

**SCHEDULE "G"**

Wastewater – Connection Fee Rate Calculation and Capital Contribution Formula

*As attached*

## SCHEDULE “G”

### Wastewater Connection Fee Rate Calculation and Capital Contribution Model (References sections 7.4, 7.5 and 7.6 of the Agreement)

#### G 1 – Principles

The Wastewater capital contributions shall be based on the following principles:

- (a) The Wastewater Formula shall be adjusted and updated every two (2) years during the Term to ensure accuracy and appropriateness, as follows:
  - (i) Average wastewater flow rates and loading will be calculated based on the most recent samples and monthly averages obtained from the testing completed in accordance with section 5.6 of this Agreement;
  - (ii) If wastewater usage and loading are in excess of the Base Capacity Rate and the Guideline Parameters, the Wastewater Formula will be adjusted to reflect the increased usage by the GTH Lands.
- (b) Upon completion of the Term or expiry of the Agreement, the parties shall complete the Final Wastewater Connection Fee Adjustment in accordance with section 7.6 of this Agreement.

#### G2 – Guideline parameters

Parameter	@ 0.35 ML/d	@ 1.0 ML/d
Chemical oxygen demand (COD)	210 kg/d	600 kg/d
Biochemical oxygen demand (BOD)	150 kg/d	300 kg/d
Phosphorus	10 kg/d	20 kg/d
Total suspended solids (TSS)	200 kg/d	600 kg/d
Total Kjeldal nitrogen (TKN)	40 kg/d	100 kg/d

- The GTH purchased a base capacity rate of 0.35 ML/d with a COD level of 210 kg/d and an initial flow capacity of 0.5 ML/d
- The GTH can purchase up to the Maximum Capacity Rate of 1.0 ML/d with a COD level of 600 kg/d and will be entitled to the upper limits for the other guideline parameters as per the March 17, 2017 memo from AECOM (see G5 – AECOM memo)
  - Methodology for calculating an increase in the base capacity rate, any additional parameter listed above or flow capacity will follow the formula set out in G3

#### G3 – Wastewater Capital Contribution Formula

- Capital cost of WWTP (\$175,000,000) less PPP Canada Funding (\$41,000,000)
  - Net capital cost of \$134,000,000

- The cost and parameters for plan capacity were based on the original EPCOR agreement that was in effect in 2017, plus the City's *Wastewater and Storm Water Bylaw 2016-24*. The maximum limits were established as per the attached memo from AECOM dated March 17, 2017
- The WWTP is designed to process 38,000 kg/d of COD for an annual average day with the GTH estimated to used 210 kg/d which is an average monthly capacity use of 0.5526%
- The capital contribution is calculated based on \$134,000,000 x 0.5526% for a total contribution of \$740,500
- Future calculations for additional capacity would be based on this formula

The limits for each guideline parameter and flow at 0.1 ML/d capacity rate intervals were calculated using the following formula and values:

$$\frac{y - y_0}{x - x_0} = \frac{y_1 - y_0}{x_1 - x_0}$$

*For Guideline Parameters:*

- $x_0$  = Starting effluent flow rate (Base Capacity Rate)
- $x_1$  = Maximum Capacity Rate
- $y_0$  = Starting mass loading (starting Guideline Parameter)
- $y_1$  = Maximum mass loading (maximum Guideline Parameter)
- $x$  = Capacity rate/interval
- $y$  = Permitted guideline parameter amount

*For Flow Capacity:*

- $x_0$  = Starting effluent flow rate (Base Capacity Rate)
- $x_1$  = Maximum Capacity Rate
- $y_0$  = Starting/initial flow capacity
- $y_1$  = Maximum flow capacity
- $x$  = Capacity rate/interval
- $y$  = Permitted flow

Table G1 – Mass loading, flow capacity and connection fee based on capacity rate

Capacity Rate (ML/d)	COD (kg/d)	BOD (kg/d)	Phosphorus (kg/d)	TSS (kg/d)	TKN (kg/d)	Flow Capacity (ML/d)	Average Monthly Capacity (%)	Capacity Purchased (%)	Gross Connection Fee* (\$)	Connection Fee* (\$)
0.35	210	150	10	200	40	0.5	0.5526	0.5526	740,500	740,500
0.4	240	162	11	231	45	0.54	0.6316	0.0790	846,344	105,844
0.5	300	185	12	292	54	0.62	0.7895	0.1579	1,059,930	211,586
0.6	360	208	14	354	63	0.69	0.9474	0.1579	1,269,516	211,586
0.7	420	231	15	415	72	0.77	1.1053	0.1579	1,481,102	211,586
0.8	480	254	17	477	82	0.85	1.2631	0.1579	1,692,554	211,586
0.9	540	277	18	538	91	0.92	1.4211	0.1579	1,904,274	211,586
1.0	600	300	20	600	100	1.0	1.5789	0.1579	2,115,726	211,586

\* Inflation not applied

#### G4 – Sample calculation of capital contribution

Year: 2023

Guideline Parameter amounts as determined by agreed upon testing (for illustration purposes only):

- COD @ 205 kg/d
- BOD @ 157 kg/d
- Phosphorus @ 8 kg/d
- TSS @ 126 kg/d
- TKN @ 42 kg/d
- Flow capacity @ 0.45 ML/d
  
- Based on the above loading and flow level, and the limits set out in table G1, the capacity rate would increase from 0.35 ML/d to 0.4 ML/d as the BOD levels have exceeded 150 kg/d
- The new upper limit for the guideline parameters and flow would be:
  - COD @ 240 kg/d
  - BOD @ 162 kg/d
  - Phosphorus @ 11 kg/d
  - TSS @ 231 kg/d
  - TKN @ 45 kg/d
  - Flow capacity @ 0.54 ML/d
  
- The capital contribution, without inflation, would be calculated as follows:
  - 240 kg/d of COD (GTH)
  - 38,000 kg/d (WWTP)
  - $(240/38000)*100 = 0.6316\%$
  - $\$134,000,000*0.6316\% = \$846,344$
  - $\$846,344 - \$740,500$
  - Wastewater connection fee = \$105,844

- The wastewater connection fee, as well as the initial connection fee with inflation, would be as follows:
  - Capacity Rate @ 0.4ML/d
  - Year: 2023
  - Inflation = 6.462%

	2018	2019	2020	2021	2022	2023
<b>Initial Connection Fee</b>	\$740,500.00	\$788,351	\$839,294	\$893,530	\$951,269	\$1,012,740
<b>Gross Connection Fee</b>	\$846,344.00	\$901,035	\$959,260	\$1,021,247	\$1,087,240	\$1,157,497
<b>Connection Fee</b>	\$105,844.00	\$112,684	\$119,965	\$127,717	\$135,971	\$144,757

- Based on the above table, the connection fee owing to the City in this sample scenario would be \$144,757

G5 -





