

Alexandria Wastewater System

2020 Annual Report

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Appendix A: Wastewater Treatment Works Performance Results

Appendix B: Sludge Monitoring Report

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Appendix D: Monitoring Well Report

Appendix E: Annual Leachate Hauling Report

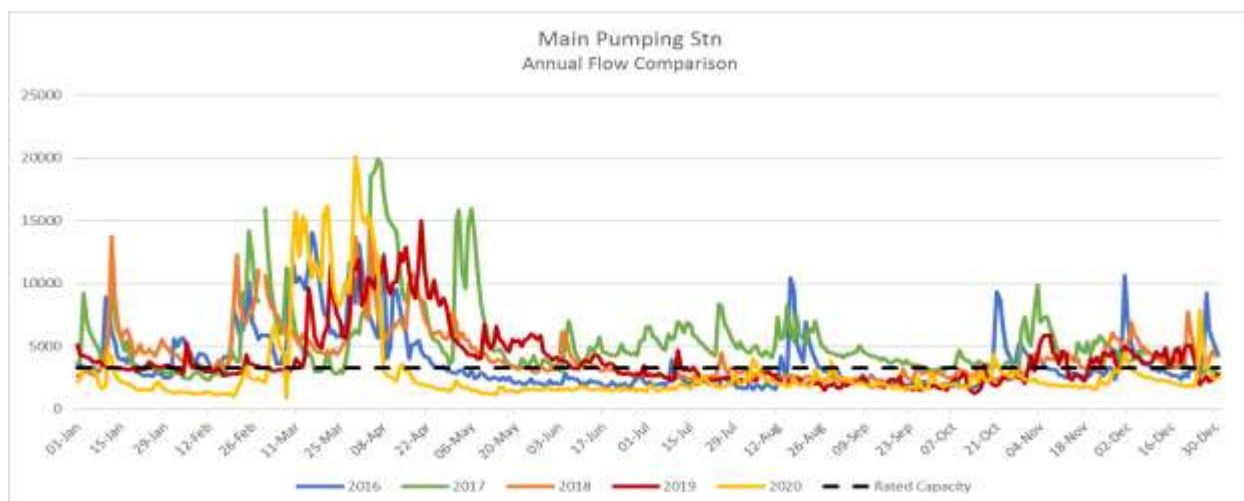
A. Performance Assessment

Summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in condition 7, including an overview of success and adequacy of works

The Alexandria sewage works system is categorized as a continuous discharge class 2 facility, which includes a sanitary sewage collection system and a wastewater lagoon treatment facility. The collection system is comprised of 25.0kms of sanitary sewage collection pipes and force mains of various sizes, with approximately 1585 residential and commercial service connections, 3 sanitary lift stations and 1 main pumping station. The lagoon treatment system is comprised of an aeration cell, with coagulant addition for phosphorous removal, 3 facultative cells that run-in series and a disinfection and dichlorination chamber, which discharges to an unnamed drain prior to entering the Delisle river. Sodium Hypochlorite is used to disinfect the treated wastewater, while sodium bisulfate is used to dechlorinate the effluent wastewater prior to discharge into the receiver.

During the 2020 calendar year 1,086,251m³ of raw untreated raw sewage was directed towards the Alexandria Lagoon Treatment Facility, based on the metered total from the main pumping station effluent flows. Included the total main station flows are 3,730m³ of leachate from the Alexandria Waste Disposal Site, hauled between April 20th and May 8th and approximately 34,875m³ of surface water from the Garry River system, which back flowed through the by-pass channel intermittently between February 5th and April 17th. The back-flow events coincided with spring thaw and snow melt events. Flow trending throughout 2020 was observed to be within normal to lower ranges than historically observed, this may be attributed to work completed in collection system to prevent infiltration and inflow over the last few years, see Figure 1 below for a 5-year annual flow comparison.

Figure 1: 5-yr Main Station Flow Comparison



The system was operated well for the most part of 2020, and produced an effluent meeting the Federal Effluent Limits and the Provincial Environmental Compliance Approval Limits, with exception of specific monthly parameters in January and February, these overages will be discussed in section G. All calculated annual averages were found to be well below limit concentrations, please refer to Table 1 below for annual average concentration and to Appendix A for system summaries.

Table 1: 7(1) of the ECA states effluent limits are as follows:

Effluent Parameter	Average Concentration Limit	2020 Average Concentration
CBOD ₅	30 mg/L	7.2 mg/L
TSS	40 mg/L	9.9 mg/L
TP	0.5 mg/L	0.22 mg/L
Total Chlorine Residual	0.02 mg/L	0.01 mg/L
pH (<i>maintained inclusive at all time</i>)	6.0-9.5	6.87 - 8.62
E. Coli (<i>geometric mean density</i>)	<200 organisms/100 mL	0/100mL

B. Groundwater Monitoring

Summary and interpretation of all ground water monitoring data

A groundwater monitoring plan was prepared in 2012 by McIntosh Perry and submitted to the MOE, as per requirements. As part of these requirements the Township had the 2 monitoring wells installed on March 5, 2013. Samples to be used as background counts were taken on March 6, 2013 and sampling continues in March each year. All sampling results were found to indicate that no major impacts downstream were observed, but possible minor increases were noted in nitrogen, reported as total ammonia, and total organic carbon. Please refer to Table 2 below for summary and Appendix D for full summary of results.

Table 2: Monitoring Well Sampling Program:

Parameter	Monitoring Well #1		Monitoring Well #2	
	Background results (March 6, 2013)	2020 Sampling Results (March 4, 2020)	Background results (March 6, 2013)	2020 Sampling Results (March 4, 2020)
TOC	8 mg/L	0.7 mg/L	15.2 mg/L	10 mg/L
TP	3.8 mg/L	0.56 mg/L	0.47 mg/L	0.24 mg/L
TKN	0.83 mg/L	0.70 mg/L	1.12 mg/L	0.60 mg/L
Nitrogen	< 0.01 mg/L	0.08 mg/L	0.22 mg/L	0.20 mg/L
Nitrite	< 0.1 mg/L	< 0.1 mg/L	0.5 mg/L	< 0.1 mg/L
Nitrate	< 0.1 mg/L	0.2 mg/L	<0.1 mg/L	< 0.1 mg/L
E. coli	<2 cfu/100 mL	0 /100 mL	<2 cfu/100 mL	0 /100 mL

C. Operational Problems

Description of any operating problems encountered, and corrective actions taken

Collection System:

- Debris in wastewater impeding pump operations, check valve operations, or increasing running amperage at multiple stations. Units inspected, repaired or flows reversed to dislodge obstructions, before placing pumps back in operation.
- Grease and sludge buildup noted in sanitary lift station wet wells, station was cleaned as required.
- Excessive flows or pump run times, mostly noted during spring thaw, with large amounts of infiltration noted at Leroux Lift Station, Bishop Lift Station and Main Pumping Station.
- Replacement of defective equipment, including floats, check valve, variable frequency drive, damaged wiring, and start contactor
- Multiple issues with gas sensors at main pumping stations, replacement and calibrations completed on multiple occasions
- A section of the main pumping station effluent piping froze, due lack of pump operations and low temperatures. Thawing achieved through pump operations.
- 21 residential sanitary sewer lateral backups, 16 resolved and 5 cases unresolved due to additional actions required. The majority of cases were found to be issues on owners side and caused by root penetration or lateral degradation due to type of piping installed.
- Flow issues at main pumping station noted intermittently, final flow verification and calibration completed in April. Issues no longer observed.

Treatment System:

- Exceedances noted in CBOD5, TP and total chlorine residual at lagoon effluent; ECA limits were only exceeded in January for TP. Treatment shortfalls typically observed under ice cover, as such treatment upgrade designs were submitted to MECP, no approval to date, although the Township is actively seeking funding options for this project.
- Additional sampling as per plan submitted to Environment Canada, results indicated intermittent elevated results for toluene, total phosphorous, dissolved aluminum, cobalt, copper, iron and zinc.
- Repair to defective aerators were completed by Hewitt.

D. Maintenance

Summary of all maintenance carried out on any structure, equipment, apparatus, mechanism or thing forming part of the works.

Collection System:

- CCTV the sanitary sewers along the east side of the Alexandria, some issues noted and repaired planned as part of 2021 budget cycle
- Installation of SCADA system at main pumping station, with remote monitoring
- Hydro One changed utility meter
- Annual calibration of level sensors, flow meters, generators, chain blocks and lifting devices
- Bi-annual gas monitor calibration

Treatment System:

- Installed man access hatch and partial cleaning of coagulant storage tank
- Oil change in all aerators
- Lagoon level adjustments, based on visual observation or as preventative measures for anticipated high flows (spring thaw or prolonged major rainfall events)
- Annual calibration of analyzer equipment calibration, flow sensors and level monitors
- Sludge levels taken in Spring and Fall

E. Effluent Quality Control and Assurance

Summary of any effluent quality assurance or control measures undertaken in the reporting period

All sampling was performed within provincial guidelines by licensed operators. Effluent quality control and assurance measures were undertaken by a MECP certified laboratory, Caduceon Environmental laboratories and AGAT Laboratories, which conduct analysis for the Township.

F. Flow Measurement Calibration

Summary of the calibration and maintenance carried out on all effluent monitoring equipment

Calibration verification for flow meters at main pumping station and lagoons was completed by TEC in April 2020. All handheld testing equipment was calibrated by ClearTech in June 2020. Annual calibrations were performed on all detection units (pumping station level indicators and chemical tank level indicators), hour meters/counters and flow sensing devices (magmeter, miltronics, etc) by St- Laurent Instrumentation between October 2020 and December 2020.

G. Effluent Objectives

Description of effort made, and results achieved in meeting the effluent objectives of condition 6

Most parameters were well below the Environmental Compliance Approval (ECA) effluent limits and effluent design objectives, which indicates the system was working as designed. The only ECA limit exceeded during the 2020 calendar year was the monthly January average TP; and the only ECA objectives exceeded were the January monthly CBOD₅, TSS and TP and the February TP. These events occurred while the lagoons were under ice cover, which historically observed upset conditions due to lack of oxygen to aid in treatment. Due to work completed on aerators, and that all 3 units were in operation, the adverse conditions appear to have been shorter duration and increased system treatment conditions. Table 3, see below, shows a summary of these results, please refer to Appendix A full summary of flows, raw and treated effluent quality analysis for the Alexandria Sewage Treatment Works.

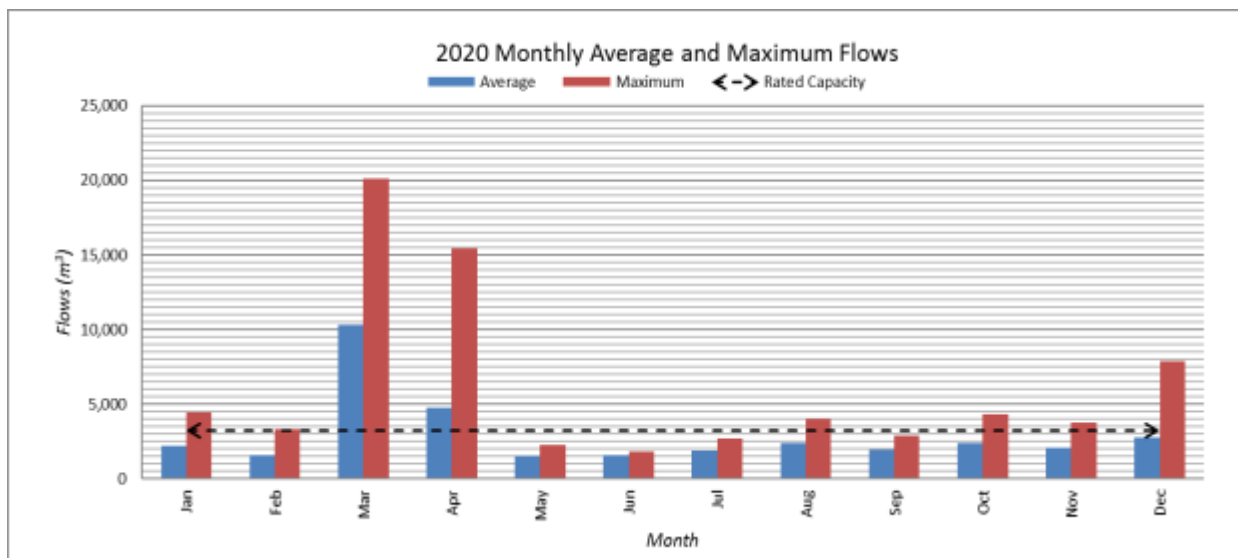
There were no reports made in regard to floating or settleable solids within the wastewater effluent. There were also no reports made that the effluent wastewater contained oil or any other substance that created a visible film, sheen, foam or discoloration to the receiving waters.

Table 3: 6(1) of the ECA effluent objectives and 7(1-3) of the ECA effluent limits are as follows:

	Effluent Parameters						
	CBOD ₅ (mg/L)	TSS (mg/L)	TP (mg/L)	Total Chlorine Residual (mg/L)	pH		E. Coli (geometric mean density) (organisms/100 mL)
					Min	Max	
<i>Concentration Limits</i>	30	40	0.5 mg/L	0.2 mg/L	6.0	9.5	< 200
<i>Concentration Objective</i>	25	25	0.4 mg/L	non-detect			< 150
January	28.8	34.5	0.62	0.01	7.15	7.88	6.3
February	16.0	19.8	0.47	0.01	7.12	7.35	2.0
March	9.0	8.3	0.24	0.02	6.98	7.69	2.3
April	4.2	12.8	0.21	0.01	7.29	8.14	1.0
May	5.0	20.0	0.30	0.01	7.55	8.16	0.0
June	3.8	6.0	0.21	0.01	7.07	7.25	0.0
July	3.0	3.2	0.13	0.01	6.91	7.27	0.0
August	3.0	3.0	0.12	0.01	7.14	7.45	0.0
September	3.2	3.0	0.06	0.01	6.91	8.62	0.0
October	8.0	3.0	0.07	0.01	6.87	7.69	0.0
November	3.0	5.5	0.15	0.01	7.63	8.10	0.0
December	3.0	3.2	0.13	0.01	7.46	8.62	0.0
Annual	7.2	9.9	0.22	0.01	6.87	8.62	0.0

The annual average daily flow for 2020 is calculated to be 2,968m³/day, this represents 91.7% of the total rated capacity for this facility, which although is over the requirements to assess the current system rating and impacts to receivers, it is within the rated capacity for this facility. The maximum daily flow for the year was reported to be 20,130 m³/day, which was reported during the month of March, when influent was observed at the main pumping station. Please refer to the figure 2 below and to Appendix A for a full summary of flows, for the Alexandria Sewage Treatment Works.

Figure 2: 2020 Monthly Flow Summaries

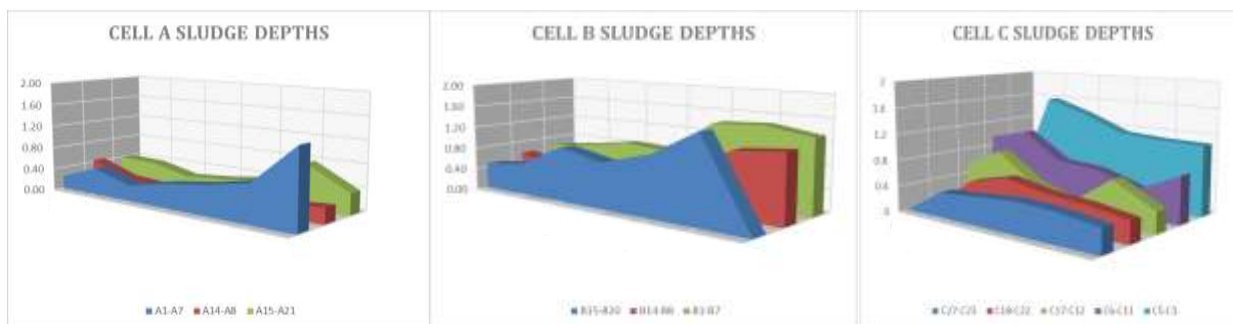


H. Sludge Accumulation

Tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and summary of the locations to where the sludge was disposed

A Sludge Management Plan was put into place in 2008. The sludge levels were measured twice during 2020, in June and again in October at 21 locations in Cell A, 20 locations in Cell B, and 27 locations in Cell C. The levels observed in October indicated that, 3 locations in Cell A, 13 locations in Cell B, and 12 locations in Cell C were found to have elevated sludge levels and Cell B was noted to have a high total sludge volume.

The current sludge volumes are within the normally observed ranges, overall sludge volumes were reduced from the 2019. Cell A volume was 40% and observed to be built up in the south east side of cell; Cell B sludge volume is over 90% and elevated levels across full cell from midpoint to east side of the cell. Cell C volume was 56% of the overall cell capacity and observed to be built up on north side of cell, near inlet piping. The Township has budgeted to invest into removal methods for 2021.



I. Complaints

Summary of any complaints received during the reporting period and any steps taken to address the complaints

There were only about a dozen received complaints from homeowners, the majority of these complaints being backing up sewer laterals. In the most cases, the issues were on the homeowner's side resulting in private contracted services. In a few cases the laterals were cameraed, and services were repaired, or arrangements were made to repair by township if the problem was found to be on township side.

No other types of complaints were logged during 2020.

J. Bypass, Overflow, spill, abnormal discharge events

Summary of all bypass, spill or abnormal discharge event

There were no primary or secondary bypasses reported throughout 2020. The Bypass Summary report was included in appendix C.

K. Other

Any other information the District Manager requires from time to time

EOS 2000

i. Equipment Summary

The date of installation and removal of the EOS-2000 unit within each unit

The EOS unit was not installed or operated during this reporting period, so as such there was no additional monitoring was completed.

ii. Monitoring

Summary of all monitoring data (pH, BOD, TSS, Ammonia, TP, Sludge depth, Dissolved Oxygen)

Not applicable

iii. Results Summary

An interpretation of all monitoring data (raw data, graphs, trend analysis and statistical analysis)

Not applicable

iv. Recommended Actions

Recommendations regarding any changes to the monitoring program or operational changes of the EOS-2000 unit

Not applicable

**NORTH GLENGARRY WATER WORKS
WASTEWATER TREATMENT WORKS PERFORMANCE RESULTS**

Municipality: North Glengarry

Year: 2020

Project: Alexandria STP

Receiving Stream: Delisle River

Description: 1 Pumping Station, 1 Aerated Cell, 3 Facultative Cells
Continuous Discharge with Phosphorous Removal

Design Capacity: 3237 m³/day

MONTH	Flows			Biochemical O ₂ Demand			Suspended Solids			Phosphorus		
	Total Flows (m ³)	Average Daily Flow (m ³)	Maximum Daily Flow (m ³)	Average Raw CBOD ₅ (mg/L)	Average Effluent CBOD ₅ (mg/L)	Percent Removal %	Average Raw SS (mg/L)	Average Effluent SS (mg/L)	Percent Removal %	Average Raw TP (mg/L)	Average Effluent TP (mg/L)	Percent Removal %
Jan	68,335	2,206	4,472	159.0	28.8	81.9	210.0	34.5	83.6	3.01	0.62	79.4
Feb	46,195	1,593	3,351	52.5	16.0	69.5	51.5	19.8	61.7	0.90	0.47	48.1
Mar	319,104	10,294	20,130	57.0	9.0	84.2	127.5	8.3	93.5	1.02	0.24	76.6
Apr	143,254	4,775	15,459	68.7	4.2	93.9	195.0	12.8	93.4	1.66	0.21	87.6
May	47,325	1,527	2,284	204.0	5.0	97.6	880.0	20.0	97.7	8.48	0.30	96.5
Jun	47,326	1,578	1,805	203.5	3.8	98.1	530.0	6.0	98.9	7.04	0.21	97.0
Jul	58,224	1,878	2,739	156.5	3.0	98.1	475.0	3.2	99.3	4.76	0.13	97.3
Aug	74,781	2,412	4,000	158.0	3.0	98.1	425.0	3.0	99.3	3.77	0.12	96.9
Sep	58,103	1,937	2,870	480.3	3.2	99.3	250.0	3.0	98.8	2.62	0.06	97.9
Oct	75,091	2,422	4,337	62.0	8.0	87.1	135.0	3.0	97.8	1.61	0.07	95.5
Nov	62,753	2,092	3,753	88.0	3.0	96.6	177.5	5.5	96.9	3.35	0.15	95.7
Dec	85,761	2,766	7,869	114.5	3.0	97.4	222.5	3.2	98.6	3.00	0.13	95.7
Total	1,086,251											
Average		2,957		150.3	7.5	92	306.6	10.2	93	3.43	0.22	89
Maximum			20,130	480.3	28.8	99	880.0	34.5	99	8.48	0.62	98
Criteria		3,237			30			40			0.50	

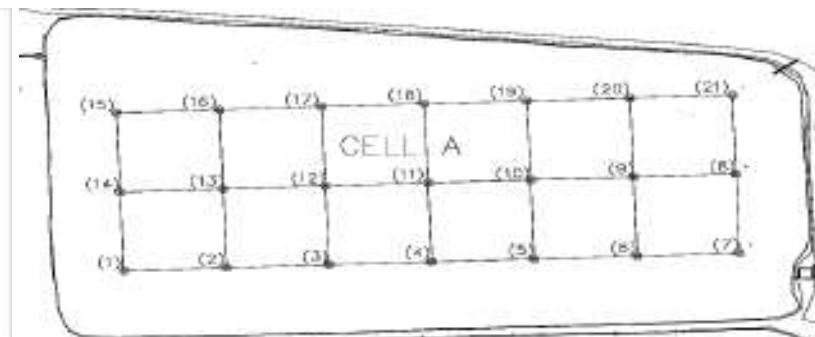
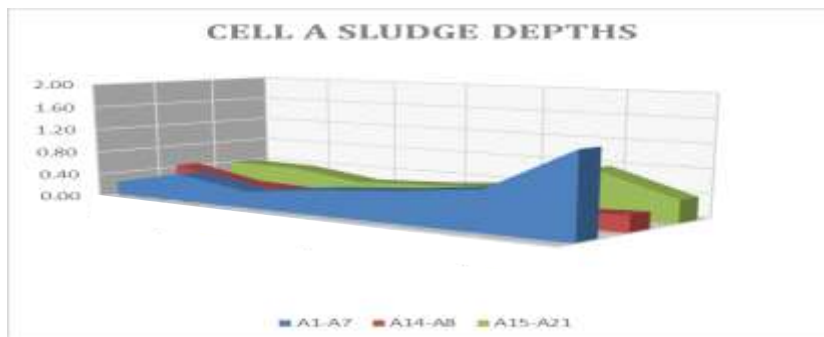
**NORTH GLENGARRY WATER WORKS
2020 WASTEWATER TREATMENT PERFORMANCE RESULTS**

MONTH	Ammonia			TKN			Nitrite			Nitrate		
	Average Raw Ammonia (mg/L)	Average Effluent Ammonia (mg/L)	Percent Removal %	Average Raw TKN (mg/L)	Average Effluent TKN (mg/L)	Percent Removal %	Average Raw Nitrite (mg/L)	Average Effluent Nitrite (mg/L)	Percent Removal %	Average Raw Nitrate (mg/L)	Average Effluent Nitrate (mg/L)	Percent Removal %
Jan	5.23	6.80		21.90	12.13	44.6	n/a	0.12		n/a	0.1	
Feb	10.20	9.44		16.55	15.15	8.5	n/a	0.09		n/a	0.1	
Mar	7.68	7.94		7.15	11.63	-62.6	n/a	0.15		n/a	0.4	
Apr	3.55	4.70		10.10	6.66	34.1	n/a	0.09		n/a	0.4	
May	8.41	2.80		39.40	5.98	84.8	n/a	0.12		n/a	0.6	
Jun	13.84	5.25		35.10	8.02	77.2	n/a	0.14		n/a	0.4	
Jul	15.33	5.44		28.25	3.55	87.4	n/a	0.25		n/a	0.7	
Aug	10.25	2.67		21.65	1.75	91.9	n/a	0.09		n/a	0.8	
Sep	12.02	0.25		20.60	1.30	93.7	n/a	0.09		n/a	1.0	
Oct	11.09	5.01		14.05	6.25	55.5	n/a	0.20		n/a	0.7	
Nov	11.67	12.18		19.75	15.50	21.5	n/a	0.18		n/a	1.1	
Dec	7.63	14.48		20.50	18.40	10.2	n/a	0.09		n/a	1.5	
Total												
Average	9.74	6.41		21.25	8.86	46		0.13			0.65	
Maximum	15.33	14.48		39.4	18.4	94		0.25			1.52	
Criteria												

**NORTH GLENGARRY WATER WORKS
2020 WASTEWATER TREATMENT PERFORMANCE RESULTS**

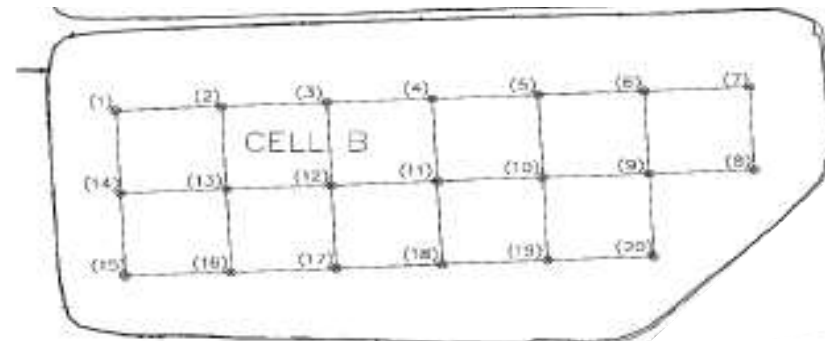
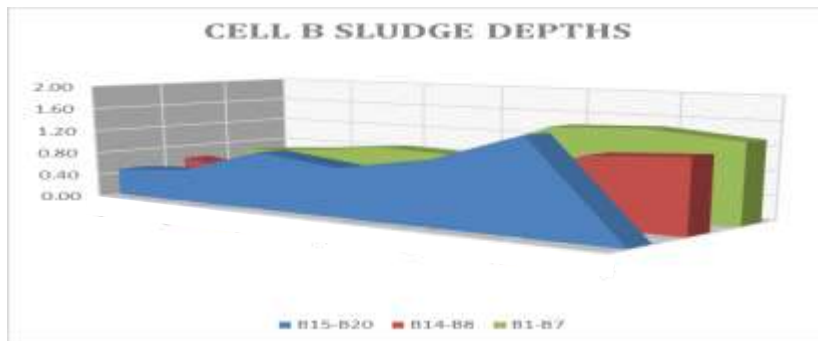
MONTH	Hydrogen Sulphide			E. coli			pH	Temp	Cl ₂
	Average Raw H ₂ S (mg/L)	Average Effluent H ₂ S (mg/L)	Percent Removal %	Average Raw E. coli cfu/100ml	Average Effluent E. coli cfu/100ml	Percent Removal %	Average Effluent pH	Average Effluent Temp °C	Average Effluent Cl ₂ mg/L
Jan	n/a	0.15		n/a	6.30		7.41	1.35	0.01
Feb	n/a	0.06		n/a	1.99		7.24	3.72	0.01
Mar	n/a	0.04		n/a	2.25		7.20	2.45	0.02
Apr	n/a	0.02		n/a	1.04		7.66	7.14	0.01
May	n/a	0.04		n/a	0.00		7.94	14.75	0.01
Jun	n/a	0.01		n/a	0.03		7.19	21.96	0.01
Jul	n/a	0.01		n/a	0.01		7.07	25.53	0.01
Aug	n/a	0.01		n/a	0.01		7.36	22.41	0.01
Sep	n/a	0.01		n/a	0.00		7.72	17.24	0.01
Oct	n/a	0.01		n/a	0.00		7.32	10.80	0.01
Nov	n/a	0.01		n/a	0.00		7.86	5.08	0.01
Dec	n/a	0.01		n/a	0.00		7.88	4.82	0.01
Total									
Average		0.03			0.0		7.62	13.06	0.01
Maximum		0.15			6.3		8.68	26.80	0.02
Criteria					200		6.0 - 9.5		0.02

Date	Cell A - Sample Point Sludge Volume m ³																					Total Sludge Volume (m ³)	Warning Trigger	Sludge Volume %
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
17-Sep-09	1224	318	584	524	1106	656	1116	902	911	608	608	405	608	565	1413	1235	576	1049	593	214	730	15943		30.4
11-May-10	291	185	266	131	316	394	921	564	405	142	405	203	113	558	309	144	131	119	150	355	6302		12.0	
11-Nov-10	204	265	398	1180	395	918	418	857	911	304	142	344	243	271	744	370	288	577	356	321	522	10028		19.1
12-Dec-11	437	450	266	1311	395	1312	921	857	770	547	547	405	405	339	632	1080	778	446	522	428	689	13534		25.8
24-Oct-12	379	344	266	262	658	787	1423	1037	608	567	506	770	263	1153	558	556	1037	393	309	321	1169	13364		25.5
06-Oct-14	525	397	717	550	1000	1758	2399	2187	871	466	365	446	567	543	558	926	922	1101	997	684	1294	19271		36.8
04-Nov-15	437	397	398	393	395	787	837	1375	608	608	304	304	608	678	558	926	864	1599	1448	321	960	14804		28.2
18-May-16	787	847	1274	1127	1922	2440	4017	1871	830	770	365	608	547	452	1190	525	490	1651	1021	919	2358	26011		49.6
17-Nov-16	641	609	611	603	605	1653	3850	744	668	668	466	770	243	611	818	1173	346	708	902	599	1315	18601		35.5
01-Jun-17	379	477	743	865	869	1679	2762	2232	891	668	466	263	263	633	1227	864	230	79	309	492	376	16767		32.0
15-Nov-17	350	344	611	734	605	1784	2288	744	972	567	-243	162	142	520	260	556	518	996	309	1347	1294	14859		28.3
07-Jun-18	816	79	823	682	1527	2047	3013	1420	1175	365	668	668	263	633	669	1729	720	734	831	1026	1315	21202		40.4
29-Oct-19	933	609	797	996	605	1391	4436	3810	1276	668	567	466	506	1018	1413	864	1008	708	878	919	1899	25766		49.1
05-Jun-20	1236	927	876	1520	1132	2309	3013	3404	709	972	668	466	770	837	1599	1173	1238	1049	1021	1240	1189	27347		52.2
28-Oct-20	670	1271	743	1127	1395	1784	3794	631	466	628	466	304	405	972	1487	0	634	655	902	1667	793	20796		39.7



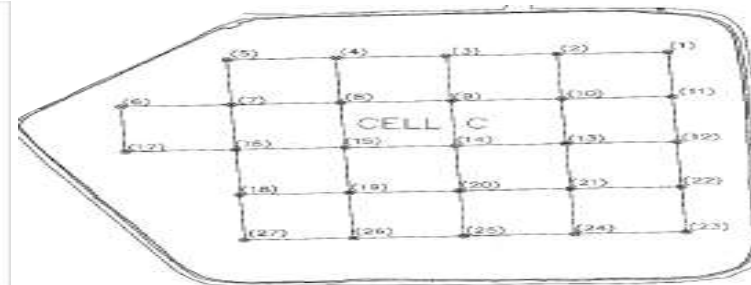
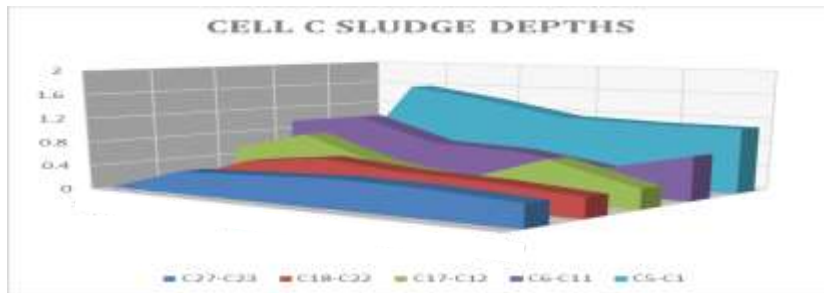
- Sludge depths taken October 28, 2020
- Sludge volume calculated to be 39.7%, which is a 9.4% reduction from 2019 values
- 3 locations exceeded high level triggers; sludge build up located on south-east side of cell

Date	Cell B- Sample Point Sludge Volume m ³																				Total Sludge Volume (m ³)	Warning Trigger	Sludge Volume %
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
17-Sep-09	753	995	844	1123	1264	1663	4850	2717	1438	1742	608	810	608	933	368	720	780	1067	846	1850	25978		51.0
11-May-10	452	1081	844	1067	3398	3354	3861	3413	1843	1215	770	770	608	542	490	480	1170	1404	1693	1388	29841		58.6
11-Nov-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0.0
12-Dec-11	2891	853	1069	1853	2836	5045	64	112	1013	2045	911	668	1337	651	49	959	1118	927	1778	3917	30096		59.1
24-Oct-12	1235	1308	1434	1488	1207	1968	2202	2740	1337	668	567	608	567	651	809	480	780	1629	2003	1264	24945		49.0
06-Oct-14	2168	2190	2391	2724	3229	4103	3446	1639	2592	1762	1053	1053	911	1345	1642	1247	1561	2303	2173	2991	42522	Total Sludge Volume High	83.5
04-Nov-15	2771	910	1744	899	3033	3687	3765	2201	2491	1883	1458	1154	749	911	1275	1127	1613	2303	2314	2097	38383	Total Sludge Volume High	75.3
18-May-16	2048	1934	2897	3678	4437	2994	5871	3211	2795	1985	2390	1580	911	1019	1593	1871	1743	2246	2173	3547	50921	Total Sludge Volume High	99.9
14-Nov-16	2048	1650	3319	2892	3594	4241	4244	1639	2187	1985	1377	1053	851	1995	1520	1367	1613	2190	2314	2991	45069	Total Sludge Volume High	88.5
01-Jun-17	2048	1650	1350	2050	3033	2744	4276	2987	1883	2693	1883	1175	1175	1041	1544	1271	1248	1769	2342	2560	40721	Total Sludge Volume High	79.9
16-Nov-17	1144	1081	2194	2050	3454	3964	2968	2201	1883	2187	1782	1175	972	1019	4094	1751	1899	2050	2624	2683	43173	Total Sludge Volume High	84.7
07-Jun-18	1897	2076	2616	3313	3454	1746	2617	2201	1458	1681	1580	1175	972	1019	1593	2351	1769	1881	2596	3176	41170	Total Sludge Volume High	80.8
29-Oct-19	2349	1934	2334	2892	3173	3964	5042	3458	2693	2187	1377	1013	1276	1345	1152	1631	1769	2246	2173	3176	47184	Total Sludge Volume High	92.6
04-Jun-20	2048	1792	2109	2892	4296	3271	4244	2987	1883	2491	2045	1053	749	1627	1348	1007	1691	2162	2370	2220	44286	Total Sludge Volume High	86.9
28-Oct-20	1897	2076	2419	2274	3959	4047	4244	2717	2288	1316	1114	1175	810	1236	1152	1367	2549	2303	2963	4718	46625	Total Sludge Volume High	91.5



- Sludge depths taken October 28, 2020
- Sludge volume calculated to be 91.5%, which is a 1.1% reduction from 2019 values
- 13 locations exceeded high level triggers; sludge build up located on south-east side of cell
- The Township has budgeted to commence the sludge removal process in this cell in 2021

Date	Cell C- Sample Point Sludge Volume m ³																											Total Sludge Volume (m ³)	Warning Trigger	Sludge Volume %
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27			
17-Sep-09	311	837	615	913	1425	679	770	567	668	608	615	432	709	344	405	446	402	594	446	506	608	362	305	352	798	602	1172	12291		18.6
11-May-10	467	419	196	554	1344	113	608	203	506	1013	329	324	304	203	101	304	709	350	203	405	101	213	457	146	285	410	533	8651		13.1
11-Nov-10	373	419	475	830	1909	340	608	405	405	1438	549	367	203	344	405	446	591	699	446	344	405	319	457	0	570	410	533	11594		17.5
12-Dec-11	840	921	1397	1107	1479	747	1681	1114	446	506	373	540	405	446	344	405	1181	594	506	506	506	1171	457	439	342	465	959	15538		23.5
24-Oct-12	933	837	1146	1135	1102	815	729	1033	567	506	439	324	466	365	365	567	709	874	365	304	304	532	457	879	370	766	533	13579		20.5
06-Oct-14	1960	1395	1537	2574	2285	1924	1114	1296	1053	851	1405	1382	608	891	851	668	1772	1224	628	851	405	1703	2348	1025	1054	547	1456	26267		39.7
04-Nov-16	2085	2037	1761	3266	4517	2309	2187	1073	668	668	703	1123	446	446	142	648	1347	944	668	668	648	1107	1586	1084	1054	876	1491	27704		41.9
18-May-16	2894	2316	2878	3404	3441	1064	851	871	567	770	1823	929	668	446	608	567	1229	1993	749	648	547	1618	1738	1084	1054	876	1491	28713		43.4
14-Nov-16	2116	781	1202	1744	3119	1200	871	567	446	871	922	1361	567	770	567	466	756	1469	668	648	446	1341	1890	1318	1196	1833	2024	21108		31.9
01-Jun-17	1494	1339	1649	1218	2258	1879	972	1296	871	567	1713	1577	972	770	466	871	898	1503	365	567	972	1235	1616	1113	1082	766	1527	23242		35.1
17-Nov-17	2427	2762	3465	3958	3038	1766	1377	1073	871	567	1493	713	567	668	567	446	1016	1503	668	466	668	809	1768	1113	940	903	1349	29411		44.5
07-Jun-18	1805	1702	1062	2435	2097	1652	770	628	790	506	1208	1361	871	1215	770	1175	1229	1329	567	365	709	1235	1677	1318	1510	1176	1598	23534		35.6
28-Oct-19	3516	3292	3717	3542	4517	3237	2795	2086	1701	1175	2921	1469	770	668	871	1073	2433	2378	1175	1175	1478	1980	2531	1699	1510	1587	2414	44508	Total Sludge Volume High	67.3
04-Jun-20	3578	3097	4276	5424	4920	2558	1883	1235	1377	1114	1867	3910	1073	1013	1175	2592	2174	2902	972	1073	972	1767	2836	1523	1624	1751	2911	48211	Total Sludge Volume High	72.9
28-Oct-20	3361	3041	3046	3819	4248	2105	2187	1377	1276	871	1603	713	1377	466	830	1681	1181	1573	1215	972	871	702	1128	1318	1367	1176	1349	36941		55.8



- Sludge depths taken October 28, 2020
- Sludge volume calculated to be 55.8%, which is a 11.5% reduction from 2019 values
- 12 locations exceeded high level triggers; sludge build up located on south-east side of cell

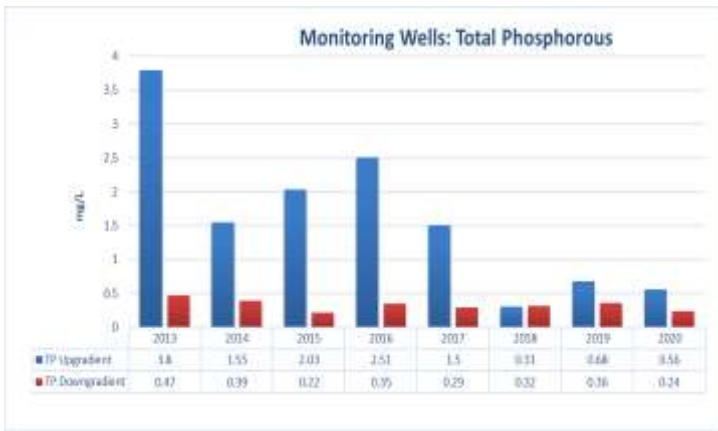
Facility Name: Alexandria WWTP
Report Year: 2020

2.0- Pumping Station and Plant Bypass Monthly Summary

Month	Primary Bypass			Secondary Bypass		
	No. of Days (days)	Duration (hours)	Volume (m ³)	No. of Days (days)	Duration (hours)	Volume (1000m ³)
January	0					
February	0					
March	0					
April	0					
May	0					
June	0					
July	0					
August	0					
September	0					
October	0					
November	0					
December	0					
Total	0		0			
Volume of Bypass as % of AADF* Daily Flow			0.00000			

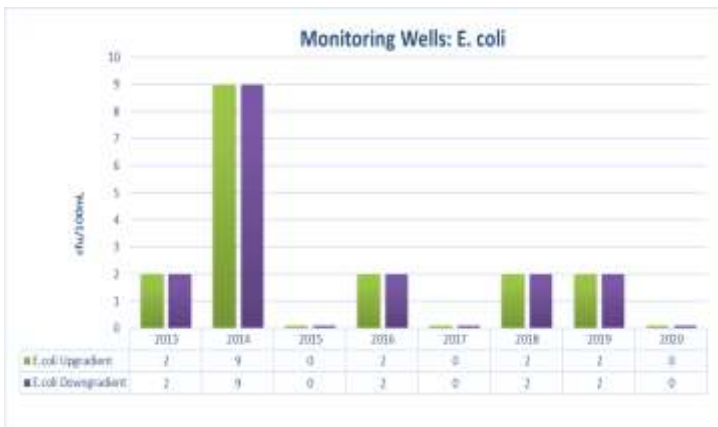
<p>*AADF(m³/d) = 0</p> <p>%= ((Volume of Bypass/AADF)/365)*100</p>

Alexandria Monitoring Wells Sampling

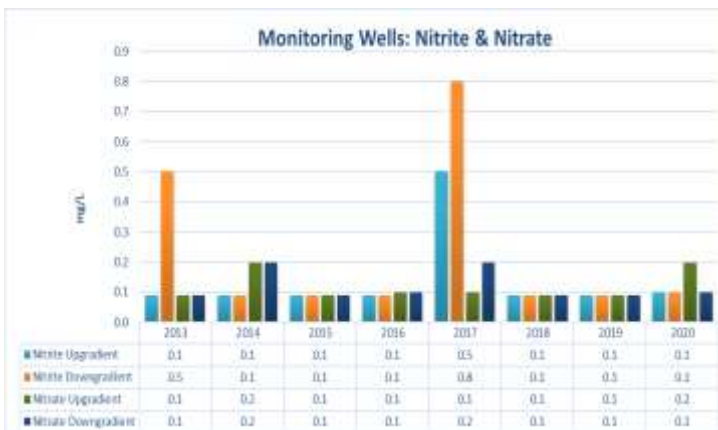


Total Phosphorous downgradient was found to be half of the result than the upgradient results, which is in-line with historical results, indicating little to no impact.

It is worth noting that the sampling results since 2018 are significantly lower than previous sample results historically observed.

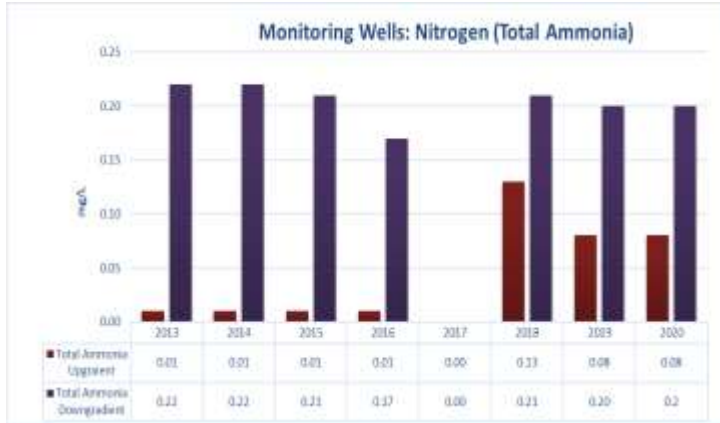


E. coli results downgradient and upgradient appear to be minimal, apart from an elevated sample in 2014. All results have been non-detect (represented by a reading of 0.1) or < 2, (represented by a reading of 2.0).



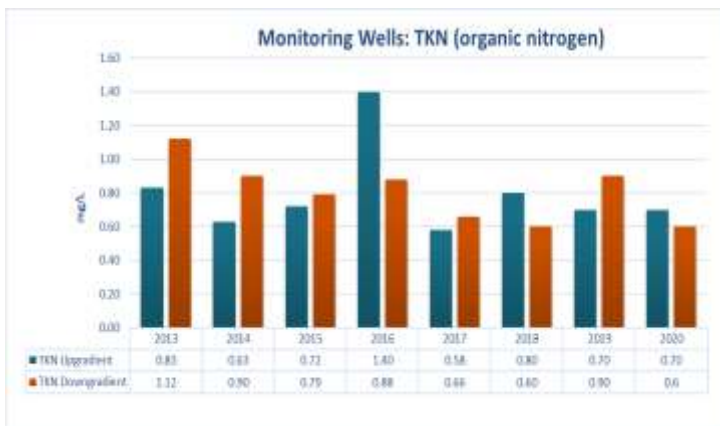
Nitrite/Nitrate samples have also been minimal in nature in most samples results. Increased levels for nitrites were visible in 2013 and 2017, while for nitrates increased levels were noted in 2014 and 2017.

In 2020 there was an increase in upgradient sample, but all other samples were below detection limits. Current trending does not indicate any potential impact at this time.



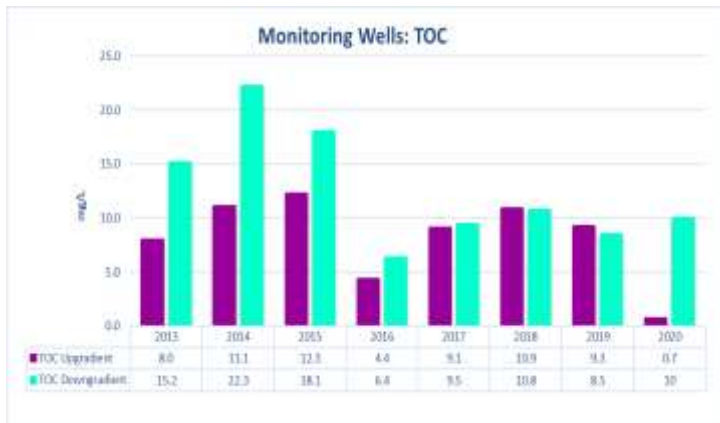
Nitrogen (Total Ammonia) downgradient samples have been marginal in nature, on average 0.2mg/L, but all downgradient results are higher than the upgradient samples.

The sampling results indicate possible influence; however, the impact would be minimal at best based on results, it is also worth noting area surrounding lagoons is agricultural.



As historical trending has displayed intermittent increases in both upstream and downstream samples, the TKN values from 2020 are slightly lower in the downgradient samples.

Overall, both sets of samples are trending downward over time.



TOC sampling results were found to be significantly higher downstream than upstream, in-line with historical trending prior to 2016, although results are consistent with readings since 2016.

This may indicate impacts downstream, but levels are marginal in nature.

2020 Landfill Leachate Hauling

Contractor	Axle Automotive
Total # of Loads	97
Total Hours	131.0
Total m³ Leachate	3,730.7
Start Date	April 20, 2020
End Date	May 8, 2020

Day (mm-dd-yy)	Daily Volume (m³)	Number Loads Hauled
April 20, 2020	229.85	6
April 21, 2020	228.70	6
April 22, 2020	268.86	7
April 23, 2020	267.94	7
April 24, 2020	192.28	5
April 25, 2020	0.00	0
April 26, 2020	0.00	0
April 27, 2020	269.47	7
April 28, 2020	271.43	7
April 29, 2020	269.95	7
April 30, 2020	269.85	7
May 1, 2020	192.53	5
May 2, 2020	0.00	0
May 3, 2020	0.00	0
May 4, 2020	266.20	7
May 5, 2020	269.57	7
May 6, 2020	272.37	7
May 7, 2020	270.28	7
May 8, 2020	191.39	5

No issues noted, all manifests were received and recorded.