PART 1 GENERAL

The following changes are effective immediately and shall be incorporated into the Contract Documents.

PART 2 INFORMATION/CLARIFICATION

2.1 CLARIFICATION

.1 NA

PART 3 SPECIFICATIONS

3.1 SYSTEM #1 – TERTIARY TREATMENT 46 73 00

.1 Part 2 – Products

.1 **Amend 2.1.5** All housings, structural components, return water collection tank, driven impeller and shaft, filtration media, piping, manifolds, nozzles, valve bodies, ducts, bases, covers, anchors, and fasteners must be a minimum of Type 316 or 316L Stainless Steel, **if applicable**.

PART 4 QUESTIONS AND ANSWERS

4.1

.1 **Q –** Can you provide additional wastewater influent and effluent characteristics?

A – Please see attached performance results for 2022, 2023, and 2024.

.2 **Q –** Is there plans for a sludge recycle from the settle cell back to the aerated lagoon?

A – If this is a requirement for your system to work, it should be identified in your proposal as a condition to meet the effluent requirements.

.3 **Q –** What process upgrades are being incorporated into the treatment train ahead of the tertiary filtration system?

A – The mechanical aeration system will be replaced with diffused aeration in the aeration cell as well as Cell C which will flow into the new Submerged Attached Growth Reactor SAGR system. The SAGR is a clean gravel bed with evenly distributed wastewater flow across the width of the cell, and a horizontal collection chamber at the end of the treatment zone. Linear™ aeration throughout the floor of the SAGR provides aerobic conditions that are required

for nitrification. The gravel bed is covered with a layer of wood chips for insulation. Anticipated water quality at the various stages of treatment is as follows:

		Lagoon Influent	SAGR Influent	System Effluent Compliance	System Effluent Objective
Design Flow	m^3/day	6,500			
Max Day Peak Flow*	m^3/day	19,500			
$cBOD_5$	mg/l	110	<25	<10	<10
TSS	mg/l	100	<25	<15	<15***
TKN	mg/l	18			
Total Ammonia	mg/l			<2/4**	<1/2**
Unionized Ammonia	mg/l				****

* Assuming that a lagoon effluent control structure will be in place to limit the peak day flow.
** Summer/Winter
*** After tertiary filtration
*** Meets WSER toxicity requirements

Coagulant addition to the lagoons is used to reduce the total phosphorus in the effluent. This practice will continue after the upgrades. There will be no additional coagulant addition between the lagoons and the SAGR system. Please refer to attached historic performance tables for total phosphorus results. It is not expected that the SAGR system will have an impact on the total phosphorus concentration leaving the lagoons and entering the tertiary treatment system.

.4 **Q –** Part 1 (page 2) item 1.2.2 Tertiary treatment controls are to integrate with control ancillary equipment required for the treatment operation including but not limited to the flocculation tank mixer (as required), coagulant system (if required) polymer system (if required), washing system, filter discharge and backwash pumping. This integration shall be accomplished through data communication on standard Ethernet between the filter PLC and the main plant PLC/SCADA system.

A – The proponents shall identify in their submission what is the minimum preliminary treatment required between the SAGR system and the proposed tertiary treatment system in their submission (i.e. coagulant addition, polymer addition, rapid mix, flocculation, etc.).

.5 **Q -** It is our understanding that following the planned upgrades, the upstream treatment process will be design in a way that minor quantities of algae or algae-related solids may be present in the influent to the tertiary filters. Please confirm whether this understanding aligns with the specifications?

A – The Township does not currently monitor the algae content in the effluent from the lagoons. The project does include the construction of a SAGR system which will provide rough filtration through a gravel bed prior to tertiary treatment.

END OF SECTION

NORTH GLENGARRY WATER WORKS

WASTEWATER TREATMENT WORKS PERFORMANCE RESULTS

Municipality: *North Glengarry* **Year:** *2024*

Project: *Alexandria STP* **Receiving Stream:** *Delisle River*

Description: *1 Pumping Station, 1 Aerated Cell, 3 Facultative Cells* **Design Capacity:** *3,237 m^3/day*

Continuous Discharge with Phosphorous Removal

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	101,902	3,287	5,909	83.0	4.3	94.8	132.0	5.0	96.2	4.65	0.11	97.7
Feb	113,273	3,906	6,995	31.0	8.0	74.2	106.0	8.3	92.2	1.12	0.20	82.4
Mar	156,619	5,052	10,623	89.0	6.0	93.3	226.0	6.5	97.1	1.99	0.17	91.3
Apr	168,382	5,613	9,050	71.0	3.0	95.8	154.0	3.8	97.5	1.73	0.19	89.0
May	116,503	3,758	6,937	48.0	3.0	93.8	39.0	3.5	91.0	1.04	0.16	84.4
Jun	82,073	2,736	8,748	140.0	3.0	97.9	310.0	3.3	99.0	3.66	0.09	97.5
Jul	102,103	3,294	7,402	37.0	3.0	91.9	34.0	4.0	88.2	1.15	0.10	91.1
Aug	231,317	7,462	20,271	22.0	3.0	86.4	17.0	3.5	79.4	0.47	0.11	76.1
Sep	98,022	3,267	7,362	159.0	3.0	98.1	370.0	3.2	99.1	3.62	0.10	97.2
Oct	63,243	2,040	2,689	223.5	3.0	98.7	347.5	3.0	99.1	5.92	0.09	98.5
Nov	55,370	1,846	2,488	38.0	3.0	92.1	57.0	3.3	94.3	1.44	0.10	93.1
Dec	102,801	3,316	7,201	51.0	3.6	92.9	56.0	4.0	92.9	1.21	0.15	87.8
Total	**1,391,607**											
Average		**3,798**		**82.7**	**3.8**	**92**	**154.0**	**4.3**	**94**	**2.33**	**0.13**	**90**
Minimum												
Maximum			**20,271**									
Criteria		***3,237***			***30***			***40***			***0.50***	

NORTH GLENGARRY WATER WORKS

WASTEWATER TREATMENT PERFORMANCE RESULTS

2024

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	n/a	5.75		33.00	7.50	77.3	n/a	0.05		n/a	1.1	n/a
Feb	n/a	7.64		8.00	10.70	-33.8	n/a	0.08		n/a	0.6	n/a
Mar	n/a	5.78		9.90	8.43	14.9	n/a	0.06		n/a	0.7	n/a
Apr	n/a	6.38		9.80	7.68	21.6	n/a	0.05		n/a	0.4	n/a
May	n/a	5.57		11.60	5.18	55.4	n/a	0.21		n/a	0.5	n/a
Jun	n/a	0.28		23.20	1.23	94.7	n/a	0.13		n/a	0.4	n/a
Jul	n/a	0.52		12.60	2.10	83.3	n/a	0.19		n/a	0.5	n/a
Aug	n/a	0.67		4.90	1.98	59.7	n/a	0.06		n/a	0.2	n/a
Sep	n/a	0.62		17.80	1.34	92.5	n/a	0.07		n/a	0.3	n/a
Oct	n/a	0.66		38.10	1.45	96.2	n/a	0.05		n/a	0.4	n/a
Nov	n/a	2.34		20.80	3.13	85.0	n/a	0.10		n/a	0.6	n/a
Dec	n/a	7.15		19.00	8.30	56.3	n/a	0.05		n/a	0.8	n/a
Total												
Average		3.61		17.39	4.92	59		0.09			0.52	
Minimum												
Maximum												
Criteria												

NORTH GLENGARRY WATER WORKS
WASTEWATER TREATMENT PERFORMANCE RESULTS
2024

MONTH	Hydrogen Sulphide			E. coli			pH			Temp	Cl_2
	Average Raw H_2S (mg/L)	Average Effluent H_2S (mg/L)	Percent Removal (%)	Average Raw E. coli (cts/100ml)	Average Effluent E. coli (cts/100ml)	Percent Removal (%)	Minimum Effluent pH	Average Effluent pH	Maximum Effluent pH	Average Effluent Temp (°C)	Average Effluent Cl_2 (mg/L)
Jan	n/a	n/a		n/a	1.00		7.18	7.50	8.07	3.53	0.00
Feb	n/a	n/a		n/a	1.00		7.29	7.60	8.22	6.48	0.00
Mar	n/a	n/a		n/a	7.01		7.99	8.09	8.20	5.45	0.00
Apr	n/a	n/a		n/a	1.00		6.93	7.89	8.32	10.43	0.00
May	n/a	n/a		n/a	1.00		7.41	7.63	7.88	19.53	0.00
Jun	n/a	n/a		n/a	1.41		7.38	8.54	9.06	20.95	0.00
Jul	n/a	n/a		n/a	1.70		7.49	7.75	8.07	21.17	0.00
Aug	n/a	n/a		n/a	1.19		7.46	7.55	7.66	22.63	0.00
Sep	n/a	n/a		n/a	1.00		6.23	7.44	8.87	20.00	0.00
Oct	n/a	n/a		n/a	1.00		7.10	7.70	8.54	12.22	0.00
Nov	n/a	n/a		n/a	1.00		7.44	7.58	7.75	7.65	0.00
Dec	n/a	n/a		n/a	1.00		7.19	7.60	8.00	3.56	0.00
Total											
Average					1.3			7.62		13.06	0.00
Minimum							6.23				
Maximum					7.0				8.68	26.80	0.00
Criteria					***200***		***6.0***	***6.5 - 8.5***	***9.5***		***0.02***

NORTH GLENGARRY WATER WORKS

WASTEWATER TREATMENT WORKS PERFORMANCE RESULTS

Municipality: ***North Glengarry*** **Year:** ***2023***

Project: ***Alexandria STP*** **Receiving Stream:** ***Delisle River***

Description: ***1 Pumping Station, 1 Aerated Cell, 3 Facultative Cells*** **Design Capacity:** ***3237 m^3/day***

Continuous Discharge with Phosphorous Removal

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	174,545	5,630	18,817	84.0	3.2	96.2	130.0	4.6	96.5	1.73	0.15	91.2
Feb	121,512	4,340	8,471	42.0	3.8	91.1	20.0	6.3	68.8	0.65	0.20	68.8
Mar	172,704	5,571	9,918	125.0	3.8	97.0	128.0	7.5	94.1	2.96	0.26	91.1
Apr	262,673	8,756	15,285	116.0	4.8	95.9	220.0	12.0	94.5	2.21	0.17	92.5
May	175,841	5,672	19,897	85.0	3.0	96.5	230.0	3.6	98.4	2.50	0.10	95.8
Jun	64,535	2,151	2,728	34.0	6.5	80.9	82.0	7.0	91.5	1.48	0.10	93.1
Jul	76,195	2,458	4,815	139.0	3.0	97.8	380.0	3.5	99.1	4.66	0.11	97.6
Aug	75,598	2,439	3,451	134.0	3.0	97.8	292.0	4.2	98.6	4.31	0.06	98.6
Sep	52,024	1,734	2,277	61.0	4.0	93.4	98.0	5.0	94.9	1.66	0.05	97.3
Oct	67,387	2,174	3,578	52.0	3.0	94.2	250.0	3.8	98.5	2.88	0.10	96.4
Nov	76,542	2,551	3,475	173.0	3.8	97.8	590.0	4.0	99.3	6.70	0.16	97.7
Dec	161,293	5,203	13,039	35.0	3.8	89.3	86.0	11.0	87.2	0.60	0.20	67.1
Total	**1,480,848**											
Average		**4,057**		**90.0**	**3.8**	**94**	**208.8**	**6.0**	**93**	**2.70**	**0.14**	**91**
Maximum			**19,897**	**173**	**6.5**	**98**	**590.0**	**12.0**	**99**	**6.70**	**0.26**	**99**
Criteria		***3,237***			***30***			***40***			***0.50***	

NORTH GLENGARRY WATER WORKS
WASTEWATER TREATMENT PERFORMANCE RESULTS
2023

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	n/a	5.79		10.00	7.96	20.4	n/a	0.11		n/a	0.8	
Feb	n/a	7.49		8.90	8.10	9.0	n/a	0.06		n/a	0.1	
Mar	n/a	7.49		17.50	13.08	25.3	n/a	0.05		n/a	0.1	
Apr	n/a	2.73		10.60	4.50	57.5	n/a	0.06		n/a	1.0	
May	n/a	0.17		13.80	1.14	91.7	n/a	0.05		n/a	0.4	
Jun	n/a	0.23		20.60	1.20	94.2	n/a	0.06		n/a	0.4	
Jul	n/a	0.38		24.90	1.75	93.0	n/a	0.06		n/a	0.3	
Aug	n/a	0.21		22.80	1.34	94.1	n/a	0.05		n/a	0.5	
Sep	n/a	0.07		19.40	1.03	94.7	n/a	0.08		n/a	0.1	
Oct	n/a	1.92		18.40	3.00	83.7	n/a	0.06		n/a	0.1	
Nov	n/a	4.57		29.40	6.80	76.9	n/a	0.06		n/a	0.5	
Dec	n/a	4.79		7.00	8.25	-17.9	n/a	0.05		n/a	0.9	
Total												
Average		2.99		16.94	4.85	60		0.06			0.43	
Maximum		7.49		29.4	13.08	95		0.11			1.01	
Criteria												

NORTH GLENGARRY WATER WORKS
WASTEWATER TREATMENT PERFORMANCE RESULTS
2023

MONTH	Hydrogen Sulphide			E. coli			pH			Temp	Cl_2
	Average Raw H_2S (mg/L)	Average Effluent H_2S (mg/L)	Percent Removal (%)	Average Raw E.coli (cts/100ml)	Average Effluent E.coli (cts/100ml)	Percent Removal (%)	Minimum Effluent pH	Average Effluent pH	Maximum Effluent pH	Average Effluent Temp (°C)	Average Effluent Cl_2 (mg/L)
Jan	n/a	0.01		n/a	5.83		7.00	8.07	7.31	4.18	0.00
Feb	n/a	0.00		n/a	1.90		7.05	7.89	7.46	5.10	0.00
Mar	n/a	0.00		n/a	5.61		6.95	8.67	7.59	3.75	0.00
Apr	n/a	0.00		n/a	8.85		7.68	8.32	7.94	8.88	0.00
May	n/a	0.00		n/a	1.32		7.45	8.27	7.94	14.02	0.00
Jun	n/a	0.00		n/a	1.00		7.30	8.31	7.97	20.70	0.00
Jul	n/a	0.00		n/a	1.19		7.30	8.64	7.92	23.88	0.00
Aug	n/a	0.00		n/a	1.00		7.01	8.20	7.53	20.76	0.00
Sep	n/a	0.00		n/a	1.00		7.00	7.61	7.36	20.03	0.00
Oct	n/a	0.00		n/a	1.82		7.18	7.92	7.51	12.12	0.00
Nov	n/a	0.00		n/a	1.19		7.53	7.91	7.71	5.28	0.00
Dec	n/a	0.00		n/a	1.68		7.00	8.63	7.81	6.23	0.00
Total											
Average		0.00			2.0		7.62	7.62	7.62	13.06	0.00
Maximum		0.01			8.9		8.68	8.68	8.68	26.80	0.00
Criteria					***200***		***6.0***	***6.5 - 8.5***	***9.5***		***0.02***

NORTH GLENGARRY WATER WORKS

WASTEWATER TREATMENT WORKS PERFORMANCE RESULTS

Municipality: *North Glengarry* **Year:** *2022*

Project: *Alexandria STP* **Receiving Stream:** *Delisle River*

Description: *1 Pumping Station, 1 Aerated Cell, 3 Facultative Cells* **Design Capacity:** *3237 m^3/day*

Continuous Discharge with Phosphorous Removal

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	62,453	2,015	2,495	127.0	6.8	94.7	160.0	4.8	97.0	1.74	0.23	86.9
Feb	72,709	2,597	5,169	165.0	5.0	97.0	560.0	10.0	98.2	4.91	0.32	93.5
Mar	187,946	**6,063**	14,509	101.0	3.7	96.4	335.0	6.7	98.0	0.48	0.25	48.6
Apr	187,526	**6,251**	16,656	56.0	3.3	94.2	96.0	12.3	87.2	1.31	0.26	80.3
May	105,742	**3,411**	6,904	44.0	4.0	90.9	85.0	7.5	91.2	1.50	0.17	88.8
Jun	77,861	2,595	3,334	141.0	3.0	97.9	390.0	4.4	98.9	4.23	0.10	97.5
Jul	61,580	1,986	2,761	163.0	3.0	98.2	465.0	4.0	99.1	4.38	0.12	97.3
Aug	70,245	2,266	3,926	188.0	3.0	98.4	560.0	6.2	98.9	5.83	0.21	96.4
Sep	78,388	2,613	4,251	37.0	3.0	91.9	48.0	4.5	90.6	1.20	0.12	90.0
Oct	66,719	2,152	2,521	139.0	3.0	97.8	325.0	5.0	98.5	3.63	0.11	97.0
Nov	75,197	2,507	5,904	3.0	3.2	-6.7	400.0	5.2	98.7	4.53	0.12	97.3
Dec	116,444	**3,756**	17,077	129.0	3.3	97.5	250.0	5.0	98.0	3.56	0.11	96.9
Total	1,162,810											
Average		3,184		107.8	3.7	87	306.2	6.3	96	3.11	0.18	89
Minimum												
Maximum			17,077	188	6.8	98	560.0	12.3	99	5.83	0.32	98
Criteria		**3,237**			**30**			**40**			**0.50**	

NORTH GLENGARRY WATER WORKS
WASTEWATER TREATMENT PERFORMANCE RESULTS
2022

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	n/a	9.31		17.30	17.18	0.7	n/a	0.10		n/a	0.3	
Feb	n/a	12.23		27.80	15.46	44.4	n/a	0.10		n/a	0.1	
Mar	n/a	10.39		13.70	13.82	-0.9	n/a	0.10		n/a	0.1	
Apr	n/a	4.25		9.90	7.53	24.0	n/a	0.10		n/a	0.8	
May	n/a	2.21		14.40	3.88	73.1	n/a	0.90		n/a	0.4	
Jun	n/a	0.60		22.30	1.74	92.2	n/a	0.10		n/a	0.3	
Jul	n/a	0.18		24.60	1.58	93.6	n/a	0.10		n/a	0.1	
Aug	n/a	0.41		30.90	2.40	92.2	n/a	0.10		n/a	0.1	
Sep	n/a	1.73		21.00	2.30	89.0	n/a	0.10		n/a	0.2	
Oct	n/a	1.09		21.30	2.28	89.3	n/a	0.10		n/a	0.3	
Nov	n/a	1.58		26.70	3.22	87.9	n/a	0.10		n/a	0.4	
Dec	n/a	3.94		19.20	6.15	68.0	n/a	0.08		n/a	0.7	
Total												
Average		3.99		20.76	6.46	62.8		0.16			0.32	
Minimum												
Maximum		12.23		30.90	17.18	93.6		0.90			0.80	
Criteria												

NORTH GLENGARRY WATER WORKS

WASTEWATER TREATMENT PERFORMANCE RESULTS

2022

MONTH	Hydrogen Sulphide			E. coli			pH			Temp	Cl_2
	Average Raw H_2S (mg/L)	Average Effluent H_2S (mg/L)	Percent Removal (%)	Average Raw E.coli (cts/100ml)	Average Effluent E.coli (cts/100ml)	Percent Removal (%)	Minimum Effluent pH	Average Effluent pH	Maximum Effluent pH	Average Effluent Temp (°C)	Average Effluent Cl_2 (mg/L)
Jan	n/a	0.05		n/a	5.28		7.20	7.87	8.94	7.33	0.00
Feb	n/a	n/a		n/a	2.14		7.02	7.36	7.67	3.80	0.00
Mar	n/a	n/a		n/a	5.57		7.08	7.40	7.70	4.69	0.00
Apr	n/a	n/a		n/a	6.62		7.29	8.01	8.57	7.60	0.00
May	n/a	n/a		n/a	3.56		7.39	7.98	8.72	16.05	0.00
Jun	n/a	n/a		n/a	1.32		7.43	7.68	8.40	20.36	0.00
Jul	n/a	n/a		n/a	1.00		7.35	7.63	8.24	23.18	0.00
Aug	n/a	n/a		n/a	1.00		7.35	7.43	7.55	22.92	0.00
Sep	n/a	n/a		n/a	1.78		7.24	7.63	7.84	17.88	0.00
Oct	n/a	n/a		n/a	1.00		7.20	7.68	8.16	11.63	0.00
Nov	n/a	n/a		n/a	1.00		7.49	7.76	8.25	7.42	0.00
Dec	n/a	n/a		n/a	1.00		7.33	7.66	7.90	3.08	0.00
Total											
Average		0.05			2.0			7.62		13.06	0.00
Minimum							7.02				
Maximum		0.05			6.6				8.68	26.80	0.00
Criteria					***200***		***6.0***		***9.5***		***0.02***