	1303.82	2416.84	September 17, 18
S2027	Thorton Farm	23219	2021	1, 2	6	Innisfil	19.3	3272.36	0.00	3272.36	September 21-29
S2017	Home Farm	24144	2023	4	8	Innisfil	8.4	1275.11	0.00	1275.11	September 30, October 1
S12093	Italian Farm	24115	2024	5	2	Oro Medonte	19.4	1459.09	1725.50	3184.59	October 5, 6
S12054	Home Farm	23423	2024	23, 24	9	Oro Medonte	33.2	1510.29	2917.50	4427.79	October 8, 9, 13
S12057	Jeremy's Farm	23173	2021	22. 23	10	Oro Medonte	6.5	534.53	315.00	849.53	October 14

S12061	Bidwell Farm	23259	2021	34	2	Oro Medonte	27.3	1203.03	2476.50	3679.53	October 15, 16
S11066	Dobson Farm	23871	2023	4	12	Springwater	32.2	2474.50	2037.50	4512.00	October 23, 26-28
S12079	Crawford Farm	23711	2023	23	7Ish	Oro Medonte	31.2	1647.97	3104.00	4751.97	November 3-5
S5041	Rita's Farm	22872	2021	31	1	Essa	7.8	1290.61	89.00	1379.61	November 9, 10
S3018	Across Rd. Farm	24132	2024	1	11	West Gwillimbury	4.9	668.16	0.00	668.16	November 11-13
S4016	Home Farm	22623	2020	19, 20	13	New Tecumseth	8.6	802.06	0.00	802.06	November 18-20
S11044	Sutton Farm	24123	2024	16	1	Springwater	23.1	1380.56	1735.50	3116.06	November 20, 21, 24
S11030	Pasture Farm	23455	2021	19	3	Springwater	15.0	935.24	1062.50	1997.74	November 27, 28
						TOTAL	**845.00**	**51828.66**	**61992.91**	**113821.57**	

Table 14 2020 Biosolids Land Application Program

During 2021, it is estimated that a total of approximately 135,000 m^3 to 140,000 m^3 of biosolids will be generated at the WwTF.

Reporting Section 11(4) (j): Complaint Summary and Resolution

A complaint was received by Access Barrie with respect to brief odour near the WwTF on February 23, 2020 and Monday, February 24, 2020. Subsequent follow-up with the complainant was conducted and the odour on Sunday could not be explained as there was no sludge loading and hauling on Sunday. The odour on Monday was potentially due to winds negatively impacting the performance of the vacuum hood on the truck loading station. The WwTF remains engaged in finding a solution to fugitive odours. Full details of the follow up and report to MECP are contained in Appendix A.

Reporting Section 11(4) (k): Bypass/Overflow/Abnormal Events

On the morning of January 11, 2020 mild, rainy weather resulted in excessive flows of raw sewage at the Barrie Wastewater Treatment Facility. Attempts were made to hold flows at 103,000 MLD by surcharging sewers. Other attempts by operators to prevent a bypass and minimize effects included toggling raw sewage pumps to prevent a bypass, ensuring equal levels in filters and boosting UV dose to 100% UV capacity. At 18:42 sand filters began to bypass. The 130 m^3 of bypassed sewage received full secondary (biological) treatment and disinfection and was discharged through the normal approved discharge point. All regulatory agencies were notified and updated (see attached reporting form in Appendix A) and bypass sampling was conducted in accordance with ECA. The SAC incident number was 904040. The bypass ended at 22:00 for a duration of 3 hours 18 minutes. Follow-up notifications were made to regulatory agencies as shown on the reporting form including estimated volumes bypassed (130m^3). Sampling results were forwarded to MECP on January 24. Effluent concentrations of suspended solids and total phosphorus were elevated as a result of the high flows and bypass. The incident was also reported in the quarterly bypass and overflow report. Despite the partial tertiary bypass, monthly compliance was still achieved for all regulatory parameters.

On September 22, 2020 an isolation valve, that is required to allow complete isolation of either of the two digester gas carbon media towers, failed and had to be replaced. Proper operation of the valve is required to allow staff to safely service the carbon media itself, without venting to atmosphere. To safely accommodate the valve replacement, the volume of digester gas contained in the carbon media tower was vented to atmosphere. Based on the dimensions of the tower and amount of media within it, Wastewater

Operations staff estimate approximately 5 m^3 of digester gas was released to the atmosphere. The incident was reported to MECP SAC (SAC # 7822-BTPGUW). Additionally, staff were positioned at the facility fence line with atmospheric monitoring equipment and observed no air quality issues during or after completion of the venting.

On October 29, 2020 during a planned removal of a digester mixer, there was an accidental release of 40 m^3 of biogas lasting 10 minutes. The incident was reported to MECP SAC (SAC #0744-BUULHV). More caution will be exerted the next time a digester mixer is removed or replaced.

Detailed reports and communications with MECP are contained in Appendix A.

Reporting Section 11(4) (l): Status of Notices of Modification

On July 4, 2019 LOF 2019-01 was issued to replace a sludge transfer line between the digesters and sludge holding tank. As of December 31, 2020, the new piping was in service and the contract was substantially performed. A certificate of substantial performance was issued on February 3, 2020 in regard to the new sludge transfer pipe (see copy in Appendix A)

A copy of the Notification is also contained in Appendix “A”.

Reporting Section 11(4) (m): Summary of Efforts Re: Procedure F-5-1

The objective of Guideline F-5 appears to be in promoting secondary treatment of sewage as a minimum level of treatment. This involves meeting certain effluent criteria stipulated in the Procedure, preventing upsets and breakdowns and avoiding overflows and bypasses. The WwTF also far exceeded the secondary effluent criteria in Procedure F-5-1. Although the WwTF was designed to meet secondary treatment standards it easily meets and consistently exceeds the Advanced Treatment standards set by Procedure F-5-1 (BOD=10 mg/L, TSS = 5 mg/L and TP=0.3 mg/L) as demonstrated in Table 4.

This section summarizes various strategies the City of Barrie currently uses to avoid overflows, bypasses, upsets and breakdowns:

- Routine bi-weekly cleaning of all sand filters using sodium hypochlorite.
- Routine weekly cleaning of WwTF raw wet well and pump station wet wells
- Check of all pump stations typically at least 2 times per week for pump run hours, alarms, float conditions etc.
- Routine daily inspections of all WwTF critical equipment.
- Routine quarterly cleaning of pump station wet wells and float alarms
- Balancing flows and sludge levels between tanks on a daily basis
- Using good engineering practice to design and operate the WwTF and pump stations
- Using the wet well and sewer system to equalize flows and prevent bypasses and overflows
- Using ultrasonic level detectors in tanks to automatically control pump rates
- 24/7 automated tank level monitoring with redundant level detection systems
- Using SCADA systems and controls on all critical wastewater infrastructure
- Expansion of SCADA access stations throughout the WwTF and at some Sewage Pumping Stations to allow Operations staff to respond to alarms and potential issues more efficiently.
- Maintaining redundant backup generators at WwTF in case of power failure
- Maintaining backup generators in larger pump stations.
- Weekly testing of WwTF standby generators, transfer switches and switchgear

- Annual cleaning and inspection of high voltage equipment, transformers etc.
- Using a remote dialing system connected to SCADA to alarm a standby operator on call 24/7
- Using electronic security measures at pump stations and entry doors at WwTF
- Permanent staffing of an in-house Optimization Section one senior optimization engineer and one analyst
- Maintaining a computerized work management system which tracks and prioritizes maintenance and repairs
- Maintaining and enforcing a sewer use by-law
- Providing ample funding for repairs and upgrades
- Twinning all force mains at pump stations for redundancy
- Maintaining a nominally separated sewer system
- Undertaking infiltration and inflow studies
- Maintaining sufficient staffing and training
- Sampling at multiple process locations in the WwTF to have a good understanding of plant process and pinpoint potential problems
- Maintaining an in-house laboratory and two lab technicians for redundancy and responsiveness
- Ongoing study to evaluate new wastewater equalization facilities
- Supplying all operators with cell phones to facilitate communications
- Conducting routine condition assessments of infrastructure
- Minimizing solids carryover in secondary effluent to keep filters clean
- Maximizing nitrification in aeration basins to minimize RBC solids going to sand filters

For more innovations that the City of Barrie is undertaking to ensure the highest quality of effluent please refer to Reporting Section 11(4) (h).

It is difficult to attach a discrete cost to each bullet above due to overlap, the generality of some costs and the frequency that the costs are incurred. Most items fall within the annual operating budget of the WwTF which remains at approximately $16 million per year. Some items fall within capital works projects while others comprise engineering or planning projects.

Reporting Section 11(4) (n): Changes or Updates to Schedules for Proposed Works

On February 6, 2020 MECP was notified that the proposed works had been commissioned (see copy of communication in Appendix A).

A certificate of substantial performance was issued on February 3, 2020 in regard to the new sludge transfer pipe (see copy of communication in Appendix A).

Appendix “A”: Environmental Compliance Approvals and Correspondence

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 0284-B2ML52
Issue Date: August 24, 2018

The Corporation of the City of Barrie
70 Collier St
Post Office Box, No. 400
Barrie, Ontario
L4M 4T5

Site Location: City of Barrie Wastewater Treatment Facility
249 Bradford St Reference Plan 51R-11568
City of Barrie, County of Simcoe

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Lake Simcoe via a Sewage Treatment Plant (City of Barrie Wastewater Treatment Facility) and Final Effluent disposal facilities as follows:

Classification of Collection System: Nominally Separate Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Construction of All Proposed Works	Upon Completion of Construction of All Proposed Works
Rated Capacity	76,000 m^3/d	76,000 m^3/d

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage/Septage/Holding Tank Waste/Portable Toilet Waste/Leachate/Pretreated Leachate/Pretreated Industrial Wastewater
At Sewage Treatment Plant	Septage/Holding Tank Waste/Portable Toilet Waste/Leachate

Proposed Works:

Secondary Treatment Systems

- Biological Treatment
  - relocate existing three (3) mixers within the selector tank at different location within the tank.
  - installation of three (3) new mixers within the selector to increase the number of mixers to six (6) in within the selector.

Sludge Management System

- Sludge Digestion
  - Primary Digesters
    - combine the two existing 100 kW circuits of the 200 kW existing heat exchanger to serve primary digester No.3 into one.
    - installation of two (2) new heat exchangers to serve primary digester No.3, each having a capacity of approximately 300 kW.

Existing Works:

Sanitary Sewage Pumping Stations

Raw Sewage Pumping Station

- three (3) inlet overflow channels into the wet well with manually raked bar screens.
- five (5) raw sewage pumps and one (1) standby pump rated at a nominal capacity of 34,560 m^3/d with a discharge flow measurement device.

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Secondary Pumping Station

- six (6) pumps, each rated at a nominal capacity of approximately 35,000 m³/d.

City of Barrie Wastewater Treatment Facility

Influent Sewers

- two (2) 1050 mm diameter inlet sewers to the Preliminary Treatment System;

Imported Sewage Receiving Facilities

- one (1) 300 m³ capacity (active volume) equalization/pretreatment hauled sewage holding compartment equipped with coarse bubble diffused aeration system, two (2) 7.5 kW positive displacement air blowers and two (2) submersible pumps, each rated at approximately 7 L/s against 4.2 m TDH discharging to the WTF influent sewer.

- one (1) in-line grinder capable of handling hauled sewage flowrate of approximately 28 L/s.

Biosolids Supernatant Compartment and Bioaugmentation Compartment

- one (1) approximately 500 m³ capacity (active volume) biosolids supernatant holding compartment equipped with one (1) rail mounted submersible propeller type mixer and three (3) submersible pumps, each rated at approximately 3 L/s against 5.0 TDH discharging to the WTF influent sewer.

- one (1) 132 m³ capacity (active volume) bioaugmentation holding compartment equipped with two (2) submersible pumps, each rated at approximately 76 L/s against 11 m TDH discharging to the WTF primary clarifier effluent. Also included are piping for enhanced nitrification.

Preliminary Treatment System

- Screening
  - 2 multi-rake bar screens (12.7 mm stainless steel mechanically cleaned bar screens), each coupled with a screenings washer compactor to reduce the quantity of organics captured in the screened material, designed to handle up to a peak instantaneous flow of 250,100 m³/d combined.

- Grit Removal
  - four (4) covered aerated grit tanks, each capable of handling approximately 130 m³ nominal liquid capacity.
  - four (4) horizontal screw conveyors to transport settled grit collected in aerated grit tanks for grit tanks (Nos. 1, 2, 3 and 4) conveyors, each having a rated capacity of approximately 0.5 m³/hr at

10% loading.

- four (4) horizontal, centrifugal screw impeller grit pumps, each having a normal operating rated capacity of approximately 13 L/s at 7.0 m Total Dynamic Head (TDH).
- three (3) grit blowers (2 duty, one standby), each rated at approximately 430 m³/hr.
- two (2) grit classifiers, each with two (2) hydrocyclones designed for a grit quantity of 10 to 100 mL grit/m³ wastewater and feed flow rate to each cyclone of approximately 13 L/s at 8.5m TDH.

Influent Flow Measurement and Sampling Point

- flow measurement devices to measure flow from the discharge of each raw sewage pump, then add the measured flows to get the total influent flow.
- automatic composite sampler at the Headworks Building;

Primary Treatment System

- three (3) covered primary clarifiers: Primary Clarifier 1 and 2 each measuring approximately 45.7 m x 16.5 m x 3.65 m in Side Water Depth (SWD), Primary Clarifier 3 measures approximately 46.1 m x 16.5 m x 3.65 m in SWD. Each is equipped with three (3) longitudinal collectors and one (1) cross collector, non-metallic chain and flight style sludge collectors.
- five (5) primary raw sludge pumps to the aerobic reactor / sludge blending tank and/or digester, each having a normal operating rated capacity of approximately 13 L/s at 12 m TDH.
- one (1) primary scum pump rated at approximately 13 L/s.
- nine (9) scum skimmers and nine (9) scum collection troughs.

Secondary Treatment Systems

- Biological Treatment
  - one (1) selector tank with nominal operating capacity of approximately 2,000 m³.
  - primary effluent flow splitter box.
  - the selector or the splitter or both may be used at any given time.
  - three (3) mixers for selector tank (approx. 3 kW per mixer) - **(to be replaced as per Proposed**

Works)

- five (5) high purity oxygen covered Reactors (UNOX): Reactors 1 and 2 each having a normal operating capacity of approximately 2,400 m³, Reactor 3 having a capacity of approximately 2,400 m³ and reactors 4 and 5 each having a normal operating capacity of approximately 2,400 m³.
- one (1) 30 kW and two (2) 20 kW mixers per each UNOX Reactors 1 to 5 inclusive.
- one (1) centrifugal blower to purge off gases from the aerobic reactors to the UNOX reactors, and having a rated capacity of 31 L/s at a discharge pressure of 695 mm water column with a direct drive of approximately 5.6 kW.
- one (1) centrifugal purge air blower for UNOX reactor no. 4 and 5, with a rated capacity of approximately 900 L/s at a discharge pressure of 4.5 kPa with a direct drive of approximately 12 kW.
- two (2) Thermax SG1700 HF ambient vaporizers with a combined capacity of 21.6 metric tonnes of liquid oxygen per day at a minimum ambient temperature of -30 °C. Liquid oxygen will be stored in a 48.5 m³ liquid oxygen storage tank.
- one (1) 75 kW electric oxygen vaporizer plus trim heater.

- Secondary Sedimentation
  - two (2) Return Activated Sludge (RAS) Chambers.
  - six (6) covered Secondary Clarifiers (2 cells each): Secondary Clarifiers 1, 2 and 3 each measuring approximately 63.6 m x 12.2 m x 3.3 in SWD and Secondary Clarifiers 4, 5, and 6 each measuring approximately 64.6 m x 12.2 m x 3.3 in SWD, each equipped with four (4) longitudinal collectors; one (1) cross collector; and two (2) scum skimmers, non-metallic chain and flight style sludge collectors.
  - six (6) Return Activated Sludge pumps, (three (3) for each RAS Chamber), each pump with a rated capacity of approximately 22,000 m³/d at 7.9 m TDH.
  - one (1) Secondary Scum Pump with a rated capacity of approximately 13 L/s (1,090 m³/d) at 15 m TDH.
  - twelve (12) geotextile inlet membrane baffles; two (2) in each of the six (6) secondary clarifiers.

Post-Secondary Treatment System

- Rotating biological contactors
  - thirty-six (36) rotating biological contactors (RBCs) for tertiary nitrification. Each RBC has a

contacting surface area of approximately 15,500m² for a total of approximately 558,000m². The RBC system has been designed to treat secondary effluent at an ammonia loading rate of 1.5 to 2 g/m²/day, and therefore has an approximate ammonia treatment capacity of 1,116 kg/day.

- Filtration
  - six (6) shallow bed, single media tertiary filters; each having dimensions of approximately 34.4 m long x 4.8 m wide; with six (6) filters having a combined peak design flow capacity of 156,000 m³/d (all in service).
  - filters 1 & 2 have an automatic backwash system consisting of a travelling bridge equipped with one (1) submersible pump for backwash rated at approximately 13 L/s and one (1) washwater pump rated at approximately 13 L/s.
  - filters 3 & 4 have an automatic backwash system consisting of a travelling bridge equipped with one (1) submersible pump for backwash rated at approximately 17 L/s and one (1) washwater pump rated at approximately 17 L/s.
  - filters 5 & 6 have an automatic backwash system consisting of a travelling bridge equipped with one (1) washwater pump rated at approximately 14 L/s.
  - air scour system: Tertiary filters 5 and 6 are equipped with an air scour system with a shared positive displacement blower having a rated capacity of approximately 78 m³/min for cleaning the filter media as part of routine maintenance.

Supplementary Treatment Systems

- Phosphorus Removal
  - two (2) below grade storage tanks PVC lined, for storage of Alum, each with approximately 38,000 L capacity located in the Chemical Building.
  - two (2) double-head positive displacement metering pumps installed in the existing chemical building to dose alum at the inlet works, the aeration tank influent channel and the mixed liquor channel; each metering pump having a rated capacity of approximately 680 L/hr for total capacity of 1360 L/hr.
  - two (2) peristaltic hose pumps rated at 371 L/hr each for total capacity of 742 L/hr.
  - one (1) positive displacement transfer pump with a rated capacity of approximately 640 L/hr installed in the existing chemical building for alum transfer to day tank storage of alum for use in the flash mixing tanks.
  - one (1) day tank for storage of alum, with approximately 3,200 L capacity, located in existing

concrete chemical storage tank between Ultra Violet (UV) disinfection channels.

- four (4) positive displacement metering pumps installed in the existing high pressure effluent pump room for alum feed for phosphorus removal, each metering pump having a rated capacity of approximately 53 L/hr, to dose alum from the day tank to the flash mixing tanks.
- three (3) flash mixing tanks having dimensions of approximately 8.5 m long x 4.0 m wide x 4.5 m SWD, to provide flash mixing of alum in the RBC effluent for phosphorus removal, equipped with approximately 12kW motor driven, propeller type mixers, respectively.
- six (6) flocculation tanks, two (2) downstream of each flash mixing tank for phosphorus removal at an average daily flow of 76,000 m³/day, each tank having dimensions of approximately 8.5 m x 8.5 m x 4.5 m SWD, equipped with a 2.2 kW and 1.1 kW motor driven, propeller type mixers, respectively.

Disinfection System

- Effluent Disinfection – UV Disinfection
  - two (2) approximately 14 m long x 2.5 m wide x 2 m SWD parallel, ultraviolet disinfection open channels, each ultraviolet disinfection channel equipped with a system control centre and a power distribution centre.
  - 18 modules per flow channel, (6 rows with 3 columns), total of 36 modules combined for the two channels, installed vertically with associated appurtenances with a total capacity of approximately 195,000m³/day.
  - two (2) positive displacement blowers installed to supply air for scouring during UV lamp cleaning, each blower having a rated capacity of approximately 120 L/s at a discharge pressure of approximately 48 kPa with an electric drive of approximately 11 kW.
  - one (1) approximately 2 m long x 1m wide x 2 m deep UV cleaning tank installed for UV lamp cleaning (acid) solution complete with scouring blower.
- Sodium Hypochlorite Disinfection
  - sodium hypochlorite storage and feed system consisting of two (2) storage tanks of approximately 6,000 L (combined);
  - two (2) peristaltic hose pumps rated at 550 L/hr each.
  - piping for addition of sodium hypochlorite to the tertiary filters for filter cleaning.

Final Effluent Flow Measurement and Sampling Point

- automatic composite sampler at outlet of the UV disinfection system;

Sludge Management System

- Sludge Thickening
  - three (3) positive displacement waste activated sludge pumps, each pump rated at approximately 25.0 L/s at 21 m TDH with approximately 19 kW variable frequency drive.
  - one (1) polymer feed system having a rated capacity of approximately 30 L/hr, adjusted per demand, consisting of a volumetric feeder, a polymer hopper wetting assembly, three (3) positive displacement rated capacity of approximately 20 kg/hr, post dilution feed pumps with polymer solution to be dosed after the waste activated sludge pumps.
  - three (3) approximately 1.3 m diameter x 4.8 m long rotary drum thickeners.
  - two (2) positive displacement thickened activated sludge pumps, each pump rated at approximately 13 L/s at 42 m TDH with approximately 22 kW variable frequency drive.
- Sludge Pre-Treatment
  - two (2) cells within one tank to be used in either anaerobic sludge blending process mode or aerobic dual-digestion process mode, with an approximate volume of 620 m^3 each.
  - one (1) external propeller type draft tube mixer per cell to provide sludge mixing, each mixer having a rated capacity of approximately 19 m^3/min and 11 kW.
  - capability for addition of atmospheric air or high purity oxygen to holding cells of approximately 4 m^3/min (150 scfm).
  - two (2) centrifugal pumps to provide sludge transfer to the primary anaerobic sludge digesters, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW.
  - one (1) centrifugal blower to purge off gases from the cells to the UNOX reactors, and having an approximate capacity of 31 L/s at a discharge pressure of 0.7 m. water column with a direct drive of approximately 6kW.
- Sludge Digestion
  - Primary Digesters

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- two (2) primary anaerobic digesters (No. 1 and No. 2) with a volume of approximately 1,580 m^3 each.
- four (4) internal draft tube mixers on Primary Digesters No. 1 and No. 2 (two per tank) to provide sludge mixing, each mixer having an approximate capacity of 27 m^3/min with a reversible, variable frequency drive of approximately 8 kW.
- digesters No. 1 and No. 2 sludge heating system consists of two (2) sludge recirculation heaters rated at approximately 300 kW each, which are installed in the control room of these digesters; and hot water jacket type heaters affixed to the mechanical mixers of approximately 60 kW for each mixer.
- two (2) sludge re-circulating pumps, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW, also having in-line grinders with by-pass for maintenance.
- two (2) transfer/recirculation pumps, transferring to the secondary digester or Primary Digester No. 3, each pump having an approximate capacity of 22 L/s at a TDH of approximately 14 m with a variable frequency drive of approximately 8 kW.
- one (1) primary anaerobic digester (No. 3) with volume of approximately 3,800 m^3 which may be used as secondary digester.
- primary Digester No.3 sludge heating system consisting of two (2) sludge recirculation heaters rated at approximately 100 kW **(each to be upgraded as per Proposed Works)**
- primary digester No.3 sludge heating system consisting of two (2) sludge recirculation heaters rated at approximately 100 kW each. Primary Digester No.3 may be used as a secondary digester as required.
- total combined primary digester volume of approximately 7,000 m^3 with minimum HRT of approximately 15 days at 76 MLD. Primary Digesters 1, 2 and 3 may be operated in series or parallel.

- Secondary Digesters
  - one (1) secondary digester, at approximately 3,800 m^3 capacity, which may be used temporarily as a primary digester".
  - two (2) transfer pumps, each pump having a rated capacity of approximately 1700 L/hr and a TDH of 24 m, transferring to the on-site Biosolids Holding Tank #1; or Sludge Loading Station No. 2 adjacent to the chemical storage building.

- Biosolids Storage and Disposal

- one (1) on-site sludge storage tank of approximately 772 m^3 capacity (Biosolids Holding Tank #1)
- two (2) transfer pumps for loading sludge haulage trucks each pump having a rated capacity of approximately 16 L/s at 8.4 m TDH.
- one (1) propeller mixing pump equipped with an approximate 15 kW motor driven.

Final Effluent Disposal Facilities

- Approximately 316 m of 1200 mm diameter sewer outfall with seventeen (17) open diffuser ports discharging to Kempenfelt Bay of Lake Simcoe.

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year, calculated and reported as per the methodology specified in Schedule F;
2. "Annual Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar year divided by the number of days during which Final Effluent was discharged that year;
3. "Annual Total Effluent Loading" means the value obtained by multiplying the Annual Average Effluent Concentration of a contaminant by the cumulative total Final Effluent discharged during the same calendar year;
4. "Annual Average Daily Influent Flow" means the cumulative total sewage flow of Influent to the Sewage Treatment Plant during a calendar year divided by the number of days during which sewage was flowing to the Sewage Treatment Plant that year;
5. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;
6. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

7. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;

8. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

9. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

10. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

11. "*E. coli* " refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

12. "EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

13. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

14. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

15. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;

16. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

17. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;

18. "Influent" means flows to the Sewage Treatment Plant from the collection system and Imported Sewage;

19. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

20. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and

includes all officials, employees or other persons acting on its behalf;

21. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F;

22. "Monthly Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar month divided by the number of days during which Final Effluent was discharged that month;

23. "Monthly Average Daily Effluent Loading" means the value obtained by multiplying the Monthly Average Effluent Concentration of a contaminant by the Monthly Average Daily Effluent Flow over the same calendar month;

24. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E.coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in Schedule F;

25. "Nominally Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers and Nominally Separate Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

26. "Nominally Separate Sewers" means Sanitary Sewers that also have connections from roof leaders and foundation drains, and are not considered to be Combined Sewers;

27. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;

28. "Operating Agency" means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;

29. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;

30. "Owner" means The Corporation of the City of Barrie and its successors and assignees;

31. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

32. "Peak Daily Flow Rate" (also referred to as maximum daily flow or maximum day flow) means the largest volume of flow to be received during a one-day period for which the sewage treatment process unit or equipment is designed to handle;

33. "Peak Instantaneous Flow Rate" means the instantaneous maximum flow rate as measured by a metering device for which the sewage treatment process unit or equipment is designed to handle;

34. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal;

35. "Primary Treatment System" means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;

36. "Processed Organic Waste" means organic waste within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended, that is hauled to the Sewage Treatment Plant of the types and quantities approved for co-processing in the sludge management system;

37. "Proposed Works" means those portions of the Works included in the Approval that are under construction or to be constructed;

38. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;

39. "Secondary Treatment System" means all facilities in the Sewage Treatment Plant associated with biological treatment, secondary sedimentation and phosphorus removal unit processes;

40. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

41. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;

42. "Source Protection Plan" means a drinking water source protection plan prepared under the Clean Water Act, 2006;

43. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

44. "Works" means the approved sewage works, and includes Proposed Works, Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

3. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

2. CHANGE OF OWNER AND OPERATING AGENCY

1. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:

   a. the form has not been previously submitted for the Works;

   b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;

   c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

2. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of address of Owner;

   b. change of Owner, including address of new owner;

   c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* , as amended, shall be included in the notification;

   d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a

copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , as amended, shall be included in the notification.

3. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of address of Operating Agency;

   b. change of Operating Agency, including address of new Operating Agency.

4. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.

5. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

3. CONSTRUCTION OF PROPOSED WORKS / RECORD DRAWINGS

1. All Proposed Works in this Approval shall be constructed and installed and must commence operation within five (5) years of issuance of this Approval, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Proposed Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the delay and whether there is any design change(s).

2. Within thirty (30) days of commencement of construction, the Owner shall prepare and submit to the District Manager a schedule for the completion of construction and commissioning operation of the Proposed Works. The Owner shall notify the District Manager within thirty (30) days of the commissioning operation of any Proposed Works. Upon completion of construction of the Proposed Works, the Owner shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Proposed Works is constructed in accordance with this Approval.

3. Within one (1) year of completion of construction of the Proposed Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

4. BYPASSES

1. Any Bypass is prohibited, except:

   a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a

portion of the flow is not bypassed;

b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

3. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;

   b. the date and time of the beginning of the Bypass;

   c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

   d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

4. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the date and time of the end of the Bypass;

   b. the estimated or measured volume of Bypass.

5. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia, following the same protocol specified in the Monitoring and Recording condition as for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition, except when the Event occurs on a scheduled monitoring day.

6. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event

during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

5. OVERFLOWS

1. Any Overflow is prohibited, except:

   a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;

   b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.

3. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;

   b. the date and time of the beginning of the Overflow;

   c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;

   d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

4. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the date and time of the end of the Overflow;

b. the estimated or measured volume of the Overflow.

5. For any Overflow Event

a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, nitrate as N, nitrite as N, total Kjeldahl nitrogen, *E. coli.* , except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.

6. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

8. The Owner shall develop a response plan for any unplanned Overflows, consisting of measures to mitigate and prevent the contamination of drinking water.

6. DESIGN OBJECTIVES

1. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.

b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

7. COMPLIANCE LIMITS

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.

2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is

disinfected continuously year-round / during the disinfection period between January 01 and December 31 inclusive.

8. OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall update and maintain the operations manual for the Works within six (6) months of completion of construction of the Proposed Works, that includes, but not necessarily limited to, the following information:

   a. operating procedures for the Works under Normal Operating Conditions;

   b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

   c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;

   d. procedures for the inspection and calibration of monitoring equipment;

   e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;

   f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;

   g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfils the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

9. MONITORING AND RECORDING

1. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

   a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.

   b. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

   c. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.

   d. definitions for frequency:

      i. Daily means once every day;

      ii. Weekly means once every week;

      iii. Thrice per week means three times per week.

      iv. Monthly means once every month;

      v. Quarterly means once every three months;

      vi. Annually means once every year;

2. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia.

3. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

   a. the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

d. the Environment Canada publications "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" (EPS 1/RM/13 Second Edition - December 2000) and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* " (EPS 1/RM/14 Second Edition - December 2000), as amended, subject to the following:

   i. the use of pH stabilization in the determination of acute lethality of Final Effluent to Rainbow Trout in accordance with the Environment Canada publication "Procedure for pH Stabilization during the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout (EPS 1/RM/50)" (2008), as amended, is permitted only if:

      a. all the three criteria stipulated in the Environment Canada EPS 1/RM/50 are met; and

      b. the Final Effluent is not discharged to a receiver in which the Final Effluent contributes more than 50% of the total flow in the receiving water, unless the District Manager, having reviewed additional information submitted regarding the Final Effluent and the receiving water approves on the use of RM50 on a site-specific basis.

4. If the Owner monitors Bisulphite Residual as a surrogate to Total Residual Chlorine, then detected levels of Bisulphite Residual in the sample shall be deemed to confirm absence of Total Residual Chlorine.

5. The minimum monitoring frequency with respect to acute lethality to Rainbow Trout and Daphnia magna shall, after eight (8) consecutive quarters of monitoring results not indicating acute lethality, be reduced to annually. If any Final Effluent sample indicates acute lethality to Rainbow Trout or Daphnia magna, the monitoring frequency shall revert back to quarterly and the Owner shall carry out the following immediately:

   a. Review the following:

      i. Final Effluent quality and confirm that concentrations of ammonia are within the limits;

      ii. plant operations around the time of the toxicity event; and

      iii. all data available regarding plant operations and Final Effluent quality.

   b. If the observed effluent toxicity is not associated with ammonia, an investigation shall be undertaken to determine the cause or source of the toxicity.

   c. Upon determination of cause or source of acute lethality to Rainbow Trout and Daphnia magna, the Owner shall determine appropriate control measures to achieve non-acutely lethal effluent and time lines for the implementation of identified control measures. The Owner shall submit the proposed

control measures and implementation time lines for approval to the District Manager.

6. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

   a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. top water elevation of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

   b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. level of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

   c. each type of Imported Sewage received for co-treatment at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul truck manifests;

7. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

10. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule E), as amended, subject to the following:

   a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.

   b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;

   c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;

   d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting

information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational Flexibility:

   a. Modifications that involve addition or extension of process structures, tankages or channels;

   b. Modifications that involves relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;

   c. Modifications that involves addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;

   d. Modifications that requires changes to be made to the emergency response, spill prevention and contingency plan; or

   e. Modifications that are required pursuant to an order issued by the Ministry.

11. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff, Source Protection Authority and any other parties identified in the Source Protection Plans.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

   a. a summary and interpretation of all Influent and Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;

   b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

c. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;

d. a summary of all operating issues encountered and corrective actions taken;

e. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;

f. a summary of any effluent quality assurance or control measures undertaken;

g. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;

h. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:

   i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;

   ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

i. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

j. a summary of any complaints received and any steps taken to address the complaints;

k. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

l. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.

m. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.

n. any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Proposed Works.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.

2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

3. Condition 3 regarding construction of Proposed Works/record drawings is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction to ensure the ongoing protection of the environment, and that prior to the commencement of construction of the portion of the Works that are approved in principle only, the Director will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the Works, to determine capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Approval, and also ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.

4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.

6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in

identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Environmental Compliance Approval submitted by Robert Sutton, Director of Engineering of The City of Barrie received on September 11, 2017, including design report, final plans and specifications.

Schedule B

Final Effluent Design Objectives

Concentration Objectives

Final Effluent Parameter	**Averaging Calculator**	**Objective** (milligrams per litre unless otherwise indicated)
CBOD5	Single Sample Result	10.0 mg/L
Total Suspended Solids	Single Sample Result	10.0 mg/L
Total Phosphorus	Single Sample Result	0.12 mg/L
Total Ammonia Nitrogen	Single Sample Result	3.0 mg/L (June 01 - October 31) 8.0 mg/L (November 01 - May 31)
E. coli	Monthly Geometric Mean Density	*100 CFU per 100 mL (January 01 to December 31)
pH	Single Sample Result	6.5 - 8.5 inclusive

* If the MPN method is utilized for *E. coli* analysis the objective shall be 100 MPN/100 mL

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Schedule C

Final Effluent Compliance Limits

Concentration Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.18 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	4.0 mg/L (June 01 - October 31) 10.0 mg/L (November 01 - May 31)
E. coli	Monthly Geometric Mean Density	*200 CFU per 100 mL (January 01 to December 31)
pH	Single Sample Result	between 6.0 - 9.5 inclusive

* If the MPN method is utilized for *E. coli* analysis the limit shall be 200 MPN/100 mL

Loading Limits

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	1,140 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	1,140 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	13.7 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	304 kg/d (June 01 - October 31) 760 kg/d (November 01 - May 31)

Lake Simcoe Phosphorus Reduction Strategy (LSRPS) Compliance Limits

Final Effluent Parameter	Annual Average Concentration (maximum unless otherwise indicated)	Annual Total Loading (maximum unless otherwise indicated)
Total Phosphorus Baseline Concentration	0.1 mg/L	-
Total Phosphorus Baseline Load	-	2,774 kg/year

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Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Dissolved Reactive Phosphorus	24 hour composite	Weekly

Imported Sewage - Imported Sewage Receiving Station

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

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Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Thrice per week
Dissolved Reactive Phosphorus	24 hour composite	Thrice per week
Total Ammonia Nitrogen	24 hour composite	Thrice per week
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Nitrate as Nitrogen	24 hour composite	Weekly
E. coli	Grab	Weekly (January 01 to December 31)
pH*	Grab/Probe/Analyzer	Thrice per week
Temperature*	Grab/Probe/Analyzer	Thrice per week
Un-ionized Ammonia**	As Calculated	Thrice per week

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

**The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Leachate Related - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
Boron	Grab	Quarterly
Cobalt	Grab	Quarterly
Magnesium	Grab	Quarterly
Manganese	Grab	Quarterly
Potassium	Grab	Quarterly
Strontium	Grab	Quarterly
Bis (2-ethylhexyl) Phthalate	Grab	Quarterly

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Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. General

    1. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

    2. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

    3. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

    4. The Owner shall ensure that any pre-authorized modifications will not:

        a. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

        b. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

        c. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

2. Modifications that do not require pre-authorization:

    1. Sewage works that are exempt from Ministry approval requirements;

    2. Modifications to the electrical system, instrumentation and control system.

3. Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"

    1. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

        a. Repairing a piece of equipment and putting it back into operation, including replacement of minor

components such as belts, gear boxes, seals, bearings;

b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;

c. Replacing the entire piece of equipment with Equivalent Equipment.

2. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

a. Adding variable frequency drive to pumps;

b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

4. Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"

1. Pumping Stations

a. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.

b. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;

c. Replacement or installation of inlet screens to the wetwell;

d. Replacement or installation of flowmeters, construction of station bypass;

e. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

f. Replacement, realignment of existing forcemain(s) valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

2. Sewage Treatment Plant

1. Sewers and appurtenances

a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

2. Flow Distribution Chambers/Splitters

a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

3. Imported Sewage Receiving Facility

1. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;

2. Replacement, relocation or installation of screens, grit removal units and compactors;

3. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;

4. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;

5. Replacement, relocation or installation of flow measurement and sampling equipment;

6. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

4. Preliminary Treatment System

a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.

b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

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5. Primary Treatment System

   a. Replacement of existing sludge removal mechanism, including sludge chamber;

   b. Replacement or installation of scum removal mechanism, including scum chamber;

   c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

6. Secondary Treatment System

   1. Biological Treatment

      a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;

      b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;

      c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);

      d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

   2. Secondary Sedimentation

      a. Replacement of sludge removal mechanism, including sludge chamber;

      b. Replacement or installation of scum removal mechanism, including scum chamber;

      c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

7. Post-Secondary Treatment System

   a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of

the filtration system as originally designed.

8. Disinfection System

   1. UV Irradiation

      a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

   2. Chlorination/Dechlorination and Ozonation Systems

      a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;

      b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

9. Supplementary Treatment Systems

   1. Chemical systems

      a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;

      b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.

      c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;

      d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

10. Sludge Management System

    1. Sludge Holding and Thickening

       a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

2. Sludge Digestion

    a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

    b. replacement of sludge digester covers.

3. Sludge Dewatering and Disposal

    a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

4. Processed Organic Waste

    a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

11. Standby Power System

    1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

12. Pilot Study

    1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:

        i. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;

        ii. no proprietary treatment process or propriety chemical is involved in the pilot study;

        iii. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;

        iv. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;

        v. the pilot study does not exceed a maximum of two years and a notification of completion shall be

submitted to the District Manager within one month of completion of the pilot project.

13. Lagoons

    a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;

    b. raise top elevation of lagoon berms to increase free-board;

    c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;

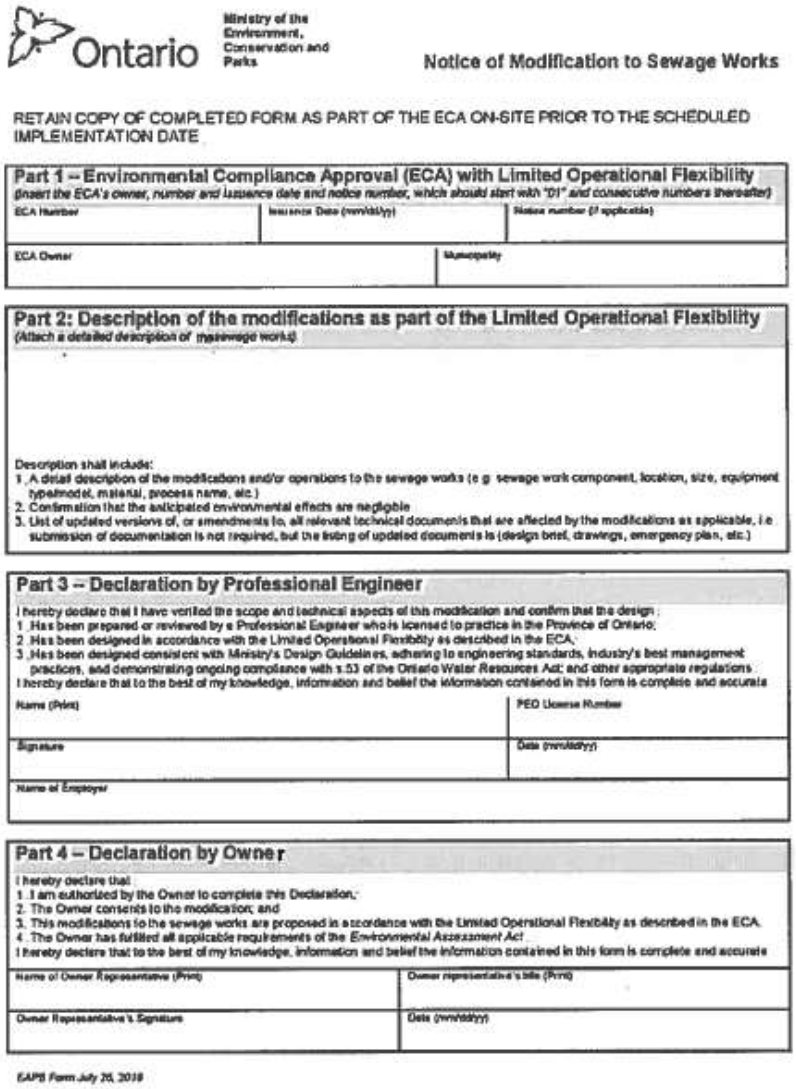
    d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;

    e. removal of accumulated sludge and disposal to an approved location offsite.

3. Final Effluent Disposal Facilities

    1. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.



Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility
(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility
(Attach a detailed description of wastewater works)

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number

Signature	Date (mm/dd/yy)

Name of Employer

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. The modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)

Owner Representative's Signature	Date (mm/dd/yy)

EAPB Form July 26, 2018

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Schedule F

Methodology for Calculating and Reporting Monthly Average Effluent Concentration, Annual Average Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;

c. Obtain the "**Total Monthly NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar month;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month

and record it as **Monthly Average BPD Effluent Concentration**;

e. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Monthly Average NBPD Effluent Concentration × Total Monthly NBPD Flow) + (Monthly Average BPD Effluent Concentration × Total Monthly BPD Flow)] ÷ (Total Monthly NBPD Flow + Total Monthly BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year

separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;

c. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;

e. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Annual Average NBPD Effluent Concentration × Total Annual NBPD Flow) + (AnnualAverage BPD Effluent Concentration × Total Annual BPD Flow)] ÷ (Total Annual NBPD Flow + Total Annual BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of n numbers. In the context of calculating Monthly Geometric Mean Density for *E.coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

"n" is the number of samples collected during the calendar month; and

"x" is the value of each Single Sample Result.

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For example, four weekly grab samples were collected and tested for *E.coli* during the calendar month. The *E.coli* densities in the Final Effluent were found below:

Sample Number	*E.coli* Densities* (CFU /100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for *E. coli* analysis, values in the table shall be in MPN/100 mL.

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Schedule G

Municipal and Local Services Board Wastewater System
Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)

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Ontario

Ministry of the Environment, Conservation and Parks

Municipal and Local Services Board Wastewater System Profile Information Form

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION

Wastewater System Number (if assigned)	☐ New Profile ☐ Update Existing Profile
Name of System	Level of Treatment (select one*) ☐ Primary ☐ Secondary ☐ Tertiary ☐ Secondary Equivalent ☐ Other (specify):
Name of Municipality or Local Services Board	*See Terms and Concepts on page 4
Population Served / Population (Design)	Type of System ☐ Treatment & Collection System ☐ Collection System Only

Design Rated Capacity (m^3/day)	Peak Flow Rate (m^3/day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):

The treatment plant receives sewage from: (Check all that applies.* If you have checked more than one option below, indicate the approximate %)

☐ Sanitary Sewer ☐ Combined Sewer
☐ Nominally Separated Sewer ☐ Partially Separated Sewer *See Terms and Concepts on page 4

[B] OWNER INFORMATION

Legal Name of Municipality or Local Services Board

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town		Postal Code	
☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title	
Tel. No. ( ) - ext.	Fax Number ( ) -	Email address		

[C] OPERATING AUTHORITY ☐ Check if same as owner

Legal Name of Operator

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town		Postal Code	
☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title	
Tel. No. ( ) - ext.	Fax Number ( ) -	Email address		

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[D] 24/7 CONTACT

☐ Dr ☐ Miss ☒ Mr ☐ Mrs ☐ Ms	First Name	Last Name	Job Title
Tel. No. ( ) - ext.	Fax Number ( ) -	Email address	

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St. Rd. etc)	Street Direction (N,S,E,W)
PO Box	City/Town	Postal Code		

If the Wastewater System has no street address

Geographical Township	Lot	Concession

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	Longitude	Zone	Easting	Northing

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
☐ Screening ☐ Shredding/ grinding ☐ Grit Removal ☐ Other(specify):	☐ Settling/sedimentation/ clarification ☐ Scum Removal ☐ Polymer Addition ☐ Other(specify):	☐ Conventional Activated Sludge (CAS) ☐ Extended Aeration ☐ Membrane Bioreactor (MBR) ☐ Sequencing Batch Reactor (SBR) ☐ Rotating Biological Contactor (RBC) ☐ Trickling Filter (TF) ☐ Biological Aerated Filter (BAF) ☐ Other(specify):	☐ Aerated Lagoon ☐ Facultative Lagoon ☐ Anaerobic Lagoon ☐ Aerobic Lagoon ☐ Other(specify):	☐ Filtration ☐ Clarification ☐ Intermittent Sand Filter (after lagoons) ☐ Polishing Wetlands ☐ Polishing Lagoons ☐ Other(specify)	☐ Phosphorous Removal ☐ Biological ☐ Chemical If chemical is used, specify: ☐ Nitrification ☐ Denitrification ☐ Other(specify)

[G] DISINFECTION

Method of Disinfection	Disinfection Period
☐ Chlorination If you chlorinate, do you practice de-chlorination? ☐ Yes ☐ No	☐ Continuous ☐ Seasonal
☐ Ultraviolet Irradiation	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

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[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
☐ Aerobic Digestion	☐ Agricultural
☐ Anaerobic Digestion	☐ Landfill
☐ Drying & Pelletization	☐ Incineration
☐ Lime Treatment	☐ Other (specify):
☐ Composting	
☐ Other (specify):	
Available Sludge Storage Capacity (m^3):	

[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
☐ Surface Water Receiving Water Body Name:	☐ Continuous ☐ Seasonal
☐ Subsurface	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006?
☐ Yes ☐ No

[J] INFLUENT

Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?
☐ Yes ☐ No
(if yes, name(s) of other municipality or local services board):

Plant receives:
☐ Leachate (approximate annual volume in m^3):
☐ Septage (approximate annual volume in m^3):
☐ Industrial Input (approximate annual volume in m^3):
or (approximate volume in %):

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Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits, in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are $CBOD_5$ (carbonaceous biochemical oxygen demand) (BOD_5 – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the objective values of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:
Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD_5 and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:
Wastewater treatment plants producing an effluent quality of $CBOD_5$ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:
Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:
Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:
Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area, whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:
These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 2377-ALXPQL issued on July 7, 2017.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* **Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

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The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of August, 2018

Fariha Pannu.

Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

YK/
c: DWMD Supervisor, MECP Barrie
Igor Sapun, Hatch Corporation

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Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
0284-B2ML52	08/24/18	2019-01#2.

ECA Owner	Municipality
The Corporation of the City of Barrie	The Corporation of the City of Barrie

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

The modifications generally consist of the installation of a new digested sludge transfer pipeline to be located in existing tunnels and underground, from existing Secondary Digester No. 1 to the existing Biosolids Holding Tank. Tie ins to existing sludge transfer piping will be made at these locations following successful installation, testing, and commissioning of the new pipeline. After the new pipeline is placed into service, the existing digested sludge transfer pipeline will be decommissioned and removed from service. Anticipated environmental effects are negligible. Contract limits duration of any sludge pumping interruption to 12 hours. Spill control plan will be implemented and tie-ins will occur within a building, minimizing risk. List of documentation as follows:

1. Sludge Transfer Line Replacement Project, Contract No. FIN2018-135T, Issued for Tender Drawings and Specifications prepared by GHD Limited, dated 11/23/18.
2. Barrie Wastewater Treatment Facility, Sludge Transfer Pip Replacement Project, Pre Design Report prepared by GHD Limited, dated April 2018.

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Daniel Rizzuti	**100160750**
Signature: Digitally signed by Daniel Rizzuti Date: 2019.05.09 17:46:05 -04'00'	Date (mm/dd/yy): **05/09/19**
Name of Employer: **GHD Limited**	

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
BALA ARANIVASUNDARAN, P.ENG, PMP	DIRECTOR OF ENGINEERING
Owner Representative's Signature	Date (mm/dd/yy)
	July 4 / 2019

EAPB Form July 26, 2018

Memorandum

Draft for Review

May 23, 2019

To:	Luc Paquin, Wesley Reid, City of Barrie	Ref. No.:	11155347
	DR WPCL		
From:	Daniel Rizzuti, Bill White, GHD	Tel:	519-884-0510
cc:	File		

Subject: Detailed Description of Sewage Works
Project 2018-135: Barrie Wastewater Treatment Facility Sludge Transfer Line Replacement

Existing 150 mm cement lined ductile iron (CLDI) sludge transfer pipe from Digester Control Building No. 2 to the Sludge Holding Tank is approaching the end of its service life. Additionally, the existing routing is longer than necessary and can be shortened. Project scope includes:

1. Install approximately 85 metres of new 150 mm nominal diameter, Schedule 40S, 316 stainless sludge transfer pipe via existing Service Tunnel Nos. 7, 8, and 11, through the Basement Pump Room in Digester Control Building No. 1, and into the southernmost concrete window well outside the western face of the building
2. Install approximately 45 metres of new buried 150 mm nominal diameter, DR11 HDPE sludge transfer pipe from the southernmost concrete window well outside the western face of Digester Control Building No. 1 the basement adjacent to the existing Sludge Holding Tank, and connect to existing 150 mm nominal diameter CLDI sludge transfer piping
3. Install and connect new 150 mm magnetic flowmeter, complete with bypass pipe section
4. Pressure test pipe
5. Commission flow meter
6. Switch over from existing 150 mm CLDI pipe to new, 150 mm stainless steel and HDPE sludge transfer pipe
7. Remove existing 150 mm CLDI piping in tunnels, and cap and abandon buried piping in place
8. Heat trace exposed portion
9. Refer to design report, drawings and specifications for more details

GHD
140 Allstate Parkway Suite 210 Markham Ontario L3R 5Y8 Canada
T 1 905 752 4300 F 1 905 752 4301 W www.ghd.com

cc. Operations

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
AIR
NUMBER 1316-5MKTGU
Issue Date: October 23, 2006

The Corporation of the City of Barrie
PO Box 400 Stn Main
Barrie, Ontario
L4M 4T5

RECEIVED
NOV 07 2006
CLERK'S OFFICE

Site Location: Barrie Water Pollution Control Centre
249 Bradford Street
Barrie City, County of Simcoe

You have applied in accordance with Section 9 of the Environmental Protection Act for approval of:

- one (1) odour control system, designated as OCS-IW, used to treat odourous air originating from the Influent Works Building equipped with 6.37 cubic metres of biofilter media having a continuous water consumption rate of 0.063 litre per second used for the media humidification and an intermittent water consumption rate of 0.25 to 0.38 litre per second utilized for the media irrigation, exhausting to the atmosphere at a maximum volumetric flow rate of 0.21 cubic metre per second and a maximum temperature of 25 degrees Celsius, through a stack, having an exit diameter of 0.15 metre, extending 3.0 metres above grade;

- one (1) standby diesel generator set, designated as SDG, having a nameplate capacity of 1080 kilowatts, operating at a maximum rate of 790 kilowatts to provide standby power to the Water Pollution Control Centre during emergency situations, exhausting to the atmosphere, through a stack, having an exit diameter of 0.3 metre, extending 2.5 metres above roof and 7.5 metres above grade;

- one (1) digester gas and natural gas fired engine No. 1, designated as ENG-1, having a rated heat input of 2.81 million kilojoules per hour, exhausting to the atmosphere at a maximum volumetric flow rate of 0.54 cubic metre per second through a stack, having an exit diameter of 0.25 metre, extending 3.05 metres above the roof and 12.1 metres above grade;

- one (1) digester gas and natural gas fired engine No. 2, designated as ENG-2, having a rated heat input of 2.81 million kilojoules per hour, exhausting to the atmosphere at a maximum volumetric flow rate of 0.54 cubic metre per second through a stack, having an exit diameter of 0.25 metre, extending 3.05 metres above the roof and 12.1 metres above grade;

- two (2) digester gas and natural gas fired boilers, each having a rated heat input of 3.53 and 1.94 million kilojoules per hour respectively, exhausting to the atmosphere at a maximum volumetric flow rate of 1.28 cubic metres per second through a common stack BOL, having an exit diameter of 0.5 metre,

extending 3.05 metres above the roof and 12.1 metres above grade;

- one (1) standby candlestick flare, designated as FLR, used to burn digester gas originating from the anaerobic digestion of sewage, having a maximum heat input of 7.11 million kilojoules per hour, exhausting to the atmosphere through a stack, having an exit diameter of 0.2 metre, extending approximately 6.4 metres above grade;

- one (1) odour control system designated as OCS-SR, used to treat odourous air originating from the septage receiving tank equipped with one (1) activated carbon adsorption unit, containing 91 kilograms of activated carbon, exhausting to the atmosphere at a maximum volumetric flow rate of 0.095 cubic metre per second and a temperature of 20 degrees Celsius, through a stack, having an exit diameter of 0.1 metre, extending 1.7 metres above grade;

- two (2) Aerobic Digester Reactor Mixers, installed with the tops of the mixers approximately 4 metres above grade, to provide sludge mixing in the aerobic sludge digesters. Each mixer is equipped with an 11 kilowatt, 1,760 rpm motor and has a rated capacity of 349.0 litres per second;

- nine (9) Aeration Mixers, installed approximately 2.5 metres above grade, serving three (3) high purity oxygen covered reactors, with each reactor served by one (1) 30 kilowatt Aeration Mixer and two (2) 20 kilowatt Aeration Mixers;

- twenty (20) Rotating Biological Contactors, operating in five stages in series, with four (4) Rotating Biological Contactors in each stage. Each Rotating Biological Contactor has dimensions of 3.61 metres in diameter by 7.98 metres in length, with a contacting surface area of 15,552 square metres and is equipped with a motor, rated at 6.5 amps at 1160 rpm;

- two (2) Aeration Blowers, capable of pumping ambient air into the Septage Receiving Tank at a rate of 0.05 cubic metres per second, operating with one (1) Aeration Blower on duty and one (1) Aeration Blower on standby;

- two (2) silencers, with one (1) silencer installed on the inlet of each of the two Aeration Blowers pumping ambient air into the Septage Receiving Tank, each silencer capable of providing the following minimum values of Insertion-Loss in 1/1 octave frequency bands:

Centre Frequency (Hertz)	63	125	250	500	1000	2000	4000
Insertion-Loss (decibel)	30	33	35	37	35	33	32

- two (2) silencers, with one (1) silencer installed on the discharge of each of the two Aeration Blowers pumping ambient air into the Septage Receiving Tank, each silencer capable of providing the following minimum values of Insertion-Loss in 1/1 octave frequency bands:

Centre Frequency (Hertz)	63	125	250	500	1000	2000	4000
Insertion-Loss (decibel)	35	37	39	40	42	40	38

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all in accordance with an Application for a Certificate of Approval (Air), submitted by The Corporation of the City of Barrie, dated March 6, 2003 and signed by Dawn McAlpine and all supporting information associated with the application, including the information relied upon in issuance of the Certificate of Approval No. 8-3278-93-006 dated August 13, 1993; the Emission Summary and Dispersion Modelling Report prepared by CH2MHILL, dated March 6, 2003 and signed by Kimberly Ireland; the revised Emission Summary and Dispersion Modelling Report (Addendum #1) prepared by CH2MHILL, dated October 28, 2003 and signed by Kimberly Ireland; the acoustical report entitled "Noise Impact Assessment, Barrie Water Pollution Control Centre" prepared by Valcoustics Canada Ltd., dated August 11, 2004 and signed by John Emeljanow; the revised Emission Summary and Dispersion Modelling Report (Addendum #2) prepared by CH2MHILL, dated March 30, 2005 and signed by Kimberly Ireland; a letter with the subject heading "Addendum #3 for Application for Amendment to Certificate of Approval (Air) for the Barrie Water Pollution Control Centre", prepared by CH2MHILL, dated August 4, 2005 and signed by Sinclair Garner and Kimberly Ireland; a letter with the subject heading "Addendum #2 for Application for Amendment to Certificate of Approval (Air) for the Barrie Water Pollution Control Centre", prepared by CH2MHILL, dated August 25, 2005 and signed by Sinclair Garner; an updated report entitled "Addendum #4 for Application for Amendment to Certificate of Approval (Air) for the Barrie Water Pollution Control Centre", prepared by CH2MHILL, dated March 3, 2006 and signed by Sinclair Garner and Kimberly Ireland; a facsimile transmission with the subject heading "Addendum #5 for the Barrie Water Pollution Control Centre", prepared by Kimberly Ireland of CH2MHILL, dated
September 20, 2006; and a facsimile transmission with the subject heading "Comments Regarding Draft CofA for the Barrie Water Pollution Control Centre", prepared by Kimberly Ireland of CH2MHILL, dated September 28, 2006.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

(1) "Acoustical Consultant" means a person currently active in the field of environmental acoustics and noise/vibration control, who is familiar with Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from a Facility;

(2) "Acoustic Audit" means an investigative procedure consisting of measurements and/or acoustic modelling of all sources of noise emissions due to the operation of the Facility, assessed to determine compliance with the performance limits for the Facility regarding noise emissions, completed in accordance with the procedures set in Publication NPC-103 and reported in accordance with Publication NPC-233;

(3) "Acoustic Audit Report" means a report presenting the results of an Acoustic Audit, prepared in accordance with Publication NPC-233;

(4) "Act" means the Environmental Protection Act;

(5) "Certificate" means this Certificate of Approval;

(6) "Company" means The Corporation of the City of Barrie;

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(7) "Director" means any Ministry employee appointed by the Minister pursuant to Section 5 of the Act;

(8) "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;

(9) "Equipment" means the odour control system and the flare described in the Company's application, this Certificate and in the supporting documentation submitted with the application, to the extent approved by this Certificate;

(10) "Facility" means the entire operation located on the property where the Equipment is located;

(11) "Independent Acoustical Consultant" means an Acoustical Consultant not representing the Company, and not involved in the noise impact assessment or the design/implementation of noise control measures for the Facility. The Independent Acoustical Consultant shall not be retained by the consultant involved in the noise/vibration impact assessment or the design/implementation of noise/vibration control measures for the Facility;

(12) "Manual" means a document or a set of documents that provide written instructions to staff of the Company;

(13) "Ministry" means the Ontario Ministry of the Environment;

(14) "Publication NPC-103 means Publication NPC-103 of the Model Municipal Noise Control By-Law, Final Report, August, 1978, as amended;

(15) "Publication NPC-205" means Publication NPC-205, Sound Level Limits for Stationary Sources in Class 1& 2 Areas (Urban), October, 1995; and

(16) "Publication NPC-233" means Publication NPC-233, Information to be Submitted for Approval of Stationary Sources of Sound, October 1995.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. The Company shall carry out testing of the standby generator set at the reduced load capacity and when the winds are from the north.

2. The Company shall restrict periodic testing of the standby generator set to the daytime period between 7:00 AM and 7:00 PM.

3. The Company shall, at all times, ensure that the noise emissions from the Facility comply with the limits determined in accordance with Ministry Publication NPC-205.

OPERATION AND MAINTENANCE

4. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:

   (1) prepare, not later than three (3) months after the date of this Certificate, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

      (a) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;

      (b) emergency procedures;

      (c) procedures for any record keeping activities relating to operation and maintenance of the Equipment; and

      (d) all appropriate measures to minimize noise and odorous emissions from all potential sources;

   (2) implement the recommendations of the Manual.

RECORD RETENTION

5. The Company shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Certificate, and make these records available for review by staff of the Ministry upon request. The Company shall retain:

   (1) all records on the maintenance, repair and inspection of the Equipment;

   (2) all records of the date, time, duration, fuel consumption rate, wind direction and reason, whenever the diesel generator set is operated; and

   (3) all records on the environmental complaints; including:

      (a) a description, time and date of each incident;

      (b) wind direction at the time of the incident; and

      (c) a description of the measures taken to address the cause of the incident and to prevent a similar occurrence in the future.

NOTIFICATION OF COMPLAINTS

6. The Company shall notify the District Manager, in writing, of each environmental complaint within two (2) business days of the complaint. The notification shall include:

   (1) a description of the nature of the complaint; and

   (2) the time and date of the incident;

ACOUSTIC AUDIT

7. The Company shall carry out acoustic audit measurements on the actual noise emissions due to the operation of the Facility. The Company:

   (1) shall carry out acoustic audit measurements in accordance with the procedures in Publication NPC-103;

   (2) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of Publication NPC-233, to the District Manager and the Director not later than three (3) months after the date of this Certificate or commencement of operation of the Facility.

8. The Director:

   (1) may not accept the results of the Acoustic Audit if the requirements of Publication NPC-233 were not followed;

   (2) may require the Company to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No. 1 is included to emphasize that the Equipment must be operated according to a procedure that will result in compliance with the Act, the regulations and this Certificate.

2. Condition No. 2 is included to ensure that the proposed standby operation, excluding emergency situations, is not extended beyond the stated hours. Operation outside these hours, when ambient sound levels are significantly lower, may result in non-compliance with the established sound level limits.

3. Condition No. 3 is included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

4. Condition No. 4 is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, the regulations and this Certificate.

5. Condition No. 5 is included to require the Company to keep records and to provide information to staff of the Ministry so that compliance with the Act, the regulations and this Certificate can be verified.

6. Condition No. 6 is included to require the Company to notify staff of the Ministry so that compliance with the Act, the regulations and this Certificate can be verified.

7. Condition No. 7 is included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the Act, the regulations and this Certificate can be verified.

8. Condition No. 8 is included to ensure that the Acoustic Audit is carried out in accordance with procedures set in the Ministry's Noise Guidelines and verifies compliance with Condition No. 3.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 8-3278-93-006 issued on August 13, 1993

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 9, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

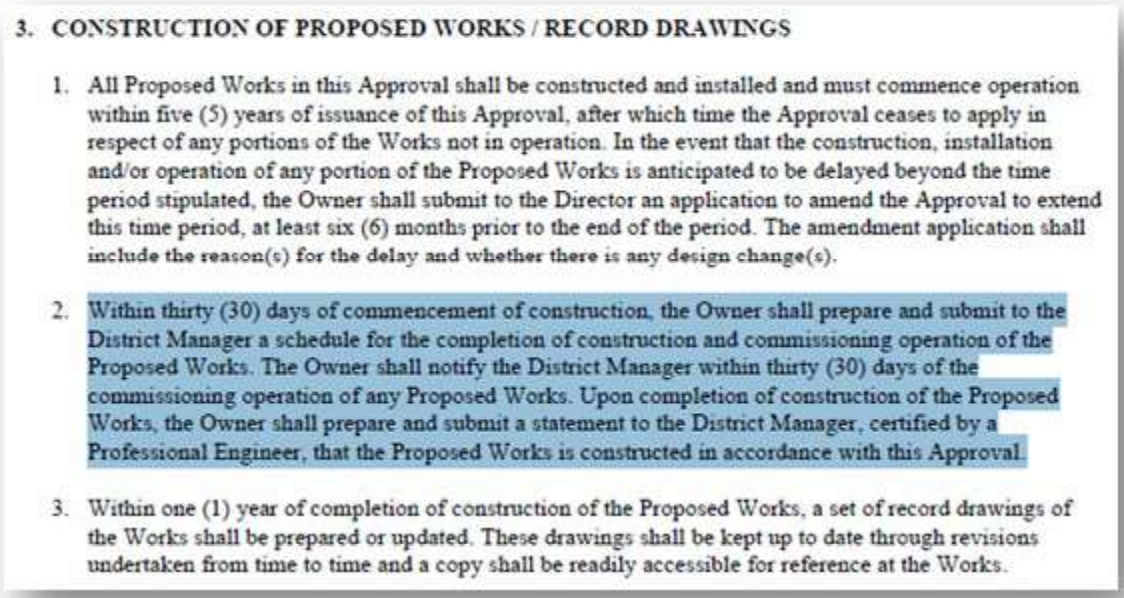
The above noted works are approved under Section 9 of the Environmental Protection Act.

DATED AT TORONTO this 23rd day of October, 2006

Page 7 - NUMBER 1316-5MKTGU

From: Stuhlemmer, Brian (MECP) [mailto:Brian.Stuhlemmer@ontario.ca]
Sent: Friday, February 07, 2020 8:33 AM
To: Luc Paquin <Luc.Paquin@barrie.ca>
Cc: Martin Shaw <Martin.Shaw@barrie.ca>; Hood, Cindy (MECP) <cindy.hood@ontario.ca>; Broeckel, Sheri (MECP) <Sheri.Broeckel@ontario.ca>
Subject: RE: ECA 0284-B2ML52 - proposed works, 2017-042 WwTF Upgrades

Thanking-you for the updates Luc,
Confirming receipt of your notification to the Ministry of completion and commissioning of proposed works for the wastewater treatment system. By way of this email, I am forwarding the municipality's notice to the Ministry's District Manager in concordance with the terms and conditions within Environmental Compliance Approval # 284-B2ML52.



3. CONSTRUCTION OF PROPOSED WORKS / RECORD DRAWINGS

1. All Proposed Works in this Approval shall be constructed and installed and must commence operation within five (5) years of issuance of this Approval, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Proposed Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the delay and whether there is any design change(s).

2. Within thirty (30) days of commencement of construction, the Owner shall prepare and submit to the District Manager a schedule for the completion of construction and commissioning operation of the Proposed Works. The Owner shall notify the District Manager within thirty (30) days of the commissioning operation of any Proposed Works. Upon completion of construction of the Proposed Works, the Owner shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Proposed Works is constructed in accordance with this Approval.

3. Within one (1) year of completion of construction of the Proposed Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

Regards,
Brian H. Stuhlemmer
Ministry of the Environment, Conservation and Parks
Barrie District Office, 54 Cedar Pointe Drive, Unit 1203
Barrie, ON, L4N 5R7 • T (705) 721-3768

Ontario

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24/7 Pollution Hotline | (866) 663-8477 • moe.tips@ontario.ca

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https://www.facebook.com/ONenvironment/
https://twitter.com/ONenvironment

From: Luc Paquin <Luc.Paquin@barrie.ca>
Sent: February 06, 2020 4:03 PM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Cc: Martin Shaw <Martin.Shaw@barrie.ca>; Dan O'Neill <Dan.O'Neill@barrie.ca>; Kiran Suresh <Kiran.Suresh@barrie.ca>; Sherry Diemert <Sherry.Diemert@barrie.ca>; Sandy Coulter <Sandy.Coulter@barrie.ca>
Subject: RE: ECA 0284-B2ML52 - proposed works, 2017-042 WwTF Upgrades

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Brian,

Referencing the MECP ECA 0284-B2ML52, please note that the following Proposed Works at the Barrie Wastewater Treatment Facility have been commissioned and have been placed into service:

Secondary Treatment Systems, Biological Treatment

Existing three (3) mixers within the selector tank have been relocated at different location within the tank.

Three (3) new mixers within the selector have been installed to increase the total number of mixers to six (6) within the selector.

Sludge Management System, Sludge Digestion, Primary Digesters

The two existing 100kW circuits of the 200kW existing heat exchanger within Primary Digester No.3 have been combined into one.

Two (2) new heat exchangers within Primary Digester No.3 have been installed, each having a capacity of approximately 300kW.

Should you have any questions, please feel free to contact us.

Luc Paquin

Senior Project Administration Technologist, Construction/

technologue senior de la gestion de projet, construction

Certified health & safety worker representative/

représentant certifié des travailleurs pour la santé et la sécurité

Infrastructure Department

City of Barrie: City Hall, 70 Collier Street, P.O. Box 400, Barrie ON, L4M 4T5
Office: 705-739-4220 x5226 | Fax: 705-739-4248
www.barrie.ca

From: Stuhlemmer, Brian (MECP) [mailto:Brian.Stuhlemmer@ontario.ca]
Sent: 3-Apr-19 08:45
To: Luc Paquin <Luc.Paquin@barrie.ca>; Martin Shaw <Martin.Shaw@barrie.ca>
Subject: RE: 2017-042 WwTF Upgrades (heat exchanger, selector mixers, water balancing) - Commencement of Construction

Thanking-you for the schedule.

Will distribute at the local Office as appropriate.

Regards,

Brian H. Stuhlemmer

Inspector | inspecteur, Provincial Officer | Agent provincial

Ministry of the Environment, Conservation and Parks

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Barrie District Office, 54 Cedar Pointe Drive, Unit 1203

Barrie, ON, L4N 5R7 • T (705) 739-6384

Ontario

From: Luc Paquin <Luc.Paquin@barrie.ca>
Sent: April 02, 2019 4:07 PM

To: Martin Shaw <Martin.Shaw@barrie.ca>
Cc: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>; Allen Baker <Allen.Baker@barrie.ca>; Dan O'Neill <Dan.O'Neill@barrie.ca>; Greg Jorden <Greg.Jorden@barrie.ca>; Sandy Coulter <Sandy.Coulter@barrie.ca>
Subject: FW: 2017-042 WwTF Upgrades (heat exchanger, selector mixers, water balancing) - Commencement of Construction

Martin,

Appended for your information and as per the Barrie Wastewater Treatment Facility ECA, please find the construction schedule for the plant heat exchanger, water balancing, and selector tank mixers project.

Please note that the commissioning for the mixers portion of the project, although not specifically identified on the schedule will be occurring around the second week of May 2019.

Luc Paquin

Senior Project Administration Technologist, Construction/

technologue senior de la gestion de projet, construction

Certified health & safety worker representative/

représentant certifié des travailleurs pour la santé et la sécurité

Engineering Department

Barrie

City of Barrie: City Hall, 70 Collier Street, P.O. Box 400, Barrie ON, L4M 4T5

Office: 705-739-4220 x5226 | Fax: 705-739-4248
www.barrie.ca

From: Martin Shaw <Martin.Shaw@barrie.ca>
Sent: March 12, 2019 4:10 PM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Greg Jorden <Greg.Jorden@barrie.ca>; Dan O'Neill <Dan.O'Neill@barrie.ca>; Allen Baker <Allen.Baker@barrie.ca>; Luc Paquin <Luc.Paquin@barrie.ca>
Subject: Commencement of Construction

Hi Brian

This is just an informal heads up that we will begin work on the selector upgrades and digester heater upgrades this week. This work (the “Proposed Works”) was the reason for re-issuing the ECA last year.

We will follow up with a schedule within 30 days of commencement of construction as required by the ECA. The work is expected to continue at least into May. We will temporarily switch from using the selector to the old splitter box. This is explicitly provided for in the ECA. The selector contents will be transferred into the tankage that remains in use. We expect no bypasses or overflows or significant loss of treatment nor do we expect any unusual air emissions.

Should you have any questions or comments please feel free to contact me.

Thanks,

Martin Shaw, P. Eng.,
Supervisor of Technical Services
Wastewater Operations Branch
Environmental Services Department
(705)739-4220 x 5242

Barrie Wastewater Treatment Facility

Spill, Bypass and/or Overflow Reporting Form

OIC: **Murray McDonnell**		**SAC Plant ID# 120000578**	
Supervisor Notified:	Time:		
G. Jorden	8:00am	Planned ☐	Emergency ■
ORO Contacted :	Time:	Date: Sept 22/20	Time : 9:10am
G. Jorden	8:00am	Duration :	Approximate Volume :
Location of incident:		15 min.	5 m3
Carbon Media Towers - Isolation Valve		Copy to Plant Manager ■ Copy to ORO ■ Copy to Supervisor(s) ■	

Description of events : Other Info. Attached ☐

An isolation valve, that is required to allow complete isolation of either of the two digester gas carbon media towers, failed and had to be replaced. Proper operation of the valve is required to allow staff to safely service the carbon media itself, without venting to atmosphere. To safely accommodate the valve replacement, the volume of digester gas contained in the carbon media tower was vented to atmosphere. Based on the dimensions of the tower and amount of media within it, Wastewater Operations Staff estimate approximately 5m3 of digester gas was released to the atmosphere. Additionally, staff were positioned at the facilty fence line with atmosperic monitoring equipment and observed no air quality issues during or after completion of the venting.

Follow-Up Action :

Operations and Maintenance staff will systematically confirm proper operation of all isolation valves on the digester gas system and schedule repairs/replacements as required.

SAC (Spills action center)1(800)268-6060	Date: Sept 22/20	Time : 8:45am
SAC Operator Contacted : Mark Lamirande	SAC No. 7822-BTPGUW	
Update: Brian Stuhlemmer, MECP Alin, SAC	Date: Sept 22/20	Time : 11:45am
	Other Info. Attached ☐	
Oral Notification To **Environmental Officer: (705)-725-3374 Cell (705)-720-5056 Pager**		
Person Contacted :	Date:	Time :
	Other Info. Attached ☐	
Oral Notification To **Ministry of Health : 1-(888)-225-7851**		
Person Contacted :	Date:	Time :
	Update:	
	Other Info. Attached ☐	
Oral Notification To **Barrie Surface Water Treatment Plant : (705) 817-0890**		
Person Contacted :	Date:	Time :
	Other Info. Attached ☐	
Signature : G. Jorden	Date : Sept. 22, 2020	

From: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Sent: Tuesday, September 22, 2020 2:00 PM
To: Greg Jorden <Greg.Jorden@barrie.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Martin Shaw <Martin.Shaw@barrie.ca>; John Hamilton <John.Hamilton@barrie.ca>; Allen Baker <Allen.Baker@barrie.ca>; Bala Araniyasundaran <Bala.Araniyasundaran@barrie.ca>
Subject: RE: Barrie WwTF - Gas Release - Emergency Repair to Digester Gas System

Update and Report received.
Thanking-you Greg.
I will update the Ministry's Incident Report, append my notes and close out presently.
Have a great rest 'o' the week.

Regards,
Brian H. Stuhlemmer
Ministry of the Environment, Conservation and Parks
Barrie District Office, 54 Cedar Pointe Drive, Unit 1203
Barrie, ON, L4N 5R7 • T (705) 721-3768

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https://www.facebook.com/ONenvironment/
https://twitter.com/ONenvironment

From: Greg Jorden <Greg.Jorden@barrie.ca>
Sent: September 22, 2020 12:51 PM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Martin Shaw <Martin.Shaw@barrie.ca>; John Hamilton <John.Hamilton@barrie.ca>; Allen Baker <Allen.Baker@barrie.ca>; Bala Araniyasundaran <Bala.Araniyasundaran@barrie.ca>
Subject: RE: Barrie WwTF - Gas Release - Emergency Repair to Digester Gas System

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Brian,

The repairs associated with the earlier digester gas venting are compete and there is no ongoing or future environmental concern. Attached is a City of Barrie Occurrence Form that should provide any required info, but to summarize:

- Venting began at approx. 9:10am and was complete by 9:25am, although most of the release would have been instantaneous.
- Total volume released was appox 5m3.
- SAC was notified after completion of all repair work at approx. 11:45am.
- Wastewater Operations staff were positioned at the fence line with atmospheric monitoring equipment and noted no air quality issues.
- There are no current or ongoing environmental concerns at the WwTF.
- Staff will systematically confirm proper function of valves related to isolation of the digester gas system and will address any issues that are found.

Again, appreciate your time and guidance this morning and if you have any additional questions, or if any further info is required, please let me know.

Thanks,
Greg

Greg Jorden
Supervisor of Wastewater Operations and Maintenance
Wastewater Operations Branch
Infrastructure Department
Tel: 705-739-4220 ext. 4349
Cell: 705-333-4831

From: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Sent: September 22, 2020 9:03 AM
To: Greg Jorden <Greg.Jorden@barrie.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Martin Shaw <Martin.Shaw@barrie.ca>; John Hamilton <John.Hamilton@barrie.ca>
Subject: RE: Barrie WwTF - Gas Release - Emergency Repair to Digester Gas System

Information Received !
Thanking-you Greg.

Regards,

Brian H. Stuhlemmer
Ministry of the Environment, Conservation and Parks
Barrie District Office, 54 Cedar Pointe Drive, Unit 1203
Barrie, ON, L4N 5R7 • T (705) 721-3768

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https://www.facebook.com/ONenvironment/
https://twitter.com/ONenvironment

From: Greg Jorden <Greg.Jorden@barrie.ca>
Sent: September 22, 2020 8:59 AM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Martin Shaw <Martin.Shaw@barrie.ca>; John Hamilton <John.Hamilton@barrie.ca>
Subject: Barrie WwTF - Gas Release - Emergency Repair to Digester Gas System

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.
Good morning Brian,

Appreciate your time and guidance this morning. To confirm our conversation and my call to SAC, below is a summary of events to this point:

- Maintenance team began planned carbon media replacement on digester gas system.
- Isolation plug valves were discovered to be faulty and must be replaced.
- To replace the valves there will be an expected release to atmosphere of digester gas.
- It is expected that it will be just a puff of gas and not an ongoing release, volume will be confirmed afterward.
- SAC has been notified and Occurrence number 7822-BTPGUW was created for the event.
- During the repair we will have gas detection instrumentation operating at the fence line of the facility to monitor any air quality issues leaving site.
- I will confirm with both SAC and yourself the completion of the release/repairs, including start/stop times, estimated volume released, any noted air quality issues, any other pertinent information.

We will be starting the maintenance work shortly unless there are any additional aspects/requirements that I missed.

Best regards,
Greg

Greg Jorden

Supervisor of Wastewater Operations and Maintenance
Wastewater Operations Branch
Infrastructure Department

From: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Sent: Thursday, October 29, 2020 2:09 PM
To: Greg Jorden <Greg.Jorden@barrie.ca>
Cc: Martin Shaw <Martin.Shaw@barrie.ca>; Sandy Coulter <Sandy.Coulter@barrie.ca>
Subject: RE: Digester Gas Release - MECP Incident #0744-BUULHV

Received.
Thank-you very much Greg, much appreciated.
Have a great rest of the week.

Regards,
Brian H. Stuhlemmer
Ministry of the Environment, Conservation and Parks
Barrie District Office, 54 Cedar Pointe Drive, Unit 1203
Barrie, ON, L4N 5R7 • T (705) 721-3768

Ontario

24/7 Spills Action Centre | (800) 268-6060
24/7 Pollution Hotline | (866) 663-8477 • moe.tips@ontario.ca

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https://www.ontario.ca/page/ministry-environment-conservation-parks
https://www.facebook.com/ONenvironment/
https://twitter.com/ONenvironment

From: Greg Jorden <Greg.Jorden@barrie.ca>
Sent: October 29, 2020 2:03 PM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Cc: Martin Shaw <Martin.Shaw@barrie.ca>; Sandy Coulter <Sandy.Coulter@barrie.ca>
Subject: RE: Digester Gas Release - MECP Incident #0744-BUULHV

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.
Hi Brian,

I actually just finished it and it's attached. Martin and Sandy haven't yet seen the internal report either, so if there are any questions at all from anyone, please let me know.

Thanks,
Greg

Greg Jorden
Supervisor of Wastewater Operations and Maintenance
Wastewater Operations Branch
Infrastructure Department
Tel: 705-739-4220 ext. 4349

From: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>
Sent: October 29, 2020 1:53 PM
To: Greg Jorden <Greg.Jorden@barrie.ca>
Cc: Martin Shaw <Martin.Shaw@barrie.ca>
Subject: Digester Gas Release - MECP Incident #0744-BUULHV

Good Day Greg,

Would it be possible to obtain from you a copy of your internal reporting form for the digester gas release today ?
After I receive that, barring any further concerns or follow-up notes which you may have, I will complete the paperwork on my end.

Regards,

Brian H. Stuhlemmer
Ministry of the Environment, Conservation and Parks
Barrie District Office, 54 Cedar Pointe Drive, Unit 1203
Barrie, ON, L4N 5R7 • T (705) 721-3768

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Barrie Wastewater Treatment Facility

Spill, Bypass and/or Overflow Reporting Form

OIC: Allen Baker		SAC Plant ID# 120000578	
Supervisor Notified:	Time:		
G. Jorden	10:50am	Planned ☐	Emergency ■
ORO Contacted :	Time:	Date: Oct 29/20	Time : 10:42am
G. Jorden	10:50am	Duration :	Approximate Volume :
Location of incident:		10 min.	40 m3
Primary Digester 2 - Roof		Copy to Plant Manager ■ Copy to Supervisor(s) ■	Copy to ORO ■

Description of events : Other Info. Attached ☐

Planned maintenance was scheduled to replace a digester mixer with a new one, a job that is completed somewhat regularly. No gas release was expected because the level of liquid in the digester seals all openings to the atmosphere, under normal operation. The level in the digester was confirmed to be suitable to allow the pulling of the mixer, through the use of engineered drawings of the digester. The work began and no issues or gas release occurred initially, once the mixer was fully removed. With the mixer draft tube open to the evniroment, a digester transfer pump turned on and removed digester sludge, lowering the level to below the bottom of the mixer draft tube and opening the pressurized digester gas head space to the atmosphere. Staff quickly stopped the transfer and pumped sludge back into the digester, sealing the tube and ending the release. The new mixer was subsequently installed and secured before 11:00am.

Follow-Up Action :

Operations staff have already confirmed that the drawing used to confirm liquid levels was not correct. As part of a previous capital upgrade, the roof of the digester was reinforced with additional concrete and steel to allow installation of upgraded mixers. This alteration raised both the mixer and draft tube higher up out of the digester, meaning that the liquid level to maintain the gas seal should have been subsequently raised as well.

Operations staff will soon revise SOPs to not only reflect the correct operating levels, but to also direct that digesters be filled to their overflow level and all transfer pumps are to be de-energized and locked out, prior to mixer removal. The revised operating levels will also be reflected in the document which will be shared with staff.

SAC (Spills action center)1(800)268-6060	Date: Oct 29/20	Time : 11:45am
SAC Operator Contacted : Alim	SAC No. 0744-BUULHV	
Update:	Date:	Time :
	Other Info. Attached ☐	
Oral Notification To Environmental Officer: (705)-725-3374 Cell (705)-720-5056 Pager		
Person Contacted :	Date:	Time :
	Other Info. Attached ☐	
Oral Notification To Ministry of Health : 1-(888)-225-7851		
Person Contacted :	Date:	Time :
	Update:	
	Other Info. Attached ☐	
Oral Notification To Barrie Surface Water Treatment Plant : (705) 817-0890		
Person Contacted :	Date:	Time :
	Other Info. Attached ☐	
Signature : G. Jorden	Date : 29-Oct-20	

February 3, 2020 Reference No. 11155347

Aaron Smits, Project Manager
BGL Contractors Corporation
608 Colby Drive
Waterloo, ON N2V 1A2

By email

Dear Mr. Smits:

Re: Substantial Performance – Contract No. 2018-135Q
Sludge Transfer Line Replacement at the Barrie Wastewater Treatment Facility
249 Bradford Street, Barrie, Ontario

GHD Limited and the City of Barrie are in receipt of BGL Contractors Corporation's revised application for Substantial Performance dated January 16, 2020. In accordance with the Construction Act, the above-noted project is certified as Substantially Performed. Enclosed is a Certificate of Substantial Performance for this contract.

BGL will note that Payment Certificate 7 included two cost items which have not yet been approved as Change Orders, and for which no payment was made:

- CO 002 for pipe re-routing (value $5,170.00) which has not yet been formally executed; and
- CO 003 for HDPE electrofusion (Value $3,395.53).

These items are expressly excluded from the calculation as they are not yet approved or paid extra costs.

Please arrange for the publication of this Certificate of Substantial Performance in a construction trade newspaper, i.e. Daily Commercial News, and provide proof of the publication to the City and GHD. The basic holdback will become eligible for payment sixty (60) days after the date of the publication.

GHD
1195 Stellar Drive Unit 1 Newmarket Ontario L3Y 7B8 Canada
T 905 830 5656 F 905 830 0176 W www.ghd.com

From: Martin Shaw
Sent: Wednesday, February 26, 2020 12:52 PM
To: 'Stuhlemmer, Brian (MECP)' <Brian.Stuhlemmer@ontario.ca>
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Greg Jorden <Greg.Jorden@barrie.ca>; Allen Baker <Allen.Baker@barrie.ca>
Subject: Odour Complaint - WwTF 249 Bradford Street

Hi Brian

A voicemail message was left with Access Barrie on the weekend (date and time unknown) from Mr. Andrew Grant (604)764-5670 who lives in Barrie and Vancouver. The message indicated an odour was coming from the WwTF that is not normally there. I called Mr. Grant at 13:30 on Monday February 24th, 2020 to get details.

Mr. Grant indicated that he detected offensive odour on Sunday (February 23) at approx. 16:30 and 18:00-19:00 and again on Monday (February 24) at approx. 12:00. The odour was brief. The location was Lakeshore Drive near WwTF. Mr. Grant is concerned for the City's reputation and effect on recreational area users near WwTF. He said the City should investigate it. I indicated that the weekend incident is unusual because sludge truck loading is shut down on weekends.

I checked with the operations lead hand, maintenance lead hand and operator in charge for any SCADA alarms regarding loss of ignition on the flare stack. There were no "loss of ignition" alarms on SCADA. I went out to the parking lot and stood downwind of the stack and digesters and could detect no odour. Maintenance was conducted two weeks ago on the stack but there appears to be no odour coming directly from the stack or the digesters.

I called Mr. Grant back and said that we have no explanation for the Sunday odour. However, I also indicated that there are some fugitive emissions on week days when sludge trucks are being loaded and that high winds can defeat the vacuum in the odour collection hood. I said that the City is working to improve the seal on the loading station to eliminate this issue.

Mr. Grant said that this is consistent with his assessment and thanked me for investigating.

Martin Shaw, P. Eng.,
Supervisor of Technical Services
Wastewater Operations Branch
Environmental Services Department
(705)739-4220 x 5242

The City of BARRIE — **Barrie Wastewater Treatment Facility**

Spill, Bypass and/or Overflow Reporting Form

OIC: M. Fanning — SAC Plant ID# 120000578

Supervisor Notified: M. Shaw — Time: 18:00

Planned = — Emergency = ✓

ORO Contacted: M. Shaw — Time: 13:50

Date: Jan 11/20 — Time: 13:25

Location of Incident: Barrie WwTF

Duration: 3 hr 13 min — Approximate Volume:

Copy to Plant Manager ☐ Copy to ORO ☐
Copy to Supervisor(s) ☐

Description of events — Other Info. Attached ☐

E-trees main + runoff resulted in sand filter by-pass @ 13:42 - Bypass ended @ 22:30

Corrective Action:

Trying to modulate raw sewage pumps balance flows across secondary clarifiers and filters.

SAC (Spills action center) 1-(800)268-6060 — Date: Jan 11 — Time: 19:42

SAC Operator Contacted: Ian Goffing

SAC Event #: 904040

Upstream: Peter – vol. TBD; Maria – vol. attd. — Date: Jan 12 — Time: 00:34 — Other Info. Attached ☐ — Jan 12 13:52

Oral Notification To Environmental Officer: (705)-726-9374 Cell (705)-720-6058 Pager

Person Contacted: Steph. Huyssen — Date: Jan 11 — Time: 20:25 — Other Info. Attached ☐ Updated — Jan 12, 00:40

Oral Notification To Ministry of Health: 1-(888)-225-7851

Person Contacted: Felicia Ratica, vol TBD — Date: Jan 11 — Time: 20:07 — Update Jan 12 00:47 — Other Info. Attached ☐ — update Jan 12 13:55

Oral Notification To Barrie Surface Water Treatment Plant: (705) 817-8890

Person Contacted: Dave Johnson — Date: Jan 11 — Time: 19:59 — Other Info. Attached ☐ Updated Jan 12, 00:35

Signature: — Date: Jan 11/20

From: Martin Shaw
Sent: Friday, April 17, 2020 2:08 PM
To: Stuhlemmer, Brian (MECP) <Brian.Stuhlemmer@ontario.ca>; Sheri.Broeckel@ontario.ca
Cc: Sandy Coulter <Sandy.Coulter@barrie.ca>; Greg Jorden <Greg.Jorden@barrie.ca>
Subject: WwTF Q1 2020 Quarterly Spill and Bypass Report
Hi Brian and Sheri

Pursuant to the requirements of ss. 4.6 and 5.6 of Amended Environmental Compliance Approval Number 0284-B2ML52 dated August 24, 2018, we wish to report that there were no overflows and one bypass of sewage at the WwTF for the first quarter of 2020.

On the morning of January 11, 2020 mild, rainy weather resulted in excessive flows of raw sewage at the Barrie Wastewater Treatment Facility. Attempts were made to hold flows at 103,000 MLD by surcharging sewers. Other attempts by operators to prevent a bypass and minimize effects included toggling raw sewage pumps to prevent a bypass, ensuring equal levels in filters and boosting UV dose to 100% UV capacity. At 18:42 sand filters began to bypass. All regulatory agencies were notified and updated (see attached reporting form) and bypass sampling was conducted in accordance with ECA. The SAC incident number was 904040. The bypass ended at 22:00 for a duration of 3 hours 18 minutes. Follow-up notifications were made to regulatory agencies as shown on the reporting form including estimated volumes bypassed ($130m^3$). Sampling results (attached) were forwarded to MECP on January 24.

Should you require any further information please advise.

Respectfully yours,

Martin Shaw, P. Eng.,
Supervisor of Technical Services
Wastewater Operations Branch
Environmental Services Department
(705)739-4220 x 5242

Hi Brian

To further clarify, a 24-hour composite sample which included the bypass event was sent for analysis of final effluent parameters as required in our ECA. We routinely do composite samples 7 days a week on final effluent.

Thanks

Martin Shaw, P. Eng.,
Supervisor of Technical Services
Wastewater Operations Branch
Environmental Services Department
(705)739-4220 x 5242

From: Stuhlemmer, Brian (MECP) [mailto:Brian.Stuhlemmer@ontario.ca]
Sent: Monday, January 13, 2020 1:49 PM
To: Martin Shaw <Martin.Shaw@barrie.ca>
Cc: Broeckel, Sheri (MECP) <Sheri.Broeckel@ontario.ca>
Subject: Barrie WwTF Bypass Event - January 11, 2020

Good Day Martin,

I am looking confirm and obtain additional details when available :
- Approximately 130 m3 bypass on January 11th at approximately 7:45 PM until 10:00 PM
- What, if any treatment, was applied to bypassed volume ?
- Details and results of samples obtained.

Regards,

Brian H. Stuhlemmer

Ministry of the Environment, Conservation and Parks

Barrie District Office, 54 Cedar Pointe Drive, Unit 1203

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Appendix "B": Completed Repair Work Order Summary

Legend: CL = closed, INS = Installation, PRO= Project, REP=Repair

W/O#	Status	Work Description	Type	Building	Completed Date
210944	CL	Installation of new flow meter on polymer maker in was/twas	INS	WAS_TWAS	23/12/2020
213307	CL	Please change the program so that if scada changes cogen from digester to natural gas, it leaves cogen running on natural gas and sends an alarm saying that it made the change.	PRO	CO-GEN	7/2/2020
217133	CL	Work order to capture time and materials for Infiltration and Inflow study	PRO	MAIN-PLANT	25/5/2020
217134	CL	Work Order to capture labour and material costs for upgrade, supply, and/or installation of SCADA workstations in: Maint Office, Mooregate, Raw Sludge, RAS West, CP25, HPEW, and PD1&2 basement.	PRO	MAIN-PLANT	7/2/2020
217380	CL	Relocate MSA LEL and H2S sensors outside of the confined space area.	REP	SEPTAGE	24/3/2020
217381	CL	Over heating, replace load reactor	REP	SECONDARY-PUMPING	24/3/2020
217387	CL	Please remove and reinstall Grit Pump No.4	REP	MAIN-PLANT	9/1/2020
217548	CL	Pump#2 is making noise, maybe bearing in motor. Several Allen Bradley Motor terminals seem to be heating up quite a bit.	REP	SECONDARY-PUMPING	9/1/2020
217559	CL	Investigate and install effluent water going to grit auger seals	INS	GRIT_TANKS	11/6/2020
217718	CL	"February Item #2 Water leaking through ceiling at tunnel intersection corroding electrical junction box and switch at this location. Investigate source of leak and repair. Also renew all corroded electrical components. "	REP	RETURN-SLUDGE	26/11/2020
217720	CL	Water hose running from sample sink in gallery through hatch on deck surface. Locate or establish water supply closer to intended area of use	REP	RETURN-SLUDGE	22/6/2020
217721	CL	Appears to be a temporary RAS sample/drain arrangement that has evolved into a permanent solution. Investigate a permanent plumbing solution compliant with existing codes	REP	RETURN-SLUDGE	10/8/2020

217727	CL	"Work Order to capture labour and material costs for supply and install SCADA workstation in Raw Sludge. OT - to order SCADA computers and software. MAINT - to order enclosure MAINT-EL - to run conduit and wiring Summary - The View Client installed here will consist of View Client license, computer, monitor, keyboard, and mouse. It will be installed within an Enclosure installed in the location as shown in the photo below. Two rigid steel conduit will need to be installed, one for power, and one for Ethernet. This power conduit will need to be connected to a power junction box and then to CP24 in the Raw Sewage MCC. The Ethernet conduit will need to be ran to the main square conduit and then back to CP24. The Ethernet switch in this panel is adequate to handle this extra device. An electrician will be required to pull all cabling from the Enclosure to the Control Panel. The Electrician will need to install a duplex outlet in the Enclosure wired to a UPS fed, fused, terminal in the Control Panel. Wallwin Voice and Data will install two Surface Mount Jacks – one in the Enclosure and one in the Control Panel. The Ethernet wiring will be terminated in these Jacks. An Ethernet patch cable will be required at each end to terminate the networking."	PRO	RAW-SLUDGE	3/7/2020
217728	CL	"Work Order to capture labour and material costs for supply and install of SCADA workstations in RAS West. OT - to order SCADA computers and software. MAINT - to order enclosure MAINT-EL - to run conduit and wiring Summary - The View Client installed here will consist of View Client license, computer, monitor, keyboard, and mouse. It will be installed within an Enclosure installed in the location as shown in the photo below. Two rigid steel conduit will need to be installed, one for power, and one for Ethernet. This power conduit will need to be connected to a power junction box and then to CP25 in the UNOX 4/5 MCC. The Ethernet conduit will need to be ran to the main square conduit and then back to CP25. The Ethernet switch in this panel will need to be upgraded (N-TRON 308FX2) to accommodate this extra device. An electrician will be required to pull all cabling from the Enclosure to the Control Panel. The Electrician will need to install a duplex outlet in the Enclosure wired to a UPS fed, fused, terminal in the Control Panel. Wallwin Voice and Data will install two Surface Mount Jacks – one in the Enclosure and one in the Control Panel. The Ethernet wiring will be terminated in these Jacks. An Ethernet patch cable will be required at each end to terminate the networking."	PRO	RETURN-SLUDGE	3/7/2020

217729	CL	"Work Order to capture labour and material costs for supply and install of SCADA workstation in CP25 Aeration. OT - to order SCADA computers and software. MAINT-EL - to run wiring Summary - The View Client installed here will consist of a TPC panel mounted touchscreen display and the View Client license. The Ethernet switch in this panel is being upgraded in the West RAS Gallery detail above. An Electrician will need to power the TPC with a 24 VDC circuit from the existing power supply. A fuse may be required if a spare is not already available. An Ethernet patch cable will be required to connect the TPC to the network switch."	PRO	AERATION	3/7/2020
217730	CL	"Work Order to capture labour and material costs for supply and install of SCADA workstation in Splitter Gallery. OT - to order SCADA computers and software. MAINT - to order enclosure MAINT-EL - to run conduit and wiring Summary - The View Client installed here will consist of View Client license, computer, monitor, keyboard, and mouse. It will be installed within an Enclosure installed in the location as shown in the photo below. Two rigid steel conduit will need to be installed, one for power, and one for Ethernet. This power conduit will need to be connected to a suitable power circuit. If not powered by UPS, then a UPS must be installed in the enclosure. The Ethernet conduit will need to be ran to the main square conduit and then back to CP24. An electrician will be required to pull all cabling from the Enclosure to the Control Panel. The Electrician will need to install a duplex outlet in the Enclosure wired to a UPS fed circuit. Two Surface Mount Jacks will be required – one in the Enclosure and one in the Control Panel. The Ethernet wiring will be terminated in these Jacks. An Ethernet patch cable will be required at each end to terminate the networking."	PRO	SPLITTER-GALLERY	24/11/2020

217731	CL	"Work Order to capture labour and material costs for supply and installation of SCADA workstation. OT - to order SCADA computers and software. MAINT - to order enclosure MAINT-EL - to run conduit and wiring Summary - The View Client installed here will consist of View Client license, computer, monitor, keyboard, and mouse. It will be installed within an Enclosure installed in the location as shown in the photo below. Two rigid steel conduit will need to be installed, one for power, and one for Ethernet. This power conduit will need to be connected to a power junction box and then to CP16 in the PD1/2 MCC. The Ethernet conduit will need to be ran to the main square conduit and then back to CP16. The Ethernet switch in this panel is adequate to handle this extra device. An electrician will be required to pull all cabling from the Enclosure to the Control Panel. The Electrician will need to install a duplex outlet in the Enclosure wired to a UPS fed, fused, terminal in the Control Panel. Wallwin Voice and Data will install two Surface Mount Jacks – one in the Enclosure and one in the Control Panel. The Ethernet wiring will be terminated in these Jacks. An Ethernet patch cable will be required at each end to terminate the networking. Summary - The View Client installed here will consist of View Client license, computer, monitor, keyboard, and mouse. It will be installed within an Enclosure installed in the location as shown in the photo below. The desk shown in the photo will have to be relocated closer to the exhaust louvers to accommodate the space required by the Enclosure. Two rigid steel conduit will need to be installed, one for power, and one for Ethernet. Both conduits will need to run back to the CP1 control panel. The Ethernet switch in this panel will need to be upgraded (N-TRON 306FX2) to accommodate this extra device. An electrician will be required to pull all cabling from the Enclosure to the Control Panel. The Electrician will need to install a duplex outlet in the Enclosure wired to a UPS fed, fused, terminal in the Control Panel. Wallwin Voice and Data will install two Surface Mount Jacks – one in the Enclosure and one in the Control Panel. The Ethernet wiring will be terminated in these Jacks. An Ethernet patch cable will be required at each end to terminate the networking."	PRO	DIGESTER1_2	3/7/2020
217732	CL	"Work Order to capture labour and material costs for upgrade of SCADA workstation. OT - to order SCADA software. "	PRO	MAINT-BLDG	3/7/2020
218358	CL	Pump not working.	REP	RAW-SLUDGE	12/9/2020
218364	CL	The Fire Prevention backflow preventer has a fitting leak. 75022 fire prevention fitting leak.	REP	TERTIARY_BLDG	20/7/2020
218365	CL	The plant water backflow preventer closest to the HPEW room is venting from the RP steadily at a few drops/min. 74847 plant backflow preventer	REP	TERTIARY_BLDG	20/7/2020

219519	CL	Motor starting to get noisy, grease and monitor	REP	AERATION	11/3/2020
219953	CL	Seal water valve leaking and spaying on to Pump #5	REP	SECONDARY-PUMPING	27/2/2020
219961	CL	Valve has a leak at the flange and the gasket. Bolts were tightened but leak still there.	REP	RETURN-SLUDGE	3/3/2020
220118	CL	Motion Failure Daily	REP	RAW_SEWAGE	27/1/2020
220119	CL	Please add additional isolation valves and flush points in the gravity scum line going to the scum hopper.	INS	SPLITTER-GALLERY	7/8/2020
220121	CL	Hose connection for HPEW hook up is split and needs to be replaced. (hatch at the inlet to 5 and 6).	REP	SECONDARY-CLARIFIER	2/3/2020
220133	CL	Not working needs to be checked and or replace	REP	DIGESTER3	11/2/2020
220134	CL	Please repair the broken flight and return to service.	REP	SECONDARY-CLARIFIER	27/1/2020
220140	CL	Hypo leak where the gate for filter #4 is stored.	REP	TERTIARY_BLDG	27/1/2020
220154	CL	Please repair the flush line going to the old strainer and replace the old strainer.	REP	TERTIARY_BLDG	22/7/2020
220155	CL	Installation of replacement security system by Surelock	REP	STAFF_FACILITY	7/2/2020
220159	CL	Fresh/recirc valve not operating in local or remote. please repair or replace. Also the pressure gauge needs to replaced.	REP	ODOR_CONTROL	8/6/2020
220508	CL	Please investigate and repair Generator #1 transfer test failure.	REP	GENERATOR	12/3/2020
220509	CL	Please repair or replace drain ball valve on east side septage receiving line.	REP	SEPTAGE	9/1/2020
220512	CL	Replace O2 sensor on the lower MSA	REP	INFLUENT	27/1/2020
220515	CL	Flow meter not working please repair or replace.	REP	DIGESTER3	11/2/2020
220517	CL	Please repair the deficiencies from the Ainsworth inspection.	REP	GENERATOR	27/1/2020
220518	CL	Flow meter is not reading correctly, please replace.	REP	GRIT_PUMP	16/4/2020
220519	CL	Valve not holding before drip trap for waste flame.	REP	CO-GEN	29/1/2020
220521	CL	"December 2019 Item #2 Clear aisles and walkways. Re-paint line demarking storage area."	REP	MAINT-GARAGE	25/11/2020
220524	CL	UV electrical issues, please repair	REP	UV_BLDG	27/1/2020
220525	CL	Please repair crack in top plate on hood	REP	TERTIARY_BLDG	27/1/2020
220526	CL	Two rows in unit not working	REP	UV_BLDG	27/1/2020
220527	CL	please rebuild mixer	REP	DIGESTER3	29/4/2020
220529	CL	Something is caught in the suction side of the raw sludge pump#1, please open up and remove debris	REP	RAW-SLUDGE	27/1/2020
220530	CL	Valve will not operate needs to freed up or replaced.	REP	DIGESTER3	27/1/2020
220534	CL	Please replace light at sludge loading station, check with truck drivers as to which one is out.	REP	BIO_HOLDING_BLDG	29/1/2020
220537	CL	the sensor keeps giving a signal fault please check and repair.	REP	RAW_SEWAGE	29/1/2020
220538	CL	Upper elbow on bypass part of the transfer line (right behind the pump itself) is leaking (cracked, only visible when pump is running)	REP	CHEMICAL	7/2/2020

220540	CL	The cable came off the winch and needs to be fixed	REP	BIO_HOLDING_BLDG	29/1/2020
220541	CL	Pump has failed and check valve malfunctioning, please repair	REP	DIGESTER3	13/2/2020
220542	CL	Hot water mixing pump on scum tank will not run. It shows it is running but it is not.	REP	SPLITTER-GALLERY	16/4/2020
220543	CL	Chain has come off the bull gear please reinstall.	REP	PRIMARY_CLARIFIERS	29/1/2020
220544	CL	Fan shaking, please take down and repair and reinstall	REP	DIGESTER1_2	29/1/2020
220545	CL	Both mixers are very noisy please check	REP	DIGESTER3	29/1/2020
220547	CL	Low O2 did not generate a callout, light at the door flashing. When the sensor failed the alarm called out and the light went out.	REP	WET_WELL	4/2/2020
220548	CL	Big boiler showing that the firing rate is 88% but nothing is running and no gas selected.	REP	BOILER	28/4/2020
220549	CL	Squealing sound while running, possible bearing?	REP	WAS_TWAS	29/1/2020
220550	CL	Please change the nose cone on the gear box and than change the oil.	REP	INFLUENT	25/3/2020
220551	CL	High float in the sump does not work needs replacing.	REP	RAW-SLUDGE	3/3/2020
220554	CL	please check pump and both check valves for proper operation.	REP	WAS_TWAS	4/2/2020
220555	CL	please replace broken gearbox and check the bridge for any repairs.	REP	TERTIARY_BLDG	1/4/2020
220909	CL	Small leak on the Alum transfer pump. please check and repair.	REP	CHEMICAL	4/2/2020
220910	CL	RDT sprayers on RDT #3 will not stop spraying.	REP	WAS_TWAS	4/2/2020
220914	CL	Inlet louvre for final effluent pump room is not working. Control unit needs replacing. Please repair.	REP	SECONDARY-PUMPING	3/3/2020
220915	CL	Inspect noisy motor PD 3 basement. Pmp2766_05	REP	DIGESTER3	16/4/2020
220925	CL	Hypo pump #1 display panel won't do anything	REP	CHEMICAL	9/3/2020
220926	CL	Please replace or repair the hose in the raw sewage. Is there a possibility of relocating the spool to the wall.	REP	RAW_SEWAGE	27/3/2020
221223	CL	Waste flame air intake motor very noisy. possible bearing issue	REP	CO-GEN	14/2/2020
221224	CL	Please inspect relief valve on boiler as it continues to leak.	REP	BOILER	3/3/2020
221226	CL	screen remains blank, will not reset	REP	CHEMICAL	9/3/2020
221228	CL	Check the pump seems not pumping	REP	DIGESTER3	27/2/2020
221234	CL	Please replace motor, as there seems to be a wore out bearing.	REP	COOLING-TOWER	12/2/2020
221236	CL	Please replace 2 position speed selector key switch on VFD	REP	RAW-SLUDGE	3/3/2020
221237	CL	Hose removal and reinstall with 1"□ or 1.5"□ cam lock fittings. If possible a retractable house reel would be very useful in this area as well. Please see attached picture for location. Please see Brooke if more information is required.	REP	RETURN-SLUDGE	19/5/2020
221238	CL	Motor is sounding rough, please inspect and repair	REP	DIGESTER3	1/4/2020

221239	CL	"Hose reels and new piping installed "	REP	TERTIARY_BLDG	25/2/2020
221240	CL	High pressure effluent flushing line flushing valve	REP	SECONDARY_DIGESTER	1/4/2020
221247	CL	Festoon cable bracket on bridge 6 is on an angle. It may hit some brackets on roof rail.	REP	TERTIARY_BLDG	19/2/2020
221248	CL	Possible bearing going bad on drive side.	REP	RBC	25/5/2020
221414	CL	Sounds as if the UPS in the Grinder Panel has failed	REP	SEPTAGE	1/4/2020
221477	CL	Please repair the hot water system for cleaning the RDT's.	REP	WAS_TWAS	20/2/2020
221479	CL	Fix hole in air intake ducting	REP	DIGESTER1_2	25/2/2020
221480	CL	Please repair the alum leak on the alum transfer line	REP	CHEMICAL	25/2/2020
221482	CL	Leaking seal	REP	RETURN-SLUDGE	21/2/2020
221645	CL	Please repair UPS	REP	SEPTAGE	24/2/2020
221646	CL	Filter #5 stopping at the same spot. Alarm shows Hood lift failed.	REP	TERTIARY_BLDG	3/3/2020
221647	CL	Hot water tank doesn't work. Internal electrical severely corroded. Possible scorch Mark's visible	REP	WAS_TWAS	3/3/2020
221648	CL	Check pump speed signals	REP	WAS_TWAS	24/3/2020
221649	CL	The Battery on the Genie Single manLift is not holding a charge, please repair as necessary notify Gwen Harrington 7053332987 upon completion, so inspection can be scheduled	REP	RAW-SLUDGE	9/3/2020
221650	CL	Water line at the stairs has a pin hole and is spraying all over. please repair.	REP	WET_WELL	2/3/2020
221651	CL	Please replace the lower stop button for the loading station.	REP	BIO_HOLDING_BLDG	1/4/2020
221655	CL	"Add rope to hi float in RAS sump pump. Float is at an unsafe distance to pull properly from the top, a rope would make this task easier and safe. "	REP	RETURN-SLUDGE	24/8/2020
221656	CL	Replace RAS sump pit hatch hinges Sticks badly and is very difficult to close.	REP	RETURN-SLUDGE	2/3/2020
221657	CL	Can we get Blending tank #2 repaired and ready for service as we need to clean out tank #1.	REP	AR-BLENDING	1/4/2020
221659	CL	Oxygen line going to Unox 4 and 5 has a leak, please repair.	REP	SPLITTER-GALLERY	28/2/2020
221661	CL	Please repair sodium hypochlorite leak in pipe in chemical building basement.	REP	CHEMICAL	28/2/2020
221991	CL	Valve will not open or close. Actuator runs but the valve doesn't move.	REP	AR-BLENDING	2/3/2020
221994	CL	Suspect #1 polymer pmp has a problem with the state.	REP	WAS_TWAS	1/4/2020
221996	CL	Hang white board in ops room	INS	ADMINISTRATION	4/3/2020
221997	CL	"[Work Order Reassignment from work order 221996] Hang white board in ops room"	INS	ADMINISTRATION	4/5/2020
222004	CL	Please repair broken scum skimmer on secondary tank #1, pass #1	REP	SECONDARY-CLARIFIER	27/3/2020
222006	CL	Please install hood raise limits to filter bridge #6	REP	TERTIARY_BLDG	10/3/2020

222163	CL	- Gas booster 1 started shutting down and restarting over and over on Saturday morning very early. This caused cogen 1 to go down. The booster is getting a low inlet pressure but there is plenty of gas available. Booster 2 was started and is running fine but booster 1 needs to be investigated this week	REP	DIGESTER1_2	9/3/2020
222166	CL	Repair loss excitation	REP	CO-GEN	11/3/2020
222167	CL	Please fabricate new sludge judge sample ports in hatches on Primary tank #2	INS	PRIMARY_CLARIFIERS	12/3/2020
222170	CL	Please change the UPS in the lab	REP	ADMINISTRATION	12/3/2020
222171	CL	Scum skimmer SC1143_37 is not working and needs to be repaired.	REP	SECONDARY-CLARIFIER	13/3/2020
222328	CL	Filter #4 hood pump making allot of noise can you please have a look. I will let you know when it is down.	REP	TERTIARY_BLDG	17/3/2020
222329	CL	Please install the ladder gate (currently located in the maintenance garage equipment cage) on the emergency ladder located just outside the Secondary Pump Room. Hardware is required, please ask John Hamilton for instructions on lock to be used, etc.	INS	SECONDARY-PUMPING	10/6/2020
222330	CL	Install a second hose real for the RDTs from the shop pressure washer.	INS	WAS_TWAS	17/3/2020
222331	CL	Please replace the wash water pump on filter #4.	REP	TERTIARY_BLDG	18/3/2020
222332	CL	Test	REP	ADMINISTRATION	26/3/2020
222333	CL	Need to inspect the valve actuator, valve keeps failing to close.	REP	SPLITTER-GALLERY	24/3/2020
222334	CL	Check operation of tank	REP	GRIT_TANKS	24/3/2020
222497	CL	Investigate leak and get a contractor to re tube boiler No.1	REP	CO-GEN	5/6/2020
222499	CL	Please repair faulty disconnect switch on grit tank #4 conveyor. Local panel is locked out from main source in mcc room.	REP	GRIT_PUMP	26/3/2020
222500	CL	Please install a piece of plywood on the electrical shop wall close to a 120VAC outlet, so that Tim Lacey can mount a gas monitor bump test station. There is a piece of wood to use in the maintenance garage.	INS	DIGESTER3	29/3/2020
222755	CL	Please replace the pressure sensors on aeration tanks 4 and 5 as per John Hamilton	REP	AERATION	23/10/2020
222961	CL	please investigate why the grit is so wet.	REP	INFLUENT	30/3/2020
222962	CL	Please install a new shower stall at 167 Bradford ST.	INS	MAINT-BLDG	11/5/2020
222963	CL	please replace grit cyclone with new one	REP	INFLUENT	3/4/2020
222966	CL	Hypo loading pipe on left hand side outside of the building is leaking. New cam lock fitting was added as old one was corroded but did not seem to help. New fittings may be required.	REP	CHEMICAL	9/4/2020
222967	CL	Please take down clarifier as the shear pin broke and something is jammed in the tank.	REP	MAIN-PLANT	28/4/2020
222968	CL	Both fans are not working, please replace and order spares.	REP	INFLUENT	16/4/2020
222969	CL	please replace ballast.	REP	UV_BLDG	14/4/2020
223144	CL	#1 tanks outlet valve leaks	REP	CHEMICAL	15/4/2020

223148	CL	Please rebuild cogen #2	REP	CO-GEN	15/10/2020
223149	CL	please repair grating on southwest side of filter 3	REP	TERTIARY_BLDG	16/4/2020
223150	CL	Please repair door going into MCC room in UV building	REP	UV_BLDG	28/4/2020
223517	CL	Please change the hose and oil on Alum pump 3B	REP	CHEMICAL	27/4/2020
223518	CL	Please unplug the scum line coming from Tank #3 all the way to the scum tank	REP	SPLITTER-GALLERY	2/5/2020
223519	CL	Hood keeps falling, please inspect and repair.	REP	TERTIARY_BLDG	30/4/2020
223520	CL	"Code Rule: OESC 2018 Rules 12-114, 2-130 and 12-3000 - Incomplete or unused wiring is required to be disconnected, removed or to made safe by terminating in approved enclosures. See Bulletin 12-25-*. Inspector Comments: Wire way opening and 12x12 box hanging off the wall "	REP	BIO_HOLDING_BLDG	1/5/2020
223524	CL	"Code Rule: OESC 2018 Rule 02-100 - Inspector Comments: It was observed that the new VFD's are not labeled with multiple voltages within enclosure and the location of the source i.e. Fed from MCC # "	REP	BIO_HOLDING_BLDG	1/5/2020
223525	CL	"Code Rule: OESC 2015 Rule 10-610 - Use metal locknuts and suitable bushings to connect conduits to boxes and fittings. Inspector Comments: It was identified that inside the control panel CP-19 a ground bushing has been installed on the new control conduit "	REP	BIO_HOLDING_BLDG	4/5/2020
223526	CL	"Code Rule: OESC 2018 Rule 02-003 - The owner, owner's agent, or operator shall maintain a record of all electrical installation acceptable to the Electrical Safety Authority in any public building, commercial or industrial establishment, apartment house, or other building in which the public safety may be involved and shall produce this record to any inspector at any time and from time to time upon request, as specified by the Electrical Safety Authority. Inspector Comments: It was identified that the maintenance staff are not logging their work in the ESA online CSSL logbook, this has been an issue for many years and this is a compliance concern as per OESC Rule 2-003, i.e. Bio Solids VFD', new Hot water heater (Primary section) and SCADA Node locations It was also observed that Wallwin Electric has the majority of work entries. This issue shall be addressed before the next scheduled site visit "	REP	MAIN-PLANT	21/5/2020

223527	CL	"Code Rule: OESC 2018 Rule 12-3010 - All electrical boxes shall be properly supported and secured to the building structure. Inspector Comments: New Hot water heater (Primary section) - it was identified that a new switch has been installed for the boiler unit and the box is not secured to the wall and shall be fastened"	REP	SPLITTER-GALLERY	5/5/2020
223529	CL	"Code Rule: OESC 2018 Rule 12-3000 5) - Covers shall be installed on all electrical boxes. Inspector Comments: It was identified that a LB cover near the inlet is missing and shall be installed "	REP	TERTIARY_BLDG	5/5/2020
223530	CL	"Code Rule: OESC 2018 Rule 02-100 - Inspector Comments: It was identified that the new SCADA node locations do not have the Panel and circuit # labeled "	REP	MAIN-PLANT	19/5/2020
223531	CL	"Code Rule: OESC 2018 Rule 02-034 - The extension cord is not approved for use in the manner as used. Inspector Comments: New Hot water heater (Primary section) - it was identified that an extension cord has been installed for the operation of a valve "	REP	SPLITTER-GALLERY	5/5/2020
223532	CL	"Code Rule: OESC 2018 Rule 12-1010 1) - Rigid metal conduit shall be supported, with support intervals not to exceed, 1.5 m (5 ft) for 1/2"" and 3/4"" conduit, 2 m (6.6 ft) for 1"" and 1 1/4 "" conduit and 3 m (10 ft) for 1 1/2"" and larger conduit. Inspector Comments: "	REP	BIO_HOLDING_BLDG	1/5/2020
223533	CL	"Code Rule: OESC 2018 Rule 02-300 - Repair damaged wiring. Inspector Comments: It was identified that multiple flexes have come loose from there connectors and shall be refastened "	REP	DIGESTER3	5/5/2020
223534	CL	"Code Rule: OESC 2018 Rule 12-1010 1) - Rigid metal conduit shall be supported, with support intervals not to exceed, 1.5 m (5 ft) for 1/2"" and 3/4"" conduit, 2 m (6.6 ft) for 1"" and 1 1/4 "" conduit and 3 m (10 ft) for 1 1/2"" and larger conduit. Inspector Comments: It was identified that the conduits for PMP 2773 HWT are not supported"	REP	DIGESTER3	5/5/2020

223535	CL	"Code Rule: OESC 2018 Rule 02-100 - Inspector Comments: It was identified that the VFD's are not labeled to the location of the source i.e. MCC "	REP	DIGESTER3	5/5/2020
223546	CL	The PLC is showing that the mixer is in PC and is running and these are direct inputs with no extra logic. Therefore, if this Mixer is not in PC and/or not running, then there is an electrical problem. The only other logic associated is that the PLC is telling the Mixer to run (24/7) and is looking for a run status to confirm. Since it has this run status, then there should not be any alarm. This is nothing else wired from the Mixer such as fault	REP	FLASH-FLOC	6/5/2020
223800	CL	Chemical line coming from the tray tunnel is leaking on the floor.	REP	CHEMICAL	5/5/2020
223803	CL	please replace T an P relief valve on boiler in splitter gallery	REP	SPLITTER-GALLERY	6/5/2020
223804	CL	odor Control fan gets very loud.	REP	ODOR_CONTROL	8/5/2020
223809	CL	Large boiler will not run in Auto on digester gas.	REP	CO-GEN	16/7/2020
223811	CL	Please replace bulbs on lights that are going out.	REP	RETURN-SLUDGE	11/5/2020
223985	CL	Please rebuild Classifier#1	REP	INFLUENT	21/5/2020
223986	CL	Please blow out the bubblers for the secondary pump chambers	REP	SECONDARY-PUMPING	12/5/2020
223987	CL	Raw sewage pump #4 (in bar-screen/compactor room) has no flow for the seal water.	REP	RAW_SEWAGE	25/5/2020
223988	CL	"1. Grit auger will not shut off in local. 2. Grit pump will not run in auto and in local will only run when you hold the start button in."	REP	GRIT_PUMP	15/6/2020
223989	CL	Knocking in the RDT could be a bad bearing.	REP	WAS_TWAS	26/5/2020
223992	CL	Pressure sensor not operating properly and needs to be checked and or replaced.	REP	RAW-SLUDGE	8/6/2020
224143	CL	alum leaking at pump, please inspect and repair	REP	CHEMICAL	19/5/2020
224144	CL	Snaking the drainpipe heading into the sump pump in the scum gallery. Partially clogged. Need a rental snake to get the job done (both our current ones are OOS)	REP	SPLITTER-GALLERY	22/5/2020
224145	CL	Reading bounces from 3m3/hr to 80 m3/hr. should be running steady at 34 to 35 m3/hr.	REP	WAS_TWAS	25/5/2020
224146	CL	Flow meter to selector is reading signal fault.	REP	RETURN-SLUDGE	25/5/2020
224147	CL	Please replace existing flowmeter with new one, and coordinate with OT	INS	WAS_TWAS	19/5/2020
224149	CL	Wouldn't fire up	REP	WAS_TWAS	20/5/2020
224150	CL	Please check the odour control on the septage receiving and if needed replace.	REP	SEPTAGE	13/7/2020
224305	CL	Please look at the failed to start alarm on the blower of odour control	REP	ODOR_CONTROL	26/5/2020
224306	CL	Please investigate and repair low intensity alarm on UV bank #1 module #2	REP	UV_BLDG	25/5/2020
224308	CL	Please replace the O2 sensor on the upper gas system in the grit room.	REP	INFLUENT	26/5/2020

224311	CL	Please remove valve and clean rags out and reinstall valve.	REP	SECONDARY-CLARIFIER	11/6/2020
224313	CL	Boiler #2 loses its gas selection indication on SCADA after running for awhile. There may be a loose wire in the switch circuit to indicates which gas has been selected.	REP	BOILER	28/6/2020
224315	CL	Gear box needs to be replaced. Motor was replaced today. Pri clar 3 long coll 2	REP	PRIMARY_CLARIFIERS	28/5/2020
224316	CL	Transducer is faulting again please investigate and repair.	REP	CHEMICAL	29/6/2020
224317	CL	Please install a new light post and light at the north end of the plant gates	INS	OUTSIDE	23/7/2020
224592	CL	Want to add a second sludge judge "holder" on the brick wall outside of the top of the stairs coming up from the solarium. There is one currently on the inside of the wall but one would be useful for outside so we do not need to obstruct the doorway while coming in and out. (Please leave old one where it is, we will use as storage for an extra) - If needed please see Brooke F for more details/ clarification of positioning.	INS	PRIMARY_CLARIFIERS	9/6/2020
224593	CL	Please replace the sensor as it is reading 6.5 and the O2 is actually 20.9	REP	RAW_SEWAGE	1/6/2020
224594	CL	Please relocate lights in Hypo room to make room for the new platform	REP	CHEMICAL	2/6/2020
224596	CL	Please replace the seal on Secondary Effluent Pump No.5	REP	SECONDARY-PUMPING	27/5/2020
224597	CL	Waste flame has holes in the pipe, please investigate and repair	REP	CO-GEN	24/9/2020
224598	CL	Will not run in auto please look into this and repair.	REP	BOILER	5/6/2020
224792	CL	Re and re pump as the seal has been compromised	REP	WAS_TWAS	15/6/2020
224793	CL	Temperature sensor not working on the sludge outlet side of hot water loop 10.	REP	DIGESTER3	12/6/2020
224794	CL	Please check and replace / repair the CO sensor in the co-gen room.	REP	CO-GEN	12/6/2020
224795	CL	Please adjust the balancing vale from winter mode to summer mode.	REP	BOILER	10/6/2020
224796	CL	Please repair alum pump #6 as the VFD will not run.	REP	FLASH-FLOC	16/7/2020
224951	CL	Please do a complete rebuild of Primary#3	REP	PRIMARY_CLARIFIERS	23/10/2020
224959	CL	Grit Pump #1 flush valve out of place. (It has either lifted or sunk and so the valve is stuck closed).	REP	GRIT_PUMP	19/6/2020
224960	CL	Grit Pump #2 belts making slight noise, and wobbling.	REP	GRIT_PUMP	19/6/2020
224961	CL	Please replace batteries and charger	REP	CO-GEN	16/7/2020

225112	CL	We will be using a Viking E30-EWP Call-Box and will need to mount it to a SS plate. Mount to two arms coming out and the thought is to mount a SS plate to cover the arms about and inch above and an inch below about 12” or 16” wide. This plate would hold the call-box and anything else we may require such as entry instructions or phone numbers. The plate will need to have a cut out to panel mount the Call-Box – with the box on back of the plate and front panel on the front of the plate with a gasket in between. We will need to install a conduit from the box on the back either to the upper arm or lower arm to run cabling.	PRO	MAIN-PLANT	10/8/2020
225118	CL	Please clean the filter and change the belt on supply fan 60-SF-05 located on PD3 electrical shop roof.	REP	DIGESTER3	26/6/2020
225354	CL	We are trying to set the low alarm but every time it starts, we get a low flow alarm. Can you add in a delay on the low and low-low alarms so we can set them	REP	SECONDARY_DIGESTER	3/7/2020
225355	CL	Please assist contractor to install new storage racking in various areas of the plant	INS	MAIN-PLANT	3/7/2020
225569	CL	Leak in transfer line to day tank	REP	CHEMICAL	6/7/2020
225570	CL	Please check pump operation. Doesn't seem to be pumping enough.	REP	WAS_TWAS	6/7/2020
225571	CL	Change hose	REP	CHEMICAL	3/7/2020
225573	CL	Grit Blower #3 failed to start after a small power bump. Tried to reset and start in pc auto, pc man and locally and blower will not start. Fuse was not tripped but reset anyway. (Switched to blower #2)	REP	GRIT_PUMP	9/7/2020
225734	CL	Pump tripping out please have a look and repair if needed.	REP	DIGESTER1_2	15/7/2020
225735	CL	Grit conveyer will not run in hand or in auto. Please check and repair.	REP	GRIT_PUMP	28/7/2020
225888	CL	"July Item #4 Missing cover on electrical junction box of ceiling fan. Replace cover. "	REP	RETURN-SLUDGE	25/11/2020
225892	CL	"June Item #1 Unwatering pump room and Tunnel 10. Trip hazard. Due to missing floor grates. Install floor grates"	REP	RAW-SLUDGE	25/11/2020
225896	CL	Compactor motion sensor tripping the compactor off occasionally please have a look.	REP	RAW_SEWAGE	22/7/2020
225897	CL	TWAS not on the daily report. It is showing 0 m3 for last night.	REP	WAS_TWAS	24/7/2020
225898	CL	Display is not working on unit, please replace.	REP	RAW_SEWAGE	23/7/2020
225899	CL	Pump will not start can you please have an electrician check this pump out.	REP	SEPTAGE	23/7/2020
226115	CL	Pressure transmitter is not reading correctly and may be defective. Alarm has been disabled in SCADA.	REP	WAS_TWAS	28/7/2020

226117	CL	"[Followup Work Order to 225899] Comments from Farr, David on Jul 23 at 12:35PM: Visual inspection of all the electrical components. Cycled power on and off. Ran the pump in local. Switched back to PC. Ran for the next cycle when called. Saw that PLC called for the pump as well. Pump will not start can you please have an electrician check this pump out."	REP	SEPTAGE	27/7/2020
226119	CL	Low level float in back wash tank/septage receiving tangled. Unable to lower to proper height.	REP	OUTSIDE	4/8/2020
226120	CL	All sensors in wet well required to be looked at/ changed due to being submerged during high flows Sunday Aug 2nd 2020	REP	WET_WELL	4/8/2020
226364	CL	Excessive pump pulsation pipes shaking does not do this for the other pump.	REP	WAS_TWAS	19/8/2020
226366	CL	Looks like the scum system is back feeding to the hopper. The check valve might not be working.	REP	PRIMARY_CLARIFIERS	10/8/2020
226368	CL	Pump very noisy please check and repair if needed.	REP	RAW-SLUDGE	10/8/2020
226369	CL	Pump very noisy maybe a problem with motor or shaft.	REP	DIGESTER1_2	7/8/2020
226370	CL	Pump line needs to cleared and put back together.	REP	PRIMARY_CLARIFIERS	10/8/2020
226371	CL	Filter bridge #5 valve for changing water pumping route to the channel. This valve (located at side of the bridge) is EXTREMELY hard to operate. Please replace ASAP	REP	TERTIARY_BLDG	21/9/2020
226372	CL	Filter #6 valve for changing water pumping to channel is EXTREMELY hard to operate. This valve is located underneath the filter bridge. Also, the valve as it currently is installed is backwards not allowing for good leverage on moving it. Please replace as soon as possible and change direction for optimal handle operation.	REP	TERTIARY_BLDG	22/9/2020
226373	CL	Change out hose	REP	CHEMICAL	9/8/2020
226527	CL	Level very erratic please check and repair.	REP	CHEMICAL	2/12/2020
226528	CL	"Broken sheer pin and idler. Replaced idler arm and sheer pin"	REP	PRIMARY_CLARIFIERS	11/8/2020
226529	CL	Pressure gauge on the main line leaking bad please replace.	REP	ODOR_CONTROL	12/8/2020
226532	CL	Test	REP	AERATION	12/8/2020
226533	CL	Test	REP	AR-BLENDING	13/8/2020
226534	CL	Please repair flush valve on the discharge line.	REP	GRIT_PUMP	13/8/2020
226535	CL	UV transmittance unit not working	REP	UV_BLDG	17/8/2020
226690	CL	Please replace liners	REP	RAW_SEWAGE	19/8/2020
226694	CL	Doesn't appear to be working please check and repair or replace.	REP	AR-BLENDING	28/8/2020
226854	CL	Please check valve as it shows unknown position.	REP	CO-GEN	27/8/2020
226855	CL	The pop-up menu shows PC auto when in PC manual. PLEASE REPAIR	REP	RAW_SEWAGE	25/8/2020
226856	CL	Please have electrical verify the signal in CP14 as the filter backwash is showing a flow with no pumps running.	REP	SEPTAGE	27/8/2020

226857	CL	Flow meter FIT 1491 showing a flow on SCADA but nothing on the actual meter itself.	REP	SEPTAGE	26/8/2020
226866	CL	Issues with both pumps #1 runs but not level does not change and #2 keeps tripping out.	REP	SEPTAGE	27/8/2020
226869	CL	Mud valve on filter #6 spins both ways may be broken. Please repair.	REP	TERTIARY_BLDG	17/9/2020
227113	CL	Pump will not start.	REP	RAW_SEWAGE	8/9/2020
227116	CL	Pump runs but shows no flow.	REP	RBC	3/9/2020
227117	CL	Please have a contractor (Apex) come in to clean out the spill containment area for the sodium hypochlorite in the chemical building.	REP	CHEMICAL	3/9/2020
227120	CL	Pump Oil appears to have water in it please check to make sure.	REP	DIGESTER1_2	6/9/2020
227122	CL	Sec. Tank #5 skimmer #2 needs to be lowered. Riding above majority of fiow.	REP	SECONDARY-CLARIFIER	22/9/2020
227123	CL	Both blowers need oil topped up	REP	SEPTAGE	15/9/2020
227328	CL	Replacing a float line on a portable pump used for filter shocking	REP	TERTIARY_BLDG	8/9/2020
227330	CL	#5/3 LEL pump keeps giving a low flow alarm.	REP	AERATION	8/9/2020
227332	CL	Emergency lighting in Tunnel 8	REP	MAIN-PLANT	8/9/2020
227333	CL	Program is doubling the withdrawal so instead of getting 70m3 we are getting 140m3.	REP	RAW-SLUDGE	14/9/2020
227336	CL	Filter #1 needs some sand and diffusers at the east side of the filter.	REP	TERTIARY_BLDG	18/9/2020
227337	CL	Hose needs replacing may already have been done.	REP	CHEMICAL	14/9/2020
227489	CL	Irrigation line to the upper portion of the tower is broken or has come off. Pleas repair.	REP	ODOR_CONTROL	15/9/2020
227490	CL	Valve shows that it is not closing please check.	REP	RETURN-SLUDGE	15/9/2020
227492	CL	Looks like the bearing may be coming apart. It is the bearing close to Bradford.	REP	RBC	22/9/2020
227493	CL	Valve failing to open limits and valve needs to be checked.	REP	RAW-SLUDGE	28/9/2020
227494	CL	Leak on the transfer line. Located in the return sludge gallery tunnel	REP	CHEMICAL	18/9/2020
227499	CL	Filter bridge #1 skirts have come off and need to be replaced.	REP	TERTIARY_BLDG	3/11/2020
227500	CL	"Filter Bridge #1 crooked and front end and back end are almost a cell different. "	REP	TERTIARY_BLDG	24/9/2020
227656	CL	please replace valves on the east and west carbon media towers.	REP	OUTSIDE	25/9/2020
227657	CL	#2 sump pump	REP	SPLITTER-GALLERY	30/10/2020
227884	CL	Hot water pump #1 raw sludge gallery, will not start.	REP	PRIMARY_WATER	6/10/2020
228118	CL	Failed to start as it tripped the breaker. Has a vibration, different sound than the other blower.	REP	SEPTAGE	6/10/2020
228119	CL	Pump has failed, please replace.	REP	UNOX	19/10/2020
228120	CL	Pump has failed, please replace	REP	AR-BLENDING	6/10/2020
228121	CL	Reset mixers 5 and 6	REP	SELECTOR	19/10/2020

228122	CL	Suspect motor on primary tank long collector 1/3	REP	PRIMARY_CLARIFIERS	19/10/2020
228124	CL	Both gas dryers are going off on dual pressure.	REP	DIGESTER1_2	15/10/2020
228126	CL	Can't see voltages or amps from the incoming transformers.	REP	GENERATOR	15/10/2020
228276	CL	Please investigate and repair generator from not transferring.	REP	GENERATOR	9/10/2020
228279	CL	Recirculation pump not working.	REP	ODOR_CONTROL	15/10/2020
228280	CL	Hypo leak on suction side of hypo pump #2 right before valve we use to fill hypo jugs. Marked with caution tape. Leak happened when outlet valve to storage tank 2 is opened.	REP	CHEMICAL	15/10/2020
228425	CL	gas dryer automatic drip trap #1 solenoid valve making unusual noise and is hot to touch.	REP	DIGESTER1_2	3/11/2020
228426	CL	Please have someone repair the CO2 analyzer.	REP	AERATION	5/11/2020
228427	CL	Please remove old washing machine and have it in the maintenance shop ready for pick up on Wednesday Oct. 21. Vendor will install new machine.	INS	MAINT-BLDG	27/10/2020
228428	CL	Please remove old 75HP pump and install new cone in wet well and new 100HP pump.	REP	RAW_SEWAGE	16/11/2020
228429	CL	Please remove mixer and install new mixer, rebuild old mixer.	REP	DIGESTER1_2	26/10/2020
228431	CL	Please change power supply on UV bank No.9 module No.7	REP	TERTIARY_BLDG	28/10/2020
228433	CL	Please investigate rewrite notification on UV bank No.11 Module No.13	REP	TERTIARY_BLDG	23/10/2020
228434	CL	Please replace door switch on UV bank No.11 Module No.14	REP	TERTIARY_BLDG	28/10/2020
228437	CL	Making allot of noise needs to be repaired	REP	WAS_TWAS	26/10/2020
228438	CL	Win 911 not calling out to the on call phone	REP	SCADA_ROOM	23/10/2020
228439	CL	Loud noise from RDT please check and repair.	REP	WAS_TWAS	11/11/2020
228588	CL	Can you please trim the effluent gate slides so that we can get the gate in for shocking.	REP	TERTIARY_BLDG	27/10/2020
228592	CL	"Cationic Polymer pump #1 not pumping ""enough"". Needs to be replaced. When tested it was pumping 2L/min instead of the desired 7L/min being called for by SCADA. John H and Jake C were present during trouble shooting."	REP	WAS_TWAS	28/10/2020
228593	CL	changed motor on the unit heater at filter#6	REP	TERTIARY_BLDG	28/10/2020
228594	CL	please replace control transformer(EF1)	REP	WAS_TWAS	30/10/2020
228595	CL	Found this.D O PROBE Unox 5 cell 3. New length of PC pipe and coupler. Or duct tape.	REP	AERATION	29/10/2020
228596	CL	Please replace the motor on the heater in filter No.6	REP	TERTIARY_BLDG	30/10/2020
228597	CL	please replace plug valve with new butterfly valve on the hot water loop.	REP	BOILER	11/11/2020
228894	CL	Septage blowers keep failing to start. Units will not run in Auto or Manual, duty has also been disabled and enabled to try to get one of them to run.	REP	SEPTAGE	3/11/2020
228895	CL	Please investigate and repair no power problem at UV Module 12 , Bank 4.	REP	UV_BLDG	3/11/2020

228897	CL	Replace Receptacle on the deck outside of the stairwell for installation of heated matting	REP	MAIN-PLANT	3/11/2020
228900	CL	This is the CO2 gas analyzer for aeration 1-3. Breaker is in TWAS. Unit has a signal fault and has been powered off and on and still has fault.	REP	WAS_TWAS	11/11/2020
228901	CL	Please replace wheels and align the bridge.	REP	TERTIARY_BLDG	17/12/2020
228904	CL	Sump Pump in digester 1/2 building hi float does not work.	REP	DIGESTER1_2	23/11/2020
228905	CL	Hi float for sump in tunnel under cogen gets "stuck" on when tested. Easily triggered, not easily stopped.	REP	CO-GEN	2/12/2020
228906	CL	Sump pump in tunnel 11 (leading to PD3) pump #2 seems to not work. While testing and pumping down, no change in water level, no disturbance in the water surface and no audible water removal in piping.	REP	DIGESTER3	2/12/2020
228909	CL	VFD fault won't clear needs to be looked at and repaired.	REP	AR-BLENDING	18/12/2020
229063	CL	Pump not pumping maybe a check valve issue. According to Doug H.	REP	FLASH-FLOC	11/11/2020
229376	CL	Filter #6 overflow gate needs repair.	REP	TERTIARY_BLDG	23/11/2020
229378	CL	Repair or replace control panel handle and closing mechanism	REP	CHEMICAL	25/11/2020
229379	CL	Seal is leaking on the pump, please repair	REP	EFFLUENT-PUMP	23/12/2020
229380	CL	Please repair no power problem in bank #5 module #14	REP	UV_BLDG	27/11/2020
229381	CL	Local display not showing volume added but flow meter is working.	REP	SEPTAGE	27/11/2020
229621	CL	Please repair power supply issue in UV bank #9, module #7	REP	UV_BLDG	7/12/2020
229623	CL	Please repair bank #12. The 3 modules will not come on in manual mode.	REP	UV_BLDG	7/12/2020
229624	CL	Please repair fan on UV bank #10, module #10	REP	UV_BLDG	2/12/2020
229625	CL	Please install a plug outlet on the wall by the counter in the WAS/ TWAS control room.	INS	WAS_TWAS	23/12/2020
229626	CL	Rope switch will not reset please check and repair.	REP	RAW_SEWAGE	7/12/2020
229627	CL	Secondary Heat Loop No.12 Hot Water Pump No.2 is leaking.	REP	DIGESTER3	30/11/2020
229628	CL	Sump pump not working please check and repair	REP	CO-GEN	4/12/2020
229831	CL	Not working needs to be check and or repaired.	REP	WAS_TWAS	9/12/2020
229835	CL	Please investigate and repair cogen overloading issue	REP	CO-GEN	9/12/2020
229836	CL	Replacement of the defoamer pump for digester #1.	INS	DIGESTER1_2	10/12/2020
229983	CL	Repair air blower cord for the air supply used for confined space. Unit trips out GFCI.	REP	MAIN-PLANT	16/12/2020
229985	CL	Secondary alum feed line SC#1 goose neck has broken off, and will need to be replaced.	REP	OUTSIDE	24/12/2020
229987	CL	(BLR2295_01_SF) Odor control blower has fail to start alarm and when investigated, the belt for the blower was on the ground broken. The belt will need to be replaced and is in the operations room if needed for reference.	REP	ODOR_CONTROL	21/12/2020

230136	CL	Filter Bridge #6 when retracting to home position bridge stops at two locations for no reason and creates an alarm. Festoon cable requires attention as it is pulling the top of the cabinet instead of the mast.	REP	TERTIARY_BLDG	31/12/2020
230137	CL	Please replace the pump as it is not working	REP	TERTIARY_BLDG	31/12/2020