THE MUNICIPAL INFRASTRUCTURE GROUP LTD.
8800 Dufferin Street, Suite 200
Vaughan, Ontario L4K 0C5
T 905.738.5700
F 905.738.0065
www.tmig.ca

MEMORANDUM

DATE	May 6, 2021
TO	**Jeff Ormonde (Urbantech)**
CC	
SUBJECT	Lakeview Community Water Modelling Methodology and Analysis – 8050 Units
FROM	Cassandra Leal, P.Eng
PROJECT NUMBER	17201

1 Introduction

The Municipal Infrastructure Group Ltd. (TMIG) has been retained to conduct an analysis to review the water servicing capacity of the proposed watermain network (Urbantech, January 2020) relative to the contemplated development densities.

This memorandum will outline the modelling methodology adopted for the Lakeview Community. The water model was used to confirm that the proposed pipe network can supply the design water demands at appropriate pressures expected under various scenarios.

This memorandum has been updated with the updated population, provided from Urbantech May 2021. The watermain network is assumed to be unchanged.

2 Design Criteria

The Region of Peel produced the Inspiration Lakeview Water and Wastewater Servicing Analysis (May 2018). Within this document, the Region outlined the design criteria that apply to the proposed development:

- 265 Lpcd for average day water consumption
- A maximum day peaking factor of 1.8 for residential and 1.4 for employment growth
- A peak hour factor of 3.0

Also, there are limits to the velocity and pressures:

- Under Maximum Day demand, pipe velocity should remain below 1.5 m/s
- Under Maximum Day demand, pressure in the system should not drop below 280 kPa (40 psi)
- Pressure in the system should not drop below 140 kPa (20 psi) under a maximum day plus fire condition

Standards outlined in the Region's *Inspiration Lakeview Water and Wastewater Servicing Analysis (May 2018)* report and Inspiration Lakeview Conceptual Municipal Servicing Strategy (TMIG, July 2014) were used in substitution.

3 Population Breakdown

Using the information provided by Urbantech (May 2021), the populations in the water model were modified to match the populations used in the sanitary sewer design sheet and drainage map (dated August 2020). The information provided by Urbantech does not include the External Lands between the subject lands and Lakeshore Road. The sanitary drainage map used to obtain the population is found in **Appendix A.**

Detailed population and demand calculations can be found in **Appendix B**. The future demands for the external lands between Lakeshore Road and the Lakeview Community Lands (called "External") were calculated using the population

breakdown from the Inspiration Lakeview Village Masterplan Concept. This information is also included in **Appendix B** and is unchanged from previous submissions.

A summary of the water demands is provided in **Table 1**:

TABLE 1 WATER DEMANDS – SUMMARY

	Lakeview Community	External
Total Residential Population	22,042	10,048
Residential Avg Day Demand	67.6 L/s	30.8 L/s
Employment Avg Day Demand	24.7 L/s	0 L/s
Residential Max Day Demand	121.7 L/s	55.47 L/s
Employment Max Day Demand	34.5 L/s	0 L/s
Residential Peak Hour Demand	202.8 L/s	92.46 L/s
Employment Peak Hour Demand	74.0 L/s	0 L/s

4 Water Model Development

InfoWater has been selected for modelling the water distribution system for the study area. The key input factors for the model are described below:

4.1 Pipe Network

The preliminary watermain layout was provided by Urbantech and is included in **Appendix C**.

4.2 Water Demands

The average daily demands were calculated for each development block (internal), as shown in **Appendix B**. These demands were assigned to nodes adjacent to the respective parcels. The average day demand set is populated with the residential demands assigned to Demand 1 and employment demands assigned to Demand 2.

Based on the standards outlined in Inspiration Lakeview Water and Wastewater Servicing Analysis (May 2018) the peaking factor for the Maximum day is 1.8 for residential and 1.4 for employment. The peaking factor for Peak hour is 3 for both residential and employment.

The average day demand set was multiplied with the respective peaking factors to create separate maximum day and Peak hour demand sets.

Design fire demands have been proposed to be minimum of 300 L/s. This is common for commercial properties, and high-rise residential development.

Using the Inspiration Lakeview Master Plan population breakdown, the external lands were included in the model. For simplicity, the external demands were added as two demands in the model, an east and a west demand (Junction J-34 and J-198, respectively). The population breakdown included residential and employment. For this review, the appropriate rates and factors were used.

A table listing the nodes at which the development blocks were allocated is provided in **Appendix B**.

4.3 Boundary Conditions

The proposed development is located within Peel Region pressure zone PZ1. Since we are modelling a local area from within a larger distribution network, suitable boundary conditions were established at the study area limits (where the proposed internal network will connect to existing sub-transmission mains). The proposed connection locations are:

- To the 600 mm watermain along Lakeshore Road East, at Lakefront Promenade;
- To the 600 mm watermain along Lakeshore Road East, at Hydro Road;

Fixed head reservoirs were established at these two locations. The HGL elevations at these reservoirs were established through pressure logging data provided by Region of Peel. The details of the boundary conditions are in **Table 2**.

TABLE 2 HGL ELEVATIONS AT BOUNDARY CONDITIONS

Boundary Location	HGL Elevation	Source
Lakeshore Road East, at Lakefront Promenade	142 m	Region of Peel email dated September 11th
Lakeshore Road East, at Hydro Road	142 m	Region of Peel email dated September 11th

5 Modelling Results

The proposed watermain network and demands were simulated to determine the resulting pressures under various demand conditions. We also considered a condition where the Lakeshore Road watermain is unavailable and the lands area serviced only through the feed from the plant.

Pressure maps indicating modelled pressure at every node for the Scenarios are provided in Figure 1 through Figure 4. The InfoWater Junction output for all scenarios and Pipe output for Maximum day scenario is provided in **Appendix D**.

5.1 Normal Conditions Scenarios

Average day demand, maximum day demand, maximum day demand plus fire flow and peak hour demand scenarios were run with the two proposed connections to the existing 600mm Lakeshore Road watermain, at Lakefront Promenade and Hydro Road. These scenarios did not consider a feed from the west at Lakefront Promenade and Rangeview Road.

The summary of modelling results is provided in **Table 3**.

TABLE 3 MODELLING RESULTS SUMMARY

Water Demand Modeling Scenario	Minimum Water System Requirements	Modeling Results
Average Day Demand	Recommended Normal Pressures within System 275 kPa to 690 kPa (40 psi to 100 psi)	System Pressure = 510 kPa to 647 kPa (74 psi to 93 psi)
Maximum Day Demand	Recommended Normal Pressures within System 275 kPa to 690 kPa (40 psi to 100 psi)	System Pressure = 507 kPa to 643 kPa (74 psi to 93 psi)
	Flow velocity remains below 1.5 m/s within the distribution network	Flow velocity within the distribution network is between 0.01 m/s to 0.89 m/s.
Peak Hour Demand	Recommended Normal Pressures within System 275 kPa to 690 kPa (40 psi to 100 psi)	System Pressure = 498 kPa to 637 kPa (72 psi to 92 psi)
Maximum Day Demand plus Fire Flow	Required Fire Flow to be provided at a residual pressure of no less than 140 kPa	
	Fire flow requirements for the proposed development Q_f > 300 L/s	Available Fire Flow = 532 L/s to 2,710 L/s

5.2 Emergency Conditions Scenario

To simulate an emergency or maintenance condition where one or both water supply points to Lakeshore Road are not available, the two boundary conditions and watermain along Lakeshore Road East were turned off and the boundary condition to the west (supply from Lakefront Promenade and south of Rangeview Road) was turned on.

The HGL at this boundary condition was established through pressure logging data provided by the Region of Peel. The details of the boundary condition are in **Table 4**.

TABLE 4 HGL ELEVATION AT WEST BOUNDARY CONDITION

Boundary Location	HGL Elevation	Source
Water Treatment Plant, south of Rangeview Road	148 m	Region of Peel email dated September 11th

Under this condition, the pressures were between 488 – 643 kPa (71 to 93 psi). This is still within the acceptable pressure range. Figure 5 is the pressure map for this scenario. This scenario illustrates that the watermain network and sizing is acceptable for the population and demands for Lakeview Community. Under normal conditions, all three of these supply points would be available.

6 Conclusions and Recommendations

The modelled results all lie within acceptable range, but the pressures could exceed 600 kPa (90 psi) along Street A. The available fire flows at the nodes within the Study Area will be between 532 L/s and 2,710 L/s. The actual block-by-block fire flow requirements should be verified relative to these values.

The watermain network and sizing appears to be adequate for the population and demands used in this model.

FIGURE 1 AVERAGE DAY DEMAND SCENARIO PRESSURE

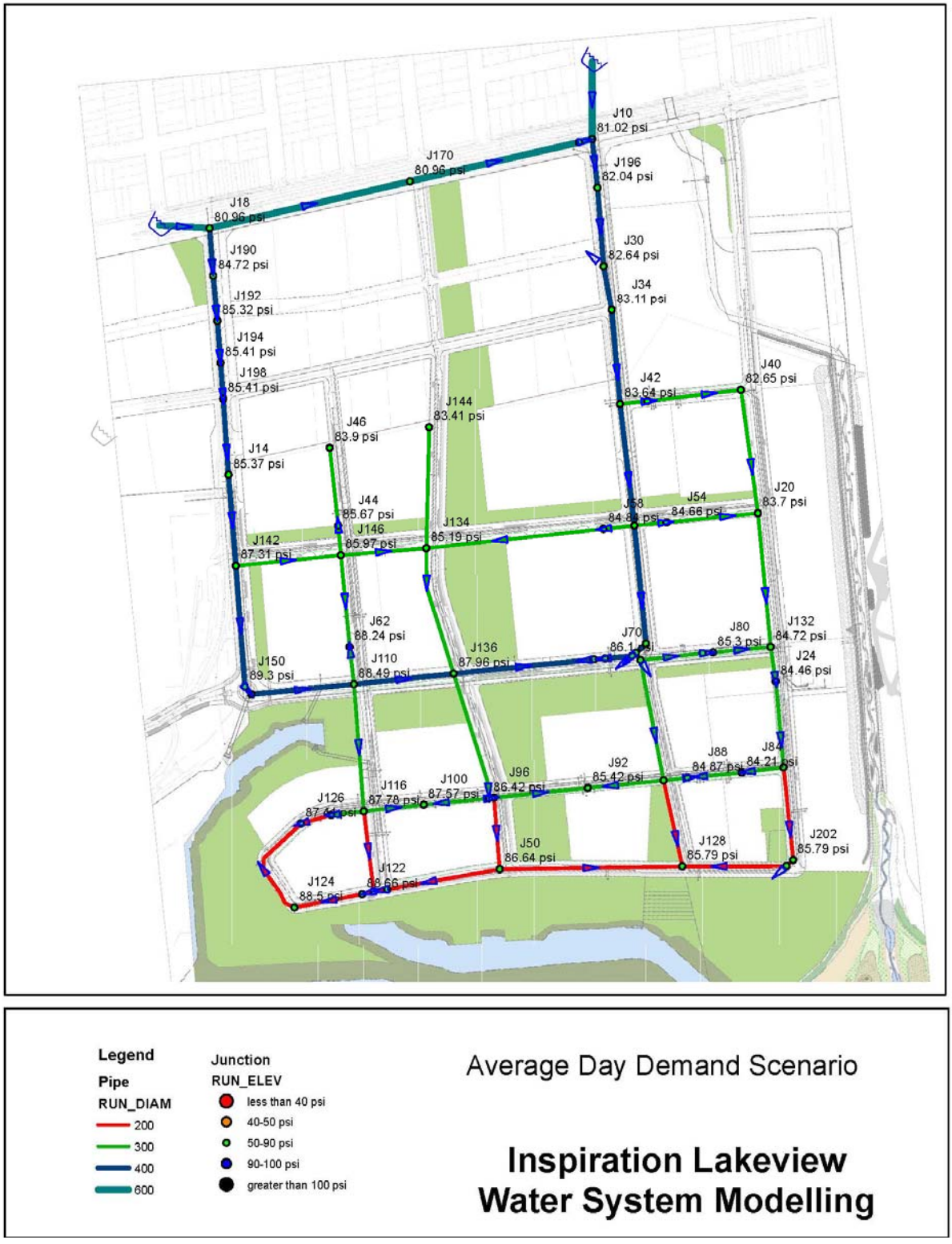


FIGURE 2 MAXIMUM DAY DEMAND SCENARIO PRESSURE

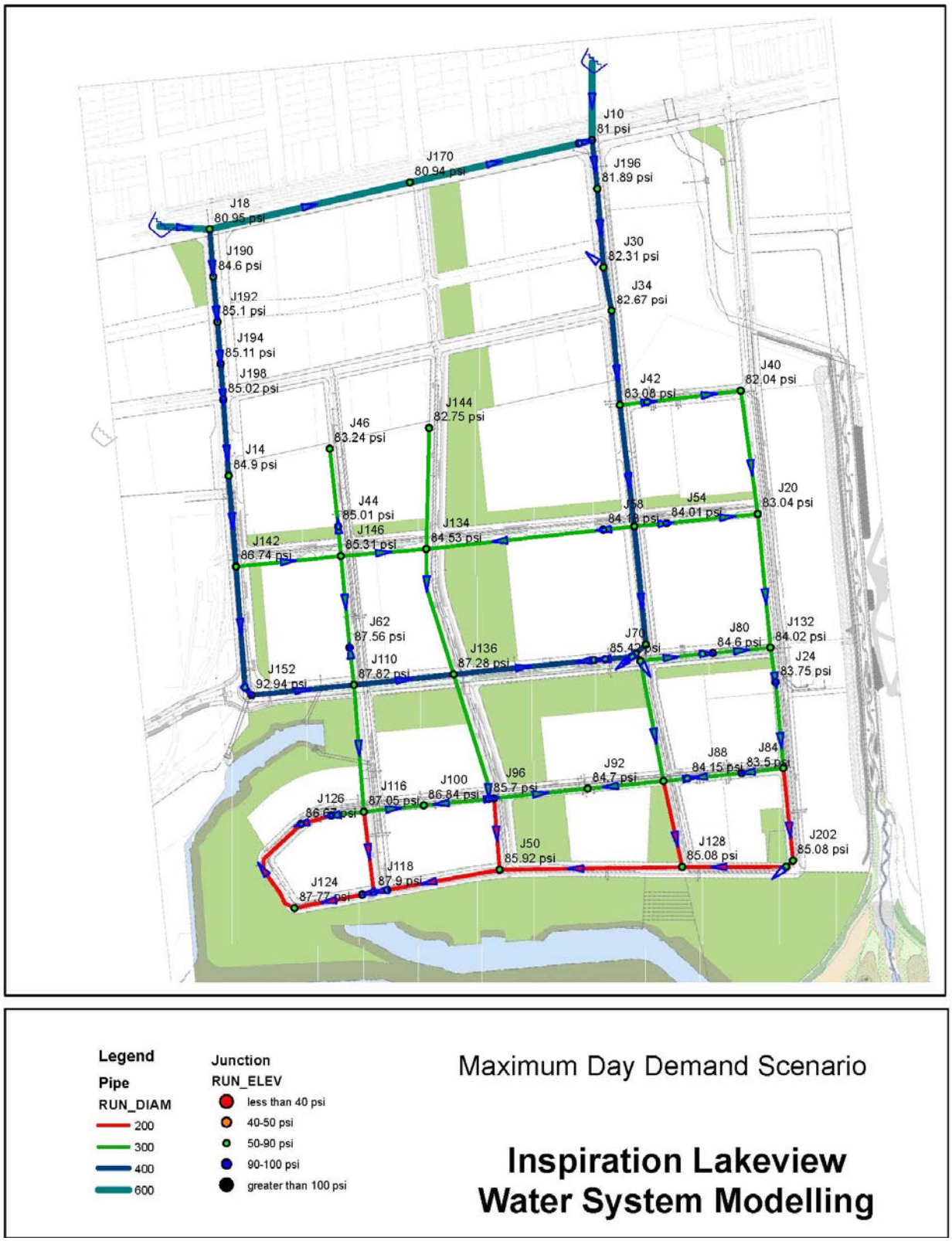


FIGURE 3 PEAK HOUR DEMAND SCENARIO PRESSURE

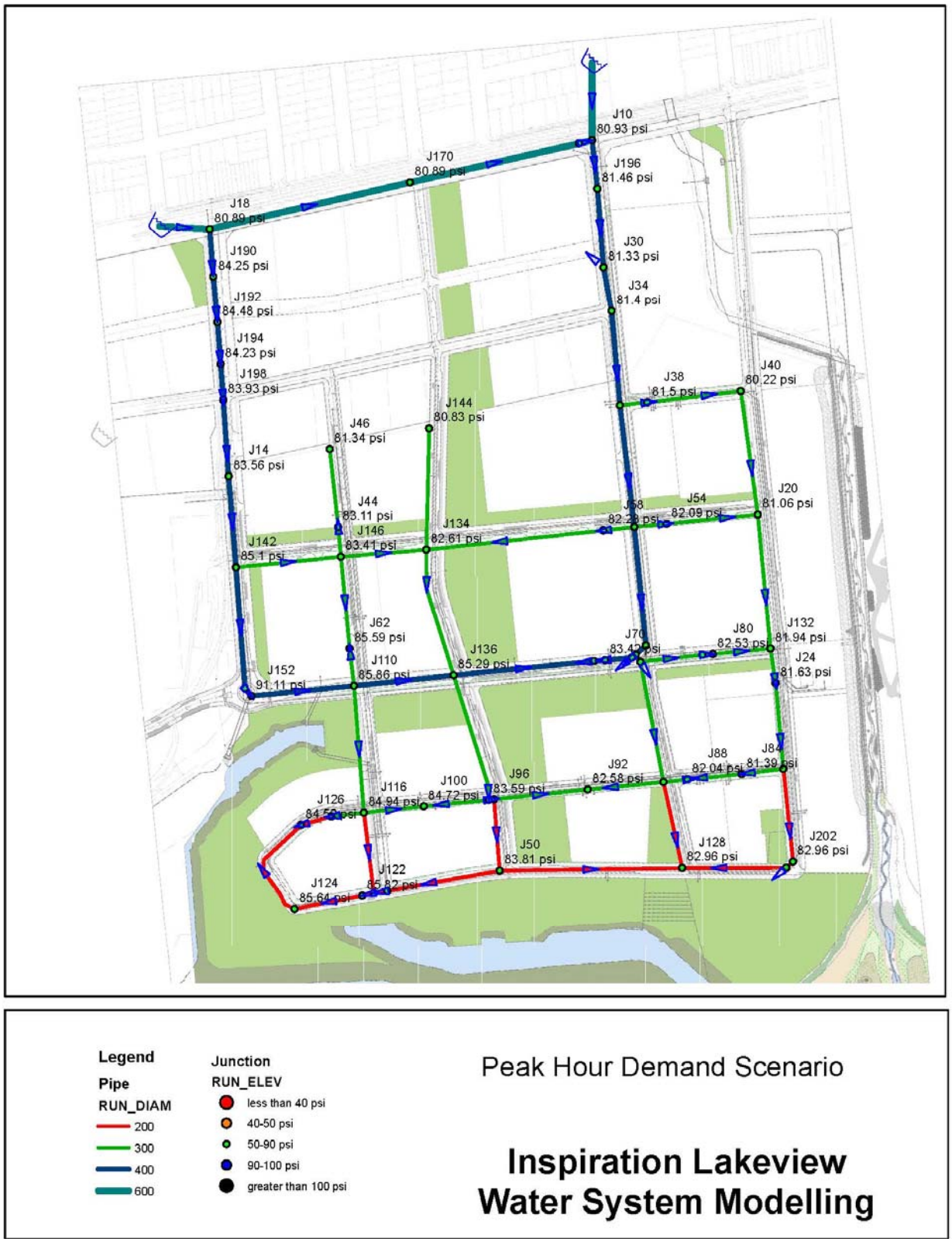


FIGURE 4 MAXIMUM DAY PLUS FIRE FLOW SCENARIO AVAILABLE FIREFLOW

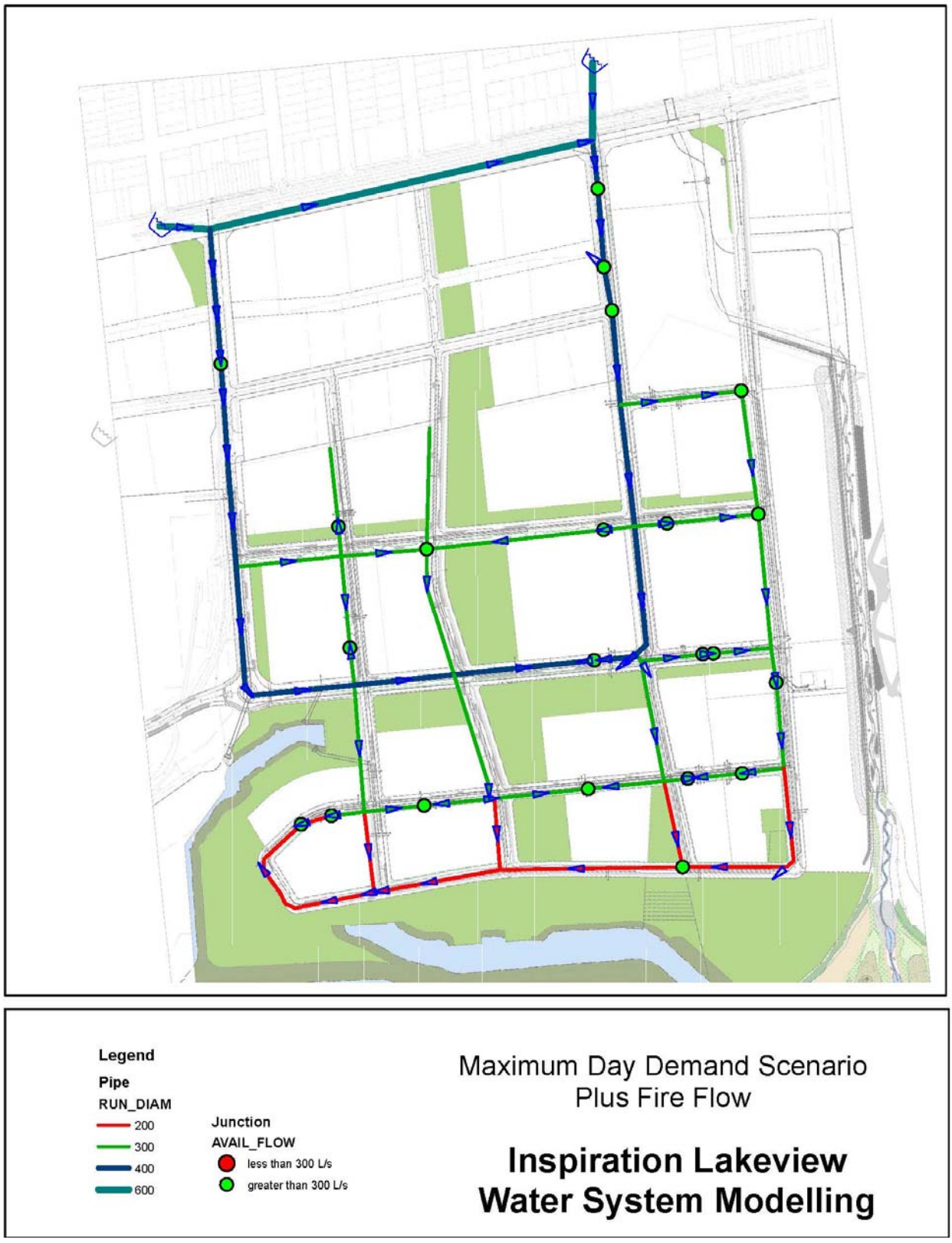
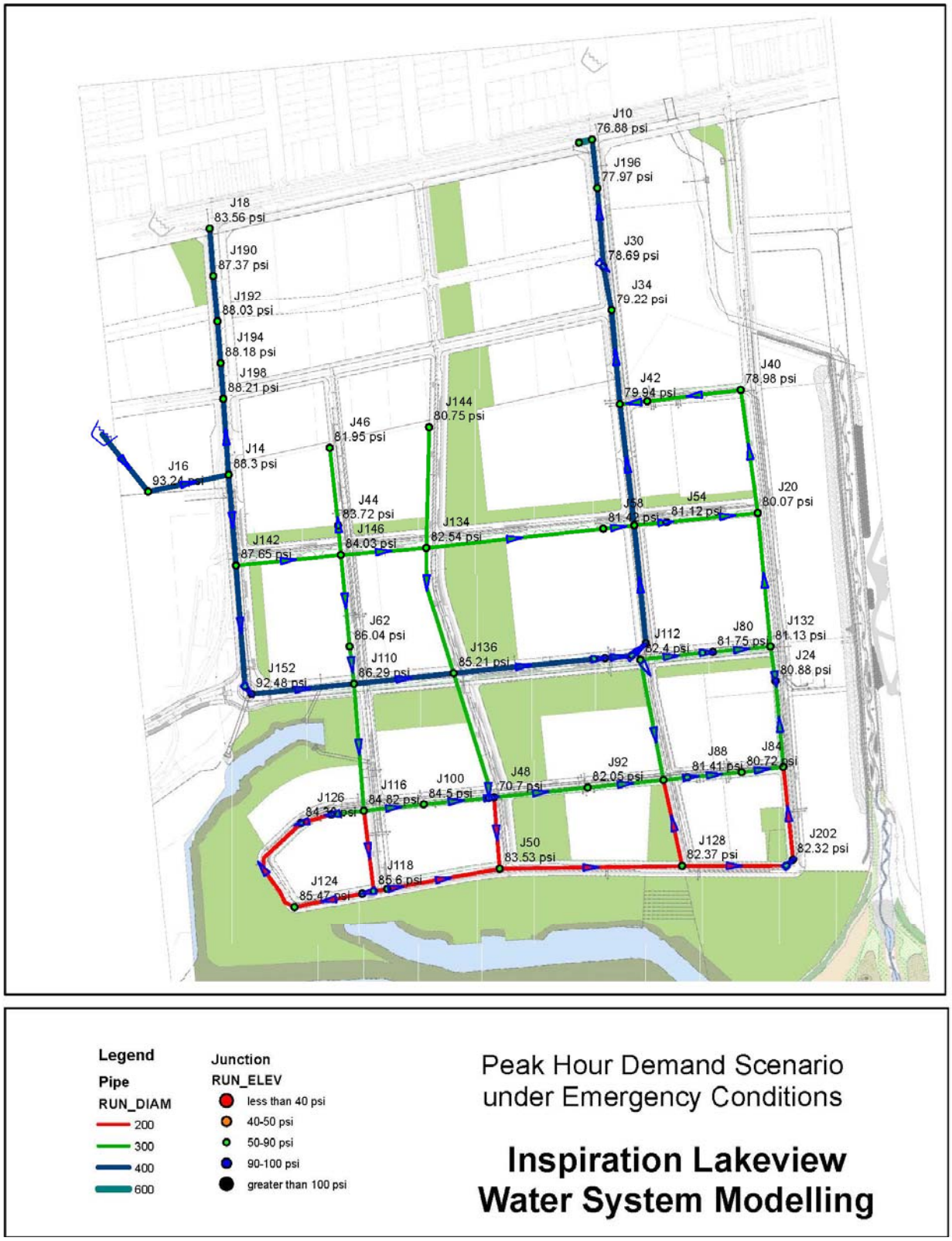


FIGURE 5 PEAK HOUR DEMAND UNDER EMERGENCY CONDITIONS



APPENDIX A


SANITARY SERVICING PLAN
LAKEVIEW COMMUNITY PARTNERS LTD.
CITY OF MISSISSAUGA
URBANTECH
LEGEND
NOTES
G.E. BOOTH WASTEWATER TREATMENT FACILITY
SERSON CREEK
LIMIT OF PROPERTY
EX. PLASTERFORM INC.
EXISTING EMPLOYMENT
FUT. ROAD
STREET I
STREET E
HYDRO ROAD
STREET H
STREET C
STREET A
STREET B
STREET F
STREET G
STREET D
STREET J
FUTURE ROAD
RANGEVIEW ROAD
LAKESHORE ROAD EAST
LAKEFRONT PROMENADE
EX. LAKEFRONT PROMENADE PARK
LAKEVIEW WATER TREATMENT PLANT
LAKE ONTARIO

APPENDIX B

PN 17201 1
Date 6-May-21
By CBL

		RESIDENTIAL		EMPLOYMENT
Design Criteria	ADD	265	Lpcd	265
	MDD Factor	1.8		1.4
	PHD Factor	3		3

Populations from this file: G:\Projects\2017\17201 - Lakeview Community - Mississauga\Design\SAN WATER\2021 05 06 - 17201 - CALC - Water and Wastewater.xlsx

				DMD 1						SCALE TO 7995		DMD 2				
Block Number	**Junction in Model**	**Residential Population**	**Combined**	**ADD**	**MDD**	**PHD**	**FF**		**Employment Population**	**Combined**	**MODIFIED**	**ADD**	**MDD**	**PHD**	**FF**
1	J44	380					*300*	J44	0	0	0				
2	J44	620	1000	3.07	5.52	9.20	*300*	J44	0	0	0				
3	J58	1,052	1052	3.23	5.81	9.68	*300*	J58	0	0	0				
4	J30	836	836	2.56	4.62	7.69	*300*	J30	0	0	0				
5	J54	384	384	1.18	2.12	3.53	*300*	J54	0	0	0				
6	J62	2,128		0.00			*300*	J62	0	0	0				
7	J62	2,161	4289	13.16	23.68	39.47	*300*	J62	101	101	108	0.33	0.46	0.99	
8	J64	2,712	2712	8.32	14.97	24.95	*300*	J64	0	0	0				
9	J74	2,220	2220	6.81	12.26	20.43	*300*	J74	0	0	0				
10	J104	1,161	1161	3.56	6.41	10.69	*300*	J104	0	0	0				
11	J126	1,367	1367	4.19	7.55	12.58	*300*	J126	69	69	74	0.23	0.32	0.68	
12	J100	1,745					*300*	J100	0	0	0				
13	J100	1,194	2939	9.01	16.22	27.04	*300*	J100	81	81	87	0.27	0.37	0.80	
14	J92	1,359					*300*	J92	81		0				
15	J92	1,056	2415	7.41	13.33	22.22	*300*	J92	66	147	157	0.48	0.67	1.44	
16	J88	956		0.00	0.00	0.00	*300*	J88	45		0				
17	J88	0	956	2.93	5.28	8.80	*300*	J88	36	81	87	0.27	0.37	0.80	
18	J196	711	711	2.18	3.93	6.54	*300*	J196	46	46	46	0.14	0.20	0.42	
19	J84	0					*300*	J84	152		0				
20	J84	0					*300*	J84	51	203	217	0.67	0.93	2.00	
21	J80	0					*300*	J80	55	55	59	0.18	0.25	0.54	
22	J24	0					*300*	J24	2,790	2790	2980	9.14	12.80	27.42	
23	J40	0					*300*	J40	200	200	214	0.66	0.92	1.97	
24	J20	0					*300*	J20	2,993	2993	3197	9.81	13.73	29.42	
39	J128	0	0	0.00	0.00	0.00	*300*	J128	551	551	589	1.81	2.53	5.42	
31 (park)	J134			0.00	0.00	0.00	*300*	J134	214	214	229	0.70	0.98	2.10	
		22042	22042	67.61	121.69	202.82	7800.00		7531	7531	8041	24.66	34.53	73.99	
Lakeview				67.61	121.69	202.82						24.66	34.53	73.99	
Externals - West				16.26	29.26	48.77						0.00			
Externals - East				14.56	26.21	43.69						0.00			
TOTAL				98.42	177.16	295.27						24.66	34.53	73.99	

PN 17201
Date 2020 09 08
By CL

	RESIDENTIAL	EMPLOYMENT	JUNCTION
Pvt 01	593	0	West
Pvt 02	492	0	West
Pvt 03	366	0	West
Pvt 04	468	0	West
Pvt 05	858	0	East
Pvt 06	346	0	West
Pvt 07	500	0	West
Pvt 08	297	0	West
Pvt 09	297	0	West
Pvt 10	534	0	West
Pvt 11	641	0	East
Pvt 12	649	0	West
Pvt 13	303	0	West
Pvt 14	347	0	West
Pvt 15	608	0	East
Pvt 16	1,493	0	East
Pvt 17	1,254	0	East
	10,048	0	

ADD	265	Lpcd
MDD Factor - Res	1.8	
MDD Factor - Empl	1.4	
PHD	3	

		POPULATION		DMD 1	DMD 2	DMD 1	DMD 2	DMD 1	DMD 2
JUNCTION		**RES**	**EMP**	**ADD RES**	**ADD EMP**	**MDD RES**	**MDD EMP**	**PHD RES**	**PHD EMP**
west	J198	5,300	0	16.26	0.00	29.26	0.00	48.77	0.00
east	J34	4,748	0	14.56	0.00	26.21	0.00	43.69	0.00
		10,048	0	30.82	0.00	55.47	0.00	92.46	0.00
				30.82		55.47		92.46	

APPENDIX C


KEY PLAN
LEGEND
PROPOSED 400mm WATERMAIN
PROPOSED 300mm WATERMAIN
PROPOSED 200mm WATERMAIN
EXISTING WATERMAIN
FUTURE WATERMAIN
NOTE:
THE EXISTING 400mm WATERMAIN SHOWN WITHIN EXISTING BASEMENT SHALL BE REPLACED BY A DEDICATED 400mm WATERMAIN ON LAKEFRONT PROMENADE, STREET B, AND STREET I. AS SHOWN ON THIS PLAN. THE EXISTING WATERMAIN IS A DEDICATED FEED FROM THE WATER TREATMENT TO WASTEWATER TREATMENT PLANT AND SHALL REMAIN IN OPERATION UNTIL THE NEW 400mm WATERMAIN IS COMMISSIONED.
urbantech
LAKEVIEW COMMUNITY PARTNERS LTD.
CITY OF MISSISSAUGA
PRELIMINARY WATER SERVICING PLAN
PROJECT No. 17-549
DATE JAN. 2020
SCALE 1:2000
DWG No. WM-1
G.E. BOOTH WASTEWATER TREATMENT FACILITY
SERSON CREEK
LIMIT OF PROPERTY
HYDRO ROAD
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET I
STREET J
LAKEFRONT PROM.

APPENDIX D

17201 - Inspiration Lakeview Water Modelling - May 2021 InfoWater Output - Avg Day Demand Run				
ID	**Demand (L/s)**	**Elevation (m)**	**Head (m)**	**Pressure (psi)**
J10	0	85	141.99	81.02
J100	9.31	80.1	141.7	87.57
J104	3.57	79.92	141.7	87.82
J110	0	79.47	141.72	88.49
J112	0	81.34	141.71	85.83
J114	0	81.23	141.72	85.99
J116	0	79.95	141.7	87.78
J118	0	79.36	141.7	88.63
J120	0	78.33	141.7	90.09
J122	0	79.33	141.7	88.66
J124	0	79.44	141.7	88.5
J126	4.44	80.21	141.69	87.41
J128	1.81	81.35	141.7	85.79
J130	0	82.01	141.7	84.86
J132	0	82.11	141.71	84.72
J134	0.7	81.8	141.73	85.19
J136	0	79.85	141.72	87.96
J138	0	82.78	141.7	83.76
J14	0	81.75	141.81	85.37
J142	0	80.35	141.77	87.31
J144	0	83.05	141.73	83.41
J146	0	81.26	141.73	85.97
J150	0	78.92	141.74	89.3
J152	0	75.92	141.74	93.56
J154	0	82.07	141.73	84.82
J156	0	81.32	141.72	85.85
J158	0	81.44	141.72	85.69
J160	0	85.04	141.99	80.96
J170	0	85.04	141.99	80.96
J18	0	85.04	141.99	80.96
J190	0	82.36	141.95	84.72
J192	0	81.89	141.91	85.32
J194	0	81.79	141.88	85.41
J196	2.33	84.23	141.94	82.04
J198	16.26	81.77	141.84	85.41
J20	9.81	82.84	141.72	83.7
J200	0	81.35	141.7	85.79
J202	0	81.35	141.7	85.79
J24	9.14	82.29	141.7	84.46
J30	2.57	83.73	141.86	82.64
J34	14.56	83.36	141.82	83.11
J38	0	82.86	141.76	83.74
J40	0.66	83.61	141.74	82.65
J42	0	82.93	141.77	83.64
J44	3.08	81.47	141.73	85.67
J46	0	82.71	141.73	83.9
J48	0	89.79	141.7	73.79
J50	0	80.75	141.7	86.64
J54	1.18	82.17	141.73	84.66
J58	3.24	82.05	141.73	84.84
J62	13.2	79.65	141.72	88.24
J64	8.68	81.1	141.72	86.17
J70	0	81.15	141.72	86.1
J74	6.83	81.63	141.71	85.4
J80	0.18	81.7	141.71	85.3
J84	0.67	82.46	141.7	84.21
J88	3.21	82	141.7	84.87
J92	7.91	81.61	141.7	85.42
J96	0	80.91	141.7	86.42

17201 - Inspiration Lakeview Water Modelling - May 2021 InfoWater Output - Max Day Demand Run				
ID	**Demand (L/s)**	**Elevation (m)**	**Head (m)**	**Pressure (psi)**
J10	0	85	141.98	81
J100	16.64	80.1	141.19	86.84
J104	6.43	79.92	141.18	87.09
J110	0	79.47	141.25	87.82
J112	0	81.34	141.23	85.14
J114	0	81.23	141.24	85.31
J116	0	79.95	141.19	87.05
J118	0	79.36	141.19	87.9
J120	0	78.33	141.19	89.37
J122	0	79.33	141.19	87.93
J124	0	79.44	141.18	87.77
J126	7.9	80.21	141.17	86.67
J128	2.53	81.35	141.19	85.08
J130	0	82.01	141.2	84.14
J132	0	82.11	141.21	84.02
J134	0.98	81.8	141.26	84.53
J136	0	79.85	141.24	87.28
J138	0	82.78	141.2	83.04
J14	0	81.75	141.48	84.9
J142	0	80.35	141.36	86.74
J144	0	83.05	141.26	82.75
J146	0	81.26	141.27	85.31
J150	0	78.92	141.3	88.68
J152	0	75.92	141.3	92.94
J154	0	82.07	141.28	84.17
J156	0	81.32	141.24	85.17
J158	0	81.44	141.24	85.01
J160	0	85.04	141.98	80.94
J170	0	85.04	141.98	80.94
J18	0	85.04	141.98	80.95
J190	0	82.36	141.87	84.6
J192	0	81.89	141.76	85.1
J194	0	81.79	141.66	85.11
J196	4.14	84.23	141.83	81.89
J198	29.27	81.77	141.57	85.02
J20	13.73	82.84	141.26	83.04
J200	0	81.35	141.2	85.08
J202	0	81.35	141.2	85.08
J24	12.8	82.29	141.2	83.75
J30	4.63	83.73	141.62	82.31
J34	26.21	83.36	141.51	82.67
J38	0	82.86	141.36	83.17
J40	0.92	83.61	141.31	82.04
J42	0	82.93	141.38	83.08
J44	5.54	81.47	141.27	85.01
J46	0	82.71	141.27	83.24
J48	0	89.79	141.2	73.07
J50	0	80.75	141.19	85.92
J54	2.12	82.17	141.27	84.01
J58	5.83	82.05	141.27	84.18
J62	23.76	79.65	141.24	87.56
J64	15.49	81.1	141.24	85.49
J70	0	81.15	141.24	85.42
J74	12.29	81.63	141.21	84.7
J80	0.25	81.7	141.21	84.6
J84	0.93	82.46	141.2	83.5
J88	5.66	82	141.2	84.15
J92	14.04	81.61	141.19	84.7
J96	0	80.91	141.2	85.7

17201 - Inspiration Lakeview Water Modelling - May 2021
InfoWater Output - Max Day Demand Run - Pipe Report

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
24	J44	J146	37.79	300	120	-5.54	0.08	0	0.04
25	J112	J114	11.08	300	120	-27.51	0.39	0.01	0.68
26	J110	J116	162.84	300	120	19.26	0.27	0.06	0.35
27	J116	J118	103.23	200	120	0.87	0.03	0	0.01
28	J120	J118	17.79	200	120	1.66	0.05	0	0.03
29	J118	J122	14.95	200	120	2.54	0.08	0	0.06
30	J122	J124	88.59	200	120	2.54	0.08	0.01	0.06
31	J126	J124	144.09	200	120	-2.54	0.08	0.01	0.06
32	J120	J50	146.51	200	120	-1.66	0.05	0	0.03
33	J128	J130	112.4	200	120	-1.83	0.06	0	0.03
34	J130	J112	156.59	300	120	-13.93	0.2	0.03	0.19
35	J112	J74	79.98	300	120	13.58	0.19	0.01	0.18
36	J14	J198	97.33	400	120	-71.06	0.57	0.09	0.97
37	J136	J134	166.63	300	120	-11.63	0.16	0.02	0.14
38	J138	J24	110.22	300	120	-4.22	0.06	0	0.02
40	J142	J146	135.17	300	120	27.84	0.39	0.09	0.7
41	J134	J144	154.56	300	120	0	0	0	0
42	J126	J104	40.45	200	120	-5.36	0.17	0.01	0.24
6	J40	J38	120.78	300	120	-20.41	0.29	0.05	0.39
8	J48	J50	91.46	200	120	1.12	0.04	0	0.01
P101	RES9002	J18	64.43	600	120	114.25	0.4	0.02	0.33
P105	J18	J170	263.81	600	120	13.92	0.05	0	0.01
P107	J160	J10	17.35	600	120	13.92	0.05	0	0.01
P121	J170	J160	222.37	600	120	13.92	0.05	0	0.01
P13	J146	J134	109.84	300	120	7.32	0.1	0.01	0.06
P143	J190	J18	61.03	400	120	-100.33	0.8	0.11	1.85
P145	J192	J190	58.87	400	120	-100.33	0.8	0.11	1.85
P147	J194	J192	53.81	400	120	-100.33	0.8	0.1	1.85
P15	J146	J62	118.8	300	120	14.99	0.21	0.03	0.22
P155	J196	J30	100.45	400	120	107.63	0.86	0.21	2.1
P157	J198	J194	45.99	400	120	-100.33	0.8	0.08	1.85
P159	J128	J200	133.31	200	120	-1.24	0.04	0	0.02
P163	J202	J138	119.12	200	120	-1.24	0.04	0	0.02
P165	J136	J96	166.15	300	120	16.72	0.24	0.05	0.27
P167	J200	J202	11.25	200	120	-1.24	0.04	0	0.02
P17	J62	J110	47.94	300	120	-8.77	0.12	0	0.08
P19	J20	J54	117.59	300	120	-10.23	0.14	0.01	0.11
P21	J14	J142	116.76	400	120	71.06	0.57	0.11	0.97
P25	J150	J152	12.66	400	120	43.22	0.34	0	0.39
P27	J152	J110	132.14	400	120	43.22	0.34	0.05	0.39
P29	J110	J136	128.24	400	120	15.18	0.12	0.01	0.06
P31	J136	J64	180.81	400	120	10.09	0.08	0	0.03
P33	J64	J70	14.43	400	120	-5.4	0.04	0	0.01
P35	J70	J156	34.75	400	120	-5.4	0.04	0	0.01
P37	J156	J114	6.2	400	120	-5.4	0.04	0	0.01
P39	J114	J158	17.17	400	120	-32.91	0.26	0	0.23
P41	J158	J154	153.05	400	120	-32.91	0.26	0.04	0.23
P43	J154	J42	156.43	400	120	-56.39	0.45	0.1	0.64
P45	J42	J34	120.68	400	120	-76.79	0.61	0.14	1.13
P47	J34	J30	57.66	400	120	-103	0.82	0.11	1.94
P51	J134	J58	228.31	300	120	-5.3	0.07	0.01	0.03
P53	J58	J154	39.98	300	120	-11.13	0.16	0.01	0.13
P55	J104	J116	41.94	300	120	-11.79	0.17	0.01	0.14
P57	J116	J100	77.25	300	120	6.6	0.09	0	0.05
P59	J100	J96	84.08	300	120	-10.04	0.14	0.01	0.11
P61	J96	J48	6.45	300	120	6.68	0.09	0	0.05
P63	J48	J92	120.82	300	120	5.56	0.08	0	0.04
P65	J92	J130	97.59	300	120	-8.48	0.12	0.01	0.08
P69	J88	J84	69.9	300	120	-2.05	0.03	0	0.01
P71	J84	J138	53.85	300	120	-2.98	0.04	0	0.01
P73	J24	J132	44.79	300	120	-17.02	0.24	0.01	0.28
P75	J132	J20	172.6	300	120	-15.98	0.23	0.04	0.25
P77	J20	J40	159.11	300	120	-19.49	0.28	0.06	0.36
P79	J50	J128	234.05	200	120	-0.54	0.02	0	0
P81	J38	J42	35.3	300	120	-20.41	0.29	0.01	0.39
P83	J54	J154	41.53	300	120	-12.35	0.17	0.01	0.15
P85	J74	J80	13.52	300	120	1.29	0.02	0	0
P87	J80	J132	74.26	300	120	1.04	0.01	0	0
P89	J10	J196	62.59	400	120	111.77	0.89	0.14	2.26
P93	J88	J130	30.88	300	120	-3.61	0.05	0	0.02
P95	J142	J150	156.08	400	120	43.22	0.34	0.06	0.39
P97	J46	J44	100.05	300	120	0	0	0	0
P99	RES9006	J10	99.44	600	120	97.85	0.35	0.02	0.24

17201 - Inspiration Lakeview Water Modelling - May 2021 InfoWater Output - Peak Hour Demand Run				
ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J10	0	85	141.93	80.93
J100	27.93	80.1	139.69	84.72
J104	10.71	79.92	139.69	84.96
J110	0	79.47	139.87	85.86
J112	0	81.34	139.81	83.12
J114	0	81.23	139.83	83.31
J116	0	79.95	139.71	84.94
J118	0	79.36	139.7	85.78
J120	0	78.33	139.7	87.25
J122	0	79.33	139.7	85.82
J124	0	79.44	139.69	85.64
J126	13.32	80.21	139.66	84.52
J128	5.43	81.35	139.71	82.96
J130	0	82.01	139.72	82.03
J132	0	82.11	139.76	81.94
J134	2.1	81.8	139.91	82.61
J136	0	79.85	139.85	85.29
J138	0	82.78	139.71	80.93
J14	0	81.75	140.53	83.56
J142	0	80.35	140.21	85.1
J144	0	83.05	139.91	80.83
J146	0	81.26	139.93	83.41
J150	0	78.92	140.03	86.87
J152	0	75.92	140.02	91.11
J154	0	82.07	139.94	82.27
J156	0	81.32	139.83	83.17
J158	0	81.44	139.84	83.02
J160	0	85.04	141.93	80.88
J170	0	85.04	141.94	80.89
J18	0	85.04	141.94	80.89
J190	0	82.36	141.63	84.25
J192	0	81.89	141.32	84.48
J194	0	81.79	141.05	84.23
J196	6.99	84.23	141.53	81.46
J198	48.78	81.77	140.81	83.93
J20	29.43	82.84	139.87	81.06
J200	0	81.35	139.71	82.96
J202	0	81.35	139.71	82.96
J24	27.42	82.29	139.72	81.63
J30	7.71	83.73	140.94	81.33
J34	43.68	83.36	140.62	81.4
J38	0	82.86	140.18	81.5
J40	1.98	83.61	140.04	80.22
J42	0	82.93	140.23	81.45
J44	9.24	81.47	139.93	83.11
J46	0	82.71	139.93	81.34
J48	0	89.79	139.71	70.97
J50	0	80.75	139.71	83.81
J54	3.54	82.17	139.92	82.09
J58	9.72	82.05	139.93	82.28
J62	39.6	79.65	139.86	85.59
J64	26.04	81.1	139.83	83.49
J70	0	81.15	139.83	83.42
J74	20.49	81.63	139.76	82.63
J80	0.54	81.7	139.76	82.53
J84	2.01	82.46	139.71	81.39
J88	9.63	82	139.71	82.04
J92	23.73	81.61	139.7	82.58
J96	0	80.91	139.72	83.59

17201 - Inspiration Lakeview Water Modelling - May 2021 - Max Daily Demand with Fireflow Simulation Run

Note:- At any given node the Available Flow (at 140 kPa/20 psi) must be greater than Total demand.

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Available Flow at Hydrant (L/s)	Available Flow Pressure (psi)
J100	16.64	86.84	141.19	300	76.51	958.97	20.31
J104	6.43	87.09	141.18	300	74.22	815.54	20.3
J126	7.9	86.67	141.17	300	61.36	532.60	20.3
J128	2.53	85.08	141.19	300	62.77	556.76	20.3
J134	0.98	84.53	141.26	300	77.15	1,142.28	20.31
J194	0	85.11	141.66	300	81.65	1,888.24	20.31
J196	4.14	81.89	141.83	300	80.03	2,710.09	20.31
J20	13.73	83.04	141.26	300	75.15	1,090.90	20.31
J24	12.8	83.75	141.2	300	74.12	965.73	20.31
J30	4.63	82.31	141.62	300	78.81	1,867.18	20.31
J34	26.21	82.67	141.51	300	78.50	1,701.62	20.31
J40	0.92	82.04	141.31	300	72.78	935.17	20.31
J44	5.54	85.01	141.27	300	74.83	912.19	20.31
J54	2.12	84.01	141.27	300	76.67	1,145.08	20.31
J58	5.83	84.18	141.27	300	76.73	1,137.01	20.31
J62	23.76	87.56	141.24	300	79.80	1,172.44	20.31
J64	15.49	85.49	141.24	300	78.83	1,291.49	20.31
J74	12.29	84.7	141.21	300	75.8	1,028.76	20.31
J80	0.25	84.6	141.21	300	75.63	1,008.51	20.31
J84	0.93	83.5	141.2	300	73.13	900.97	20.31
J88	5.66	84.15	141.2	300	74.60	969.62	20.31
J92	14.04	84.7	141.19	300	74.44	939.27	20.31

17201 - Inspiration Lakeview Water Modelling - May 2021 InfoWater Output - Peak Hour Demand Run Emergency Conditions				
ID	**Demand (L/s)**	**Elevation (m)**	**Head (m)**	**Pressure (psi)**
J10	0	85	139.08	76.88
J100	27.93	80.1	139.54	84.5
J104	10.71	79.92	139.6	84.84
J110	0	79.47	140.17	86.29
J112	0	81.34	139.3	82.4
J114	0	81.23	139.32	82.58
J116	0	79.95	139.62	84.82
J118	0	79.36	139.57	85.6
J120	0	78.33	139.56	87.05
J122	0	79.33	139.57	85.63
J124	0	79.44	139.57	85.47
J126	13.32	80.21	139.56	84.38
J128	5.43	81.35	139.29	82.37
J130	0	82.01	139.29	81.43
J132	0	82.11	139.19	81.13
J134	2.1	81.8	139.86	82.54
J136	0	79.85	139.79	85.21
J138	0	82.78	139.23	80.25
J14	0	81.75	143.87	88.3
J142	0	80.35	142	87.65
J144	0	83.05	139.86	80.75
J146	0	81.26	140.36	84.03
J150	0	78.92	141.05	88.32
J152	0	75.92	140.98	92.48
J154	0	82.07	139.26	81.31
J156	0	81.32	139.33	82.46
J158	0	81.44	139.31	82.27
J16	0	80.46	146.05	93.24
J160	0	85.04	139.08	76.82
J18	0	85.04	143.82	83.56
J190	0	82.36	143.82	87.37
J192	0	81.89	143.82	88.03
J194	0	81.79	143.82	88.18
J196	6.99	84.23	139.08	77.97
J198	48.78	81.77	143.82	88.21
J20	29.43	82.84	139.17	80.07
J200	0	81.35	139.26	82.33
J202	0	81.35	139.26	82.32
J24	27.42	82.29	139.19	80.88
J30	7.71	83.73	139.08	78.69
J34	43.68	83.36	139.08	79.22
J38	0	82.86	139.17	80.05
J40	1.98	83.61	139.17	78.98
J42	0	82.93	139.16	79.94
J44	9.24	81.47	140.36	83.72
J46	0	82.71	140.36	81.95
J48	0	89.79	139.53	70.7
J50	0	80.75	139.51	83.53
J54	3.54	82.17	139.23	81.12
J58	9.72	82.05	139.33	81.42
J62	39.6	79.65	140.17	86.04
J64	26.04	81.1	139.39	82.87
J70	0	81.15	139.37	82.77
J74	20.49	81.63	139.21	81.85
J80	0.54	81.7	139.21	81.75
J84	2.01	82.46	139.25	80.72
J88	9.63	82	139.27	81.41
J92	23.73	81.61	139.33	82.05