



Kollaard Associates

Engineers

210 Prescott Street, Unit 1

P.O. Box 189

Kemptville, Ontario K0G 1J0

Civil • Geotechnical •
Structural • Environmental •
Hydrogeology •

(613) 860-0923

FAX: (613) 258-0475

SERVICING BRIEF

4727 BANK STREET
OTTAWA, ONTARIO

Prepared For:
W.O. Stinson and Son Ltd.
4728 Bank Street
Ottawa, Ontario
K1T 3W7

PROJECT #: 190105

DISTRIBUTION

3 copies – City of Ottawa

1 copy – W.O. Stinson and Son Ltd.

1 copy – Kollaard Associates Inc.



TABLE OF CONTENTS

LIST OF APPENDICES	2
LIST OF DRAWINGS	2
1 INTRODUCTION.....	3
2 SANITARY SEWER DESIGN.....	4
2.1 Design Flows	4
2.2 Sanitary Service Lateral.....	5
2.3 Sanitary Main.....	5
3 CONCLUSIONS.....	8



Kollaard Associates

Engineers

Rev. 0 – January 17, 2020

Servicing Brief
W.O. Stinson and Son Ltd.
4727 Bank Street
File No. 190105

LIST OF APPENDICES

Appendix A: Servicing Design Information

Appendix B: Drawings

LIST OF DRAWINGS

180105 – SER – Site Servicing Plan

180105 – SAN – Sanitary Drainage Area

180105 – PP – Plan and Profile



1 INTRODUCTION

Kollaard Associates was retained by W.O Stinson and Sons Ltd to complete a Site Servicing Brief for the proposed sanitary sewer connection to Fiddlehead Street. The existing building on the property uses an onsite septic system. The existing septic is to be decommissioned and a service connection established, with the servicing pipe running through an existing access road, and connecting to Fiddlehead Street.

The intent of this report is to identify the sanitary demand for the site as well as identify the additional servicing requirements resulting from the proposed sanitary connection.

The development is located at 4727 Bank Street. The property is on the east side of Bank Street. The site has a total area of 0.25 hectares and is currently occupied by a service station. The service station contains 4 fuel stations, with 8 fuel outlets. The service station contains 1 washroom in the existing building.

Bank Street contains both a 400mm diameter PVC sanitary forcemain and 300mm diameter PVC forcemain. Without a non-pressurized sanitary main, the sanitary servicing connection cannot be completed to Bank Street. Connection is to be made to Fiddlehead Street, within the Sundance Village subdivision sanitary network.



2 SANITARY SEWER DESIGN

The sanitary service lateral from the existing development will be connected to the existing 200mm diameter sanitary sewer along Fiddlehead Street. The existing sanitary sewer flows by gravity to the Leitrim sanitary pump station at 3173 Findlay Creek Drive.

Sewage discharges will be in compliance with the City of Ottawa Sewer Use By-law. The anticipated peak sanitary flow will be a total of approximately 0.205 Litres per second.

The sanitary sewage flow for the building was calculated based on the City of Ottawa Sewer Design Guidelines (Section 4.4.1 as amended in technical bulletin ISTB-2018-01). The sanitary sewer flow was also calculated based on Table 8.2.1.3B of the Ontario Building Code.

2.1 Design Flows

Commercial – City of Ottawa Section 4.4.1

$$Q_{\text{commercial}} = 28\,000\text{L/gross ha/day} \times 0.25\text{ha} \times (1/86,400\text{ sec/day}) = 0.081\text{L/sec}$$

Peaking Factor: commercial 1.5

$$\text{Extraneous Flow: } 0.33\text{L/sec/ha} \times 0.25\text{ha} = 0.083\text{L/sec}$$

$$\text{Peak Design Flow: } (0.081)(1.5) + 0.083 = 0.205\text{L/sec}$$

Commercial – Service Station O.B.C Table 8.2.1.3B

$$\text{Per Water Closet: } 950\text{L/day} \times 1 \times (1/86,400\text{ sec/day}) = 0.011\text{L/sec}$$

Per fuel outlet or per vehicle served

- 8 fuel nozzles $\times 560\text{ L/day} \times (1/86,400\text{ sec/day}) = 0.052\text{L/sec}$

- 300 vehicles served/day $\times 20\text{L/vehicle} \times (1/86,400\text{ sec/day}) = 0.069\text{L/sec}$

$$Q_{\text{service station}} = 0.011 + 0.069 = 0.080\text{ L/sec}$$

Assuming an average commercial sanitary demand of 28,000L/gross ha/day, provides an anticipated average sanitary demand of 0.081Litres per second. Since the actual sanitary demand for the use as a service station is 0.080Litres per second, it is keeping with the anticipated sanitary demand for commercial development.



2.2 Sanitary Service Lateral

A 200mm sanitary sewer lateral has been proposed to convey flows from the service station to the existing 200mm diameter sanitary sewer on Fiddlehead Street. As shown in the site servicing plan 190105-SER, the lateral will run from the rear of the building and into an existing access road between Bank Street and Fiddlehead Street. The sanitary pipe will run parallel to an existing 200mm watermain. A 1200mm diameter inspection maintenance hole is provided within the access route for the private sewer service upstream of the public sewer connection. The sanitary service and sanitary manhole are to be installed with a minimum 2.5m horizontal separation from the watermain as per procedure F-6-1 Section 4 of the Ontario Drinking Water Act.

The Ontario Building Code specifies minimum pipe size and maximum hydraulic loading for sanitary sewer pipe. OBC 7.4.10.8 (2) states "Horizontal sanitary drainage pipe shall be designed to carry no more than 65% of its full capacity." A 200 mm diameter sanitary service with a minimum slope of 1.0% has a capacity of 32.8 Litres per second.

The maximum peak sanitary flows for the site is 0.205 Litres per second. Since 0.205 Litres per second is much less than $0.65 \times 32.8 = 21.32$ Litres per second, the 200mm diameter sanitary service would have sufficient capacity for the design flow.

2.3 Sanitary Main

The proposed lateral would connect to a 200mm diameter sanitary sewer in the Sundance Village subdivision on Fiddlehead Street. The sanitary network outlets to a 250mm diameter pipe on Summertime Drive/Rotary Way. From Summertime Drive the sanitary network connects to a 375mm pipe at the intersection with Fernside Street. The 375mm diameter pipe is a sub trunk sewer that runs between the Lilythorne subdivision and the Cowan's Grove subdivision. The trunk sewer then crosses Bank Street to the Leitrim pump station.

The city of Ottawa provided the phase 1 sanitary drainage plan of the Sundance Village subdivision completed by IBI Group. The plan outlines the current and future residential population and contributing areas of the subdivision. To ensure adequate capacity in the Sundance Village subdivision to accommodate the proposed connection, the calculations show the drainage plan subdivided into 6 catchment areas, as show in the drainage plan (modified by Kollaard Associates). The modified drainage plan is included in the appendix. At the end of the catchment areas outlined in the drawing are nodes. Each node indicates where the sanitary network area collects to a central pipe and manhole. Some nodes collect multiple catchment areas, and hence the sanitary pipe diameter increases. The nodes are placed in areas of highest flow rate for each size of pipe.



Referring to the modified drainage area plan, node A represents the highest flow within the Fiddlehead street area (area 1 on the drainage plan). Nodes B and C denote catchment area 2 and catchment area 3 on the drainage plan, just upstream of where the 200mm diameter pipe network combines to a 250mm diameter pipe. Node D represents the highest flow in the 250mm diameter pipe before it changes to a 375mm pipe (combining catchment areas 2-4. Node E at the 375mm diameter pipe encompasses catchment areas 2-6 for the entire subdivision.

The demand on the existing sanitary sewers in the Sundance Village subdivision were calculated based on the occupation, residential population and contributing area shown in the drainage plan from IBI Group. Pipe slopes were estimated from geoOttawa Mapping. The sanitary sewer calculation sheets are attached in the Appendix. The first calculation sheet shows the sanitary sewer capacity before the connection from the Stinson site. The second calculation sheet shows the sanitary sewer after the connection from the Stinson site. These calculation sheets can be found in the appendix.

Node A

The existing sanitary sewer on Fiddlehead Street between MH153A and MH154A consists of 200 mm diameter PVC pipe at a slope of 0.43 percent. The capacity of this section of sewer is 21.58 Litres per second. The current pipe flow is 2.54 Litres per second.

The total demand on the Fiddlehead Street sanitary sewer between MH153A and MH154A will be 0.20 Litres per second after the proposed connection. This total demand represents 1 percent of the capacity of the 200mm diameter sanitary sewer. The additional peak demand resulting from the proposed connection consists of 0.20 Litres per second or about a 7.3 percent increase. This additional demand represents 0.93 percent of the capacity of the 200mm diameter sanitary sewer. Therefore, it is considered that there is sufficient capacity in the sewer on Fiddlehead Street for the proposed connection.

Node B

The existing sanitary sewer on Sunburst Street between MH121A and MH126A consists of 200 mm diameter PVC pipe at a slope of 1.66 percent. The capacity of this section of sewer is 42.26 Litres per second. The current pipe flow is 20.78 Litres per second.

The total demand on the Sunburst Street sanitary sewer between MH121A and MH126A will be 2.74 Litres per second after the proposed connection. This total demand represents 13 percent of the capacity of the 200mm diameter sanitary sewer. The additional peak demand resulting from the proposed connection consists of 0.20 Litres per second or about a 7.3 percent increase. This additional demand represents 0.47 percent of the capacity of the 200mm



diameter sanitary sewer. Therefore, it is considered that there is sufficient capacity in the sewer on Fiddlehead Street for the proposed connection.

Node C

The existing sanitary sewer on Summertime Drive between MH125A and MH126A consists of 200 mm diameter PVC pipe at a slope of 2.55 percent. The capacity of this section of sewer is 52.42 Litres per second. The current pipe flow is 2.31 Litres per second.

The proposed connection does not affect node C. The pipe flow will remain the same as the pre-connection flow at this node.

Node D

The existing sanitary sewer on Summertime Drive between MH129A and MH133A consists of 250 mm diameter PVC pipe at a slope of 1.04 percent. The capacity of this section of sewer is 60.7 Litres per second. The current pipe flow is 26.93 Litres per second.

The total demand on the Summertime Drive sanitary sewer between MH129A and MH133A will be 27.23 Litres per second after the proposed connection. This total demand represents 45 percent of the capacity of the 250mm diameter sanitary sewer. The additional peak demand resulting from the proposed connection consists of 0.30 Litres per second or about a 1.1 percent increase. This additional demand represents 0.49 percent of the capacity of the 250mm diameter sanitary sewer. Therefore, it is considered that there is sufficient capacity in the sewer on Fiddlehead Street for the proposed connection.

Node E

The existing sanitary sewer on between MH136A and MH137A consists of 375 mm diameter concrete pipe at a slope of 0.49 percent. The capacity of this section of sewer is 122.68 Litres per second. The current pipe flow is 50.11 Litres per second.

The total demand on the sanitary sewer between MH136A and MH137A will be 50.41 Litres per second after the proposed connection. This total demand represents 41 percent of the capacity of the 375mm diameter sanitary sewer. The additional peak demand resulting from the proposed connection consists of 0.30 Litres per second or about a 0.6 percent increase. This additional demand represents 0.24 percent of the capacity of the 375mm diameter sanitary sewer. Therefore, it is considered that there is sufficient capacity in the sewers in Sundance Village for the proposed connection.



3 CONCLUSIONS

The peak sanitary demand for the commercial use of the site was identified as 0.205 Litres per second. With Bank Street not containing a gravity sewer in front of Civic # 4727, the sanitary lateral connection is to be made to Fiddlehead Street, within the Sundance Village subdivision sanitary network. Based on the drainage plan provided by the city, it is considered that there is sufficient capacity in the sewers in that subdivision to accommodate the additional flow from the gas station site at 4727 Bank Street.

We trust that this report provides sufficient information for your present purposes. If you have any questions concerning this report or if we can be of any further assistance to you on this project, please do not hesitate to contact our office.

Yours truly,

KOLLAARD ASSOCIATES INC.



William Kollaard, P. Eng.



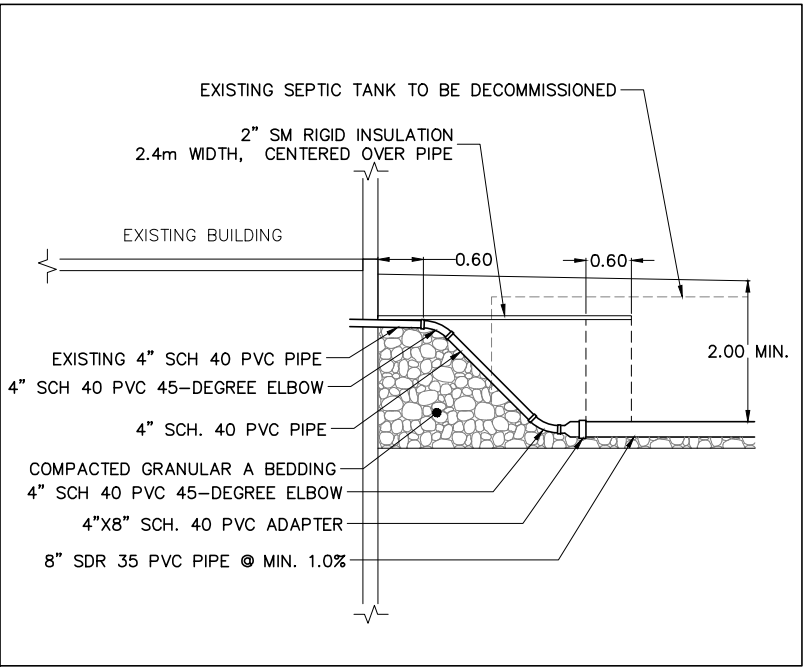
Appendix A: Servicing Design Information

- 190105- SER: Servicing Plan
- 190105- PP: Plan and Profile
- 501A: Modified Sundance Village Sanitary Drainage Area
- Pre-Connection Sanitary Sewer Design Calculations
- Post-Connection Sanitary Sewer Design Calculations

SEWER NOTES:

- SUPPLY AND CONSTRUCT ALL SEWERS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND ONTARIO PROVINCIAL STANDARDS FOR ROADS AND PUBLIC WORKS.
- SPECIFICATIONS:

ITEM	SPEC. No.	CITY STD. DWG. No.
SANITARY MANHOLE (1200Ø)	OPSD 701.010	S11 & S11.1
SEWER SERVICE CONNECTION	OPSD 701.021	S6 & S7
SANITARY BENCHING	OPSD 701.021	S24 & S25
SEWER TRENCH		
SANITARY MANHOLE FRAME & COVER	OPSD 401.030	
- INSULATE SANITARY SESRVICE CONNECTION PIPES THAT HAVE LESS THAN 2m COVER WITH THERMAL INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY EXCEPT WHERE INDICATED OTHERWISE.
- FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTION PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX; POSITIVE SEAL AND DURASEAL). SANITARY RUBBER GASKET TYPE JOINTS SHALL CONFORM TO CSA (B-182.2,3,4).
- THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
- BUILDING CONTRACTOR TO PROVIDE TEMPORARY ADDITIONAL GRANULAR BACKFILL ABOVE SHALLOW CULVERTS AND STORM SEWERS TO SUPPORT HEAVY CONSTRUCTION EQUIPMENT.
- CONTRACTOR TO TELEWISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES TO MUNICIPAL SATISFACTION.
- WHERE THE SANITARY SEWER CROSSES ABOVE THE WATERMAIN, THE CONTRACTOR IS TO PROVIDE A MINIMUM OF 0.50m VERTICAL SEPARATION, ADEQUATE STRUCTURAL SUPPORT OF THE SEWER TO PREVENT SETTLING AND EXCESSIVE JOINT DEFLECTION AND ENSURE THAT THE LENGTH OF THE WATER PIPE BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS ARE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.



DETAIL 'A'
(NOT TO SCALE)

PROPOSED TEE CONNECTION TO
EXISTING 200mmØ SAN SEWER
ANTICIPATED INV = 100.47
SPRINGLINE = 100.57
CONNECTION INV = 100.60

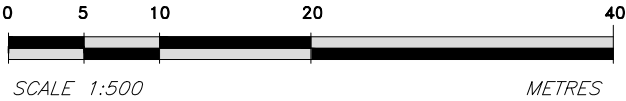
PROPOSED SANITARY CROSSING
INV = 101.20
EXISTING 375mmØ STM SEWER
ANTICIPATED OBV = 100.90
ANTICIPATED INV = 100.50

BEDDING 100% COMPACTION IN THIS AREA

APPROXIMATE LOCATION OF
EXISTING SEPTIC TANK AND FIELD
(TO BE DECOMMISSIONED)

EXISTING SAN MH
TG = 103.93
NW INV = 100.73

EXISTING STM MH
TG = 103.85
NW INV = 100.70



© COPYRIGHT 2019
KOLLAARD ASSOCIATES INCORPORATED

DRAWING NUMBER:
190105-SER

SITE SERVICING PLAN



LEGEND

- EXISTING ELEVATION
- PROPOSED/EXISTING ELEVATIONS
- DRAINAGE SLOPE
- EXISTING DRAINAGE
- PROPERTY LINE
- WATERMAIN
- STORM SEWER
- SANITARY SEWER
- EXISTING CHAIN LINK FENCE
- EXISTING HYDRO POLE
- EXISTING HYDRO ANCHOR
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- TEMPORARY BENCHMARK

1	AVB	2020/01/20	ISSUED TO THE CITY OF OTTAWA
0	ML	2019/04/04	ISSUED FOR MECP PRE-CONSULT
REV	BY	DATE	DESCRIPTION



P.O. BOX 189, 210 PRESCOTT ST (613) 860-0923
KEMPVILLE, ONTARIO info@kollaard.ca
KOG 1JO FAX (613) 258-0475
http://www.kollaard.ca

CLIENT:
W.O. STINSON & SON LTD.

PROJECT:
PROPOSED PRIVATE SANITARY SEWER

LOCATION:
4727 BANK STREET
CITY OF OTTAWA, ON

DESIGNED BY:
WK

DATE:
MAR. 28, 2019

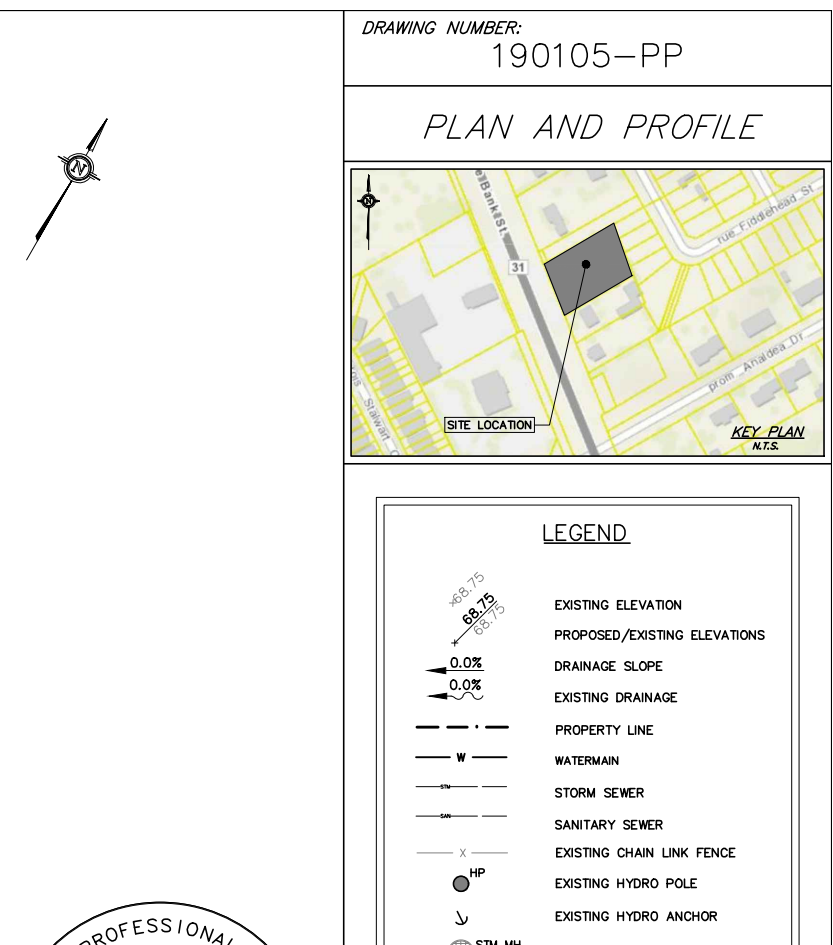
DRAWN BY:
ML

SCALE:
1:500

KOLLAARD FILE NUMBER:
190105



SITE SERVICING PLAN
(SCALE 1:500)



© COPYRIGHT 2019
KOLLAARD ASSOCIATES INCORPORATED

DRAWING NUMBER:
190105-PP

PLAN AND PROFILE

LEGEND

EXISTING ELEVATION

PROPOSED/EXISTING ELEVATIONS

DRAINAGE SLOPE

EXISTING DRAINAGE

PROPERTY LINE

WATERMAIN

STORM SEWER

SANITARY SEWER

EXISTING CHAIN LINK FENCE

HP
EXISTING HYDRO POLE

EXISTING HYDRO ANCHOR

STM MH
EXISTING STORM MANHOLE

SAN MH
EXISTING SANITARY MANHOLE

SAN
PROPOSED SANITARY MANHOLE

TEMPORARY BENCHMARK

1	AVB	2020/01/17	ISSUED TO THE CITY OF OTTAWA
0	ML	2019/04/04	ISSUED FOR MECP PRE-CONSULT
REV	BY	DATE	DESCRIPTION

Kollaard Associates
Engineers

P.O. BOX 189, 210 PRESCOTT ST
KEMPTVILLE, ONTARIO
K0G 1J0 FAX (613) 258-0475
<http://www.kollaard.ca>

(613) 860-0923
info@kollaard.ca

CLIENT:

W.O. STINSON & SON LTD.

PROJECT:

PROPOSED PRIVATE SANITARY SEWER

LOCATION:

4727 BANK STREET
CITY OF OTTAWA, ON

DESIGNED BY: WK	DATE: MAR. 28, 2019
DRAWN BY: ML	SCALE: 1:250 1:50

KOLLAARD FILE NUMBER:

190105

Pre-Connection: Sanitary Sewer Calculations
4727 Bank Street/ Sundance Village Subdivision, City Of Ottawa, Ontario

Location				Residential Flow				Commercial			Institutional			Infiltration			Flow	Sanitary Sewer Design					Sewer Capacity				
Sewer Location	Sewer Catchment	From	To	Population	Area	Flow	Cummulative Flow	Area	Flow	Cummulative Flow	Area	Flow	Cummulative Flow	Tributary Area	Infiltration Flow	Cummulative Infiltration Flow	Peak Design Flow	Length	Diameter	Slope	Pipe Capacity	Full Flow Velocity	Q _p /Q _f	V _p /V _f	Avail. Cap		
		MH	MH																						[ha]	[L/s]	[L/s]
Fiddlehead St.	area 1= node a	MH153A	MH154A	84.00	1.38	0.34	0.34	0.00	0.00	0.00	0.60	0.35	0.35	1.98	0.65	0.65	2.54	78.52	200.00	0.43%	21.58	0.69	0.12	0.68	19.05	88.25	
Sunburst St.	area 2= node b	MH121A	MH126A	696.00	9.01	2.82	2.82	2.77	1.60	1.60	2.49	1.44	1.44	14.96	4.94	4.94	20.78	79.51	200.00	1.66%	42.26	1.35	0.49	1.00	21.48	50.83	
Summertime Dr/ Rotary Way	area3= node c	MH125A	MH126A	102.00	1.99	0.41	0.41	0.00	0.00	0.00	0.00	0.00	0.00	1.99	0.66	0.66	2.31	111.58	200.00	2.55%	52.42	1.67	0.04	0.52	50.11	95.59	
	area 4			173.00	2.93	0.70		0.00	0.00		0.00	0.00		3.14	1.04		3.84										
Summertime Dr/ Rotary Way	areas 2-4 =node d	MH129A	MH133A				3.93			1.60			1.44			6.63	26.93	27.80	250.00	1.04%	60.74	1.24	0.44	0.97	33.81	55.66	
	area 5			764.00	12.63	3.09		0.00	0.00		0.00	0.00		14.41	4.76		17.13										
	area 6			273.00	4.85	1.11		0.00	0.00		0.00	0.00		4.93	1.63		6.05										
4198 Hawthorne Rd	areas 2- 6=node e	MH136A	MH137A				8.13			1.60			1.44			13.01	50.11	40.85	375.00	0.49%	122.68	1.11	0.41	0.95	72.57	59.15	
Notes:																											
			CoO Guidelines 2011	CoO Guidelines technical bulletin 2018																							
Residential	Flow [L/day/capita]:		350	280																							
	*Peaking Factor: Harmon equation		max 4	max 4																							
Commercial	Flow [L/ha/day]:		50000	28000																							
	*Peaking Factor:		1.5	1.5																							
Institutional	Flow [L/ha/day]:		50000	28000																							
	*Peaking Factor:		1.5	1.5																							
Infiltration	L/s/effective gross ha		0.28	0.33																							
Kollaard Associates File #: 190105																											

4727 Bank Street/ Sundance Village Subdivision, City Of Ottawa, Ontario

Notes:		CoO Guidelines 2011	CoO Guidelines technical bulletin 2018			
Residential	Flow [L/day/capita]: *Peaking Factor: Harmon equation	350 max 4	280 max 4		Project:	Proposed Sanitary Sewer Installation
Commercial	Flow [L/ha/day]: *Peaking Factor:	50000 1.5	28000 1.5		Location:	4727 Bank Street Ottawa ,ON
Institutional	Flow [L/ha/day]: *Peaking Factor:	50000 1.5	28000 1.5		Date:	January 10, 2020
Infiltration	L/s/effective gross ha	0.28	0.33			
Kollaard Associates File #: 190105						