

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004



Site Area 5.68 ha

Extraneous Flow Allowances

Infiltration / Inflow 1.59 L/s

Domestic Contributions

Type of Housing	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	81	146

Total Pop 146

Average Domestic Flow 0.59 L/s

Peaking Factor 4.00

Peak Domestic Flow 2.37 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space	2.5 L/m ² /d		0.00
Office	75 L/9.3m ² /d		0.00
Industrial - Light	35,000 L/gross ha/d		0.00
Industrial - Heavy	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.00

Total Estimated Average Dry Weather Flow Rate	0.59 L/s
Total Estimated Peak Dry Weather Flow Rate	2.37 L/s
Total Estimated Peak Wet Weather Flow Rate	3.96 L/s

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Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	72	130

Total Pop 130

Average Domestic Flow 0.53 L/s

Peaking Factor 4.00

Peak Domestic Flow 2.11 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space	2.5 L/m ² /d		0.00
Office	75 L/9.3m ² /d		0.00
Industrial - Light	35,000 L/gross ha/d		0.00
Industrial - Heavy	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.00

Total Estimated Average Dry Weather Flow Rate	0.53 L/s
Total Estimated Peak Dry Weather Flow Rate	2.11 L/s
Total Estimated Peak Wet Weather Flow Rate	3.70 L/s

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Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	72	130

Total Pop 130

Average Domestic Flow 0.53 L/s

Peaking Factor 4.00

Peak Domestic Flow 2.11 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space	2.5 L/m ² /d		0.00
Office	75 L/9.3m ² /d		0.00
Industrial - Light	35,000 L/gross ha/d		0.00
Industrial - Heavy	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.00

Total Estimated Average Dry Weather Flow Rate	0.53 L/s
Total Estimated Peak Dry Weather Flow Rate	2.11 L/s
Total Estimated Peak Wet Weather Flow Rate	3.70 L/s

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Domestic Contributions

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Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8	225	405

Total Pop 405

Average Domestic Flow 1.64 L/s

Peaking Factor 4.00

Peak Domestic Flow 6.56 L/s

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Commercial floor space	2.5 L/m ² /d		0.00
Office	75 L/9.3m ² /d		0.00
Industrial - Light	35,000 L/gross ha/d		0.00
Industrial - Heavy	55,000 L/gross ha/d		0.00

Average I/C/I Flow 0.00

Peak Institutional / Commercial Flow 0.00

Peak Industrial Flow** 0.00

Peak I/C/I Flow 0.00

Total Estimated Average Dry Weather Flow Rate	1.64 L/s
Total Estimated Peak Dry Weather Flow Rate	6.56 L/s
Total Estimated Peak Wet Weather Flow Rate	8.15 L/s

SANITARY SEWER CALCULATION SHEET - EXISTING CONDITIONS

PROJECT: Greatwise Developments
LOCATION: 740 Springland Drive
FILE REF: 13-673
DATE: 2-Mar-18

DESIGN PARAMETERS
Avg. Daily Flow Res. 350 L/p/d
Avg. Daily Flow Comm. 17,000 L/ha/d
Avg. Daily Flow Instit. 10,000 L/ha/d
Avg. Daily Flow Indust. 10,000 L/ha/d
Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0
Peak Fact. Comm. 1
Peak Fact. Instit. 1
Peak Fact. Indust. per MOE graph

Infiltration / Inflow 0.28 L/s/ha
Min. Pipe Velocity 0.60 m/s full flowing
Max. Pipe Velocity 3.00 m/s full flowing
Mannings N 0.013



Location			Residential Area and Population										Commercial		Institutional		Industrial		Infiltration				Pipe Data										
Area ID	Up	Down	Area	Number of Units by type				Pop.	Cumulative		Peak Fact. (-)	Q _{res} (L/s)	Area (ha)	Accu. Area (ha)	Area (ha)	Accu. Area (ha)	Area (ha)	Accu. Area (ha)	Q _{C+H+I} (L/s)	Total Area (ha)	Accu. Area (ha)	Infiltration Flow (L/s)	Total Flow (L/s)	DIA (mm)	Slope (%)	Length (m)	A _{hydraulic} (m²)	R (m)	Velocity (m/s)	Q _{cap} (L/s)	Q / Q full (-)	Q _{residual} (L/s)	
				Area (ha)	Pop.	Area (ha)	Pop.																										
						(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m²)	(m)	(m/s)	(L/s)	(-)
SPRINGLAND DRIVE AND NORBERRY CRESCENT	A		2.23	24				82.0	2.230	82.0	4.00	1.33		0.00		0.00		0.0	2.230	2.230	0.624	1.95	225	0.370	75.0	0.040	0.056	0.69	27.3	0.07	25.4		
			0.00					0.0	2.230	82.0	4.00	1.33		0.00		0.00		0.0	0.000	2.230	0.624	1.95	225	0.610	72.5	0.040	0.056	0.88	35.1	0.06	33.1		
			0.00					0.0	2.230	82.0	4.00	1.33		0.00		0.00		0.0	0.000	2.230	0.624	1.95	225	0.320	70.0	0.040	0.056	0.64	25.4	0.08	23.4		
		B	0.00					0.0	2.230	82.0	4.00	1.33		0.00		0.00		0.0	0.000	2.230	0.624	1.95	225	0.320	3.0	0.040	0.056	0.64	25.4	0.08	23.4		
NORBERRY CRESCENT	B		2.63	15			250	501.0	4.860	583.0	3.94	9.30		0.00		0.00		0.0	2.630	4.860	1.361	10.66	225	0.320	72.5	0.040	0.056	0.64	25.4	0.42	14.7		
			0.00					0.0	4.860	583.0	3.94	9.30		0.00		0.00		0.0	0.000	4.860	1.361	10.66	225	0.320	65.0	0.040	0.056	0.64	25.4	0.42	14.7		
			0.00					0.0	4.860	583.0	3.94	9.30		0.00		0.00		0.0	0.000	4.860	1.361	10.66	225	0.320	72.5	0.040	0.056	0.64	25.4	0.42	14.7		
		C	0.00					0.0	4.860	583.0	3.94	9.30		0.00		0.00		0.0	0.000	4.860	1.361	10.66	225	0.320	67.5	0.040	0.056	0.64	25.4	0.42	14.7		

† Minimum pipe slopes were assumed per Section 6.1.2.2 of the City of Ottawa Sewer Design Guidelines