MASTER FUNCTIONAL SERVICING REPORT

RANGEVIEW DEVELOPMENT MASTER PLAN

CITY OF MISSISSAUGA
PROJECT 2020-4938 **NOVEMBER 2022**

Revision	Description	Prepared		Checked	
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1 INTRODUCTION

1.1 Objective and Location

Schaeffer and Associates Ltd. (SCE) has been retained to prepare a Master Functional Servicing Report (MFSR) to facilitate the design of the proposed municipal roads and infrastructure to service the Rangeview Development on Lakeshore Rd. East and Lakefront Promenade, in the City of Mississauga, Region of Peel. The proposed development herein referred to as 'Rangeview Development' falls within the jurisdictional boundary of the Credit Valley Conservation Authority (CVC).

The subject site is approximately 21.94 ha and is bound by Lakeshore road to the northwest, Hydro Rd. to the northeast, East Avenue to the southwest, and Lakeview Park and Douglas Kennedy Park to the southeast. A location plan is provided in **Figure 1.1**. The majority of the site currently consists of employment land. The master plan proposes future right-of-way (ROW), residential site plans, and park areas. Currently, the proposed development consists of 33 parcels with 21 participating and 12 non-participating landowners' groups (LOG). The following sections of this report provide strategic information regarding the municipal servicing of the proposed re-developments.

1.2 Existing Site Conditions

Existing site conditions were reviewed using previous planning documents for the subject site. Under existing conditions, the site's land use is predominantly commercial and industrial employment lands. The site land area is also mostly paved impervious spaces (commercial and industrial) with some grassed landscaped areas within the municipal ROW. The site generally grades southwest, ultimately discharging to Lake Ontario.

A geotechnical investigation for the proposed development has been requested and will be provided when available. The Groundwater report by DS Consultants Ltd on June 9, 2020 for the neighbouring Lakeview development was reviewed for preliminary reference of the groundwater and soil conditions and excerpts are provided in **Appendix A**.

1.3 Background Studies and Documentation

The following material has been reviewed in order to identify environmental compliance, existing

topography, target release rates, and stormwater management criteria, which govern the proposed development within the area of the subject land and form the basis of this report.

- *Development Requirements Manual*, Transportation and Works Department, City of Mississauga, dated November 2020
- *Stormwater Management Criteria*, Credit Valley Conservation, dated August 2012.
- *Lakeview Village Functional Servicing Report*, Lakeview Community Partners Ltd., dated June 2021.

1.4 Proposed Development

Based on the current development plans for the site, the following development features have been considered:

- Twenty-seven (27) site plan catchments with a mix of residential units;
- Eight (8) Park Blocks;
- Additional public right of ways (ROW);

The specific design of each of the proposed blocks is subject to change in the future; however, this report intends to establish the servicing requirements of the study area such that the aforementioned developments may be supported by existing infrastructure and to verify if there will be any requirements for necessary infrastructure improvements in the future. The details of the proposed servicing scheme are provided in the remainder of the report. Refer to **Figure 1.2** for the development plan (ultimate full buildout scenario with all site areas participating).

Access to the subject site is currently provided from Lakeshore Road east, Hydro Road, East Avenue, Lakefront Promenade, and Rangeview Road. It should be noted that the proposed development includes the existing public roads; Rangeview Road, Lakefront Promenade, and East Avenue. It is to note, road widening and road re-alignment may be required on Rangeview Road and East Avenue as per the Lakeview master plan. As shown in **Figure 1.2**, two (2) additional municipal ROW are proposed, one of the proposed municipal ROW is north of Rangeview Road, parallel to Lakeshore Rd. East, connecting to East Avenue and Hydro Road. While the second proposed municipal ROW runs parallel with Lakefront Promenade on the east side, connecting to Lakeshore Rd. East and the future Lakeview Village development.

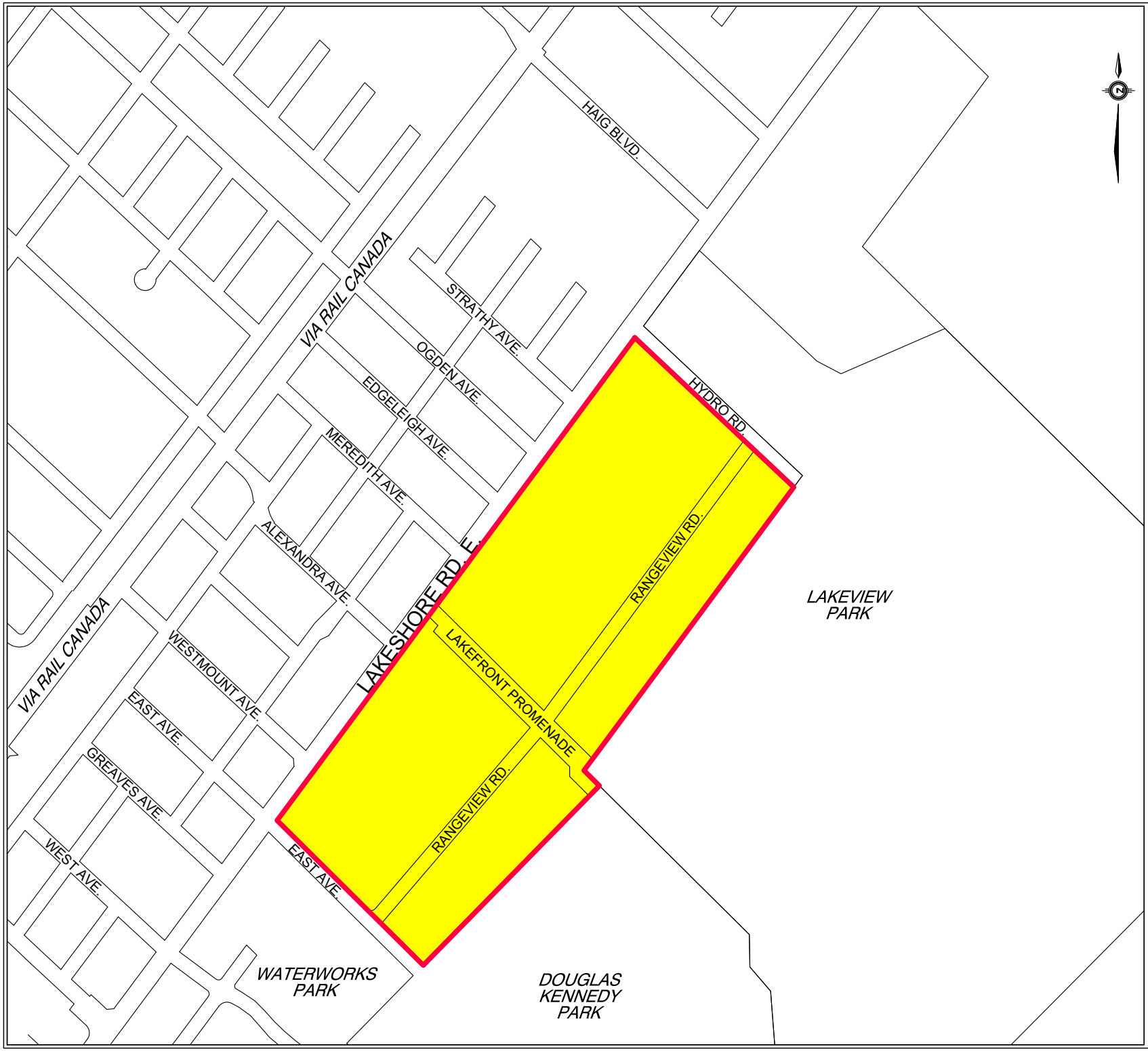
The approximate area of development and proposed unit count for each of the parcels are presented in **Table 1.1** below. Refer to **Appendix A** for detailed population statistics based on the current concept plan. At the behest of the Region of Peel, a population density of 2.7 people/unit for apartments and 3.5 people/unit for townhouses was considered. The servicing sections below will discuss interim conditions based on cost sharing and participating land agreements, and the ultimate condition in which all landowners are participating.

Table 1-1: Estimated Population

Parcel	Parcel Area (Gross)	*Townhouses* (Up to 4-Storey)	*Apartment* (4-Storeys +)	Equivalent Population		
				Townhouses	Apartments	Total
	ha	*Units*	*Units*	*persons*	*persons*	***persons***
1	0.62	0	266		719	**719**
2	0.85	48	159	168	430	**598**
3	0.43	0	145		392	**392**
4	0.43	0	142		384	**384**
5	0.87	0	232		627	**627**
6	0.70	0	241		651	**651**
7	1.07	66	135	231	365	**596**
8	0.78	36	138	126	373	**499**
9	0.86	0	158		427	**427**
10	0.70	0	259		700	**700**
11	1.36	12	278	42	751	**793**
12	1.54	68	159	238	430	**668**
13	0.42	10	0	35		**35**
14	0.45	22	0	77		**77**
15	0.57	0	210		567	**567**
16	0.73	20	256	70	692	**762**
17	0.36	40	0	140		**140**
18	0.36	18	0	63		**63**
19	0.51	0	216		584	**584**
20	0.46	0	217		586	**586**
21	0.48	18	0	63		**63**

Parcel	Parcel Area (Gross)	*Townhouses* (Up to 4-Storey)	*Apartment* (4-Storeys +)	Equivalent Population		
				Townhouses	Apartments	Total
	ha	*Units*	*Units*	*persons*	*persons*	***persons***
22	0.61	16	206	56	557	**613**
23	1.04	90	0	126	146	**272**
24	1.31	48	222	168	600	**768**
25	0.86	14	182	49	492	**541**
26	0.73	16	274	56	740	**796**
27	0.36	0	0			
28	0.36	16	81	56	219	**275**
29	0.36	0	170		459	**459**
30	0.36	0	0			
31	0.72	17	200	60	540	**600**
32	0.33	17	0	60		**60**
33	0.35	0	162		438	**438**
	21.94			**1,884**	**12,869**	**14,753**

** The population estimate was performed based on Peel Region criteria and correspondence with Peel Region. [2.7 persons per apartment unit and 3.5 persons per townhouse unit]*



RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

SUBJECT AREA

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FIGURE 1.1
LOCATION PLAN

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

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RANGEVIEW ESTATES PRECINCT AREA
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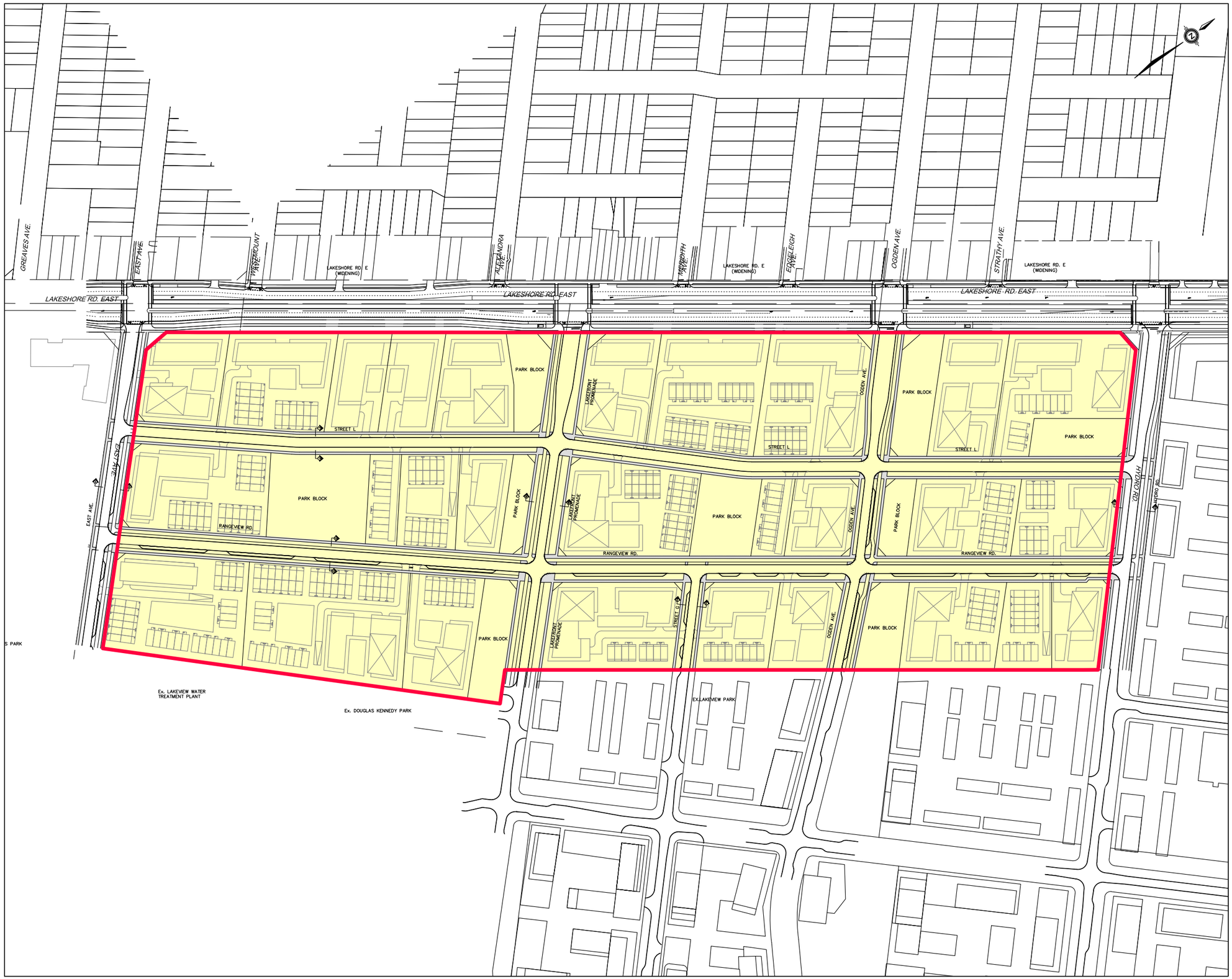

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FIGURE 1.2
PROPOSED DEVELOPMENT PLAN

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

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2 WATER SUPPLY SERVICING

2.1 Existing Water Supply Servicing

The subject site is located in the Region's Pressure District 1 (PD1). Existing water supply infrastructure proximate to the subject site includes:

- 600 mm diameter CPP along Lakeshore Road East;
- 2,400 mm diameter CPP watermain along Lakeshore Road East and Lakeshore Promenade;
- 300 mm diameter PVC watermains along East Avenue and Hydro Road;
- 300 mm diameter PVC watermain along Rangeview Road from East Avenue to Lakefront Promenade; and,
- 250 mm diameter PVC watermain along Rangeview Road from Lakefront Promenade to Hydro Road.

The Lakeview Community, located to the south of the Rangeview development, is currently under construction. At the time the Rangeview development is to be constructed, it is expected that the water servicing infrastructure, including 400 mm diameter watermains proposed along Lakefront Promenade and Hydro Road, to service the Lakeview community will be constructed. **Figure 2.1** shows the existing watermain layout.

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EXISTING WATERMAIN

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FIGURE 2.1
EXISTING WATER SUPPLY SERVICES

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2.2 Water Supply Servicing Design Criteria

The following criteria were utilized in the design of the subject site's water distribution system:

- Region of Peel's Design, Specifications & Procedures Manual – Watermain Design Criteria (June 2010)
- Ministry of Environment, Conservation and Parks' (MECP) Design Guidelines for Drinking Water Systems (2019)
- City of Mississauga Development Requirements Manual (September 2016)
- Technical memorandum for the Lakeview Community development: "Lakeview Community – Water Modelling Methodology and Analysis" (TMIG, 2021) (Lakeview Community Technical Memorandum)
- E-mail correspondence with the Region

For fire flow demands, the Region's design guidelines do not provide a minimum fire flow demand for townhouse and apartment complexes. Furthermore, building construction and floor area data was not available, so Fire Underwriter Survey (FUS) methods could not be utilized to determine fire flow demands. As such, the City of Vaughan's Engineering Design Criteria & Standard Drawings (December 2020) were referenced for fire flow demand requirements. Once architectural plans become available, calculations shall be performed per FUS standards and the fire flow analysis shall be updated accordingly. For the Lakeview Community south of the subject site, fire flow demands were based on the technical memorandum for the Lakeview Community development, "Lakeview Community – Water Modelling Methodology and Analysis" (TMIG, 2021), and can be referred to in **Appendix B**.

- Equivalent population density of 3.5 persons per unit for townhouses and 2.7 persons per unit for apartments, per e-mail correspondence with the Region (refer to **Appendix B**);
- Equivalent population density of 175 persons per hectare for townhouses and 475 persons per hectare for apartments
- Average Day Demand of 280 L/capita/day for residential developments and 300 L/capita/day for institutional, commercial, and industrial (ICI) developments;

- For residential land use, the Maximum Day Demand and Peak Hour Demand peaking factors shall be 2.0 and 3.0, respectively;
- For commercial land use, the Maximum Day Demand and Peak Hour Demand peaking factors shall be 1.4 and 3.0, respectively;
- Minimum Fire Flow Demand of 317 L/s for multi-unit apartment buildings per City of Vaughan Engineering Design Criteria & Standard Drawings (December 2020)
- Fire Flow Demand of 300 L/s for all buildings within the Lakeview Community development per Technical Memorandum: Lakeview Community – Water Modelling Methodology and Analysis (TMIG, 2021)
- The system shall be designed to provide sufficient flow and pressure to meet the greater of the Fire Flow plus Maximum Day Demand, or the Peak Hourly Demand;
- The minimum pressure under any non-fire demand scenario shall not be less than 275 kPa (40 psi). The minimum residual pressure during the Fire Flow plus Maximum Day Demand scenario shall not be less than 140 kPa (20 psi) at any location in the water distribution system;
- Hazen-Williams coefficients below table:

Pipe Diameter (mm dia.)	Hazen-Williams 'C' Coefficient
150	100
200-250	110
300-600	120
Over 600	130

2.3 Proposed Water Supply Servicing Plan

2.3.1 Interim Scenario

Under the interim scenario, infrastructure cannot be built along the entirety of Street 'A' due to the presence of non-participating landowners within the Rangeview site. As a result, 2 alternatives shall be considered for water supply servicing under interim conditions. Option 1 involves servicing the parcels fronting Rangeview Road via existing 250 mm diameter and 300 mm

diameter watermains along Rangeview Road. Parcels fronting Lakeshore Road East shall be serviced directly from the existing 600 mm diameter watermain along Lakeshore Road East. Option 2 involves servicing the parcels fronting Lakeshore Road East by connecting the existing Rangeview Road watermains to 300 mm diameter watermains along the reaches of Street 'A' where only participating landowners are present. Temporary easements would be required to loop these watermains back to Rangeview Road to limit dead-ends in the system. Parcels fronting Rangeview Road would be serviced via existing 250 mm diameter and 300 mm diameter watermains along Rangeview Road. Watermains connecting the Rangeview and Lakeview developments along Street 'G" and Ogden Avenue are not required for the system to be compliant with design guidelines, and thus these connections have been excluded. Water supply analysis of the interim water servicing scenario will be completed once the participating and non-participating landowners are confirmed. Refer to **Figure 2.2** and **Figure 2.3** depicting the proposed watermain layouts for interim scenario options 1 and 2, respectively.

2.3.2 Ultimate Scenario

The subject site is proposed to be serviced by connecting to existing watermains along Lakeshore Road East, Rangeview Road and East Avenue, as well as the 400 mm diameter watermains along Lakefront Promenade and Hydro Road, proposed as part of the Lakeview Community development. A 300 mm diameter watermain is proposed along Street 'A', extending from East Avenue to Hydro Road. In addition, a 300 mm diameter watermain is proposed along Ogden Avenue, connecting to the existing 600 mm diameter watermain along Lakeshore Road East and the existing 250 mm diameter watermain along Rangeview Road. Watermains connecting the Rangeview and Lakeview developments along Street 'G" and Ogden Avenue are not required for the system to be compliant with design guidelines, and thus these connections have been excluded. Refer to **Figure 2.4** depicting the proposed watermain layout for the ultimate scenario.

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RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

- SUBJECT AREA
- PROPOSED WATERMAIN
- PROPOSED CLOSED WATERMAIN IN INTERIM CONDITION
- EXISTING WATERMAIN
- DIRECTION OF SERVICE CONNECTION

GREAVES AVE.
EAST AVE.
WESTMOUNT AVE.
ALEXANDRA AVE.
MEREDITH AVE.
EARLEIGH AVE.
OGDEN AVE.
STRATHY AVE.
LAKESHORE RD. E (WIDENING)
LAKESHORE RD. EAST
LAKEFRONT PROMENADE
STREET L
STREET G
RANGEVIEW RD.
Ex. LAKEVIEW WATER TREATMENT PLAN
Ex. DOUGLAS KENNEDY PARK
Ex. LAKEVIEW PARK

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FIGURE 2.2
INTERIM
WATER SUPPLY SERVICES - OPTION 1

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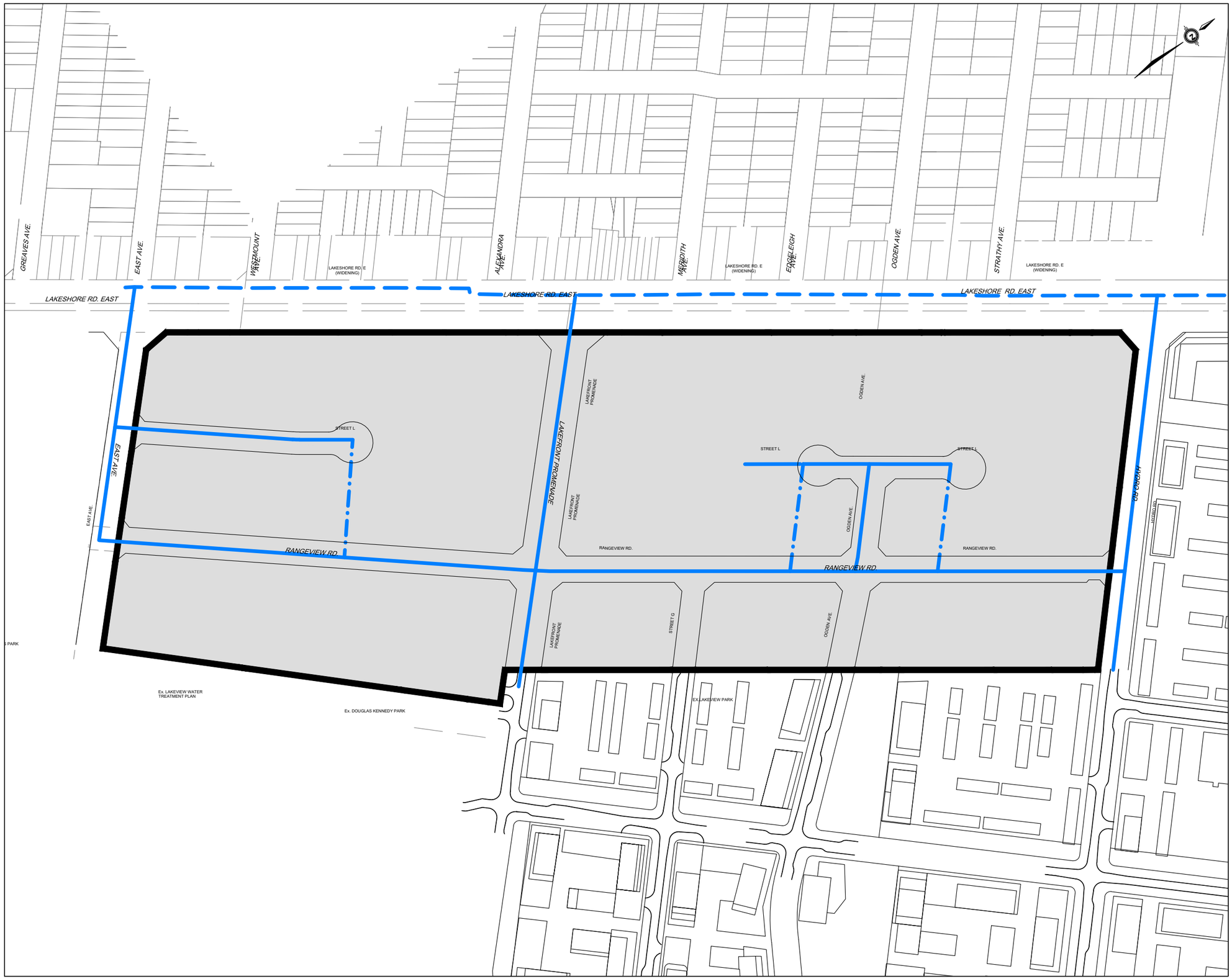

RANGEVIEW ESTATES PRECINCT AREA
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LEGEND

- SUBJECT AREA
- PROPOSED WATERMAIN
- TEMPORARY EASEMENT
- EXISTING WATERMAIN

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FIGURE 2.3
INTERIM
WATER SUPPLY SERVICES - OPTION 2

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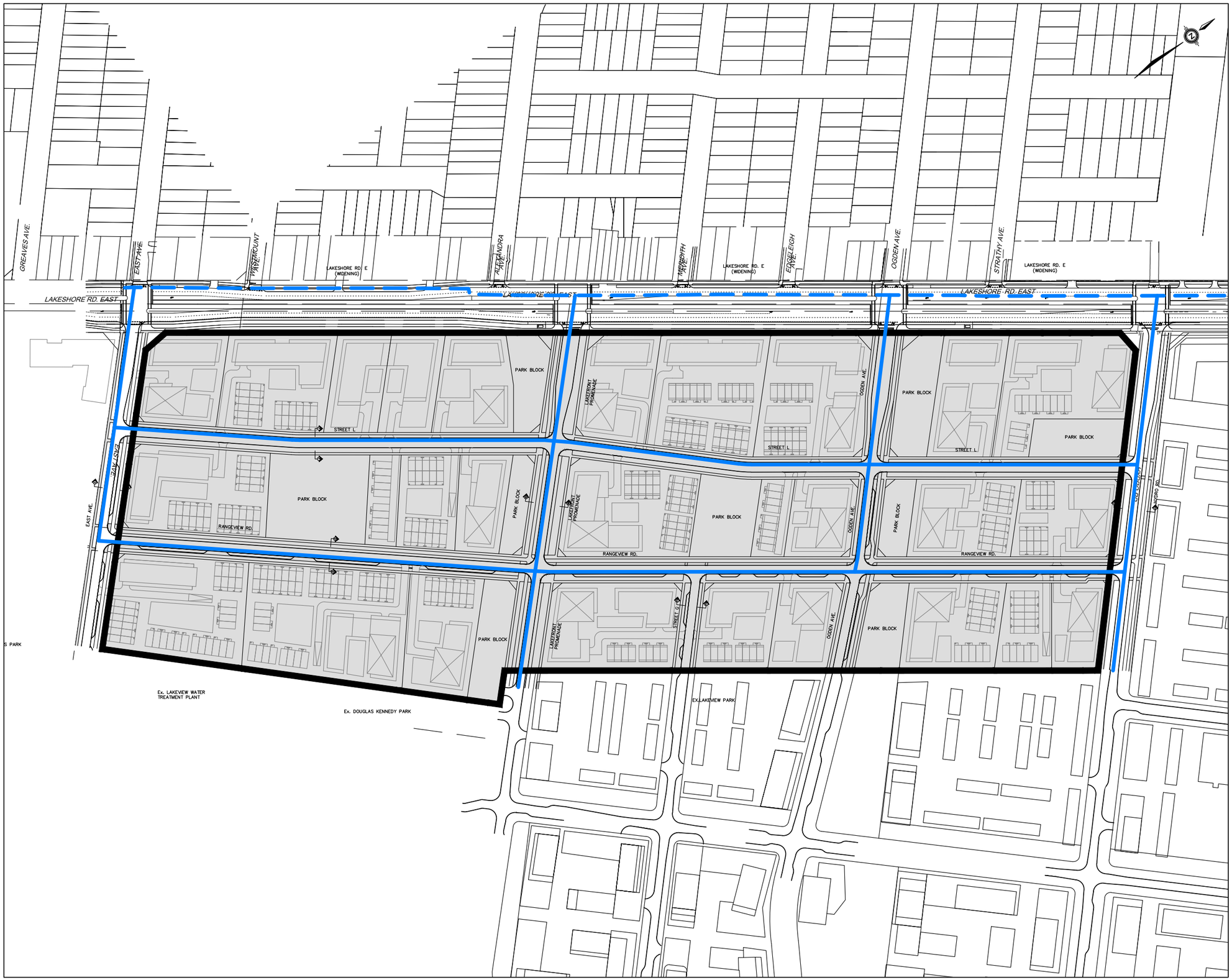

RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

- SUBJECT AREA
- PROPOSED WATERMAIN
- EXISTING WATERMAIN

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FIGURE 2.4
ULTIMATE
WATER SUPPLY SERVICES

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2.4 Water Demands

Water demands for the proposed development were calculated based on Rangeview site statistics provided by Bousefields Inc., dated September 30, 2022. Equivalent populations were calculated using 2 population density methods: population per hectare, per the Region's Design, Specifications & Procedures Manual – Watermain Design Criteria (June 2010) and population per unit type, per correspondence with the Region on October 3, 2022. The equivalent population calculated using unit type yielded a higher value, thus, to be conservative this value was carried forward for water demand calculations.

Water demands for the Lakeview Community south of the subject site and external lands east of the subject site were calculated using population data from the Lakeview Community Technical Memorandum (TMIG, 2021). Per capita water demands and peaking factors were updated to reflect the latest Region design standards.

Table 2.1 below summarizes the water demands for the Rangeview development. Refer to the detailed water demand calculations for the Rangeview development, Lakeview Community and external lands in **Appendix B.**

Table 2-1: Summary of Water Demands – Rangeview Development

Land Use	Equivalent Population	Demand			Fire Flow
		Average Day	Max Day	Peak Hour	
		L/s	*L/s*	*L/s*	*L/s*
Residential	14,753	47.81	95.62	143.43	317

2.5 Hydraulic Modeling

An InfoWater model was prepared using elevation data from the Lakeview Community Technical Memorandum (TMIG, 2021) and the latest grading plan by SCE. Demands were assigned to the nearest junction within the proposed development.

The following boundary condition was assumed for the water supply analysis:

- The boundary condition utilized in the hydraulic model was sourced from a hydrant test

completed by EBAL Engineering Ltd. on April 23, 2021. The hydrant test, performed at 1000 Lakeshore Road East, Mississauga, yielded a static pressure of 82 psi. The boundary condition was modeled as a fixed-head reservoir with a head of 144.11 m, calculated as the sum of the ground elevation at the residual hydrant of 86.44 m (per the latest grading plan) and the measured static pressure of 82 psi (57.67 m head). Refer to **Appendix B** for hydrant test results.

The InfoWater model was used to analyze the post-development system under the following demand scenarios: Average Day Demand, Maximum Day Demand, Peak Hour Demand, and Max Day plus Fire Flow Demand. The modeling results demonstrate the water supply system can provide sufficient pressure and flow to the proposed development under normal operational and fire flow scenarios in accordance with MECP and Region design guidelines.

Table 2.2 below summarizes the pressures for each demand scenario. Detailed model outputs are provided in **Appendix B**.

Table 2-2: Summary of Modelled System Pressures

Scenario	**Minimum Pressure** (psi)	**Maximum Pressure** (psi)
Average Day	81.98	96.59
Maximum Day	81.98	95.82
Peak Hour	81.98	94.27

Fire flow (Max Day plus Fire Flow Demand) scenario modelling showed that a minimum residual pressure of 20 psi could be maintained for all nodes in the system proximate to the subject site. **Table 2.3** below summarizes the pressure range under the Maximum Day plus Fire Flow scenario.

Table 2-3: Pressure Range (MDD plus Fire Flow Scenario)

Range	**Minimum Pressure** (psi)	**Maximum Pressure** (psi)
Node ID (Min/Max Location)	J124	J152
Residual Pressure	55.31	90.12

2.6 Water Age Analysis

A water age analysis was performed to ensure the proposed system is compliant with water age guidelines. Water turnover was calculated for the entirety of the modeled network as there are no proposed watermains that terminate at dead ends.

To be conservative, an occupancy rate of 20% and the minimum consumption rate (70% of the average day demand) were assumed for the purposes of calculating water age. Given these parameters, a water age of 0.47 days was determined for the entirety of the Rangeview and Lakeview Community water supply systems. Per "Effects of Water Age on Distribution System Water Quality" (AWWA, 2002), a maximum water turnover rate of 3 days was observed in distribution systems. With a water age of 0.47 days, the proposed system is less than the maximum observed turnover rate and therefore meets water age requirements. Refer to the water age analysis in **Appendix B**.

3 SANITARY SERVICING

3.1 Existing Sanitary Servicing

The majority of the site discharges sanitary flow westerly to the Beach Street Pumping Station (PS) via the existing 250mmØ sewers along Rangeview Road and the existing 250mmØ sewer on East Avenue. The remainder of the site, which includes the lots east of Lakeshore Road East and Lakefront Promenade, discharges easterly to the G.E. Booth Wastewater Treatment Facility (WWTF) via the existing 300mmØ sewers along Lakeshore Road East.

It is to be noted that there is another pumping station (Beechwood SPS), located north of Lakeshore Road East and east of Enola Avenue.

For further details, reference can be made to **Figure 3.1** for the existing sanitary services.

3.2 Background Information

SCE previously completed a high-level downstream sanitary sewer analysis for the proposed lands, with an estimated population per parcel. The results of this analysis were presented in a meeting with the Region of Peel in April 2021. The Region recommended that all future flows from the proposed development lands were to be discharged to the Beechwood PS and none of the flows were to be discharged to the Beach Street PS or Lakeview PS. The Region informed SCE that the Beach Street PS would be decommissioned. Therefore, reliance on the Beach Street PS for ultimate servicing is not feasible. The Region further informed SCE that they would be commencing the design of a Capital Project to decommission the Beach Street PS and install a new sewer along Lakeshore Road East to direct the flow from the Beach Street PS to Beechwood PS.

SCE previously contacted the Region to determine if a preliminary design was completed for the proposed sewer located west of Rangeview Road. The Region informed SCE that the preliminary design of this new system has not progressed and design information is unavailable at this time. SCE completed a preliminary high-level analysis to determine if servicing the new trunk sewer on Lakeshore Road East would be feasible to connect to the Beechwood PS. Based on the collected information from the Region's plan and profile drawings, it was noted that connection would be feasible with a flat slope. Reference can be made to **Appendix C** for the profile of this new sewer.

3.3 Sanitary Design Criteria

Reference has been made to the Region of Peel Public Works Design, Specifications & Procedures Manual (March 2017) and correspondence from the Region for the sanitary servicing portion of this report. Please note, the Region informed SCE that a density of 3.5 persons/unit and 2.7 persons/unit were to be considered for townhouses and apartments respectively. The relevant design criteria applicable to the development are summarized below:

- Average Domestic Flow — q = 302.80 L/person/day
- Infiltration Allowance — i = 0.20 L/s/ha
- Population (Townhouse) — P = 3.5 Persons/Unit
- Population (Apartment) — P = 2.7 Persons/Unit
- Population (Commercial) — P = 50 Persons/ha
- Population (Industrial) — P = 70 Persons/ha
- Harmon Peaking Factor — $M = [1+(14/(4+P(total)^{1/2}))]$

3.4 Proposed Sanitary Servicing Plan

3.4.1 Interim Conditions

Under the interim conditions, infrastructure cannot be built along the entirety of Street 'L' due to some of the non-participating landowners along Rangeview Road. Please note that the configuration of the sanitary servicing for the ultimate (full build-out) conditions has been designed considering the interim conditions. The servicing for the interim conditions will be updated on the release of the phasing plan for the Rangeview Development. Reference can be made to **Figure 3.2** for the interim serving plan.

It is to be noted that there are upgrades recommended during the ultimate conditions and once a phasing plan has been issued, an interim servicing plan can be completed to determine the capacity of the sewers at that stage.

3.4.2 Ultimate Conditions

During ultimate conditions, the site is proposed to service 33 parcels of mid-high-rise buildings and townhouses. The full build-out of the site is expected to have a design population of

approximately 14,753 people. As seen in the ultimate servicing plan in **Figure 3.3**, all future sanitary flows from the site will discharge only to the proposed internal sewers located within the subject site. Therefore, during the ultimate conditions, there will be no flows from the proposed development that would discharge into the existing sewers along Lakeshore Road East.

As discussed in the existing conditions section, a portion of the site discharges to the existing sewers along Lakeshore Road East. Since flows from the proposed development will only discharge into the new sewers, located within the boundary of the site, the existing flows to the sewers along Lakeshore Road East will be eliminated. This will result in the Lakeshore Road East sewers having greater capacity than the existing conditions. In the event, the Rangeview Development proposes to have a higher population, discharging some of the flow to the existing Lakeshore Road East sewers can be considered as a potential servicing option since there would be greater capacity.

3.4.3 Sanitary Demand

The proposed sanitary demand for the subject site is presented in the table below.

Table 3-1 Sanitary Demand

Site Discharge	Population****	Average Demand (L/S)	Harmon's Peaking Factor	Flow (L/s) **	Infiltration (L/s)***	Total PeakFlow (L/s)
Townhouse	1884	6.60	3.61	23.81	4.39	**23.81**
Apartment	12869	45.10	2.85	128.32		**128.32**
					Total Flow =	**156.52**

3.5 Downstream Capacity Analysis

A downstream sanitary sewer capacity analysis has been completed using theoretical design sheets to determine the pre-development and ultimate conditions. Reference has been made to the Region's design criteria to complete the downstream analysis. The purpose of the analysis is to analyze the capacity within the existing downstream sewers and determine if the existing infrastructure can support the flows from the proposed development. The outcome of this analysis will ensure that the sewers can safely convey the flow from the subject site to the outlet location.

Based on the ultimate servicing plan provided in **Figure 3.3**, the existing sewers along Rangeview

Road will require upgrades to ensure that there is sufficient capacity to support the anticipated flows from future development. Approximately eight of the existing 250mmØ sewer legs, with a length of 642m, on Rangeview Road will require to be upgraded to 375mmØ and 450mmØ sewers. It is to be noted that a subtrunk sewer, approximately 108m is proposed to be constructed along East Avenue (from Rangeview Road to Lakeshore Avenue East). This subtrunk sewer is proposed to connect to the new trunk sewer on Lakeshore Road East, which, as previously discussed, will be designed and constructed by the Region. As per the design sheet analysis, the 108m subtrunk sewer on East Avenue is required to be 525mmØ. Reference can be made to **Appendix C** for the design sheet analysis.

Phil Gotfried



RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

SUBJECT AREA

EXISTING SANITARY SEWER

SCHAEFFERS
CONSULTING ENGINEERS
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100 Email: general@schaeffers.com
www.schaeffers.com

FIGURE 3.1
EXISTING SANITARY SERVICES

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-11-09-4938-Existing Servicing.dwg

Phil Gotfried

RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

SUBJECT AREA

PROPOSED SANITARY SEWER

LAKESHORE RD. EAST

GREAVES AVE.

EAST AVE.

WESTMOUNT AVE.

ALEXANDRA AVE.

MEREDITH AVE.

EAGLEIGH AVE.

OGDEN AVE.

STRATHY AVE.

LAKESHORE RD. E (WIDENING)

STREET L

LAKEFRONT PROMENADE

RANGEVIEW RD.

STREET G

HYDRO RD.

Ex. LAKEVIEW WATER TREATMENT PLAN

Ex. DOUGLAS KENNEDY PARK

Ex. LAKEVIEW PARK

SCHAEFFERS
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6 Ronrose Drive, Concord, Ontario L4K 4R3
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www.schaeffers.com

FIGURE 3.2
INTERIM
SANITARY SERVICES

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900\s\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-11-09-4938-Proposed Servicing Interim.dwg

Phil Gotfried



RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

SUBJECT AREA

PROPOSED SANITARY SEWER

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FIGURE 3.3
ULTIMATE
SNITARY SERVICES

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-11-09-4938-Proposed Servicing Ultimate.dwg

4 STORMWATER MANAGEMENT

4.1 Existing Condition & Stormwater Infrastructure

The subject site is approximately 21.94 ha of a predominantly commercial and industrial area which is serviced by an existing major and minor system. Based on available topographic surveys and existing drainage, the current minor system consists of a storm sewer network, with primary servicing located within Lakeshore Rd. East, Lakefront Promenade, Rangeview Rd., and Hydro Road. Refer to **Figure 4.1** for the existing drainage and storm servicing. The existing municipal storm sewers around the site are as follows:

1) 300mmØ - 675mmØ and a 450mmØ-750 mmØ storm sewers in parallel at opposite ends of the road along Lakeshore Road East
2) 450mmØ-950mmØ along Hydro Road
3) 975mmØ-1200mmØ along Rangeview Road
4) 450mmØ-1800mmØ along Lakefront Promenade

Based on the topography and previous planning documents, it was determined the subject site ultimately drains to Lake Ontario. Given the proposed developments' proximity to Lake Ontario, quantity control is not required as per City and CVC criteria. However, quantity control and the allowable release rates for the proposed site plans will be restricted based on the 10-year minor flows to storm sewers, as per the City of Mississauga Development Requirements Manual, dated 2020.

Phil Gotfried

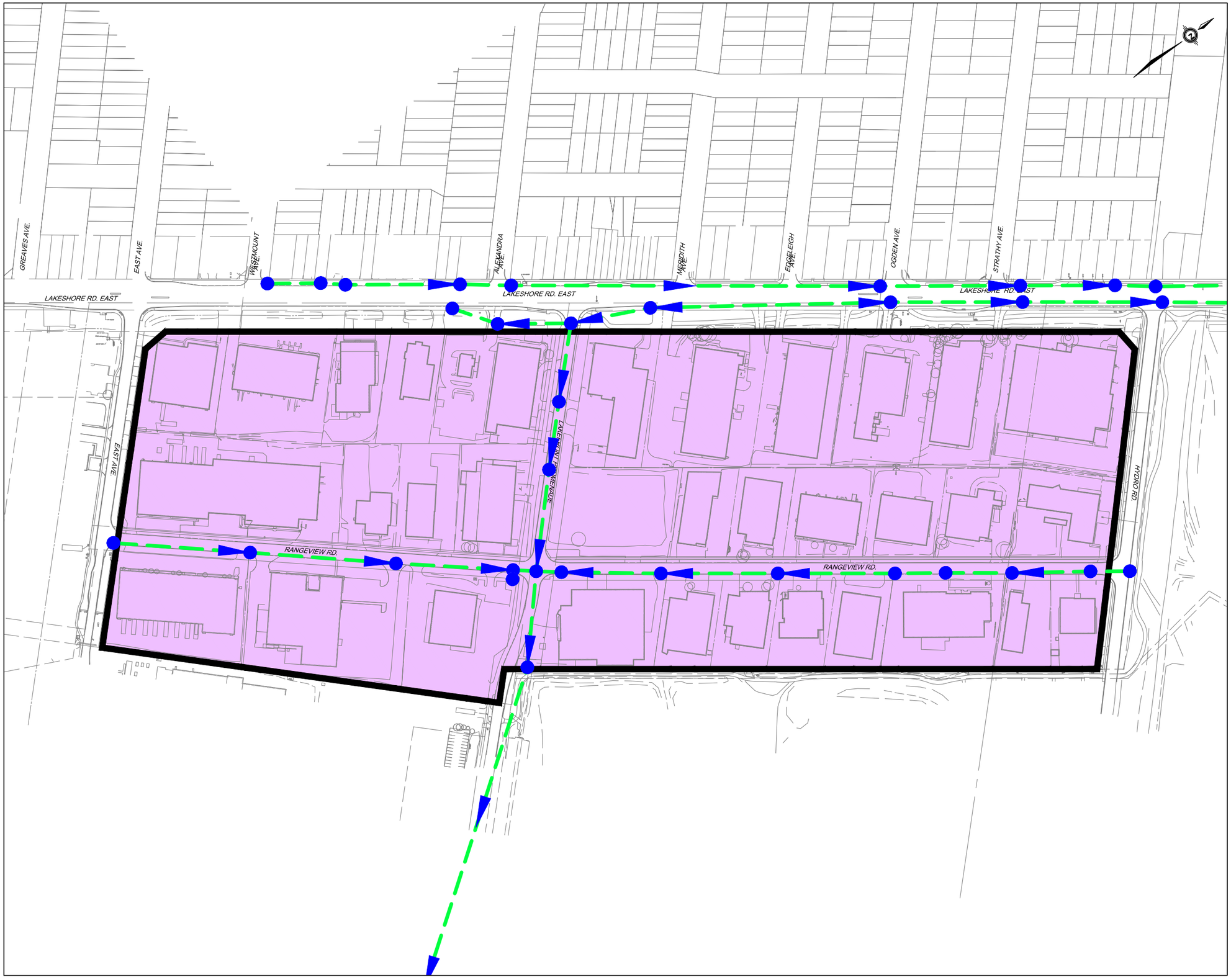
RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

SUBJECT AREA

EXISTING STORM SEWER

EXISTING DRAINAGE AREA



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www.schaeffers.com

FIGURE 4.1
PRE-DEVELOPMENT DRAINAGE
& EXISTING STORM SERVICING

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-11-09-4938-Existing Servicing.dwg

4.2 Stormwater Management Criteria

Stormwater management criteria for the subject site are to be in accordance with the City of Mississauga, Peel Region, and the Credit Valley Conservation Authority (CVC) design criteria listed below.

Based on the City of Mississauga design criteria:

- Storm sewers shall be designed to convey at least the 10-year return frequency storm without surcharging during any storm return frequency event;
- The minimum pipe diameter for storm sewers is 300mmØ;
- For estimating flows using the Rational Method from storms larger than the 10-year return, the runoff coefficients were increased to account for the increase in runoff due to saturation of the soil as per equations provided in the City of Mississauga design criteria.
- Storm sewers shall be designed using the Rational Method: Q =A*I*R/360, where 'Q' is the flow rate in [m^3/s], 'R' is the runoff coefficient (dimensionless), 'A' is the area in [ha], 'I' is rainfall intensity in mm/hr;

Table 4-1 City of Mississauga IDF Curve

Design Storm Event	A	B	C	I (mm/hr)
2-Year	610.0	4.6	0.78	75.4
5-Year	820.0	4.6	0.78	101.3
10-Year	1010.0	4.6	0.78	124.8
25-Year	1160.0	4.6	0.78	143.3
50-Year	1300.0	4.7	0.78	159.7
100-Year	1450.0	4.9	0.78	176.3

I= A/(B+Tc)^C, where minimum time of concentration as per Mississauga Guidelines is Tc = 15mins

- **Water Quantity**–Site plans to be controlled to the post-development 10-year minor flows;
- **Water Quality**–Level 1 water quality (enhanced) protection (80% TSS removal) is required;
- **Water Balance-**The development is not located in the source protection plan's Q1, Q2 wellhead protection area. There is a lake within the vicinity of the proposed

development. Therefore, there is no requirement for a water balance analysis;

- **Volumetric Controls –** 5mm infiltration, filtration, or evapotranspiration is required.

The following sections describe how the subject site area will satisfy the above-mentioned stormwater management criteria.

4.3 Proposed Stormwater Management Plan

The following sections discuss in detail the proposed stormwater management solutions to be incorporated on-site to meet the applicable stormwater management criteria identified in **Section 4.2.**

The subject site is proposed to ultimately discharge in Lake Ontario as per existing conditions. The proposed SWM scheme considers the ultimate condition and complies with the Lakeview servicing proposed to the south of the subject site. Quantity control, quality control, and volumetric controls are proposed at the site plan level.

Quality control at the site plan level is proposed to be achieved via Jellyfish filters or equivalent measures. For the municipal right of way, quality control is proposed via a treatment train approach with tree pits in conjunction with OGS units to satisfy the required 80% TSS removal. Further details about quality control are presented in **Section 4.3.4**.

Considering the site's close proximity to the Lake, meeting the pre-development water balance is not a required criterion. However, 5mm retention via filtration or infiltration, or re-use is required for volumetric controls as per the City of Mississauga SWM criteria. Additional details about the 5mm retention on-site are presented in **Section 4.3.5**.

4.3.1 Allowable Release Rates

Allowable release rates were established based on the City of Mississauga's IDF parameters. The Rational method was used to calculate release rates as the total development discharges runoff to storm sewers. The allowable release rates for all site plans were established based on the 10-year storm events summarized in **Table 4.2**. A minimum time of concentration of 15 minutes was considered as per the City of Mississauga guidelines.

Table 4-2 Allowable Release Rate for Site Plans

Catchment #	Area (ha)	Runoff Coefficient	Allowable Release (10-year flows) Rate (L/s)
201	0.52	0.90	128.92
202	0.76	0.90	188.41
203	0.39	0.90	96.69
204	0.39	0.90	96.69
205	0.52	0.90	128.92
206	0.54	0.90	133.87
207	0.93	0.90	230.56
208	0.92	0.90	228.08
209	0.58	0.90	143.79
210	0.89	0.90	220.64
211	0.86	0.90	213.21
212	0.20	0.90	49.58
213	0.40	0.90	99.17
214	0.34	0.90	84.29
215	0.86	0.90	213.21
216	0.19	0.90	47.10
217	0.36	0.90	89.25
218	0.58	0.90	143.79
219	0.55	0.90	136.35
220	1.00	0.90	247.91
221	1.30	0.90	322.29
222	0.60	0.90	148.75
223	0.82	0.90	203.29
224	0.46	0.90	114.04
225	0.38	0.90	94.21
226	0.61	0.90	151.23
227	0.32	0.90	79.33
228	0.33	0.90	81.81

4.3.2 Quantity Control

In order to achieve the release rates, set up in **Section 4.3.1**, quantity control is proposed in the site plans. Due to the close proximity of Lake Ontario, no quantity control is proposed for the park and municipal right of way. The established release rate for each site plan and the required storage are presented in **Table 4.3** below. The quantity control requirement on the site plan can be met via underground storage combined with an orifice control device.

Table 4-3 Release Rates and Storage Summary

Catchment #	Area (ha)	Runoff Coefficient	Allowable Release (10-year flows) Rate (L/s)	Required On-site storage (m^3)
201	0.52	0.90	128.92	75.58
202	0.76	0.90	188.41	110.46
203	0.39	0.90	96.69	56.68
204	0.39	0.90	96.69	56.68
205	0.52	0.90	128.92	75.58
206	0.54	0.90	133.87	78.48
207	0.93	0.90	230.56	135.17
208	0.92	0.90	228.08	133.71
209	0.58	0.90	143.79	84.30
210	0.89	0.90	220.64	129.35
211	0.86	0.90	213.21	124.99
212	0.20	0.90	49.58	29.07
213	0.40	0.90	99.17	58.14
214	0.34	0.90	84.29	49.42
215	0.86	0.90	213.21	124.99
216	0.19	0.90	47.10	27.61
217	0.36	0.90	89.25	52.32
218	0.58	0.90	143.79	84.30
219	0.55	0.90	136.35	79.94
220	1.00	0.90	247.91	145.34
221	1.30	0.90	322.29	188.94
222	0.60	0.90	148.75	87.20
223	0.82	0.90	203.29	119.18
224	0.46	0.90	114.04	66.86
225	0.38	0.90	94.21	55.23
226	0.61	0.90	151.23	88.66
227	0.32	0.90	79.33	46.51
228	0.33	0.90	81.81	47.96

4.3.3 Full Capture Locations

Preliminary full capture locations can be seen in **Figure 4.4** and support calculations can be found in **Appendix D.** The full capture locations and ponding depths will be refined at the detail design stage.

4.3.4 Quality Control

As per the quality control requirements of the City of Mississauga and CVC, the proposed developments require the provision of an enhanced level of quality treatment (i.e., 80% TSS removal) on-site.

In order to achieve an enhanced level of treatment for the site, different strategies have been proposed based on each block's land use. The strategies for each land-use type are described in the following sections.

4.3.4.1 Private Site Plan Block Treatment

Within the private site plan blocks, treatment can be provided through various options based on the proposed land use. Given the variety of options for treatment within private developments, it is proposed that all site plan blocks provide 80% TSS removal (enhanced level) at the site level.

1. Treatment Train Approach (i.e. Bioswale/Retention/Infiltration Unit + OGS Unit)
2. Centralized Filtration Units (ie: jellyfish or equivalent)

Note that the use of the above-mentioned options should be considered on a per-site plan basis and should be further explored during each block's specific design. Considerations for each site plan block option are further discussed in this section.

<u>Option 1. Bioswale/Retention/Infiltration Unit + OGS Unit</u>

In option 1, site plans where spatial factors are favourable, flows can be directed to surface level bioretention facilities (such as bioswales or rain gardens) where an initial treatment layer can be provided. These facilities can be sized to provide a minimum of 60% TSS removal. Flows that have been treated by these facilities can then be directed to an on-site OGS for an additional layer of treatment (50% TSS removal). This approach would provide a treatment train to provide a minimum of 80% TSS prior to flows leaving the site.

<u>Option 2. Centralized Filtration Units</u>

In cases where infiltration-based treatment is not feasible, a centralized proprietary treatment unit can be provided within the private site and sized to provide an enhanced level of treatment (80%

TSS removal) to site flows before discharging to the municipal sewers. Any proposed treatment units should be sized as per each block's specific site plan design.

4.3.4.2 Public Park Block Treatment

In general, public park blocks are considered to be made up of predominantly clean vegetated pervious areas. The proposed parks will enhance the area as it is increasing the green space from existing conditions. As a result, it is expected that limited to no treatment will be required to achieve 80% TSS removal. Should some level of treatment be required, LID measures such as vegetated filter strips or swales can be incorporated into the park's design in order to ensure an enhanced level of quality treatment is obtained.

4.3.4.3 Public Right of Way Treatment

Within the public right-of-way areas, quality treatment is generally more constrained as a result of paved roadway areas which occupy the majority of the ROW.

Since an enhanced level of quality treatment is required, various options were developed based on the detailed review of the feasible LID measures and groundwater levels on site. These options include:

1. Centralized OGS units and tree pits/tree trenches;
2. Perforated catchbasin lead and OGS;

The final selection of these options will be made based on discussions with the City. These options are discussed in further detail in the following sections.

<u>Option 1 – Tree Pits/Tree Trenches within Boulevards + OGS</u>

The inclusion of infiltration within the City's public right of way allows for both quality treatment and stormwater retention, which assists in reducing the erosion potential and impact on water balance as a result of development.

Currently, there is no hydrogeological report for the subject site, only preliminary Borehole Logs from DS Consultants Ltd, provided in **Appendix A**. However, based on the review of the

Groundwater report by DS Consultants Ltd on June 9, 2020, for the neighbouring Lakeview development, the groundwater levels are at 1.0 m to 3.4m under the existing ground elevation; therefore, it is anticipated an infiltration-based tree pit wouldn't be feasible; therefore, a filter-based tree pit is proposed.

A typical tree pit filter design will be incorporated within areas with ample boulevard room for planting space and placed along the roadway, upstream of proposed catch basins. In this scheme, flows will first be directed to a tree pit via a curb cut along the road. Once the flows are diverted to the tree pits, they can filter through the proposed engineered soil media (sized to provide a minimum 60% TSS removal based on volumes prescribed by MOE Table 3-2), from where the flows can be collected and diverted to the storm sewer system or be infiltrated.

Based on the MOE Table 3.2, the filter beds need to be sized for $20m^3$/ha to achieve 60% TSS removal. A downstream OGS unit will be provided to ensure that a minimum of 50% TSS removal is achieved, providing a total of 80% TSS removal when used in conjunction with tree pits (50% + (1.0 – 0.5) x 60%) = 80%). Preliminary sizing of the OGS is provided **in Appendix D**. Sizing of the OGS units will be completed in the detailed design stage.

For ROW areas that are not treated by the OGS, the tree pits are to be sized to provide the entire 80% TSS removal as per MOE Table 3.2.

LIDs along Lakefront Promenade are proposed to satisfy the higher of the 5mm retention for volumetric controls or required TSS removal for quality. Refer to **Appendix D** for details. Refer to the table below Summary of Retention Targets for the Municipal ROW.

<u>Option 2 – Perforated CB lead + OGS</u>

Flows captured by a typical roadside catchbasin can be infiltrated via a perforated pipe system. to provide 60% TSS removal. The catchbasin lead can be perforated and appropriately sized to enable infiltration with the excess draining directly to the sewer system. Alternatively, an exfiltration pipe can be proposed at the catchbasin with excess flow overflowing to the storm sewer system via a CB lead placed strategically at a higher location.

Paired with the perforated CB lead and an OGS sized for 50% TSS removal to complete the treatment train in achieving 80% TSS removal (50% + (1.0 – 0.5) x 60%) = 80%).

4.3.5 Water Balance and Volumetric Controls

The Rangeview Development area was checked as per the Ontario Source Water Protection areas; the site was found to be outside of any source water well-head protection areas. Given the proximity of the site to Lake Ontario, there is no requirement for a water balance analysis. Furthermore, most of the subject site is developed under existing conditions and mainly consists of impervious commercial and industrial areas. Since it is proposed to provide eight park blocks and various landscaped areas within the subject site, it is expected that the development will provide a net reduction in impervious areas and an overall benefit to the water balance.

However, as stipulated in the City of Mississauga, on-site retention via infiltration, filtration, or water re-use of the first 5mm of rainfall should be retained on-site to mitigate water balance and volumetric impacts of development. The sections below discuss strategies to satisfy the volumetric requirements. The table below summarizes the required retention volumes for each portion of the proposed development.

Table 4-4 Summary of Retention Targets

Description	Catchment #	Area (ha)	Runoff Coefficient	Volumetric Requirement (m^3)*
Site Plan	201	0.52	0.90	26.00
Site Plan	202	0.76	0.90	38.00
Site Plan	203	0.39	0.90	19.50
Site Plan	204	0.39	0.90	19.50
Site Plan	205	0.52	0.90	26.00
Site Plan	206	0.54	0.90	27.00
Site Plan	207	0.93	0.90	46.50
Site Plan	208	0.92	0.90	46.00
Site Plan	209	0.58	0.90	29.00
Site Plan	210	0.89	0.90	44.50
Site Plan	211	0.86	0.90	43.00

Description	Catchment #	Area (ha)	Runoff Coefficient	Volumetric Requirement (m^3)*
Site Plan	212	0.20	0.90	10.00
Site Plan	213	0.40	0.90	20.00
Site Plan	214	0.34	0.90	17.00
Site Plan	215	0.86	0.90	43.00
Site Plan	216	0.19	0.90	9.50
Site Plan	217	0.36	0.90	18.00
Site Plan	218	0.58	0.90	29.00
Site Plan	219	0.55	0.90	27.50
Site Plan	220	1.00	0.90	50.00
Site Plan	221	1.30	0.90	65.00
Site Plan	222	0.60	0.90	30.00
Site Plan	223	0.82	0.90	41.00
Site Plan	224	0.46	0.90	23.00
Site Plan	225	0.38	0.90	19.00
Site Plan	226	0.61	0.90	30.50
Site Plan	227	0.32	0.90	16.00
Site Plan	228	0.33	0.90	16.50
Municipal ROW	401	0.20	0.90	10.00
Municipal ROW	402	0.19	0.90	9.50
Municipal ROW	403	0.27	0.90	13.50
Municipal ROW	404	0.72	0.90	36.00
Municipal ROW	405	0.83	0.90	41.50
Municipal ROW	406	0.24	0.90	12.00
Municipal ROW	407	0.27	0.90	13.50
Municipal ROW	408	0.36	0.90	18.00
Municipal ROW	409	0.52	0.90	26.00
Municipal ROW	410	0.59	0.90	29.50
Municipal ROW	411	0.18	0.90	9.00
Municipal ROW	412	0.16	0.90	8.00
Municipal ROW	413	0.36	0.90	18.00
Municipal ROW	414	0.43	0.90	21.50
Municipal ROW	415	0.50	0.90	25.00
Municipal ROW	416	0.21	0.90	10.50
Municipal ROW	417	0.20	0.90	10.00
Municipal ROW	418	0.37	0.90	18.50
Municipal ROW	419	0.17	0.90	8.50

*Volumetric Requirement= TIMP x 5mm x Area x 10

4.3.5.1 Private Site Plan Block Retention

Runoff can be infiltrated via infiltration-based LIDs or reused within private site plans via

rainwater harvesting tanks. Site re-use can include a combination of irrigation, greywater, mechanical cooling, or infiltration where possible. The specific site uses and retention designs should be confirmed per each private site plan block's specific servicing design. Infiltration-based LIDs should be supported by site-specific groundwater conditions.

4.3.5.2 Public Park Block Retention

Due to the nature of the park design, with the increased landscape and reduced level of imperviousness from existing conditions, it is not proposed to provide any retention on the park blocks.

4.3.5.3 Public Right of Way Retention

In order to achieve the required retention volume presented in **Table 4.4** the use of infiltration or filtration-based techniques within the public boulevard is required.

LIDs to be used along the public right of way can include tree pits (as described in Section 5.3.2) which can be sized to retain the greater of 5mm retention volumes or quality control. However, considering the site consists of high groundwater levels, the use of infiltration LIDs may be challenging. In scenarios where groundwater constraints present infiltration concerns, the tree pits can be designed for filtration.

4.3.6 Interim Conditions

Under the interim scenario, infrastructure cannot be built along the entirety of Street 'A' due to the presence of non-participating landowners. The configuration of storm servicing for the ultimate (full buildout) scenario is based on the interim condition of current participating lands. Thus, as shown in **Figure 4.3**, there are three (3) proposed cul du sacs on Street L based on the current participating lands. The proposed SWM scheme considers the interim phase and ensures no impediment to the drainage flow from the existing developments. The interim condition is subject to meet the applicable stormwater management criteria identified in **Section 4.2**.

Phil Gotfried

RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA
COMMUNITY COST SHARING

LEGEND

SUBJECT AREA

PROPOSED DRAINAGE BOUNDARY

201 | 0.54ha | C=0.90 — CATCHMENT ID, AREA IN HECTARES, RUNOFF COEFFIECIENT

LAKESHORE RD. EAST
LAKESHORE RD. E (WIDENING)
GREAVES AVE.
EAST AVE.
WESTMOUNT AVE.
ALEXANDRA AVE.
MEREDITH AVE.
EAGLEHIGH AVE.
OGDEN AVE.
STRATHY AVE.
LAKEFRONT PROMENADE
RANGEVIEW RD.
STREET L
STREET M
STREET N
STREET O
STREET P
Ex. LAKEVIEW WATER TREATMENT PLAN
Ex. DOUGLAS KENNEDY PARK
Ex. LAKEVIEW PARK

201	0.52ha	C=0.90
202	0.76ha	C=0.90
203	0.39ha	C=0.90
204	0.39ha	C=0.90
205	0.52ha	C=0.90
206	0.54ha	C=0.90
207	0.93ha	C=0.90
208	0.92ha	C=0.90
209	0.58ha	C=0.90
210	0.91ha	C=0.90
211	0.86ha	C=0.90
212	0.20ha	C=0.90
213	0.40ha	C=0.90
214	0.34ha	C=0.90
215	0.86ha	C=0.90
216	0.19ha	C=0.90
217	0.36ha	C=0.90
218	0.58ha	C=0.90
219	0.57ha	C=0.90
220	1.00ha	C=0.90
221	1.30ha	C=0.90
222	0.60ha	C=0.90
223	0.82ha	C=0.90
224	0.46ha	C=0.90
225	0.38ha	C=0.90
226	0.61ha	C=0.90
227	0.32ha	C=0.90
228	0.35ha	C=0.90
300	0.24ha	C=0.30
301	0.33ha	C=0.30
302	0.26ha	C=0.30
303	0.62ha	C=0.30
304	0.16ha	C=0.30
305	0.35ha	C=0.30
306	0.16ha	C=0.30
307	0.29ha	C=0.30
308	0.26ha	C=0.30
401	0.20ha	C=0.90
402	0.19ha	C=0.90
403	0.27ha	C=0.90
404	0.71ha	C=0.90
405	0.83ha	C=0.90
406	0.24ha	C=0.90
407	0.26ha	C=0.90
408	0.29ha	C=0.90
409	0.52ha	C=0.90
410	0.61ha	C=0.90
411	0.18ha	C=0.90
412	0.16ha	C=0.90
413	0.32ha	C=0.90
414	0.44ha	C=0.90
415	0.50ha	C=0.90
416	0.21ha	C=0.90
417	0.21ha	C=0.90
418	0.33ha	C=0.90

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FIGURE 4.2
PROPOSED STORM DRAINAGE PLAN

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Drainage\2022-11-09-4938-Proposed Drainage.dwg

Phil Gotfried

RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

- SUBJECT AREA
- PROPOSED STORM SEWER
- PROPOSED OGS
- * STORM SEWER SHOWN ON OGDEN RD. AND STREET 'G', SOUTH OF RANGEVIEW ROAD, ARE ONLY REQUIRED TO SUPPORT POTENTIAL ROAD CONSTRUCTION.

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FIGURE 4.3
INTERIM
STORM SERVICES

2020-4938 | OCTOBER 2022 | SCALE: N.T.S.

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-10-27-4938-Proposed Servicing Interim.dwg

Phil Gotfried

RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA

LEGEND

- SUBJECT AREA
- PROPOSED STORM SEWER
- PROPOSED OGS
- 100 YEAR FULL CAPTURE LOCATION
- STORM SEWER SHOWN ON OGDEN RD. AND STREET 'G', SOUTH OF RANGEVIEW ROAD, ARE ONLY REQUIRED TO SUPPORT POTENTIAL ROAD CONSTRUCTION.

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FIGURE 4.4
ULTIMATE
STORM SERVICES

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

W:\4900\s\4938 - Rangeview, Mississauga\Drawings\Servicing\2022-11-09-4938-Proposed Servicing Ultimate.dwg

5 CLOSING REMARKS

This report illustrates the comprehensive servicing strategy for the Rangeview study area. The proposed municipal servicing strategy has been proposed to satisfy the City of Mississauga and CVC guidelines, and this strategy will be used by future developments for their respective detailed servicing designs. The key servicing components are summarized below.

Water Supply Servicing

- The subject site is proposed to be serviced by connecting to existing watermains along Lakeshore Road East, Rangeview Road and East Avenue, as well 400 mm diameter watermains along Lakefront Promenade and Hydro Road, proposed as part of the Lakefront Community development;
- A 300 mm diameter watermain is proposed along Street 'A', extending from East Avenue to Hydro Road;
- A 300 mm diameter watermain is proposed along Ogden Avenue, connecting to the existing 600 mm diameter watermain along Lakeshore Road East and the existing 250 mm diameter watermain along Rangeview Road;
- Two interim conditions have been proposed depending on the agreements with the non participating land owners.

Sanitary Servicing

- The subject site will be serviced as per the details outlined in the Interim and Ultimate Servicing Plan.
- A downstream sanitary capacity analysis has been completed to analyze the sewers during the Ultimate Servicing Plan. As discussed in **Section 3.5**, upgrades will be required for the existing sewers along Rangeview Road and a pipe size has been provided for the new subtrunk sewer along East Avenue.

Storm Servicing

- Quantity control is proposed at a site plan level. Quantity controls for proposed site plan developments will include the capture and control of peak flows from storm events up to and including the 100-year storm to the 10-year sewer capacity.

- Quality controls will be provided within each site plan block to meet the enhanced level of treatment. For the public right of way, various options were reviewed to provide an enhanced level of treatment. Currently, it is proposed to implement a tree pit filtration/infiltration strategy with an end-of-pipe OGS to achieve an enhanced level of treatment.
- The retention of 5mm on-site can be achieved in each block through the use of infiltration or re-use systems within site plans, while the ROW can make use of infiltration/filtration via roadside tree pits.

We trust that you will find this material satisfactory, and we are looking forward to receiving your comments soon. Should you have any questions or comments, please do not hesitate to contact us.

Respectfully Submitted,

SCHAEFFER & ASSOCIATES LTD.



Ishraque Chandan, EIT.
Water Resource Analyst

Heather Milukow, M.Eng., P.Eng.
Water Resource Engineer

Appendix A
Background Information

BOUSFIELDS INC.
PLANNING | DESIGN | ENGAGEMENT

Rangeview Master Plan

Concept Plan V5.1 (FINAL)

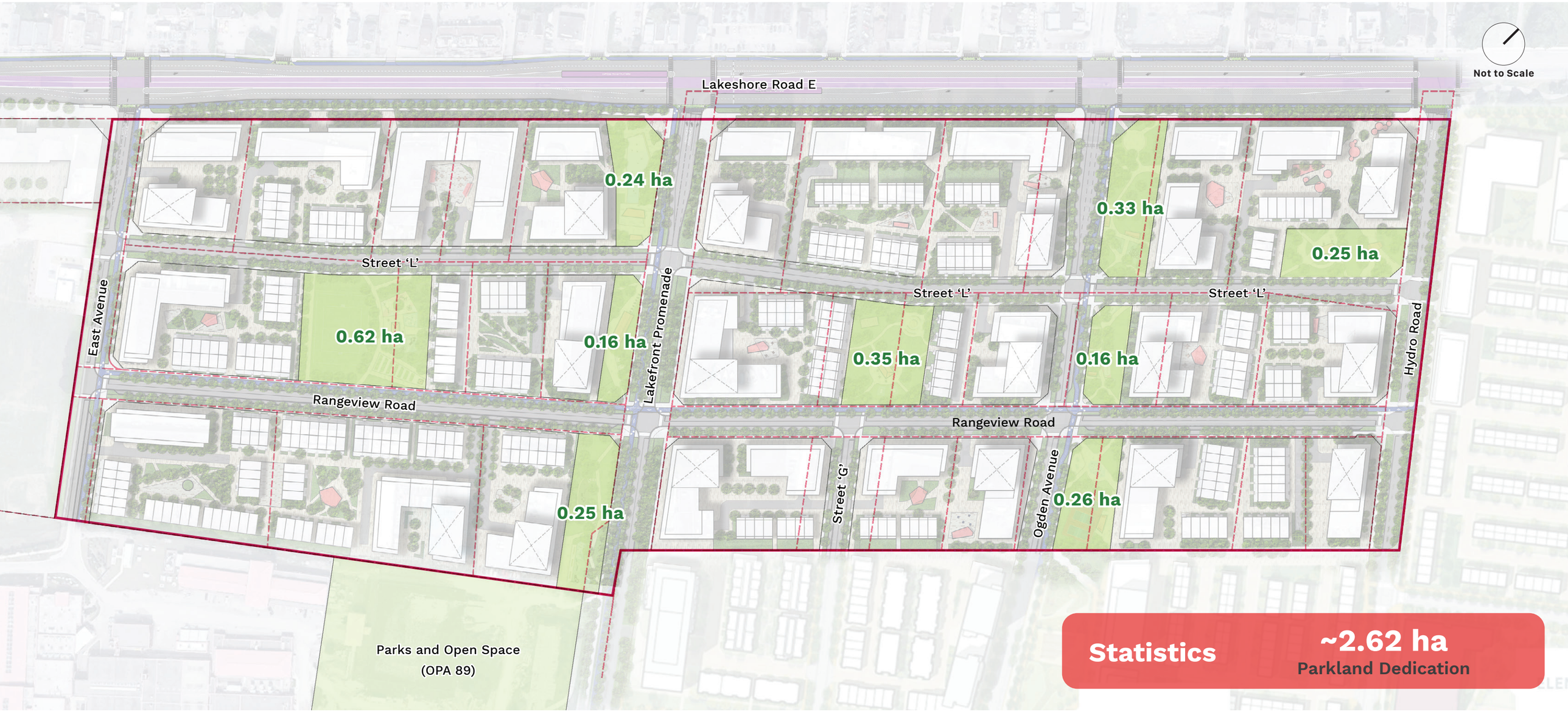
Rangeview Estates Precinct Area
Mississauga ON

October 2022

Project No. 20167

PARKLAND DEDICATION

Parkland Block Concept



Legend Rangeview Estates Precinct Area | Existing Parcel Lines | Development Parcels | Parkland Blocks

BOUSFIELDS INC.
PLANNING | DESIGN | ENGAGEMENT

PARKLAND DEDICATION

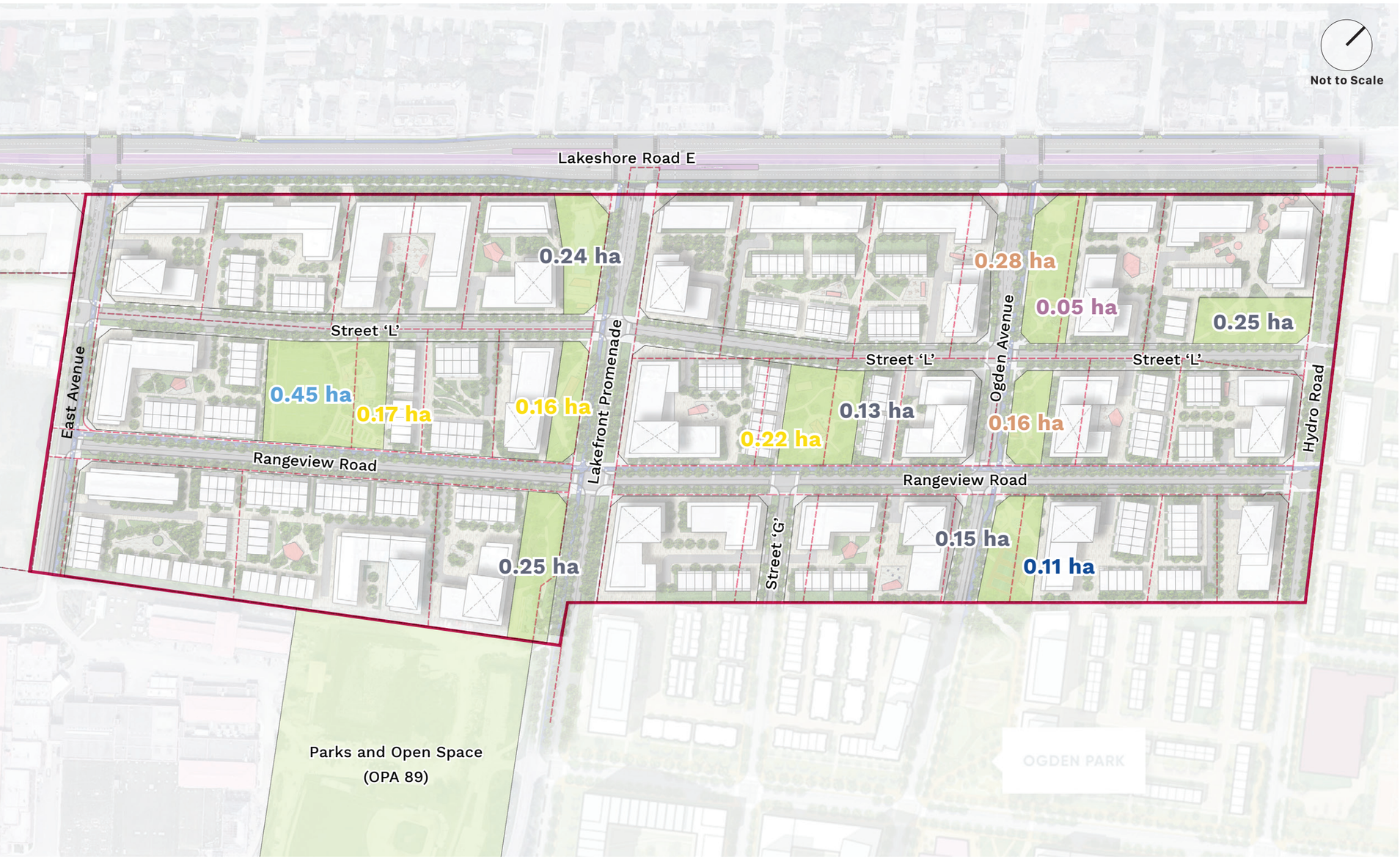
Participating Landowners Dedication



Legend Rangeview Estates Precinct Area | Existing Parcel Lines | Development Parcels | Parkland Blocks | Non-Participating Landowners

PARKLAND DEDICATION

Statistics



DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	**0.55 ha**
ELGROUP HOLDINGS INC./ ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	**0.45 ha**
RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	**0.44 ha**
2120412 ONTARIO INC. (Xtreme Tire)	**0.11 ha**
WHITEROCK 880 RANGEVIEW INC. (Dream)	**0.0 ha**
447111 ONTARIO LIMITED (Norstar)	**0.0 ha**
1127792 ONTARIO LIMITED (Dino Collini)	**0.0 ha**
ILSCO OF CANADA LIMITED (Thomas Quinn)	**0.05 ha**
KOTYCK INVESTMENTS LTD.	**0.0 ha**
NON PARTICIPATING LANDOWNERS	**1.02 ha**

±2.62 ha **TOTAL PARKLAND DEDICATION AREA**

Legend Rangeview Estates Precinct Area | Existing Parcel Lines | Development Parcels | Parkland Blocks

MASTER PLAN VERSION 5.1 (FINAL)

Concept Plan

Not to Scale

Lakeshore Road E

Lakefront Greenway

Street 'L'

East Avenue

Rangeview Park

Lakefront Promenade

Central Square

Ogden Park

Hydro Common

Ogden Avenue

Hydro Road

Rangeview Road

Street 'G'

Parks and Open Space (OPA 89)

Legend

- Rangeview Estates Precinct Area
- Existing Parcel Lines
- Development Parcels
- Low-rise (Up to 4-Storeys)
- Mid-rise (5 to 8-Storeys)
- Tall Building (Up to 15-Storeys)

MASTER PLAN VERSION 5.1 (FINAL)

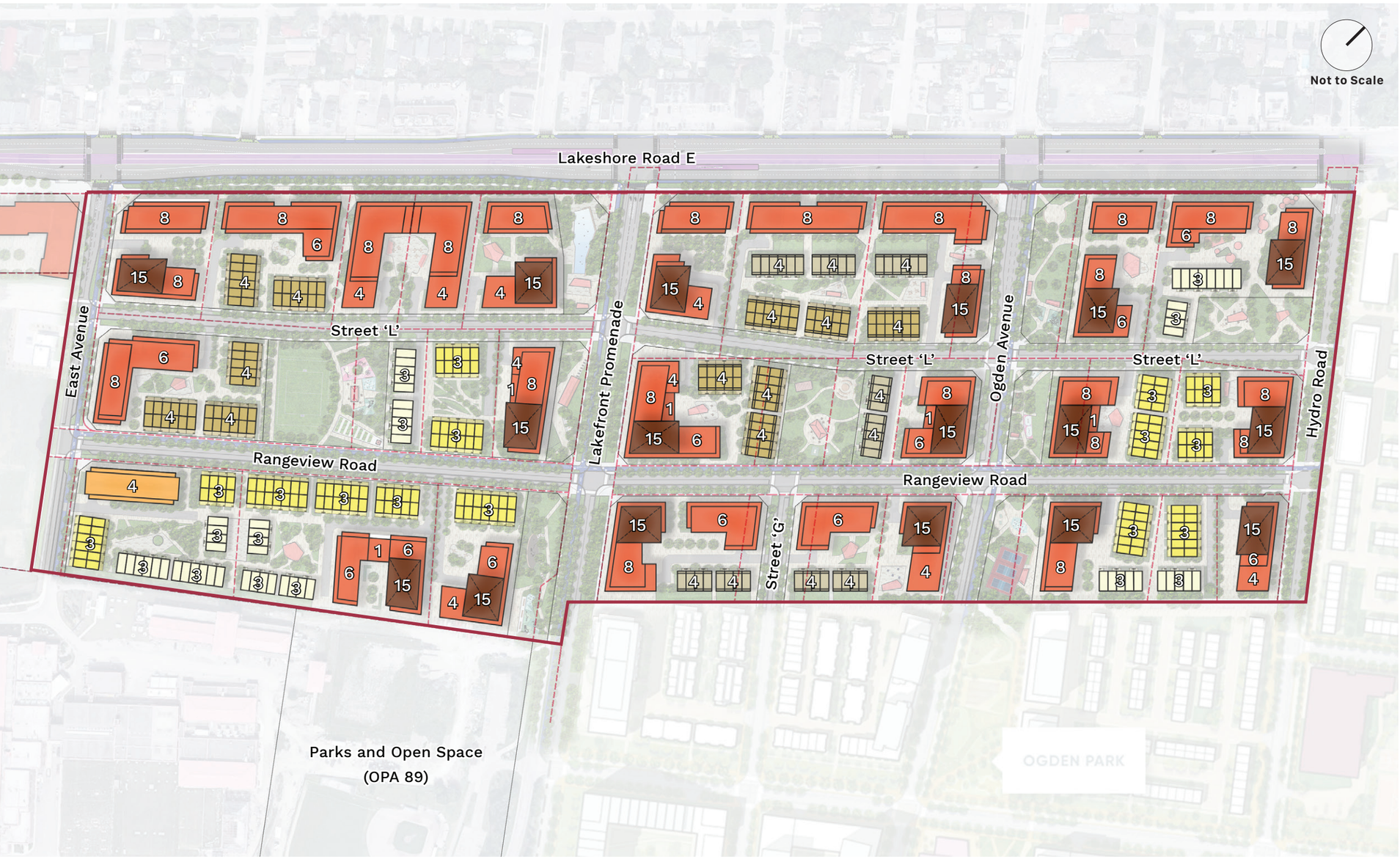
Development Parcels



Legend Rangeview Estates Precinct Area — Existing Parcel Lines — Development Parcels

BUILT FORM

Height (Storeys) + Individual Typology Statistics



Total Residential Units
± 5,300 units

Low-rise Buildings (Up to 4-St) **11.2%**
± 592 units

- Traditional Townhouse Blocks (3-ST) ± 60 units
- Stacked Townhouse Blocks (4-ST) ± 84 units
- Back-to-Back Townhouse Blocks (3-ST) ± 150 units
- Stacked Back-to-Back Townhouse Blocks (4-ST) ± 244 units
- Apartment (4-ST) ± 54 units

Mid-rise Buildings (5- to 8-ST) **68.9%**
± 3,654 units

Tall Buildings (9- to 15-ST) **19.9%**
± 1,054 units

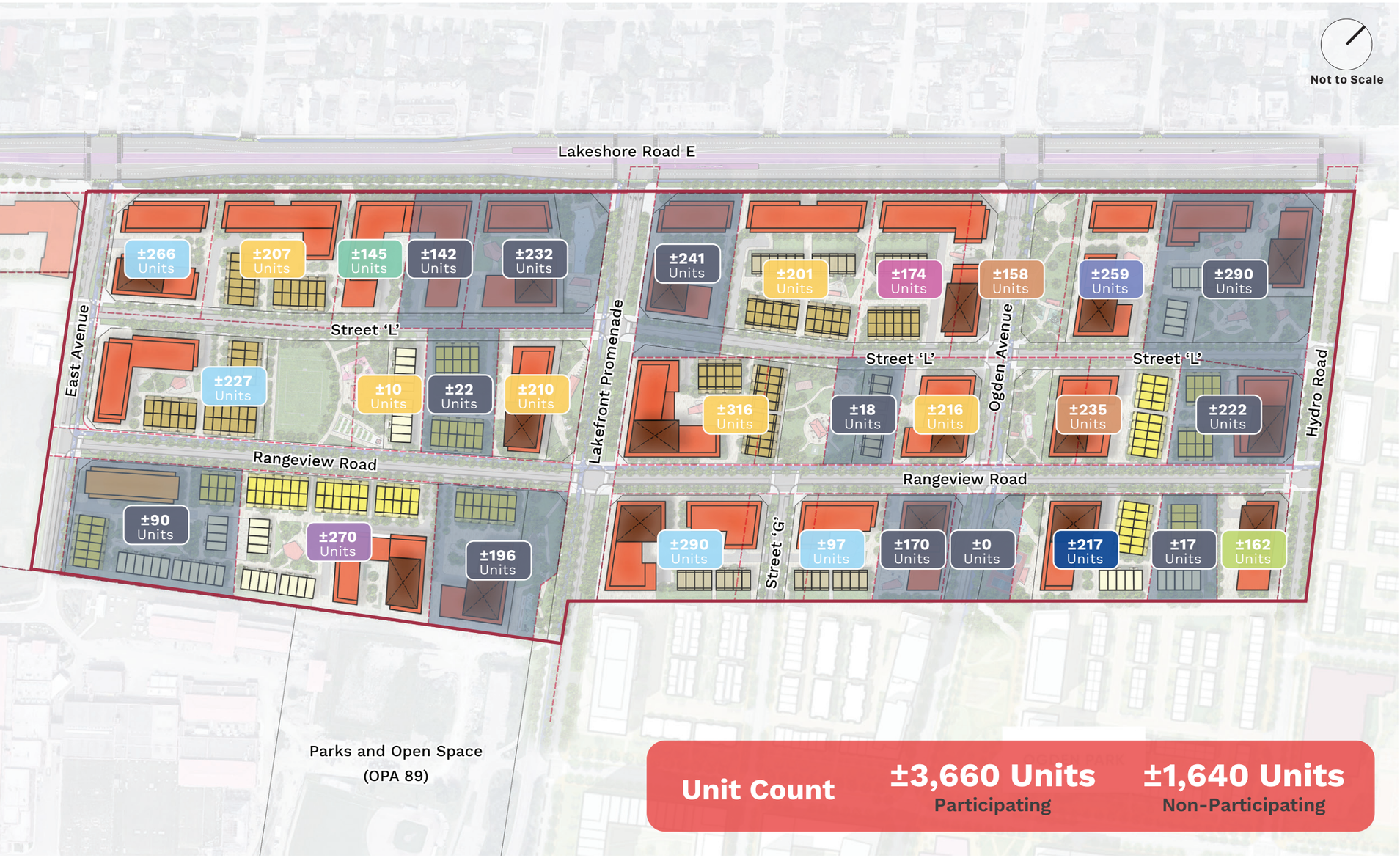
Assumptions

1. *Residential Gross Floor Area (GFA) for Apartments, Mid-rise and Tall Building based on 95% of the Gross Construction Area (GCA)*
2. *50% of the Ground Floor for Each Mid-rise / Tall Building is Allocated for Non-Residential Uses (i.e. lobby, servicing, etc.)*
3. *Approximate Unit Count for Mid-rise and Tall Building based on an 80 sq.m. unit size*
4. *Individual Stacked Townhouse module = 2 units*

Legend Rangeview Estates Precinct Area | Low-rise (Up to 4-Storeys) | Mid-rise (5 to 8-Storeys) | Tall Building (Up to 15-Storeys) | Building Height (Storeys)

MASTER PLAN DRAFT VERSION 5.1

Participating Landowners vs. Non-Participating Landowners Unit Counts



DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	**± 1,160 Units**
ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	**± 880 Units**
RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	**± 393 Units**
2120412 ONTARIO INC. (Xtreme Tire)	**± 217 Units**
WHITEROCK 880 RANGEVIEW INC. (Dream)	**± 270 Units**
447111 ONTARIO LIMITED (Norstar)	**± 174 Units**
1127792 ONTARIO LIMITED (Dino Collini)	**± 145 Units**
ILSCO OF CANADA LIMITED (Thomas Quinn)	**± 259 Units**
KOTYCK INVESTMENTS LTD.	**± 162 Units**
NON-PARTICIPATING LANDOWNERS	**± 1,640 Units**

Legend Rangeview Estates Precinct Area | Non-participating Landowners | Low-rise (Up to 4-Storeys) | Mid-rise (5 to 8-Storeys) | Tall Building (Up to 15-Storeys)

BUILT FORM + PARKLAND COMPARISON

	Master Plan V4.1		Master Plan Draft V5.1		
Individual Statistics	**Unit Count**	**Parkland Dedication**	**Unit Count**	**Parkland Dedication Provided [1]**	**Required Parkland Dedication [2]**
DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	**1,144**	**0.41 ha**	**1,160**	**0.55 ha**	**0.63 ha**
ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	**866**	**0.33 ha**	**880**	**0.45 ha**	**0.48 ha**
RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	**372**	**0.53 ha**	**393**	**0.44 ha**	**0.21 ha**
2120412 ONTARIO INC. (Xtreme Tire)	**206**	**0.11 ha**	**217**	**0.11 ha**	**0.12 ha**
WHITEROCK 880 RANGEVIEW INC. (Dream)	**258**	**0.12 ha**	**270**	**0.00 ha**	**0.15 ha**
447111 ONTARIO LIMITED (Norstar)	**167**	**0.00 ha**	**174**	**0.00 ha**	**0.09 ha**
1127792 ONTARIO LIMITED (Dino Collini)	**137**	**0.04 ha**	**145**	**0.00 ha**	**0.08 ha**
ILSCO OF CANADA LIMITED (Thomas Quinn)	**245**	**0.00 ha**	**259**	**0.05 ha**	**0.14 ha**
KOTYCK INVESTMENTS LTD.	**156**	**0.00 ha**	**162**	**0.00 ha**	**0.09 ha**
NON-PARTICIPATING LANDOWNERS	**1,546**	**0.53 ha**	**1,640**	**0.89 ha**	**0.89 ha**
TOTALS	**5,330**	**2.07 ha**	**5,300**	**± 2.62 ha**	**± 2.88 ha**

Notes

1 Based on reduced OPA 89 parkland interpretation due to revised park blocks layout and road configuration.

2 Based on Master Plan Draft V5.1 unit count and interpreted OPA 89 ratio (5.41 square metres per dwelling unit).

Block	Parcel	Landowners	Parcel Area		Public Road Conveyance		Parkland Dedication		Net Developable Area		Low-rise Units					Mid-rise Units	Tall Building Units	TOTALS
			sq.m.	ha	sq.m.	ha	sq.m.	ha	sq.m.	ha	Townhouses	Stacked Townhouses	Back-to-Back Townhouses	Stacked Back-to-Back Townhouses	Apartments	Mid-rise Buildings	Tall Buildings	
											(Up to 4-Storeys)					(5- to 8-Storeys)	(9- to 15-Storeys)	
	1	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	6,198.99	0.62	987.60	0.10	0.00	0.00	5,211.39	0.52	0	0	0	0		204	62	266
	2	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	8,451.90	0.85	819.13	0.08	0.00	0.00	7,632.77	0.77	0	0	0	48		159	0	207
	3	1127792 ONTARIO LIMITED (Dino Collini)	4,339.04	0.43	470.67	0.05	0.00	0.00	3,868.37	0.38	0	0	0	0		145	0	145
	4	*896 Lakeshore Road East*	4,338.68	0.43	470.35	0.05	0.00	0.00	3,868.33	0.38	0	0	0	0		142	0	142
	5	*910 - 920 Lakeshore Road East*	8,686.81	0.87	1,081.29	0.11	2,360.87	0.24	5,244.66	0.52	0	0	0	0		170	62	232
	6	*946 Lakeshore Road East*	7,040.36	0.70	1,316.49	0.13	0.00	0.00	5,723.87	0.57	0	0	0	0		179	62	241
	7	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	10,735.57	1.07	1,400.78	0.14	0.00	0.00	9,334.79	0.93	0	22	0	44		135	0	201
	8	447111 ONTARIO LIMITED (Norstar)	7,833.20	0.78	700.05	0.07	0.00	0.00	7,133.15	0.71	0	12	0	24		138	0	174
	9	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	8,590.92	0.86	3,709.01	0.37	2,792.76	0.28	2,089.15	0.21	0	0	0	0		96	62	158
	10	ILSCO OF CANADA LIMITED (Thomas Quinn)	6,980.11	0.70	628.18	0.06	531.28	0.05	5,820.65	0.59	0	0	0	0		197	62	259
	11	*1076 Lakeshore Road East*	13,573.97	1.36	2,101.19	0.21	2,548.07	0.25	8,924.70	0.90	12	0	0	0		216	62	290
	12	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	15,357.62	1.54	2,271.26	0.23	4,500.04	0.45	8,586.32	0.86	0	0	0	68		159	0	227
	13	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	4,189.30	0.42	478.25	0.05	1,674.19	0.17	2,036.86	0.20	10	0	0	0		0	0	10
	14	*895 Rangeview Road*	4,465.52	0.45	490.35	0.05	0.00	0.00	3,975.17	0.40	0	0	22	0		0	0	22
	15	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	5,653.29	0.57	680.47	0.07	1,569.28	0.16	3,403.54	0.34	0	0	0	0		148	62	210
	16	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	7,259.45	0.73	149.47	0.01	0.00	0.00	7,109.98	0.72	0	0	0	20		194	62	276
	17	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	3,627.10	0.36	302.01	0.03	2,204.35	0.22	1,120.74	0.11	0	0	0	40		0	0	40
	18	2547046 ONTARIO INC./2545488 ONTARIO INC. (Vittorio Torchia)	3,627.76	0.36	471.03	0.05	1,299.94	0.13	1,856.79	0.18	0	18	0	0		0	0	18
	19	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	5,075.55	0.51	1,521.30	0.15	0.00	0.00	3,554.25	0.36	0	0	0	0		154	62	216
	20	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	4,587.89	0.46	1,359.76	0.14	1,616.06	0.16	1,612.07	0.16	0	0	0	0		155	62	217
	21	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	4,829.66	0.48	624.29	0.06	0.00	0.00	4,205.37	0.42	0	0	18	0		0	0	18
	22	2547046 ONTARIO INC./2545488 ONTARIO INC. (Vittorio Torchia)	6,054.50	0.61	560.73	0.06	0.00	0.00	5,493.77	0.55	0	0	16	0		144	62	222
	23	*850 Rangeview Road*	10,354.01	1.04	390.01	0.04	0.00	0.00	9,964.00	1.00	16	0	20	0	54			90
	24	WHITEROCK 880 RANGEVIEW INC. (Dream)	13,146.95	1.31	150.90	0.02	0.00	0.00	12,996.05	1.29	12	0	36	0		160	62	270
	25	*890 Rangeview Road (Canada Post)*	8,627.44	0.86	128.53	0.01	2,464.74	0.25	6,034.17	0.60	0	0	14	0		120	62	196
	26	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	7,258.96	0.73	130.52	0.01	0.00	0.00	7,128.45	0.72	0	16	0	0		212	62	290
	27	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	3,621.46	0.36	1,533.79	0.15	0.00	0.00	2,087.67	0.21	0	0	0	0		0	0	0
	28	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	3,625.21	0.36	51.22	0.01	0.00	0.00	3,573.98	0.35	0	16	0	0		81	0	97
	29	*1008 Rangeview Road*	3,621.63	0.36	52.07	0.01	0.00	0.00	3,569.56	0.35	0	0	0	0		108	62	170
	30	*1024 Rangeview Road*	3,623.21	0.36	1,853.39	0.19	1,493.39	0.15	276.43	0.02	0	0	0	0		0	0	0
	31	2120412 ONTARIO INC. (Xtreme Tire)	7,248.77	0.72	102.47	0.01	1,077.26	0.11	6,069.05	0.60	5	0	12	0		138	62	217
	32	*1062 Rangeview Road*	3,273.04	0.33	40.63	0.00	0.00	0.00	3,232.41	0.33	5	0	12	0		0	0	17
	33	KOTYCK INVESTMENTS LTD. (Laurie McPherson)	3,491.56	0.35	247.02	0.02	0.00	0.00	3,244.53	0.33	0	0	0	0		100	62	162
		TOTALS	**219,389.45**	**21.94**	**27,274.23**	**2.74**	**26,132.23**	**2.62**	**165,982.98**	**16.58**	60	84	150	244	54	**3,654**	**1,054**	**5,300**
													592					

LEGEND

Non-participating Landowners

XX.XX Manual Rounding

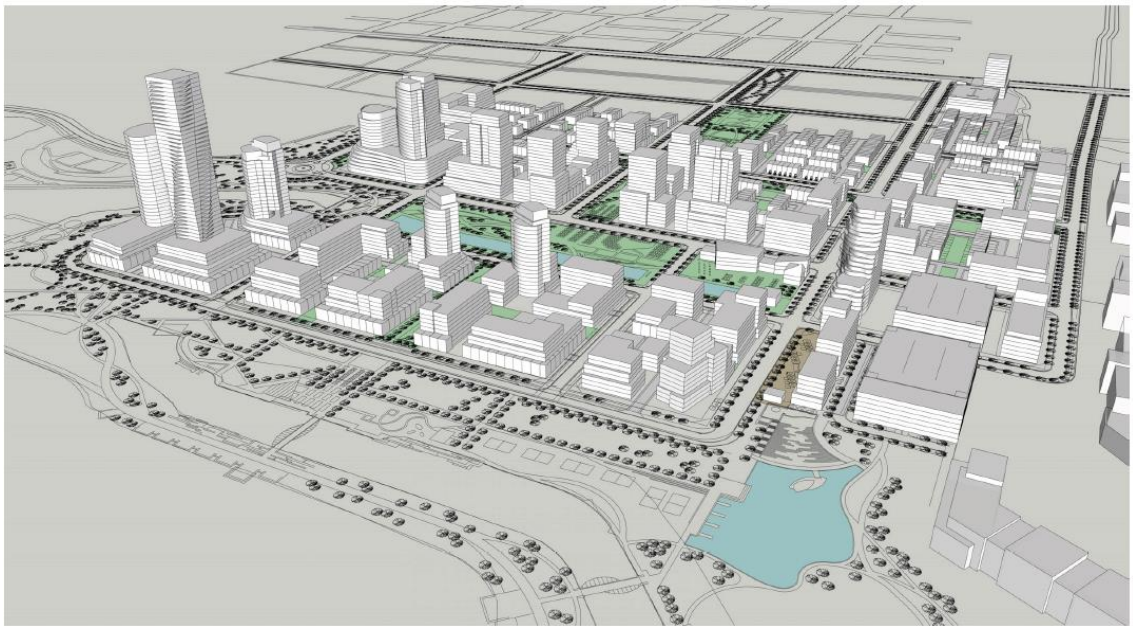
Check *219,389.45* *27,274.23* *26,132.23*

Net Developable + Parkland ***19.20***

Participating Landowners	Units	Public Road Conveyance	Parkland Dedication
DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	1,160	0.53	0.55
ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	880	0.50	0.45
RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	393	0.57	0.44
2120412 ONTARIO INC. (Xtreme Tire)	217	0.01	0.11
WHITEROCK 880 RANGEVIEW INC. (Dream)	270	0.02	0.00
447111 ONTARIO LIMITED (Norstar)	174	0.07	0.00
1127792 ONTARIO LIMITED (Dino Collini)	145	0.05	0.00
ILSCO OF CANADA LIMITED (Thomas Quinn)	259	0.06	0.05
KOTYCK INVESTMENTS LTD. (Laurie McPherson)	162	0.02	0.00
TOTAL	3,660	1.83	1.60
Non-participating Landowners	1,640	0.91	1.02
MASTER PLAN TOTAL	5,300	2.74	2.62

REPORT ON

Preliminary Geotechnical Investigation
Proposed Residential & Commercial Development
800 Hydro Road
Mississauga, Ontario



PREPARED FOR:

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Project No: 18-519-10 R2
Date: June 9, 2020

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Appendix A: Photographs of Rock Cores

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APPENDIX B: LOGS AND LOCATION PLAN OF EXP BOREHOLES

APPENDIX C: GEOPHYSICAL SURVEY REPORT BY GEOPHYSICS GPR INTERNATIONAL INC.

1. INTRODUCTION

DS Consultants Ltd. (DS) was retained by the ARGO Development Corporation on behalf of Lakeview Community Partners Limited to carry out preliminary geotechnical and hydrogeological investigations for the proposed Lakeview Village on the lands of the former Lakeview Power Generation Station located at 800 Hydro Road in Mississauga, Ontario.

It is understood that the proposed 71.6-hectare Lakeview Village will include 5,000 to 7,000 new homes in a variety of housing options, including townhouses, mid-rise and high-rise buildings. There will be more than 600,000 square feet of employment and institutional use and another 200,000 square feet of cultural space. Lakeview Village will include a Serson Square, a year-round central gathering space with retail offices and homes that can be used as an arts and cultural hub.

The proposed high-rise structures will entail up to 3-levels of basement. The finished basement floor elevations are not available to us at the time of writing this report.

exp Services Inc (exp.) conducted a preliminary geotechnical investigation at the subject site in December 2017 and drilled nine (9) boreholes as a part of their field work. The logs and location plan of exp. boreholes (BH1 to BH9) are attached in **Appendix B** of this report.

The purpose of this geotechnical investigation was to determine the subsurface conditions at the borehole locations and make preliminary engineering recommendations for the following:

1. Foundations
2. Floor slabs and permanent drainage
3. Earth pressures
4. Excavations and backfill
5. Earthquake considerations
6. Pavements
7. Underground utilities

This report deals with geotechnical issues only. Preliminary hydrogeological findings by DS will be presented in a separate report. Environmental testing was not part of our scope of work.

This report is provided on the basis of the assumption that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations of this office can be relied upon.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario, Canada. The format and contents are guided by client specific needs and economics and conform to generalized standards for services. Laboratory testing for most part follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

The foundation recommendations made in this report are based on the subsoil conditions found during the field investigation. The comments made in this report on potential construction problems and possible construction options intended only for guidance of the designer.

This report has been prepared for Lakeview Community Partners Limited and its architects and designers. Third party use of this report without DS Consultants Ltd. consent is prohibited.

2. FIELD WORK & LAB TESTING

Forty-five (45) boreholes (BH18-1 to BH18-49, except BH18-22 to BH18-24 and BH18-26, see Drawing 1 and 1A for location plan) were drilled at the site to depths varying from 1.7 m to 48.3m below the existing grade.

Four boreholes (BH18-22 to BH18-24 and BH18-26) were not be drilled due to the on-going construction work related to removal of buried concrete slabs associated with the former powerhouse.

Boreholes were drilled with solid stem and hollow stem continuous flight auger equipment by a drilling sub-contractor under the direction and supervision of DS Consultants Ltd personnel. Mud rotary was used in the drilling of some deep boreholes. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (SPT) method. The samples were logged in the field and returned to the DS Consultants Ltd laboratory for detailed examination by the project engineer and for laboratory testing.

Shale bedrock was cored at five (5) borehole locations (BH18-19, BH18-29, BH18-32, BH18-37 and BH18-45), with HQ double tube wireline equipment providing 63.5mm diameter rock core samples. The coring was carried out under the full-time supervision of a representative from DS who identified and described the rock samples, noting and recording the percentages of total and solid rock core recovery, RQD values, fracture index and the percentage and thicknesses of hard layers.

As well as visual examination in the laboratory, majority of the soil samples were tested for moisture contents. Selected fourteen (14) soil samples were subjected to grain size analyses and gradation curves are presented on Drawings 58 & 59. Atterberg's Limits tests were conducted on selected five (5) soil samples and results are presented on the respective borehole logs.

Water level observations were made during drilling and in the open boreholes at the completion of the drilling operations. Monitoring wells were installed in overburden and bedrock at seven (7) borehole locations for the longer-term groundwater level monitoring.

Methane gas measurements were taken in boreholes during drilling and upon completion of drilling, using a portable multi-gas detector RKI Eagle 2 instrument.

The ground surface elevations at the borehole locations was undertaken by DS personnel, using the differential GPS unit, leased from Sokkia Inc.

Geophysical survey was carried out at the subject site by the sub-contractor, Geophysics GPR International Inc. and their report is attached in **Appendix C** of this report.

3. SITE AND SUBSURFACE CONDITIONS

The subject site is located at 800 Hydro Road in Mississauga, approximately three kilometers east of Port Credit, on Mississauga's waterfront. The subject property primarily consists of former OPG Lakeview Coal plant that was decommissioned between 2006 & 2008 and the City own lands that is currently being used as playing fields and parking lot. The topography of the site has gentle slope towards south towards Lake Ontario, with elevations decreasing from 84m to 77m. At the time of our field work, the existing concrete slabs associated with the former OPG powerhouse were being removed by the contractor.

The borehole location plan is shown on Drawings 1 and 1A. Notes on samples description are provided on Drawing 1B. The subsurface conditions in the boreholes are presented in the individual borehole log on Drawings 2 to 46. Generalized sub-surface profiles are provided on Drawing 47 to 57.

Based on the borehole information, there is a significant variation in the bedrock depths at site along the north-south and east-west directions. There is a bedrock valley within the site, with the bedrock surface depths varying from 1.5m to at or below 48.3m. To delineate the bedrock valley and for the ease of describing the geotechnical conditions, the site is sub-divided into three areas (Area A, Area B & Area C, see Drawing 1 for areas & respective borehole locations). The subsurface conditions in the boreholes, area wise, are summarized in the following paragraphs.

3.1 Soil Conditions in Area 'A'

Seventeen boreholes (BH18-14, BH18-19, BH18-21, BH18-25, BH27 to BH18-38 and BH18-49) were drilled within Area 'A'. All boreholes were drilled to shale bedrock.

Topsoil, Pavement Structure & Fill Materials: A surficial topsoil layer, ranging in thickness from 125 to 350mm, was encountered at BH18-21, BH18-33 to BH18-38 & BH18-49. Two boreholes (BH18-28 & BH18-30) drilled on the paved areas encountered 70mm of asphalt at the surface, overlying granular base/subbase. Fill materials were found in all boreholes, extending to depths varying from 0.8 to 4.2m below the existing grade. Fill material was heterogeneous and consisted of sand & gravel, crusher run limestone, silty sand, sandy silt and clayey silt to silty clay, with inclusions of organics/topsoil, wood,

concrete, asphalt and shale fragments. The SPT 'N' values recorded in fill materials ranged from 5 to over 50 blows per 300mm of spoon penetration, indicating loose to very dense state of relative density.

Clayey Silt to Silty Clay Till: Below the fill materials, clayey silt to silty clay till deposits were encountered in BH18-14, BH18-19, BH18-29, and BH18-34 to BH18-38 (except BH18-35), overlying shale bedrock or silty clay. Clayey silt till was present in a stiff to hard consistency, with measured SPT 'N' values ranging from 8 to over 50 blows per 300mm of spoon penetration. Occasional cobble/boulders and sand seams were encountered within this deposit.

Grain size analysis of one soil sample (BH18-33/SS3) was conducted. The results are shown on Drawing 59, with the following fractions:

Clay: 29%
Silt: 46%
Sand: 23%
Gravel: 2%

Atterberg limits testing of one soil sample (BH18-33/SS3) was conducted. The results are shown on the borehole log and are summarized as follows:

Liquid limit (W_L): 34%
Plastic limit (W_P): 21%
Plasticity index (PI): 13

Silty Clay: A silty clay deposit was encountered in BH18-25, BH18-27, BH18-30 and BH18-36, below the fill material, or cohesionless soils or clayey silt till, and overlying shale bedrock. Silty clay was present in a firm to hard, generally hard consistency, with measured SPT 'N' values ranging from 6 to more than 50 blows for 300 mm penetration.

Grain size analysis of one soil sample (BH18-36/SS4) was conducted. The results are shown on Drawing 59 with the following fractions:

Clay: 32%
Silt: 57%
Sand: 11%

Atterberg limits testing of same soil sample (BH18-36/SS7) was conducted. The results are shown on the borehole log and are summarized as follows:

Liquid limit (W_L): 37%
Plastic limit (W_P): 23%
Plasticity index (PI): 14

Cohesionless Soils (Sand & Gravel, Sand): Cohesionless soils consisting of sand and gravel and sand were encountered in boreholes BH18-25, to BH18-28, BH18-32 below the fill material. These

cohesionless soils were water bearing and present in a very loose to very dense state, as indicated by the measured SPT 'N' values of nil to over 50 blows per 300mm of spoon penetration.

Sandy Silt Till: A sandy silt till deposit was encountered in BH18-49 below the fill material, extending to a depth of 4.5m, overlying shale bedrock. Sandy silt till was present in a compact to dense state, as indicated by the measured SPT 'N' values of 29 to 31 blows per 300mm of spoon penetration. Occasional cobble/boulders and sand seams were encountered within this deposit.

Shale Bedrock:

In Area 'A', shale bedrock of Georgian Bay Formation was found at all borehole locations, at depths ranging from 1.5 to 6.3m below the existing grade, corresponding to elevations ranging from 71.2 to 80.1m. The approximate depth and elevation of the shale bedrock surface at the borehole locations are listed on Table 3.1 below.

Table 3.1: Approximate Depth and Elevation of Shale Bedrock Surface in Area 'A'

Borehole No.	Depth of Shale Bedrock Surface below Existing Ground (m)	Approximate Elevation of Shale Bedrock Surface (m)	Notes
BH18-14	2.3	78.1	Augered
BH18-19	4.5	76.2	CORED
BH18-21	1.5	78.2	Augered
BH18-25	4.2	73.3	Augered
BH18-27 (30a)	3.8	73.5	Augered
BH18-28	3.3	79.5	Auger refusal
BH18-29A	6.3	71.2	cored
BH18-30	1.5	75.7	Augered
BH18-31	3.8	73.5	Augered
BH18-32	4.3	72.9	CORED
BH18-33	3.8	75.7	Augered
BH18-34	3.1	77.0	Augered
BH18-35	4.2	73.7	Augered
BH18-36	4.6	75.7	Augered
BH18-37	3.1	78.2	CORED
BH18-38	4.6	75.7	Augered
BH18-49	4.5	76.3	Augered
BH3*	**3.2**	**74.1**	**CORED**
BH5*	**3.5**	**76.8**	**Augered**
BH6*	**1.3**	**75.8**	**Augered**
BH9*	**4.4**	**74.6**	**CORED**

*exp. boreholes

Detailed description of shale bedrock is provided in Section 3.4.

3.2 Soil Conditions in Area 'B'

Twenty-two (22) boreholes (BH18-1 to BH18-13, BH18-15 to BH18-18, BH18-20, BH18-39, BH18-40, BH18-46 & BH18-48) were drilled within Area 'B', to depths ranging from 11.1 to 48.3m.

Topsoil, Pavement Structure & Fill Materials: A surficial topsoil layer, ranging in thickness from 100 to 350mm, was encountered at BH18-1, BH18-3 to BH18-6, BH18-10 to BH18-12, BH18-16, BH18-39, BH18-40 and BH18-48). Three boreholes (BH18-2, BH18-17 and BH18-20) drilled on the paved areas encountered 70 to 100mm of asphalt at the surface, overlying granular base/subbase. Fill materials were found in all boreholes, extending to depths varying from 0.8 to 3.1m below the existing grade. Fill material was heterogeneous and consisted of clayey silt, silty clay, silty sand, sandy silt, silt and sand and gravel, with inclusions of organics/topsoil in varying proportions and trace asphalt & shale fragments. The SPT 'N' values recorded in fill materials ranged from 4 to 50 blows per 300mm of spoon penetration, indicating loose to very dense state of relative density.

Clayey Silt to Silty Clay Till: Clayey silt to silty clay till deposits of varying thicknesses were encountered in boreholes at varying depths. Clayey silt to silty clay till was present in a stiff to hard consistency, with measured SPT 'N' values ranging from 14 to over 50 blows per 300mm of spoon penetration. Occasional cobble/boulders and sand seams were encountered within this deposit.

Grain size analysis of four soil samples from clayey silt to silty clay till (BH18-1/SS5, BH18-2/SS6, BH18-7/SS12 & BH18-15/SS3) were conducted. The results are shown on Drawings 58 & 59, with the following fractions:

Clay:	16 to 37%
Silt:	33 to 48%
Sand:	15 to 49%
Gravel:	1 to 9%

Atterberg limits testing of two soil samples (BH18-2/SS6 & BH18-3/SS15) were conducted. The results are shown on the borehole logs and are summarized as follows:

Liquid limit (W_L):	19 to 20%
Plastic limit (W_P):	11 to 12%
Plasticity index (PI):	8

Clayey Silt to Silty Clay: Clayey silt to silty clay deposit of varying thicknesses were encountered in boreholes at varying depths of the boreholes. Clayey silt o silty clay was present in a firm to hard, generally in very stiff consistency, with measured SPT 'N' values ranging from 6 to more than 50 blows for 300 mm penetration.

Grain size analysis of one soil sample (BH18-6/SS12) was conducted. The results are shown on Drawings 58 with the following fractions:

Clay: 68%
Silt: 26%
Sand: 6%

Atterberg limits testing of same soil sample (BH18-6/SS12) was conducted. The results are shown on the borehole log and are summarized as follows:

Liquid limit (W_L): 48%
Plastic limit (W_P): 23%
Plasticity index (PI): 25

Sandy Silt to Silty Sand Till: Sandy silt to silty sand till deposits of varying thicknesses were encountered in boreholes at varying depths. Sandy silt to silty sand till was generally water bearing and present in a very dense state, with measured SPT 'N' values of over 50 blows per 300mm of spoon penetration. Occasional to frequent cobble/boulders should be expected within this deposit.

Cohesionless Soils (Sand & Gravel, Sand, Silty Sand, Sandy Silt, Silt): Cohesionless soils consisting of sand & gravel, sand, silty sand, sandy silt, silt were encountered in majority of boreholes, embedded within the glacial till, at varying depths. These cohesionless soils were water bearing and present in a compact to very dense state, as indicated by the measured SPT 'N' values of 22 to over 50 blows per 300mm of spoon penetration.

Grain size analyses of seven (7) soil sample (BH18-2/SS3, BH18-3/SS10, BH18-8/SS7, BH18-8/SS8, BH18-8/SS12, BH18-9/SS5 and BH18-40/SS7) were conducted. The results are shown on Drawings 58 and 59, with the following fractions: 2

Clay: 2 to 10%
Silt: 3 to 62%
Sand: 23 to 95%
Gravel: up to 4%

Shale Bedrock:

In Area 'B', shale bedrock Georgian Bay Formation was found at five (5) borehole locations (BH18-6, BH18-9, BH18-15, BH18-18 & BH18-20), at depths ranging from 9.1 to 48.1 below the existing grade, corresponding to elevations ranging from 34.7 to 71.3m. There is a bedrock valley in this area which was further confirmed by the geophysics testing. The approximate depth and elevation of the shale bedrock surface at the borehole locations are listed on Table 3.2 below.

Table 3.2: Approximate Depth and Elevation of Shale Bedrock Surface in Area 'B'

Borehole No.	Depth of Shale Bedrock Surface below Existing Ground (m)	Approximate Elevation of Shale Bedrock Surface (m)	Notes
BH18-6	48.1	34.7	Augered
BH18-7	>30.7		Not encountered at 30.7m
BH18-9	15.2	65.0	Augered
BH18-15	9.1	71.3	Augered
BH18-18	13.7	67.4	Augered
BH18-20	10.7	69.6	Augered
BH2*	**12.0**	**68.3**	**Augered**

*exp. boreholes

Detailed description of shale bedrock is provided in Section 3.4.

3.3 Soil Conditions in Area 'C'

Six boreholes (BH18-41 to BH18-45 and BH18-47) were drilled within Area 'C'. All boreholes were drilled to shale bedrock.

Topsoil & Fill Materials: A surficial topsoil layer, ranging in thickness from 150 to 400mm, was encountered at borehole locations. Fill materials were found in all boreholes, extending to depths varying from 0.8 to 3.4m below the existing grade. Fill material was heterogeneous and consisted of clayey silt, silty clay, sandy silt, and sand & gravel with trace inclusions of organics/topsoil, brick, concrete, asphalt and shale fragments. The SPT 'N' values recorded in fill materials ranged from 4 to 17 blows per 300mm of spoon penetration, indicating loose to compact/firm to stiff state of compactness.

Clayey Silt to Silty Clay Till: Below the fill materials or silt/sandy silt, clayey silt to silty clay till deposits were encountered in boreholes, overlying shale bedrock or silt/sandy silt. Clayey silt till was present in a stiff to hard consistency, with measured SPT 'N' values ranging from 13 to over 50 blows per 300mm of spoon penetration.

Cohesionless Soils (Silt, Sandy Silt to Silty Sand): Cohesionless soils consisting of silt and sandy silt to silty sand were encountered in all boreholes, except in BH18-43 and BH18-44 below the fill material or clayey silt till. These cohesionless soils were generally water bearing and present in a very loose to dense state, as indicated by the measured SPT 'N' values of 5 to 32 blows per 300mm of spoon penetration.

Shale Bedrock: In Area 'C', shale bedrock of Georgian Bay Formation was found at all borehole locations, at depths ranging from 3.1 to 7.6m below the existing grade, corresponding to elevations ranging from 75.7 to 80.4m. The approximate depth and elevation of the shale bedrock surface at the borehole locations are listed on Table 3.3 below.

Table 3.3: Approximate Depth and Elevation of Shale Bedrock Surface in Area 'C'

Borehole No.	Depth of Shale Bedrock Surface below Existing Ground (m)	Approximate Elevation of Shale Bedrock Surface (m)	Notes
BH18-41	7.6	75.7	Augered
BH18-42	6.1	79.6	Augered
BH18-43	3.1	80.4	Augered
BH18-44	3.8	80.1	Augered
BH18-45	3.8	79.2	CORED
BH18-47	6.1	76.3	Augered
BH7*	3.6	79.8	CORED

*exp. boreholes

Detailed description of shale bedrock is provided in Section 3.4.

3.4 Shale Bedrock (Georgian Bay Formation)

Shale bedrock belonging to Georgian Bay Formation was encountered at this site. Because of the method of drilling and sampling, the surface elevations of the bedrock can be different than indicated on the borehole logs (Drawings 2 to 46). Commonly the till overlying the shale contains slabs of limestone which would give a false indication of the bedrock level. Similarly, the depth of weathering cannot be determined accurately due to the presence of limestone layers.

Shale bedrock was cored at five (5) borehole locations (BH18-19, BH18-29, BH18-32, BH18-37 and BH18-45) to confirm the depth and quality of bedrock.

Photographs of the bedrock cores are also presented in **Appendix A** of the report. The descriptive terms used on the record of rock cores and throughout this report are explained on the "Explanation of Terms Used in the Bedrock Core Log" sheet in Appendix A. **Appendix A** also presents more details and general comments about the shale bedrock in Toronto area.

Total Core Recovery (TCR):

The total core recovery indicates the total length of rock core recovered, expressed as a percentage of the actual length of the core run. The total core recovery for the cored runs ranged from 67 to 100%. Generally, less core recovery was experienced only near the surface of the rock, where the formation is highly to moderately weathered and was almost full as depth increased.

Solid Core Recovery (SCR):

The solid core recovery is the total length of solid, full diameter rock core that was recovered, expressed as a percentage of the length of the core run. Solid core recovery ranged from 28 to 98%, and also

appears to generally improve with depth. The SCR index was generally influenced by the orientations of the fractures. SCR was low when fractures oblique to the borehole axis were intercepted.

Rock Quality Designation (RQD):

The rock quality designation index is obtained by measuring the total length of recovered rock core pieces which are longer than 100mm and expressing their sum total length as a percentage of the length of the core run. RQD is a function of the frequency of joints, bedding plane partings and fractures in the rock cores. While the use of double tube core barrels provided reasonably good protection of the core during drilling and core retrieval, the fissile nature of the shale greatly influences the RQD values of the rock cores. Consequently, it is believed that the RQD values recorded underestimate the rock quality classification of the laminated fissile shale. On the basis of the recorded RQD values which range from nil to 97%, the rock quality is estimated to be “very poor” to “excellent”, and the average value of more than 50% suggests a rock of generally “fair” quality.

Hard Layers:

Based on the visual examination of the rock cores, an attempt was made to identify and record the thickness and percentages of the relatively harder siltstone and limestone layers. The percentage of the “hard layers” per core run ranges between nil and 32%. The thickness of these layers varied but was generally varied from 50 to 380mm, but thicker layers have been observed to be as much as 750 to 900 mm at other sites. The layers are actually lenses and they can vary significantly in thickness over short distance. Encountering such thick layers should be anticipated. It is also common to encounter closely spaced groupings of thin strong limestone/siltstone layers which individually may only be 25 to 50mm thick but collectively can be 1m in thickness.

Fracture Index:

When logging the rock cores, the fracture Index (i.e. the number of fractures for each 0.3m length of core) was also recorded. The recorded values range between nil and greater than 25. Occasional fragmented and broken zones were encountered within the solid core. Bedrock was fragmented up to a depth of about 4.9m m in BH18-37, as indicated by nil solid core recovery in this zone. It was observed that the planes of weaknesses along which the cores tended to break, included planes of fissility and bedding, the contact surfaces between shale and siltstone or limestone bands and some oblique and subvertical joints.

Weathering:

In general, moderately weathered zone in the bedrock was limited to about 1.5 m from the bedrock surface. Below this, the degree of weathering ranged from slightly weathered to fresh. The siltstone and limestone layers were generally fresh with only slight surficial weathering on joint surfaces in the zone close to bedrock surface.

Methane Gas:

Methane gas under pressure was encountered in BH18-13 below a depth of about 11m, which is possibly just above the bedrock surface. The borehole was terminated at this depth and properly sealed. Although, during the rock coring there were no physical indications of the presence of gas in the coreholes, the Georgian Bay Formation is known to contain pockets of combustible gas. Therefore, appropriate care and monitoring are essential in all confined excavation work, particularly caissons and tunnels.

3.5 Groundwater Conditions

During drilling, short-term (un-stabilized) groundwater levels were found at depths ranging from 1.5 to 18.3m below the existing grade. Long-term (stabilized) groundwater levels in the monitoring wells were found at depths ranging from 2.0 to 8.0m below the existing grade, corresponding to Elevations of 74.9 to 80.2m. The results of the water level readings taken on Sept. 26, 2018 in the monitoring wells are summarized on Table 3.5.

Table 3.5: Groundwater Levels Observed in DS Monitoring Wells

Borehole	Surface Elevation (m)	Date of Observation	Water Level Depth (mbgs)	Water Level Elev. (m)	Notes
BH18-8	81.6	Sept. 26, 2018	2.8	78.8	Screened in overburden
BH18-12	83.2	Sept. 26, 2018	8.0	75.2	Screened in overburden
BH18-16	82.9	Sept. 26, 2018	2.7	80.2	Screened in overburden
BH18-19	80.7	Sept. 26, 2018	4.7	76.0	Screened in bedrock
BH18-29A*	77.5	Sept. 26, 2018	-	-	Screened in bedrock (Well not accessible)
BH18-32	77.2	Sept. 26, 2018	2.3	74.9	Screened in bedrock
BH18-37	81.3	Sept. 26, 2018	2.0	79.3	Screened in bedrock

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events.

4. FOUNDATIONS

It is understood that the 71.6-hectare Lakeview Village will include 5,000 to 7,000 new homes in a variety of housing options, including townhouses, mid-rise and high-rise buildings. The proposed structures will entail up to 3-levels of basement. The finished basement floor elevations are not available to us at the time of writing this report. It is assumed that P1, P2 and P3 basement levels will approximately be at 3m, 6m and 9m depths respectively below the existing grade. Footings will be 1m to 2m below the lowest basement slab.

Based on the encountered bedrock depths, the subject site is sub-divided into three areas (Area A, Area B and Area C), as summarized in Sections 3.1 to 3.3. The foundation recommendations for these three areas are provided below:

4.1 Proposed Buildings in Area 'A'

Boreholes drilled within Area 'A' (BH18-14, BH18-19, BH18-21, BH18-25, BH27 to BH18-38 and BH18-49) reported shale bedrock at depths ranging from 1.5 to 6.3m below the existing grade, corresponding to elevations ranging from 71.2 to 80.1m. Due to the shallow bedrock depths, this area is considered more suitable for high-rise development with one or more basement levels.

Depending upon the finished lowest basement floor elevation, the proposed buildings can be supported by conventional spread and strip footings / mat foundations or short drilled piers founded on shale bedrock, at minimum 0.3 m below the shale bedrock surface, for a bearing pressure values of 2.5 MPa at the Serviceability Limit States (SLS), and for a factored geotechnical resistance of 3.75 MPa at the Ultimate Limit States (ULS).

The footings/piers founded on sound shale, at minimum 1.5 m below the shale surface can be designed for a bearing pressure of 5.0 MPa at SLS, and a factored geotechnical resistance of 7.5 MPa at ULS.

The depths and elevations of shale bedrock at the borehole locations in Area 'A' are provided in Table 3.1 of this report.

4.2 Proposed Buildings in Area 'B'

Twenty-two (22) boreholes (BH18-1 to BH18-13, BH18-15 to BH18-18, BH18-20, BH18-39, BH18-40, BH18-46 & BH18-48) were drilled within Area 'B', to depths ranging from 11.1 to 48.3m.

There is a bedrock valley within Area 'B', with bedrock depths ranging from 9.1 to 48.1m below the existing grade, corresponding to elevations ranging from 34.7 to 71.3m. Therefore, this area is more suitable for low-rise to mid-rise development to be supported by shallow foundations (footings/raft) founded on undisturbed native soil.

Depending upon the location of the building and number of basement levels, it may be possible to support the proposed development in this area on footings or deep foundations such as caissons founded on bedrock.

Additional boreholes will be required to further delineate and confirm the bedrock depths if foundations are to be supported on bedrock.

Footings and/or raft founded on undisturbed native soils can be designed for a bearing capacity values of 300 to 500 kPa at SLS (serviceability limit states) and for a factored geotechnical resistance of 450 to

750 kPa at ULS (ultimate limit states). The bearing values and the corresponding founding elevations at the borehole locations are summarized on Table 4.2.

Table 4.2: Bearing Values and Founding Levels of Spread Footings

BH No.	Material	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth below Existing Ground (m)	Founding Level At or Below Elevation (m)	Notes/WL Elevation (m)
BH18-1	Silty clay Till/ Sandy Silt Till	500	750	3.4	79.4	during drilling WL at 76.7m
BH18-2	Clayey Silt Till	500	750	2.6	81.2	
BH18-3	Clayey Silt Till/ sandy silt to silty sand	500	750	1.0	80.4	during drilling WL at 76.8m
BH18-4	Sandy silt to silty sand	400	600	2.1	79.0	during drilling WL at 75.1m
BH18-5	Clayey Silt Till	500	750	2.6	81.4	
BH18-6	Clayey Silt Till	500	750	1.8	81.0	
BH18-7	Clayey Silt Till	500	750	1.5	80.6	
BH18-8	Clayey Silt/sandy silt	400	600	1.1	80.5	WL at 78.8m on Sept. 26/18
BH18-9	Clayey Silt/sandy silt	300 500	450 750	2.3 6.1	77.9 74.1	during drilling WL at 77.1m
BH18-10	Clayey Silt Till/clayey silt/sandy silt till	500	750	1.8	80.5	during drilling WL at 76.5m
BH18-11	Clayey Silt Till Silty Clay	500 300	750 450	3.4 13.0	81.7 72.1	
BH18-12	Clayey Silt Till Clayey Silt	500 300	750 450	3.0 8.0	80.2 75.2	WL at 75.2m on Sept. 26/18
BH18-13	Clayey Silt Till/Clayey Silt/Sandy silt to silty sand till	300 500	450 750	1.8 4.6	78.4 75.6	during drilling WL at 75.6m; methane gas encountered at 11m
BH18-15	Silt/silty sand/silty clay	500	750	3.1	77.3	
BH18-16	Clayey silt till	500	750	2.6	80.3	WL at 80.2m on Sept. 26/18
BH18-17	Clayey Silt Till/Clayey Silt	500	750	1.8	78.5	
BH18-18	Clayey silt till Silty clay/silt	300	450	2.1	79.0	
BH18-20	Clayey silt till/silty clay/silt to clayey silt	500	750	1.0	79.3	during drilling WL at 77.2m
BH18-39	Sandy silt till/silty clay till	500	750	3.4	78.4	
BH18-40	Sandy Silt to silty sand/silty clay till	500	750	2.5	79.3	during drilling WL at 79.5m
BH18-46	Silty clay till	500	750	1.1	80.3	

BH18-48	Clayey silt till/sandy silt till	500	750	1.8	79.3	during drilling WL at 78.0m

4.3 Proposed Buildings in Area 'C'

Boreholes drilled in Area 'C' (BH18-41 to BH18-45 and BH18-47) reported shale bedrock depths ranging from 3.1 to 7.6m below the existing grade, corresponding to elevations ranging from 75.7 to 80.4m. Due to the shallow bedrock depths, this area is also suitable for high-rise development with one or more basement levels.

Depending upon the finished lowest basement floor elevation, the proposed buildings can be supported by conventional spread and strip footings / mat foundations or short drilled piers founded on shale bedrock, at minimum 0.3 m below the shale bedrock surface, for a bearing pressure values of 2.5 MPa at the Serviceability Limit States (SLS), and for a factored geotechnical resistance of 3.75 MPa at the Ultimate Limit States (ULS).

The footings/piers founded on sound shale, at minimum 1.5 m below the shale surface can be designed for a bearing pressure of 5.0 MPa at SLS, and a factored geotechnical resistance of 7.5 MPa at ULS.

The depths and elevations of shale bedrock at the borehole locations are provided in Table 3.3 of this report.

Footings and/or raft founded on undisturbed native soils can be designed for a bearing capacity values of 300 to 500 kPa at SLS (serviceability limit states) and for a factored geotechnical resistance of 450 to 750 kPa at ULS (ultimate limit states). The bearing values and the corresponding founding elevations at the borehole locations are summarized on Table 4.3.

Table 4.3: Bearing Values and Founding Levels of Spread Footings

BH No.	Material	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth below Existing Ground (m)	Founding Level At or Below Elevation (m)	Notes/WL Elevation (m)
BH18-41	Silty clay Till/ silt	500	750	2.6	80.7	during drilling WL at 78.7m
BH18-42	Clayey Silt Till	500	750	4.6	81.1	
BH18-43	Clayey Silt Till	500	750	1.1	82.4	
BH18-44	Clayey Silt Till	300	450	1.5	82.4	
BH18-45	Silty Clay Till	400	600	2.6	80.7	
BH18-47	Clayey Silt Till / Silt/sandy silt to silty sand	300	450	1.0	81.4	during drilling WL at 77.8m

4.4 Other Comments on Foundations

Foundations designed to the specified bearing capacity at the serviceability limit states (SLS) are expected to settle less than 25 mm total and 19 mm differential.

Where it is necessary to place footings at different levels in soil, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. Where it is necessary to place footings at different levels on bedrock, the upper footing must be founded below an imaginary 1 horizontal to 1 vertical line (1H:1V in bedrock) drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper footing.

All foundation bases must be inspected by this office prior to pouring concrete.

The shale bedrock weathers rapidly between wetting and drying cycles. In view of this, it is suggested that a lean concrete mat slab be placed immediately after the excavation is complete to keep the shale intact, unless the footings are cast immediately after excavating.

The inspected and approved footing base should be covered with 50 mm thick mud slab immediately in order to avoid disturbance of the founding soil due to construction activity and weathering /drying.

It should be noted that the recommended bearing capacities have been calculated by DS Consultants Limited from the borehole information for the preliminary design stage only. Additional boreholes may be required when the final building plans are available. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by DS Consultants Limited to validate the information for use during the construction stage.

5. FROST PROTECTION

All foundations exposed to seasonal freezing conditions must have at least 1.2m of soil cover for frost protection.

There is no official rule governing the required founding depth for footings below unheated basement floors. Certainly, it will not be greater than the 1.2 m required in Southern Ontario for exterior footings. Un-monitored experience indicates that a shallower depth ranging from 0.82 to 0.9 m for interior column footings and 0.4 m for wall footings has been successful where 2 or more basement levels apply. The 0.82 m depth is believed to be close to the minimum structural requirement for interior column footings. Adjacent to air shafts and entrance and exit doors, a footing depth of 1.2 m below floor level is required or, alternatively, insulation protection must be provided.

It is also emphasized that underfloor drainage and/or an adequate free draining gravel base is required to minimize the risk of floor dampness. Floor dampness could lead to temporary icing and the risk of accidents.

6. FLOOR SLAB AND PERMANENT DRAINAGE

The floor slab can be supported on grade provided all existing fill material and disturbed soils are removed and the base thoroughly proof rolled. The fill required to raise the grade can consist of inorganic soil, placed in shallow lifts and compacted to 98 percent of Standard Proctor Maximum Dry Density (SPMDD). A moisture barrier consisting of at least 200 mm of 19 mm clear crushed stone should be installed under the floor slab.

In the area where shale bedrock is encountered at floor slab level, the floor slab can be cast as slab-on-grade, provided a 200 mm layer of clear crushed stone (19 mm maximum size) is placed between the underside of the floor slab and the exposed bedrock surface.

A perimeter and underfloor drainage system will be required for buildings with basements. Typical drainage and backfill recommendations are illustrated on Drawings 60 to 62 for the open cut and shored excavation system.

7. ELEVATOR AND SUMP PITS

If elevator/sump pits are to be installed in cohesionless soils (sandy silt, sand, silt) below the water table, drainage systems at the base level of the pits are not recommended, due to the concern of loss of fines. In this case, the pits can be designed as water-tight structures, and water pressure on the pit walls and the pit base slab should be considered.

8. EARTH, ROCK AND WATER PRESSURES

The design of basement walls can incorporate the conventional design in the overburden using the earth pressure coefficient K_1=0.40. In the rock, the earth pressure coefficient K can be reduced to K_2=0.20.

The lateral earth/rock pressure acting at any depth on basement walls can be calculated as follows:

In soil: $p = K_1 (\gamma_1 h_1 + q) + p_w$

In rock: $p = K_2 (\gamma_1 H_1 + q + \gamma_2 h_2) + p_w$

where p = lateral earth and water pressure in kPa acting at depth h_1 or h_2

K_1, K_2 = earth pressure coefficients, K_1=0.40 for overburden soil; K_2=0.20 for rock

γ_1 = unit weight of overburden soil, assuming 20.5 kN/m^3 above the water table and 11 kN/m^3 below the water table

γ_2 = unit weight of rock below water, assuming 15 kN/m^3

h_1 = Depth in overburden soil, below ground surface

H_1 = thickness of soil above rock

h_2 = Depth in rock, below rock surface

q = value of surcharge in kPa

p_w = hydrostatic water pressure

When the foundation wall is poured against the caisson wall, the foundation wall as well as the caisson wall should be designed for hydrostatic pressure, even though a drainage board is provided between the basement wall and the caisson wall.

9. EXCAVATIONS AND GROUNDWATER CONTROL

Excavations can be carried out with heavy hydraulic backhoe. Long-term (stabilized) groundwater levels in the monitoring wells were found at depths ranging from 2.0 to 8.0m below the existing grade, corresponding to Elevations of 74.9 to 80.2m. Positive dewatering will be required prior to any excavation in water bearing cohesionless soils below the groundwater table, otherwise it will result in an unstable base and flowing sides. A contractor specializing in dewatering should be retained to design the dewatering systems for excavations below the groundwater table.

Further comments on groundwater control during construction and permanent drainage are provided in our preliminary hydrogeology report.

It should be noted that the glacial till soils may contain boulders. Large obstructions in the fill material are anticipated. Provisions must be made in the excavation contract for the removal of boulders in the till and large obstructions in the fill material.

Excavation of the shale can be carried out using heaviest available single tooth ripper equipment. The limestone beds are present and may overly the shale bedrock surface at some locations. It may be necessary at some locations to utilize jackhammer type equipment to “open” the limestone layers for the ripper.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the fill material can be classified as Type 3 soil above the groundwater table. The very stiff to hard clayey soils can be classified as Type 2 Soil above the groundwater table and as Type 3 below the groundwater table. The cohesionless soils of sand and silty sand can be classified as Type 3 Soil above the groundwater table and Type 4 soil below the groundwater table.

The native soils free from topsoil and organics can be used as general construction backfill, provided its moisture content is within 2 percent of the optimum moisture content. Loose lifts of soil, which are to be compacted, should not exceed 200 mm. Depending on the time of construction and weather, some excavated material may be too wet to compact and will require aeration prior to its use.

Imported granular fill, which can be compacted with hand held equipment, should be used in confined areas. The excavated soils are not considered to be free draining. Where free draining backfill is required, imported granular fill such as OPSS Granular B should be used.

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should be compacted at the surface or be covered with tarpaulins to minimize moisture uptake.

10. EARTHQUAKE CONSIDERATIONS

Based on the existing borehole information and according to Table 4.1.8.4.A of OBC 2012, the subject site for the proposed development can be classified as “Class C” for seismic site response.

In Area ‘A’ and Area ‘B’, for the proposed buildings with one or more levels of basement, founded on sound shale bedrock, it may be possible to classify the site as “Class B” for seismic site response. This should be further confirmed during the detail design stage.

11. ROADS

The proposed development will be serviced by a network of roads.

11.1 Pavement Thickness

The investigation has shown that the predominant subgrade soil, after stripping the topsoil and any other organic and otherwise unsuitable subsoil, will generally consist of clayey silt till, clayey silt, clayey silt till shale complex and shale bedrock.

Based on the above and assuming that traffic usage will be residential/commercial for local and collector road, the following minimum pavement thicknesses are recommended for roads to be constructed within the development.

Collector Road

40 mm HL3 Asphaltic Concrete
85 mm HL8 Asphaltic Concrete
200 mm Granular ‘A’
325 mm Granular ‘B’

Local/Minor Local Road

40 mm HL3 Asphaltic Concrete
85 mm HL8 Asphaltic Concrete
200 mm Granular 'A'
175 mm Granular 'B'

These values may need to be adjusted according to the City of Mississauga Standards. The site subgrade and weather conditions (i.e. if wet) at the time of construction may necessitate the placement of thicker granular sub-base layer in order to facilitate the construction. Furthermore, heavy construction equipment may have to be kept off the newly constructed roads before the placement of asphalt and/or immediately thereafter, to avoid damaging the weak subgrade by heavy truck traffic.

11.2 Stripping, Sub-excavation and Grading

The site should be stripped of all topsoil and any organic, weathered or otherwise unsuitable soils to the full depth of the roads, both in cut and fill areas. Following stripping, the site should be graded to the subgrade level and approved. The subgrade should then be proof-rolled, in the presence of the Geotechnical Engineer, by at least several passes of a heavy compactor having a rated capacity of at least 8 tonnes. Any soft spots thus exposed should be removed and replaced by select fill material, similar to the existing subgrade soil and approved by the Geotechnical Engineer. The subgrade should then be re-compacted from the surface to at least 98% of its Standard Proctor Maximum Dry Density (SPMDD). The final subgrade should be cambered or otherwise shaped properly to facilitate rapid drainage and to prevent the formation of local depressions in which water could accumulate.

Owing to the clayey (i.e. impervious) nature of some subsoils at the site, proper cambering and allowing the water to escape towards the sides (where it can be removed by means of subdrains) is considered to be beneficial for this project. Otherwise, any water collected in the granular sub-base materials could be trapped thus causing problems due to softened subgrade, differential frost heave, etc. For the same reason damaging the subgrade during and after placement of the granular materials by heavy construction traffic should be avoided. If the moisture content of the local material cannot be maintained at ±2% of the optimum moisture content, imported granular material may need to be used.

Any fill required for re-grading the site or backfill should be select, clean material, free of topsoil, organic or other foreign and unsuitable matter. The fill should be placed in thin layers and compacted to at least 95% of its SPMDD. The degree of compaction should be increased to 98% within the top 1.0 m of the subgrade, or as per City Standards. The compaction of the new fill should be checked by frequent field density tests.

11.3 Construction

Once the subgrade has been inspected and approved, the granular base and sub-base course materials should be placed in layers not exceeding 200 mm (uncompacted thickness) and should be compacted to at least 100% of their respective SPMDD. The grading of the material should conform to current OPS Specifications.

The placing, spreading and rolling of the asphalt should be in accordance with OPS Specifications or, as required by the local authorities.

Frequent field density tests should be carried out on both the asphalt and granular base and sub-base materials to ensure that the required degree of compaction is achieved.

11.4 Drainage

The City of Mississauga may require the installation of full-length subdrains on all roads. The subdrains should be properly filtered to prevent the loss of (and clogging by) soil fines.

All paved surfaces should be sloped to provide satisfactory drainage towards catch-basins. As discussed in Section 11.2, by means of good planning any water trapped in the granular sub-base materials should be drained rapidly towards subdrains or other interceptors.

12. UNDERGROUND UTILITIES

It is understood that underground services (watermains, storm and sanitary sewer) will be installed at the site to service the proposed development. Based on the preliminary servicing plans prepared by Urbantech, invert levels of the proposed utilities will be about 2 to 6m below the existing grade, with sanitary sewer at the deepest point at about 6m below the existing grade.

Trenches will be dug through fill materials followed by native soils of cohesive and cohesionless nature. Long-term (stabilized) groundwater levels in the monitoring wells were found at depths ranging from 2.0 to 8.0m below the existing grade, corresponding to Elevations of 74.9 to 80.2m. Positive dewatering will be required prior to any excavation in water bearing cohesionless soils below the groundwater table, otherwise it will result in an unstable base and flowing sides. Water table must be lowered to at least 1m below the lowest excavation level.

Detailed comments on excavation and groundwater control are provided in Section 9.

The undisturbed native soils encountered in the boreholes will provide adequate support for the service pipes and allow the use of Class B type bedding. The recommended minimum thickness of granular bedding below the invert of the pipes is 150 mm. The thickness of the bedding may, however, have to be increased depending on the pipe diameter or in accordance with local standards or if wet or weak

subgrade conditions are encountered, especially when the soil at the trench base level consists of wet, dilatant silt.

The bedding material should conform to City of Mississauga bedding stone gradation requirements. Where the bedding falls below the anticipated water table, the bedding stone must be surrounded with a geotextile filter cloth.

For deep trenches, i.e. more than 2.0 m below the shale surface, a minimum 50 mm thick polystyrene etc. layer will be required at both sides of the pipe to avoid rock squeezing. The polystyrene layer should extend vertically to at least 0.3 m above the pipe. The rock trench should be wide enough so that at each side, the horizontal distance between the pipe side and the cut rock surface is at least 0.3 m.

The select inorganic fill materials or native soils free from topsoil / organics can be used as general construction backfill, provided their moisture contents at the time of construction are within 2% of their optimum moisture content.

In any case the degree of compaction of the trench backfill should be at least 95% of the material's Standard Proctor Maximum Dry Density (SPMDD). This value should be increased to at least 98% within 2 m of the road surface. The granular pavement sub-base and base materials should be compacted to at least 100% of their respective SPMDD.

13. GENERAL COMMENTS AND LIMITATIONS OF REPORT

This geotechnical report is preliminary, prepared based on the conceptual design plans. Additional boreholes will be required, once the detailed development plans are available to confirm the findings and recommendations provided in this report.

This report is intended solely for the client named. The material in it reflects our best judgment in light of the information available to DS Consultants Ltd at the time of preparation. Unless otherwise agreed in writing by DS Consultants Ltd, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the borehole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the borehole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

DS Consultants Ltd should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, DS Consultants Ltd will assume no responsibility for interpretation of the recommendations in the report.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. DS Consultants Ltd accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

DS CONSULTANTS LTD



Alka Sangar, M.Eng., P.Eng.



Fanyu Zhu, Ph.D., P.Eng.

Drawings

J:\-GIS\18-519-10 800 Hydro Road, Mississuaga\1-QGIS\Geotechnical\Figure 1- BH Location Plan.qgs



Image Source: Imagery @2018 Google

Legend:

Boreholes

- Monitoring Well
- Borehole
- Area 'A' Bedrock depth 1.5 to 4.6m
- Area 'B' Bedrock depth 9.1 to 48.1m
- Area 'C' Bedrock depth 3.1 to 76m

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Vaughan, Ontario, L4H 0K8
Telephone: (905) 264-9393
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Client: LAKEVIEW COMMUNITY PARTNERS LIMITED

Project: GEOTECHNICAL INVESTIGATION

Title: **BOREHOLE LOCATION PLAN**

Approved By:	Drawn By:	Date:
N.W	S.Y	October 2018
Scale: As Shown	**Project No.:** 18-519-10	**Figure No.:** 1

C:\0Sharon\18-519-10 800 Hydro Road, Mississuaga\1-QGIS\Geotechnical\Figure 1- BH Location Plan-Only 2018.qgs Jun-08 17:08



Legend

- Approx_Site_bnd
- Monitoring Well (2018)
- Borehole (2018)

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Vaughan, Ontario L4H 0K8
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Client: ARGO DEVELOPMENT CORPORATION

Project: PROPOSED GEOTECHNICAL INVESTIGATION - PHASE 1 AREA
Lakeview Development, 800 Hydro Road, Toronto, ON

Title: **BOREHOLE LOCATION PLAN**

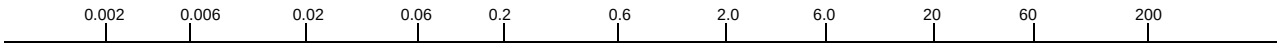
Size:	Approved By:	Drawn By:	Date:
11 x 17	N.W	S.Y	June 2020
Rev. 0	Scale: As Shown	Project No.: 18-519-10	Drawing No.: **1A**
	Image/Map Source: *CAD Drawing*		

Drawing 1B: Notes On Sample Descriptions

1. All sample descriptions included in this report generally follow the Unified Soil Classification. Laboratory grain size analyses provided by DSCL also follow the same system. Different classification systems may be used by others, such as the system by the International Society for Soil Mechanics and Foundation Engineering (ISSMFE). Please note that, with the exception of those samples where a grain size analysis and/or Atterberg Limits testing have been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-01

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-18-2018

REF. NO.: 18-519-10
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
82.8						
0.0 / 82.4	**TOPSOIL:**350mm	1	SS	14		
0.4	**FILL:** clayey silt, some organics, trace gravel, grey, moist, stiff	2	SS	8		82
80.5		3	SS	10		81
2.3 / 79.7	**FILL:** sandy silt, some organics, grey, moist, loose	4	SS	8		80
3.1 / 78.2	**SILTY CLAY TILL:** some sand, trace gravel, brown, moist, very stiff	5	SS	17		79
4.6 / 76.7	**SANDY SILT TILL:** trace to some clay, trace gravel, grey, moist, very dense	6	SS	50	▽	78
6.1 / 75.2	**SAND:** trace silt, brown, wet, dense	7	SS	45	W. L. 76.7 m during drilling	77
7.6 / 73.7	**SAND AND GRAVEL:** trace silt, brown, wet, very dense	8	SS	50		76
9.1	**SILTY SAND TILL:** some gravel to gravelly, occassional cobble/boulders, trace clay, grey, moist to wet, very dense	9	SS	78		75
						74
						73

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa): 225

NATURAL UNIT WT (kN/m³):

METHANE AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
1	15	47	37

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-01

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-18-2018

REF. NO.: 18-519-10
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILTY SAND TILL: some gravel to gravelly, occassional cobble/boulders, trace clay, grey, moist to wet, very dense(Continued)											
11			10	SS	50		72		○			
12	wet below 12.2 m		11	SS	76		71		○			
70.0							70					
12.8	**END OF BOREHOLE** Notes: 1) Water level at 6.1 mbgl during drilling											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH18-02

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-19-2018

REF. NO.: 18-519-10
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
83.8												
83.7	**ASPHALT:** 100 mm											
0.1 / 83.4	**SAND AND GARVEL:** 250 mm		1	AS								
0.4 / 83.0	**FILL:** silty sand, trace gravel, grey, wet											
0.8 / 82.3	**CLAYEY SILT TILL:** some sand, trace gravel, brown, moist, very stiff		2	SS	22		83					
1.5 / 81.5	**SILTY SAND:** trace clay, brown, wet, dense		3	SS	40		82					0 72 22 6
2.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/boulder, grey, moist, very stiff to hard		4	SS	46		81			225		
			5	SS	40		80			225		
			6	SS	28		79			225		1 49 33 17
			7	SS	41		78			225		
			8	SS	70		77			225		
			9	SS	44		76			225		
							75	wet spoon				July 19, 2018
							74					---------- July 20, 2018

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-02

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-19-2018

REF. NO.: 18-519-10
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	CLAYEY SILT TILL: sandy, trace gravel, occasional cobble/boulder, grey, moist, very stiff to hard(Continued)											
11			10	SS	21		73		○	225		
12			11	SS	40		72		○			
13							71					
70.1												
13.7	**CLAYEY SILT:** trace sand, grey, moist, very stiff		12	SS	21		70		○	225		
15			13	SS	19		69		○	225		
16							68					
17			14	SS	18		67		○	225		
18	stiff at 18.3 m						66					
			15	SS	19		65		○	225		
19												
20							64					

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-02

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-19-2018

REF. NO.: 18-519-10
ENCL NO.: 3

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
63.4	**CLAYEY SILT:** trace sand, grey, moist, very stiff(Continued)		16	SS	18				○	225	
20.4	**END OF BOREHOLE** Notes: 1) Borehole dry upon completion										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-03

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
81.4										
0.0 / 81.0	**TOPSOIL:** 350mm		1	SS	13		81			
0.4 / 80.6	**POSSIBLE FILL:** clayey silt, brown, moist, stiff									
0.8 / 79.7	**CLAYEY SILT:**some sand, occassional sand seams, brown, moist, very stiff to hard		2	SS	22		80	>225		
1.7 / 78.3	**CLAYEY SILT TILL :** some sand, trace gravel, occassional sand seams, brown, moist, very stiff		3	SS	33		79	>225		
			4	SS	24					
3.1	**SANDY SILT TO SILTY SAND** trace clay, trace gravel, brown, moist to wet , very dense		5	SS	50/ 100mm		78			
	grey, wet below 4.6 m		6	SS	50/ 100mm	▽ W. L. 76.8 m during drilling	77			
73.8			7	SS	80		76			
7.6 / 72.3	**SILTY SAND TO SAND:** trace clay, grey, wet, dense		8	SS	46		75			
9.1	**SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble/boulder, grey, wet, very dense		9	SS	50/ 150mm		74			
							73			
							72			

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-03

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
70.7	**SILTY SAND TILL:** trace to some clay, trace gravel, occasional cobble/boulder, grey, wet, very dense(Continued)						71
10.7	**SAND:** trace silt, grey, wet, dense to very dense		10	SS	42		70
			11	SS	64		69
67.7							68
13.7	**SANDY SILT TO SILTY SAND:** trace to some clay, some gravel, grey, wet, very dense		12	SS	80		67
			13	SS	50/ 150mm		66
			14	SS	50/ 75mm		65
63.1							64
18.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasssional cobble/boulders, grey, moist, hard		15	SS	50/ 150mm		63
							62

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

NUMBER	GR	SA	SI	CL
10	0	95		(5)

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3%: Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-03

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 4

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
61.2			16	SS	92				>225		
20.2	**END OF BOREHOLE** Notes: 1) Water level at 4.6 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ $^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH18-04

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-22-2018

REF. NO.: 18-519-10
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
81.1 / 0.0	**TOPSOIL:** 150mm						81
80.9 / 0.1	**FILL:** silty sand and gravel, brown, moist, compact		1	SS	10		
80.3 / 0.8	**FILL:** silt to clayey silt, trace organics, trace gravel, grey, moist, compact		2	SS	12		80
79.3 / 1.8	**CLAYEY SILT TILL:** sandy, trace gravel, trace cobble, brown, moist, very stiff		3	SS	14		79
78.8 / 2.3	**SANDY SILT TO SILTY SAND:** trace clay, trace to some gravel, brown, moist to wet, very dense to compact		4	SS	29		78
			5	SS	50/ 150mm		77
			6	SS	50/ 50mm		76
	grey and wet below 6.1 m		7	SS	25	▽	74
73.5 / 7.6	**SILTY SAND TILL:** trace clay, some gravel, occassional cobble/boulders, grey, wet, very dense		8	SS	78		73
			9	SS	64		72

W. L. 75.1 m during drilling

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-04

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-22-2018

REF. NO.: 18-519-10
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
	SILTY SAND TILL: trace clay, some gravel, occassional cobble/boulders, grey, wet, very dense(Continued)						71
11			10	SS	hammer bounced		70
12							69
			11	SS	50/ 125mm		
13							68
67.4							
13.7	**SAND:** trace silt, grey, wet, very dense		12	SS	62		67
14							
15							66
	interbed of silt at 15.5 m		13	SS	53		
16							65
17			14	SS	80		64
18							
62.9							63
18.2	**SILTY CLAY TILL:** some sand, trace gravel, grey, moist, hard		15	SS	56		
19							62
20							

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
>225		

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-04

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-22-2018

REF. NO.: 18-519-10
ENCL NO.: 5

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
60.7	**SILTY CLAY TILL:** some sand, trace gravel, grey, moist, hard(Continued)		16	SS	42		61			>225	
20.4	**END OF BOREHOLE** Notes: 1) Water level at 6.0 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

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LOG OF BOREHOLE BH18-05

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-26-2018

REF. NO.: 18-519-10
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
84.0						
83.9 / 0.1	**TOPSOIL:** 127mm					
	FILL: clayey silt, trace rootlet, trace organic, brown, moist, stiff to hard		1	SS	22	
			2	SS	11	83
			3	SS	50	82
81.7 / 2.3	**CLAYEY SILT TILL:** some sand, trace gravel, occassional cobble/boulder, brown to grey, moist, hard		4	SS	45	
			5	SS	69	81
	grey below 4.9 m		6	SS	93	80
			7	SS	58	79
			8	SS	60	78
			9	SS	39	77
						76
						75

GROUND WATER CONDITIONS

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3%: Strain at Failure

LOG OF BOREHOLE BH18-05

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-26-2018

REF. NO.: 18-519-10
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
	CLAYEY SILT TILL: some sand, trace gravel, occassional cobble/boulder, brown to grey, moist, hard(Continued)						
			10	SS	51		73
71.8							72
12.2	**SILTY CLAY:** trace sand, grey, moist, hard to very stiff		11	SS	32		
			12	SS	19		71
68.8							70
15.2	**CLAYEY SILT:** trace sand, grey, moist, very stiff		13	SS	21		69
			14	SS	19		68
65.7							67
18.3	**SILT:** trace clay, trace sand, grey, wet, compact		15	SS	26		66
64.5							65
19.5	**SANDY SILT TO SILTY SAND TILL :** interbed of wet sand, grey, wet, very dense						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-05

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-26-2018

REF. NO.: 18-519-10
ENCL NO.: 6

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
63.6			16	SS	66				○		
20.4	**END OF BOREHOLE** Notes: 1) Water level at 18.3 mbgl upon completion.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ $^{\varepsilon_f}$=3% Strain at Failure

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LOG OF BOREHOLE BH18-06

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-18-2018

REF. NO.: 18-519-10
ENCL NO.: 7

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"							GR SA SI CL
82.8 / 0.0	**TOPSOIL:** 230 mm											
82.6 / 0.2	**FILL:** sand and gravel, brown, moist, compact		1	SS	13							
82.0 / 0.8	**FILL:** silty clay, trace gravel, brown, moist, compact		2	SS	13		82					
81.3 / 1.5	**CLAYEY SILT TILL:** some sand to sandy trace gravel, brown, moist, hard		3	SS	28		81			>225		
			4	SS	44		80			>225		
	grey below 3.1 m		5	SS	34		79			>225		
			6	SS	40		78			>225		
			7	SS	51		77					
			8	SS	54		76			>225		
			9	SS	54		75			>225		
							74					
							73					

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-06

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-18-2018

REF. NO.: 18-519-10
ENCL NO.: 7

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	CLAYEY SILT TILL: some sand to sandy trace gravel, brown, moist, hard(Continued)											
			10	SS	54		72		○	>225		
			11	SS	64		71		○	>225		
69.1							70					
13.7	**SILTY CLAY:** trace sand, occasional sand seams, grey, moist, very stiff		12	SS	16		69		48 ○	125		0 6 26 68
			13	SS	26		68		○	200		
66.0							67					
16.8	**CLAYEY SILT TO SILT :** some clay, trace sand, grey, moist, compact		14	SS	23		66		○	200		
			15	SS	26		65		○	>225		
							64					
							63					

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-06

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-18-2018

REF. NO.: 18-519-10
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
	CLAYEY SILT TO SILT : some clay, trace sand, grey, moist, compact(Continued)	16	SS	23	
		17	SS	28	
59.9					
22.9	**SILT:**some clay, grey, very moist to wet, dense	18	SS	32	
58.4					
24.4	**SAND:**trace silt, some gravel to gravelly, grey, wet, very dense	19	SS	81	
		20	SS	87	
55.4					
27.4	**SANDY SILT TO SILTY SAND:**trace clay, grey, wet, very dense	21	SS	58	
54.8					
28.0	**SILTY CLAY:**trace sand, trace gravel, grey, moist, hard	22	SS	81	
52.8					

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-06

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-18-2018

REF. NO.: 18-519-10
ENCL NO.: 7

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
30.0	**SILT:** some clay, trace sand, grey, wet, dense						
			23	SS	45		52
51.8							
31.0	**SAND:**trace silt, grey, wet, dense						
50.8							51
32.0	**SAND AND GRAVEL:**trace silt, occassional cobble/boulders, grey, wet, very dense		24	SS	80		
							50
			25	SS	87		49
			26	SS	50/ 125mm		48
			27	SS	76		47
			28	SS	50/ 150mm		46
							45
							44
			29	SS	80		43

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3% Strain at Failure

LOG OF BOREHOLE BH18-06

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-18-2018

REF. NO.: 18-519-10
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
41	**SAND AND GRAVEL:**trace silt, occassional cobble/boulders, grey, wet, very dense(Continued)						42
			30	SS	50/ 100mm		
42							41
			31	SS	50/ 125mm		40
43							
44							39
			32	SS	50/ 100mm		
45							38
			33	SS	50/ 100mm		37
46							
47							36
			34	SS	100/ 75mm		
48							35
34.7							
48.1 / 34.5	**SHALE:** Georgian Bay Formation, weathered, grey		35	SS	100/ 50mm		
48.3	**END OF BOREHOLE:**						

Notes:
1) Water level at 16.8m during drilling.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-07

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-20-2018

REF. NO.: 18-519-10
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	GR	SA	SI	CL
82.1												
0.0 / 81.8	**GRANULAR BASE:** 300mm	1	AS			82						
0.3 / 81.0	**FILL:** sand, some gravel, grey, moist, compact	2	SS	16		81						
1.1	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/boulder, brown to grey, moist, very stiff to hard	3	SS	33			>225					
		4	SS	79		80	>225					
	grey below 3.1 m	5	SS	59		79	>225					
		6	SS	58		78	>225					
		7	SS	51		77	>225					
74.5					▽	76						
7.6	**SANDY SILT TILL:**some clay, some gravel, occasional cobble/boulder, grey, very moist to wet, very dense	8	SS	87	W. L. 74.5 m during drilling	75						
73.0						74						
9.1	**SILT:** trace sand, grey, moist to very moist, compact	9	SS	29		73						

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE — 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

METHANE AND GRAIN SIZE DISTRIBUTION (%)

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-07

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-20-2018

REF. NO.: 18-519-10
ENCL NO.: 8

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
71.4	**SILT:** trace sand, grey, moist to very moist, compact(Continued)				72
10.7	**SANDY SILT TO SILTY SAND:** trace gravel, grey, wet, very dense	10	SS	77	71
70.0					70
12.1	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble/boulder, grey, moist, hard	11	SS	59	69
		12	SS	59	68
66.9					67
15.2	**SANDY SILT TO SILTY SAND:**trace clay, grey, wet, very dense	13	SS	79	66
65.3					65
16.8	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, occasional cobble/boulder, grey, moist, hard	14	SS	72	64
		15	SS	40	63
62.3					
19.8					

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
>225		
>225		2 27 48 23
>225		
>225		

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GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ε=3% Strain at Failure

LOG OF BOREHOLE BH18-07

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-20-2018

REF. NO.: 18-519-10
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILTY CLAY: trace sand, grey, moist, hard(Continued)		16	SS	39		62	200		
							61			
			17	SS	34			175		
							60			
			18	SS	56		59	>225		
							58			
			19	SS	52			>225		
							57			
			20	SS	57		56	>225		
							55			
			21	SS	50/ 25mm			>225		
53.1							54			
29.0	**SANDY SILT TILL:** trace to some clay, trace gravel, occasional cobble/boulder, grey, wet, very dense						53			

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-07

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-20-2018

REF. NO.: 18-519-10
ENCL NO.: 8

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SANDY SILT TILL: trace to some clay, trace gravel, occasional cobble/boulder, grey, wet, very dense(Continued)						52				
51.4			22	SS	50/ 100mm				○		
30.7	**END OF BOREHOLE** Notes: 1) Water level at 7.6m during drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ $^{\varepsilon}$=3% Strain at Failure

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-08

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-28-2018

REF. NO.: 18-519-10
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
81.6							
0.0 / 80.8	**FILL:** sand and gravel, brown, wet, compact		1	SS	17		
0.8	**CLAYEY SILT :** trace sand, brown to grey, moist, very stiff to hard		2	SS	16		
			3	SS	20		
	grey below 2.3 m		4	SS	28	▽	
			5	SS	32		
76.7							
4.9	**SAND & SILT:** trace to some clay, grey, wet, compact to dense		6	SS	24		
			7	SS	46		
74.0							
7.6	**SANDY SILT:** trace clay, grey, wet, very dense		8	SS	66		
72.5							
9.1	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, occasional cobble/boulder, grey, moist, hard		9	SS	71		

W. L. 78.8 m
Sep 26, 2018

Bentonite

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)

	GR	SA	SI	CL
7	0	43	47	10
8	0	31	62	7

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH18-08

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-28-2018

REF. NO.: 18-519-10
ENCL NO.: 9

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
70.9	**CLAYEY SILT TILL:** some sand to sandy, trace gravel, occasional cobble/boulder, grey, moist, hard(Continued)											
10.7	**SILT TO CLAYEY SILT:** trace sand, grey, moist to very moist, dense		10	SS	34		71			175		
69.4							70	Filter pack				
12.2	**SILTY SAND TILL:** trace clay, some gravel, grey, wet, very dense		11	SS	50/ 150mm		69					
68.1							68	Slotted Pipe				
13.5	**SAND:** trace silt, trace gravel, grey, wet, very dense		12	SS	74							8 88 (4)
66.4							67					
15.2	**SANDY SILT TO SILTY SAND:** trace clay, grey, wet, very dense		13	SS	82		66					
64.5							65					
17.1	**SILTY CLAY:** trace sand, grey, moist, hard		14	SS	71		64	Bentonite				
			15	SS	50		63			>225		
							62					

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-08

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-28-2018

REF. NO.: 18-519-10
ENCL NO.: 9

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
61.2	**SILTY CLAY:** trace sand, grey, moist, hard(Continued)		16	SS	35				○	>225		
20.4	**END OF BOREHOLE** Notes: 1) Water level at 4.9 mbgl during drilling 2) Water level in the monitoring well recorded at 2.8m on Sept. 26, 2018.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ $^{\varepsilon_f}$=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-09

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-04-2018

REF. NO.: 18-519-10
ENCL NO.: 19

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
80.2												
0.0 / 79.4	**FILL:** sandy silt, trace gravel, grey, moist		1	AS			80		○			
0.8 / 78.7	**FILL:** silty clay, trace organics, grey, moist, loose		2	SS	4		79		○			
1.5	**CLAYEY SILT:** trace sand, grey, moist, firm to very stiff		3	SS	6				○			
			4	SS	20		78		○	>225		
77.1						▽						
3.1	**SANDY SILT:** trace to some clay, grey, wet, compact		5	SS	22		W. L. 77.1 m during drilling		○			4 33 53 10
			6	SS	30		76		○			
74.1							75					
6.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard		7	SS	75		74		○	>225		
72.6							73					
7.6	**SILT TO SANDY SILT:** trace clay, grey, wet, very dense		8	SS	81		72		○			
			9	SS	50/ 125mm		71		○			

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-09

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-04-2018

REF. NO.: 18-519-10
ENCL NO.: 19

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILT TO SANDY SILT: trace clay, grey, wet, very dense(Continued)						70					
69.5												
10.7	**SILTY CLAY:** trace sand, trace gravel, grey, moist, hard		10	SS	32				○	>225		
11							69					
12			11	SS	53		68		○	>225		
13												
66.5							67					
13.7	**SILT:** trace to some clay, trace sand, grey, wet, dense		12	SS	34				○			
14							66					
15												
65.0							65					
65.2	**SHALE:** Georgian Bay Formation,		13	SS	50/				○			
15.3	weathered, grey				100mm							
	END OF BOREHOLE											
	Notes: 1) Water level at 3.1 mbgl during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-10

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-25-2018

REF. NO.: 18-519-10
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
82.3										
0.0 / 82.0	**TOPSOIL:** 300 mm									
0.3 / 81.5	**FILL:** silty clay, trace topsoil, trace gravel, brown, wet, stiff		1	SS	14		82			
0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff to hard		2	SS	19		81	200		
			3	SS	50			>225		
			4	SS	45		80	>225		
			5	SS	30		79	>225		
77.7							78			
4.6 / 76.2	**CLAYEY SILT:** trace sand, grey, moist, very stiff		6	SS	20	▽	77	225		
6.1 / 74.7	**SILT:** trace clay, trace to some sand, grey, wet, compact		7	SS	23		76			
7.6	**SANDY SILT TILL:** some clay, frequent seams of wet sand, trace gravel, occassional cobbe/boulders, grey, moist, very dense		8	SS	54		75			
							74			
			9	SS	73		73			

W. L. 76.5 m during drilling

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-10

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-25-2018

REF. NO.: 18-519-10
ENCL NO.: 11

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
70.1 / 12	**SANDY SILT TILL:** some clay, frequent seams of wet sand, trace gravel, occassional cobbe/boulders, grey, moist, very dense(Continued)		10	SS	50	72
12.2	**SILTY CLAY:** trace sand, grey, moist, very stiff		11	SS	27	71
			12	SS	28	70
			13	SS	30	69
			14	SS	24	68
64.0 / 18						67
18.3	**SAND AND GRAVEL:** trace silt, grey, saturated, very dense		15	SS	76	66
62.3 / 20			16	SS	50/	65
						64
						63

GROUND WATER CONDITIONS

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-10

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-25-2018

REF. NO.: 18-519-10
ENCL NO.: 11

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"							GR SA SI CL
20.0	**END OF BOREHOLE** Notes: 1) Water level at 5.8 mbgl during drilling				150mm							

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH18-11

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-20-2018

REF. NO.: 18-519-10
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
85.1 / 0.0	**TOPSOIL:** 250 mm				85
84.9 / 0.2	**FILL:** clayey silt, mixed with topsoil, trace gravel, grey, moist, compact	1	SS	18	
84.3 / 0.8	**FILL:** silty clay, trace to some organics, trace gravel, grey, moist, loose to compact	2	SS	20	84
		3	SS	9	83
		4	SS	7	
82.0 / 3.1	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, very stiff to hard	5	SS	22	82
		6	SS	58	81
		7	SS	34	80
		8	SS	35	79
		9	SS	39	78
					77
					76

STRATA PLOT
GROUND WATER CONDITIONS

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
>225
>225
>225
>225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-11

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-20-2018

REF. NO.: 18-519-10
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	CLAYEY SILT TILL: sandy, trace gravel, greyish brown, moist, very stiff to hard(Continued)						75					
	wet sand seams below 10.7 m							wet spoon				
11			10	SS	50		74					
12			11	SS	41		73			>225		
13							72					
71.4												
13.7	**SILT CLAY:** trace sand/silt seams, grey, moist, stiff to very stiff		12	SS	14		71			125		
15			13	SS	21		70			150		
16							69					
17			14	SS	19		68			150		
18			15	SS	23		67			175		
19							66					
20												

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-11

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-20-2018

REF. NO.: 18-519-10
ENCL NO.: 12

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
64.7	**SILT CLAY:** trace sand/silt seams, grey, moist, stiff to very stiff(Continued)		16	SS	16		65			150	
20.4	**END OF BOREHOLE** Notes: 1) Borehole dry upon completion										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-12

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-24-2018

REF. NO.: 18-519-10
ENCL NO.: 13

ELEV (m) / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3 m	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)
83.2 / 0.0	**TOPSOIL:** 150 mm						
0.2	**FILL:** silty clay, mixed with topsoil/organics, trace gravel, brown to grey, moist, loose to compact	1	SS	23		83	
		2	SS	28		82	
		3	SS	6			
		4	SS	7		81	
80.5 / 2.7	**CLAYEY SILT TILL:** sandy, trace gravel, occassional cobble/boulders, brown, moist, very stiff to hard	5	SS	24		80	>225
		6	SS	50		79	>225
		7	SS	56	Bentonite	78	>225
		8	SS	60	W. L. 75.2 m Sep 26, 2018	77	>225
74.1 / 9.1	**CLAYEY SILT:** trace seams/partings of silt, grey, moist, very stiff	9	SS	23		74	

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED, + FIELD VANE & Sensitivity, ● QUICK TRIAXIAL, × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P, NATURAL MOISTURE CONTENT w, LIQUID LIMIT w_L; WATER CONTENT (%): 10 20 30
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-12

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-24-2018

REF. NO.: 18-519-10
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
71.0	**CLAYEY SILT:** trace seams/partings of silt, grey, moist, very stiff(Continued)	10	SS	26	73
12.2	**SILT :** trace to some clay, trace sand, grey, very moist to wet, compact to dense	11	SS	18	72
		12	SS	30	71
68.0					70
15.2	**CLAYEY SILT TO SILTY CLAY :**trace sand, grey, moist, very stiff to hard	13	SS	21	69
		14	SS	42	68
64.9					67
18.3	**SILT TO CLAYEY SILT:** some clay, grey, moist, compact to dense	15	SS	29	66
					65
					64

Filter Pack
Slotted pipe
Bentonite

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
175
>225
>225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-12

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-24-2018

REF. NO.: 18-519-10
ENCL NO.: 13

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
62.8	**SILT TO CLAYEY SILT:** some clay, grey, moist, compact to dense(Continued)		16	SS	34		63		○			
20.4	**END OF BOREHOLE:** Notes: 1) 50 mm dia monitoring well installed upon completion. 2) Water level in moniotring well at 8m on Sept. 26, 2018.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-13

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-16-2018

REF. NO.: 18-519-10
ENCL NO.: 14

ELEV (m) / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3 m	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)
80.2 / 0.0	**FILL:** sand & gravel, trace silt, grey, moist	1	AS			80	
79.4 / 0.8	**FILL:** silty clay, trace gravel, grey, moist, stiff	2	SS	8		79	
78.7 / 1.5	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff	3	SS	21		78	
77.9 / 2.3	**CLAYEY SILT TO SILT:** trace sand, grey, moist, very stiff	4	SS	18			200
		5	SS	17		77	200
75.6 / 4.6	**SANDY SILT TO SILTY SAND TILL :** trace clay, trace gravel, grey, wet, very dense	6	SS	64	W. L. 75.6 m during drilling	75	
74.1 / 6.1	**CLAYEY SILT TILL :**sandy, frequent sand seams, trace gravel, grey, moist, hard	7	SS	38		74	>225
72.6 / 7.6	**SANDY SILT:** trace to some clay, brownish grey, wet, dense	8	SS	49		72	
71.1 / 9.1	**SILTY CLAY:**frequent seams of silt, grey, moist, hard	9	SS	37		71	>225

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L; WATER CONTENT (%): 10 20 30
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-13

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-16-2018

REF. NO.: 18-519-10
ENCL NO.: 14

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
69.5	**SILTY CLAY:**frequent seams of silt, grey, moist, hard(Continued)						70				
10.7 69.1	**SILT TO CLAYEY SILT:** seams of sand, trace gravel, grey, moist, very dense		10	SS	70/ 279mm				○		
11.1	**END OF BOREHOLE:** Notes: 1) Borehole terminated due to eruption of gas with mud and water from hole. 2) Water level at 4.6 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-14

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 15

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
80.4												
0.0 / 79.6	**FILL:** sand and gravel, trace rootlets, grey, moist		1	AS			80		○			
0.8 / 78.9	**FILL:** silty clay, trace gravel, pieces of wood, grey, moist, loose		2	SS	8		79		○			
1.5 / 78.1	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff		3	SS	29				○	>225		
2.3 / 77.2	**SHALE:** Georgian Bay Formation, weathered, grey		4	SS	50/ 50 mm		78		○			
			5	SS	50/ 50 mm				○			
3.2	**END OF BOREHOLE:** Notes: 1) Borehole dry and open upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-15

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 16

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
80.4					
0.0 / 79.6	**FILL:** sand and gravel, trace rootlets, grey, moist	1	AS		80
0.8 / 78.9	**FILL:** clayey silt, trace organics, grey, moist, compact	2	SS	18	79
1.5 / 78.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, stiff	3	SS	9	
2.3 / 77.3	**SILT:** trace to some clay, trace sand, brown, moist, compact	4	SS	22	78
3.1 / 76.6	**SILTY SAND:** some gravel, brown, moist, very dense	5	SS	50/100 mm	77
3.8 / 74.3	**SILTY CLAY:** trace sand, grey, moist, hard to very stiff	6	SS	33	76
		7	SS	21	75
6.1 / 71.3	**SILT TO CLAYEY SILT:** trace sand, grey, moist, compact to very dense	8	SS	22	74
		9	SS	50/50 mm	73
9.1 / 71.1	**SHALE:** Georgian Bay Formation, weathered, grey	10	SS	50/50 mm	72
9.3	**END OF BOREHOLE**				

Notes:
1) Borehole dry and open upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
125		9 33 42 16
>225		
>225		
>225		
>225		

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-16

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-23-2018

REF. NO.: 18-519-10
ENCL NO.: 17

ELEV (m) / DEPTH	DESCRIPTION	NUMBER	TYPE	"N" BLOWS/0.3 m	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)
82.9 / 0.0	**TOPSOIL:** 100 mm						
82.8 / 0.1	**FILL:** clayey silt, mixed with topsoil, brown, moist, compact	1	SS	19			
		2	SS	10		82	
					Bentonite		
		3	SS	15		81	
80.6 / 2.3	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff to hard	4	SS	21			>225
					W. L. 80.2 m Sep 26, 2018		
	frequent wet sand seams	5	SS	28			
79.4 / 3.5	**SAND:** trace silt, brown, wet, compact				Slotted Pipe		
78.3 / 4.6	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard	6	SS	30		78	
						77	
		7	SS	36			>225
						76	
75.3 / 7.6	**SANDY SILT TILL:** some clay, trace gravel, sand seams, grey, very moist to wet, dense	8	SS	38		75	
						74	
73.8 / 9.1	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff to hard	9	SS	30			>225
						73	

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED + FIELD VANE & Sensitivity ● QUICK TRIAXIAL × LAB VANE: 20 40 60 80 100
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-16

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-23-2018

REF. NO.: 18-519-10
ENCL NO.: 17

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
11	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, very stiff to hard(Continued)		10	SS	33		72					
12 70.7							71					
12.2	**CLAYEY SILT:** trace sand, occassional seams of silt, grey, moist, very stiff to hard		11	SS	21					>225		
13							70					
14			12	SS	29		69					
15							68					
16			13	SS	30		67					
17	frequent seams of silt below 16.8 m		14	SS	28		66					
18							65					
19			15	SS	24		64					
20							63					

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-16

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-23-2018

REF. NO.: 18-519-10
ENCL NO.: 17

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
62.5			16	SS	25						
20.4	**END OF BOREHOLE:** Notes: 1) Monitoring well was installed beside BH18-16. 2) Water level in the monitoring well at 2.7m on Sept. 26, 2018.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH18-17

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-16-2018

REF. NO.: 18-519-10
ENCL NO.: 18

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	ELEVATION
80.3						
80.0 / 0.3	**ASPHALT:** 100 mm **GRANULAR BASE:** 250 mm **FILL:** sandy silt, trace topsoil/organics, greyish brown, moist		1	AS		80
79.5 / 0.8	**FILL:** silty clay, trace organics, trace gravel, grey, moist, loose		2	SS	7	79
78.8 / 1.5	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff to hard		3	SS	18	
			4	SS	50/ 25mm	78
			5	SS	82/ 280mm	77
			6	SS	26	76
74.2 / 6.1	**CLAYEY SILT:** sandy, grey, moist, hard		7	SS	34	75
			8	SS	36	74
71.2 / 9.1	**SILT:** some clay, trace sand, grey, moist to wet, compact		9	SS	26	73
						72
						71

GROUND WATER CONDITIONS

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
>225
>225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-17

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-16-2018

REF. NO.: 18-519-10
ENCL NO.: 18

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	ELEVATION
	SILT: some clay, trace sand, grey, moist to wet, compact(Continued)					70
			10	SS	27	69
68.1						
12.2	**SILTY CLAY & SILT:** interbedded, trace sand, grey, moist, hard		11	SS	37	68
						67
			12	SS	45	66
65.1						
15.2	**SILT TO SANDY SILT:** trace clay, grey, wet, very dense		13	SS	53	65
63.5						64
16.8	**SILTY CLAY:**trace sand, grey, moist, hard		14	SS	73	63
62.0						
18.3	**SILT:**trace to some clay, grey, wet, very dense		15	SS	70/ 280mm	62
60.8						61
19.5	**CLAYEY SILT TILL:**sandy, trace gravel, grey,moist, hard					

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-17

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-16-2018

REF. NO.: 18-519-10
ENCL NO.: 18

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
59.9	**CLAYEY SILT TILL:**sandy, trace gravel, grey,moist, hard(Continued)		16	SS	50/ 50mm		60				
20.4	**END OF BOREHOLE** Notes: 1) Water level at 9.1m during drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH18-18

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 19

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
81.1					81
0.0	**FILL:** sand and gravel, moist	1	AS		
80.3					
0.8	**FILL:**clayey silt, trace to some organics, greyish brown, moist, loose	2	SS	9	80
79.4					
1.7	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, stiff to hard	3	SS	11	79
		4	SS	29	
		5	SS	33	78
					77
76.5					
4.6	**SILTY CLAY:**seams of silt, trace sand, grey, moist, very stiff	6	SS	15	76
75.0					
6.1	**SILT:** trace to some clay, grey, wet, compact	7	SS	19	75
		8	SS	25	74
					73
72.0					
9.1	**SAND AND GRAVEL:** some silt, grey, wet, very dense	9	SS	86	72

W. L. 75.0 m during drilling

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa): 125, >225, >225, 175

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-18

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 19

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
70.4	**SAND AND GRAVEL:** some silt, grey, wet, very dense(Continued)						71					
10.7	**SILT:** trace to some clay, trace sand, grey, wet, very dense		10	SS	76		70		○			
68.9							69					
12.2	**SILTY CLAY:** trace sand, grey, moist, hard		11	SS	51				○	>225		
67.4							68					
13.7 / 67.1	**SHALE:** Georgian Bay Formation, weathered, grey		12	SS	50/ 50 mm				○			
14.0	**END OF BOREHOLE:** Notes: 1) Water level at 6.1m during drilling.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-19

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 20

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS "N" 0.3 m
80.7 / 0.0	**FILL:** sand and gravel, grey, moist	1	AS	
79.9 / 0.8	**FILL:** silty clay, trace organics, trace gravel, greyish brown, moist, firm	2	SS	8
79.0 / 1.7	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to hard	3	SS	10
		4	SS	26
		5	SS	32
76.2 / 4.5	**GEORGIAN BAY FORMATION:**	6	SS	50/ 100mm
76.1 / 4.6	shale interbedded with limestone/siltstone layers, grey Total Core Recovery = 83% Solid Core Recovery = 29% RQD = 17% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm	1	RC	
75.5 / 5.2	Total Core Recovery = 85% Solid Core Recovery = 23% RQD = 18% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm	2	RC	
74.0 / 6.7	Total Core Recovery = 100% Solid Core Recovery = 28% RQD = 19% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm	3	RC	
72.5 / 8.2	Total Core Recovery = 100% Solid Core Recovery = 28% RQD = 28% Hard Layer (Limestone/Siltstone)= 32% Maximum Thickness of Hard Layer = 380mm	4	RC	
71.0 / 9.7				

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-19

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-11-2018

REF. NO.: 18-519-10
ENCL NO.: 20

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
69.5	Total Core Recovery = 100% Solid Core Recovery = 40% RQD = 30% Hard Layer (Limestone/Siltstone)= 15% Maximum Thickness of Hard Layer = 125mm(Continued)		5	RC			70					
11.2	**END OF BOREHOLE:** Notes: 1) Monitoring well was installed in the borehole upon completion. 2) Water level in the monitoring well at 4.7m on Sept. 26, 2018.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH18-20

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jun-26-2018

REF. NO.: 18-519-10
ENCL NO.: 21

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
80.3 / 0.0	**ASPHALT:** 70mm				
80.2 / 0.1	**GRANULAR BASE:** 300mm	1	AS		80
79.9 / 0.4	**FILL:** clayey silt, some sand, trace gravel, greyish brown, moist				
79.5 / 0.8	**CLAYEY SILT TILL:** sandy, trace gravel, grey, moist, hard	2	SS	33	79
		3	SS	45	
		4	SS	83	78
77.2 / 3.1	**SAND:** trace silt, grey, wet, compact	5	SS	28	77
76.9 / 3.4	**SILTY CLAY :** trace sand, grey, moist, very stiff				
75.7 / 4.6	**SILT TO CLAYEY SILT:**trace sand, occassional wet sand seams, grey, moist, hard	6	SS	52	76
74.2 / 6.1	**SILT:**trace to some clay, some sand, grey, wet, dense to very dense	7	SS	57	75
		8	SS	48	74
71.2 / 9.1	**SILT TO CLAYEY SILT:**trace sand, grey, moist to very moist, hard	9	SS	39	73
					72
					71

GROUND WATER CONDITIONS

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
>225		
>225		Wet Spoon
>225		

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-20

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jun-26-2018

REF. NO.: 18-519-10
ENCL NO.: 21

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE & Sensitivity, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILT TO CLAYEY SILT: trace sand, grey, moist to very moist, hard (Continued)						70				
69.6											
10.7 / 69.4	**SHALE:** Georgian Bay Formation, weathered, grey		10	SS	50/100mm				○		
10.9	**END OF BOREHOLE** Notes: 1) Water level at 3.1m during drilling.										

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-21

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jun-26-2018

REF. NO.: 18-519-10
ENCL NO.: 22

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
79.7							
0.0 79.4	**TOPSOIL:** 350mm		1	SS	8		
0.3 79.0	**FILL:** silty clay mixed with topsoil, trace gravel, brown, moist, loose						79
0.7 1 78.2	**FILL:** sand and gravel mixed with weathered shale, brown, moist, compact		2	SS	23		
1.5 2 77.3	**SHALE:** Georgian Bay Formation, weathered, grey		3	SS	50/ 100mm		78
2.4	**END OF BOREHOLE** Notes: 1) Borehole dry and open upon completion.		4	SS	50/ 100mm		

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-25

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-10-2018

REF. NO.: 18-519-10
ENCL NO.: 23

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
77.5							
0.0	**FILL:** sand and gravel, cobbles		1	AS			77
76.7						▽	
0.8	**FILL:** 19mm crusher run limestone, grey, wet, loose to compact		2	SS	6	W. L. 76.7 m during drilling	
1			3	SS	10		76
2							
75.2							
2.3	**SAND AND GRAVEL:** trace silt, grey, wet, very dense		4	SS	50/ 100mm		75
3			5	SS	50/ 100mm		74
73.7							
3.8	**SILTY CLAY :** trace to some sand, grey, moist, hard		6	SS	39		
4							
73.3							
4.2	**SHALE:** Georgian Bay Formation, weathered, grey						
73.1							
4.4	**END OF BOREHOLE:** Notes: 1) Water level at 0.8m during drilling.						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Wet spoon

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-27

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-10-2018

REF. NO.: 18-519-10
ENCL NO.: 27

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
77.3							
0.0	**FILL:** sand and gravel, grey, moist, loose		1	AS			77
1			2	SS	7		
75.8							76
1.5	**FILL:** silty sand, trace gravel, brown, moist, compact		3	SS	11		
2							
75.0						▽	75
2.3	**SAND:** trace silt, brown, wet, very loose		4	SS	WH		W. L. 75.0 m during drilling
3							
74.2							
3.1	**SILTY CLAY:** trace sand, grey, moist, firm		5	SS	6		74
73.5							
3.8	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 100mm		
4							
73.3							
4.0	**END OF BOREHOLE:** Note: 1) Water level at 2.3 m during drilling						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-28

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jun-26-2018

REF. NO.: 18-519-10
ENCL NO.: 25

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
82.8							
82.7 / 0.1	**ASPHALTIC CONCRETE:** 70mm **GRANULAR BASE:** 600mm		1	AS			
82.1 / 0.7	**FILL:** clayey silt mixed with sand and gravel, brown, moist, very stiff to firm		2	SS	17		82
	grey and wet below 1.5 m		3	SS	15	▽ W. L. 81.3 m during drilling	81
	fragments of Concrete		4	SS	6		80
79.7 / 3.1	**SAND AND GRAVEL:** cobbles, brown, wet, very dense		5	SS	57		
79.5 / 3.3	**END OF BOREHOLE** Notes: 1) Auger refusal at 3.3m on possible shale bedrock.						

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-29

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 200 mm
Date: Jul-09-2018

REF. NO.: 18-519-10
ENCL NO.: 24

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
77.5							
0.0	**FILL:** sand and gravel, brown, moist		1	AS			77
76.8							
0.7	**FILL:** clayey silt, some sand and gravel, greyish brown, moist, compact		2	SS	17		
76.0							76
1.5	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown to grey, moist, stiff to very stiff		3	SS	12		
	grey below 2.3 m		4	SS	8		75
			5	SS	8		
			6	AS			74
			7	SS	21		
							73
							Bentonite
71.2							72
6.3	**GEORGIAN BAY FORMATION:** shale interbedded with limestone/siltstone layers, grey		8	SS	69		
71.0							
6.5	**SHALE BEDROCK:** Total Core Recovery = 96% Solid Core Recovery = 70% RQD = 37% Hard Layer (Limestone/Siltstone)= 27% Maximum Thickness of Hard Layer = 270mm		RUN 1	RC			71
69.5							
8.0	**SHALE BEDROCK:** Total Core Recovery = 100% Solid Core Recovery = 77% RQD = 77% Hard Layer (Limestone/Siltstone)= 27% Maximum Thickness of Hard Layer = 230mm		RUN 2	RC			70
							69
68.0							
9.5							68

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

July 09, 2018

July 10, 2018

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-29

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 200 mm
Date: Jul-09-2018

REF. NO.: 18-519-10
ENCL NO.: 24

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
	SHALE BEDROCK: Total Core Recovery = 100% Solid Core Recovery = 93% RQD = 93% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer ≤ 50mm(Continued)	RUN 3	RC		
66.6 / 10.9					
	SHALE BEDROCK: Total Core Recovery = 100% Solid Core Recovery = 98% RQD = 98% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 100mm	RUN 4	RC		66
65.2 / 12.3					
	SHALE BEDROCK: Total Core Recovery = 100% Solid Core Recovery = 97% RQD = 97% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 100mm	RUN 5	RC		65 64
63.6					
13.9	**END OF BOREHOLE** Notes: 1) Monitoring well was installed in the borehole upon completion. 2) Monitoring well was not accessible on Sept. 26, 2018. Area is covered with a stock-pile.				

Filter Pack
Slotted Pipe

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%): GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +³, ×³: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-30

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jun-26-2018

REF. NO.: 18-519-10
ENCL NO.: 26

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
77.2											
77.0 0.1	**ASPHALTIC CONCRETE:** 70mm										
76.8 0.4	**GRANULAR BASE:** 300mm		1	AS			77				
	SILTY CLAY: trace sand, shale fragments, grey, moist, hard										
1			2	SS	21		76		○		
75.7 1.5	**SHALE:** Georgian Bay Formation, weathered, grey		3	SS	50/ 75mm				○		
75.5 1.7	**END OF BOREHOLE**										

Notes:
1) Borehole dry and open upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-31

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200 mm
Date: Jul-17-2018

REF. NO.: 18-519-10
ENCL NO.: 28

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
77.3												
0.0 / 76.5	**FILL:** silty sand and gravel, grey, moist		1	AS			77					
0.8 / 73.5	**FILL:** silty clay, trace gravel, trace organics, grey, moist to wet, stiff to firm		2	SS	15		76					
			3	SS	7	▽						
			4	SS	5		75	W. L. 75.0 m during drilling				
			5	SS	5		74					
3.8 / 73.2	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 125mm							
4.1	**END OF BOREHOLE:** Notes: 1) Water level at 2.3 m during drilling											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-32

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 200 mm
Date: Jul-06-2018

REF. NO.: 18-519-10
ENCL NO.: 29

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
77.2							
0.0 / 76.4	**FILL:** sand and gravel, brown		1	AS			77
0.8 / 75.7	**FILL:** 19mm crusher run limestone, brick/concrete fragments, grey, wet, compact		2	SS	22		76
1.5 / 74.9	**FILL:**sandy silt mixed with gravel, trace clay, grey, wet, very dense		3	AS	50/ 25mm		75
2.3	**SAND AND GRAVEL:** grey, wet, very loose		4	SS	2	▽ W. L. 74.9 m Sep 26, 2018	
			5	SS	2		74
						Bentonite	
4.3 / 72.9	cobbles below 4 m		6	SS	50/ 50mm		73
4.3 / 72.2	**GEORGIAN BAY FORMATION:** shale interbedded with limestone/siltstone layers, grey Total Core Recovery = 67% Solid Core Recovery = 33% RQD = 33% Hard Layer (Limestone/Siltstone)=15% Maximum Thickness of Hard Layer =140mm		RUN 1	RC			
5.0	Total Core Recovery = 100% Solid Core Recovery = 84% RQD = 73% Hard Layer (Limestone/Siltstone)= 15% Maximum Thickness of Hard Layer =140mm		RUN 2	RC			72
6.4 / 70.8	Total Core Recovery = 100% Solid Core Recovery = 94% RQD = 94% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm		RUN 3	RC			71
						Filter Pack	70
8.0 / 69.2	Total Core Recovery = 100% Solid Core Recovery = 93% RQD = 93% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm		RUN 4	RC			69
9.4 / 67.8							68
						Slotted Pipe	

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

July 06, 2018

July 09, 2018

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ 8=3% Strain at Failure

LOG OF BOREHOLE BH18-32

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 200 mm
Date: Jul-06-2018

REF. NO.: 18-519-10
ENCL NO.: 29

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE & Sensitivity, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Total Core Recovery = 100% Solid Core Recovery = 93% RQD = 93% Hard Layer (Limestone/Siltstone)= 15% Maximum Thickness of Hard Layer = 100mm(Continued)		RUN 5	RC			67				
66.3 10.9	**END OF BOREHOLE:** Notes: 1) Monitoring well was installed in the borehole upon completion. 2) Water level in the monitoring well at 2.3m on Sept. 26, 2018.										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-33

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-04-2018

REF. NO.: 18-519-10
ENCL NO.: 30

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
79.5 / 0.0	**TOPSOIL:** 300mm											
79.2 / 0.3	**FILL:** silty clay, trace sand, grey, moist, compact		1	SS	52		79		○			
78.4 / 1.1	**SILTY CLAY TILL:** sandy, trace gravel, occasional cobble/boulder, brown, moist, stiff to hard		2	SS	14				○	125		
			3	SS	33		78		○ —	>225		2 23 46 29
			4	SS	55		77		○	>225		
			5	SS	62		76		○			
75.7 / 3.8	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 100mm							
75.5 / 4.0	**END OF BOREHOLE**											

Notes:
1) Borehole dry and open upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-34

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-04-2018

REF. NO.: 18-519-10
ENCL NO.: 31

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"							
80.1												
0.0 / 79.9	**TOPSOIL:** 200mm											
0.2 / 79.3	**FILL:** silty clay, trace gravel, dark grey, moist, loose		1	SS	8		80					
0.8	**CLAYEY SILT TILL:** trace gravel, brown, moist, very stiff to hard		2	SS	27		79			>225		
			3	SS	31					>225		
							78					
			4	SS	72							
77.0 / 3.1	**SHALE:** Georgian Bay Formation, weathered, grey		5	SS	50/ 100mm		77					
76.8 / 3.3	**END OF BOREHOLE**											

Notes:
1) Borehole dry and open upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-35

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-27-2018

REF. NO.: 18-519-10
ENCL NO.: 32

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
77.9												
77.8 0.1	**TOPSOIL :** 125 mm											
	FILL : clayey silt, trace gravel, trace cobbles, brown to grey, moist, loose to compact		1	SS	11				○			
			2	SS	20		77		○			
			3	SS	13		76		○			
			4	SS	10				○			
			5	SS	5		75		○			
73.7							74					
73.6 4.3	**SHALE:** Georgian Bay Formation, weathered, grey											Wet spoon
	END OF BOREHOLE: Notes: 1) Water level at 4.1 m upon completion of borehole.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-36

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-27-2018

REF. NO.: 18-519-10
ENCL NO.: 33

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
80.3 / 0.0	**TOPSOIL :**150 mm											
80.2 / 0.2	**FILL:** clayey silt, trace asphalt/concrete fragments, trace organics, grey to dark grey, moist, compact		1	SS	18		80					
78.8 / 1.5	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff		2	SS	12		79					
78.0 / 2.3	**SILTY CLAY:**some sand, brown, moist, hard		3	SS	25		78					
			4	SS	44							0 11 57 32
75.7 / 4.6			5	SS	50/ 100mm		77					
75.5 / 4.8	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 75mm		76					
	END OF BOREHOLE: Notes: 1) Borehole dry and open upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH18-37

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 150mm
Date: Jun-27-2018

REF. NO.: 18-519-10
ENCL NO.: 34

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
81.3 / 0.0	**TOPSOIL:** 230mm						
81.1 / 0.2	**FILL:** clayey silt, trace gravel, trace organics, brown, very moist, compact		1	SS	15		
80.6 / 0.7	**FILL:** sandy gravel/cobbles, grey, moist, compact		2	SS	19		
79.8 / 1.5	**CLAYEY SILT:** trace sand, trace gravel, brown, moist, hard		3	SS	44		
			4	SS	50/ 125mm		
78.2 / 3.1	**GEORGIAN BAY FORMATION:** shale interbedded with limestone/siltstone layers, grey Bedrock coring started at 3.8 m		5	SS	50/ 75mm		
77.5 / 3.8	Total Core Recovery = 62% Solid Core Recovery = 0% RQD = 0% Hard Layer (Limestone/Siltstone)= less than 5% Maximum Thickness of Hard Layer = 50mm		RUN 1	RC			
76.4 / 4.9	Total Core Recovery = 90% Solid Core Recovery = 68% RQD = 68% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm		RUN 2	RC			
74.9 / 6.4	Total Core Recovery = 100% Solid Core Recovery = 61% RQD = 56% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm		RUN 3	RC			
73.3 / 8.0	Total Core Recovery = 100% Solid Core Recovery = 94% RQD = 94% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 100mm		RUN 4	RC			
71.7 / 9.6							

W. L. 79.3 m
Sep 26, 2018

Bentonite

Filter Pack

Slotted Pipe

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

June 27, 2018

July 30, 2018

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3%: Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-37

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger/Rock Coring
Diameter: 150mm
Date: Jun-27-2018

REF. NO.: 18-519-10
ENCL NO.: 34

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Total Core Recovery = 100% Solid Core Recovery = 88% RQD = 88% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 100mm(Continued)		RUN 5	RC			71					
70.4 10.9	**END OF BOREHOLE** Notes: 1) Monitoring well was installed in the borehole upon completion. 2) Water level in the monitoring well at 2.0m on Sept. 26, 2018.											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-38

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-27-2018

REF. NO.: 18-519-10
ENCL NO.: 35

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
80.3							
0.0 / 80.1	**TOPSOIL:** 230mm						
0.2	**FILL:** clayey silt, trace gravel, trace cobbles, asphalt fragments, dark brown to dark grey, very moist, compact		1	SS	11		80
			2	SS	16		79
78.5							
1.8	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble/boulder, brown, moist, stiff to hard		3	SS	14		
			4	SS	58		78
			5	SS	50/ 100mm		77
75.7							76
4.6 / 75.5	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 50mm		
4.8	**END OF BOREHOLE**						

Notes:
1) Borehole dry and open upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-39

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-21-2018

REF. NO.: 18-519-10
ENCL NO.: 36

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
81.8 / 0.0	**TOPSOIL:** 250mm				
81.6 / 0.3	**FILL:** sandy silt mixed with topsoil, brown, moist, compact	1	SS	14	
81.0 / 0.8	**FILL:** silt to clayey silt, trace gravel, trace topsoil/organics, grey, moist, compact	2	SS	12	81
		3	SS	19	80
		4	SS	13	79
78.7 / 3.1	**SANDY SILT TILL :** trace to some clay, trace gravel, grey, moist, very dense	5	SS	50/ 125mm	78
77.2 / 4.6	**SILTY CLAY TILL:** sandy, trace gravel, grey, moist, hard	6	SS	65	77
		7	SS	64	76
		8	SS	38	75
72.7 / 9.1	**SILT :** some clay, trace gravel, grey, wet, dense	9	SS	36	74
					73
					72

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P — NATURAL MOISTURE CONTENT w — LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa): >225 >225 >225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%) — GR SA SI CL

Mud Rotary Drilling

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-39

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-21-2018

REF. NO.: 18-519-10
ENCL NO.: 36

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION
71.1	**SILT :** some clay, trace gravel, grey, wet, dense(Continued)				
10.7	**SILTY SAND TILL:** trace clay, trace gravel, grey, wet, very dense	10	SS	75	71
69.6					70
12.2	**SILTY CLAY TILL:** sandy, trace gravel, grey, moist, hard	11	SS	40	69
	seams of sand at 13.7 m	12	SS	50/ 150mm	68
66.6					67
15.2	**SILT:**trace clay, trace sand, grey, wet, dense	13	SS	44	66
65.0					65
16.8	**SILTY CLAY TILL:** sandy, seams of sand, trace gravel, grey, moist, hard	14	SS	84	64
63.5					63
18.3	**SILTY CLAY:**trace sand, grey, moist, hard	15	SS	64	62

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa): >225 | >225 | >225 | >225
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-39

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-21-2018

REF. NO.: 18-519-10
ENCL NO.: 36

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
61.4	**SILTY CLAY:**trace sand, grey, moist, hard(Continued)		16	SS	52				○	>225	
20.4	**END OF BOREHOLE:** Notes: 1) Water level at 9 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH18-40

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 37

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
81.8 / 0.0	**TOPSOIL:** 200mm								
81.6 / 0.2	**FILL:**clayey silt, trace topsoil/organics, shale fragments, dark brown, moist, compact	1	SS	16					
80.3 / 1.5	**CLAYEY SILT TILL :** sandy, trace gravel, brown, moist, stiff	2	SS	12		81			
79.5 / 2.3	**SANDY SILT TO SILTY SAND:** trace clay, brown, wet, very dense	3	SS	10	▽	80	125		
78.7 / 3.1	**SAND AND GRAVEL:** trace silt, grey, wet, very dense	4	SS	50/ 100mm	W. L. 79.5 m during drilling	79			
77.2 / 4.6	**SILTY CLAY TILL :** sandy, trace gravel, grey, moist, hard	5	SS	52		78			Wet Spoon
75.7 / 6.1	**SANDY SILT :** trace clay, grey, wet, very dense	6	SS	34		77			
74.2 / 7.6	**SILTY CLAY TILL :** sandy, trace gravel, grey, moist, hard	7	SS	58		76			0 23 70 7
	interbed of sand at 9.1 m	8	SS	44		75	>225		
		9	SS	66		74	>225		
						73			
						72			

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-40

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 37

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	SILTY CLAY TILL : sandy, trace gravel, grey, moist, hard(Continued)									
11			10	SS	90		71	>225		
12			11	SS	73		70	>225		
13			12	SS	23		69	175		
14			13	SS	31		68	>225		
15			14	SS	30		67	175		
16			15	SS	30		66	>225		
17							65			
18							64			
19							63			
20 62.0 19.8							62			

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-40

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-25-2018

REF. NO.: 18-519-10
ENCL NO.: 37

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
61.4	**SILTY CLAY:** trace sand, grey, moist, very stiff(Continued)		16	SS	26				○	200		
20.4	**END OF BOREHOLE** Notes: 1) Water level at 2.3 mbgl during drilling											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-41

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150 mm
Date: Jul-26-2018

REF. NO.: 18-519-10
ENCL NO.: 38

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION
83.3 / 0.0	**TOPSOIL:** 152mm						
83.1 / 0.2	**FILL:** clayey silt, trace rootlet, trace asphalt, brown, moist, stiff		1	SS	12		83
			2	SS	12		
81.8 / 1.5	**SILT :** some sand, trace clay, brown, wet, loose		3	SS	5		82
81.0 / 2.3	**CLAYEY SILT TILL :** some sand, trace gravel, trace cobble, brown to grey, moist, very stiff to hard		4	SS	18		81
			5	SS	50/ 127mm		80
78.7 / 4.6	**SILT :** some sand, trace clay, grey, very moist to wet, dense		6	SS	32		79
77.2 / 6.1	**CLAYEY SILT TILL :** some sand, trace gravel, trace cobble, grey, moist, hard		7	SS	50/ 127mm		78
75.7 / 7.6	**SHALE:** Georgian Bay Formation, weathered, grey		8	SS	50/ 100mm		77
75.5 / 7.8	**END OF BOREHOLE** Notes: 1) Borehole open and dry upon completion						76

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)
METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH18-42

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-29-2018

REF. NO.: 18-519-10
ENCL NO.: 39

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
85.7 / 0.0	**TOPSOIL:** 350 mm					
85.4 / 0.3	**FILL:** silty sand, trace topsoil/rootlets, some gravel, brown, moist, compact	1	SS	10		
84.9 / 0.8	**FILL:**sandy silt, trace clay, brown, wet, loose	2	SS	4		85
84.2 / 1.5	**FILL:** clayey silt, trace organics, grey, moist, stiff	3	SS	9		
		4	SS	11		84
82.3 / 3.4	**SANDY SILT:** trace clay, brown, moist, compact	5	SS	10		
81.1 / 4.6	**CLAYEY SILT TILL:** trace gravel, brown, moist, hard	6	SS	50/ 150mm		83
79.6 / 6.1	**SHALE:** Georgian Bay Formation, weathered, grey	7	SS	50/ 100mm		82
79.4 / 6.3	**END OF BOREHOLE**					81
	Notes: 1) Borehole dry and open upon completion.					80

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa): >225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-43

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-29-2018

REF. NO.: 18-519-10
ENCL NO.: 40

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
83.5												
0.0 / 83.2	**TOPSOIL:** 350mm											
0.3 / 82.7	**FILL:** clayey silt, brown, moist, stiff		1	SS	10		83		○			
0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff to hard		2	SS	24				○			
			3	SS	28		82		○	>225		
	grey below 2.3 m		4	SS	33		81		○			
80.4												
3.1 / 80.1	**SHALE:** Georgian Bay Formation, weathered, grey		5	SS	50/ 125mm				○			
3.4	**END OF BOREHOLE**											

Notes:
1) Borehole open and dry upon completion

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH18-44

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-29-2018

REF. NO.: 18-519-10
ENCL NO.: 41

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
83.9							
0.0 / 83.6	**TOPSOIL:** 350mm		1	SS	7		
0.3 / 83.1	**FILL:** clayey silt, trace organics, brown, moist, firm						
0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, stiff to hard		2	SS	14		83
			3	SS	23		82
	trace shale fragments below 2.6 m		4	SS	35		81
			5	SS	43		
80.1							
3.8 / 79.9	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 100mm		80
4.0	**END OF BOREHOLE**						

Notes:
1) Borehole open and dry upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
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LOG OF BOREHOLE BH18-45

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-29-2018

REF. NO.: 18-519-10
ENCL NO.: 42

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
83.0							
0.0 / 82.6	**TOPSOIL:** 400mm		1	SS	14		
0.4 / 81.5	**FILL:** sand and gravel, trace concrete/ brick pieces, brown, moist, compact		2	SS	17		82
1.5 / 80.7	**SILT TO CLAYEY SILT:** brown, moist, stiff		3	SS	13		81
2.3 / 79.2	**SILTY CLAY TILL:** trace gravel, grey, moist, very stiff to hard		4	SS	25		80
			5	SS	50/ 100mm		
3.8 / 78.7	**GEORGIAN BAY FORMATION:** shale interbedded with limestone/siltstone layers, grey Bedrock Coring started at 4.3 m		6	SS	50/ 50mm		79
4.3 / 78.1	**SHALE BEDROCK:** Total Core Recovery = 83% Solid Core Recovery = 75% RQD = 50%		RUN 1	RC			
4.9 / 76.6	Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 50mm Total Core Recovery = 100% Solid Core Recovery = 93% RQD = 65% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 75mm		RUN 2	RC			78 77
6.4 / 75.1	**SHALE BEDROCK:** Total Core Recovery = 100% Solid Core Recovery = 57% RQD = 72% Hard Layer (Limestone/Siltstone)= less than 10% Maximum Thickness of Hard Layer = 75mm		RUN 3	RC			76
7.9	**END OF BOREHOLE**						

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa): >225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

June 29, 2018

July 27, 2018

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity ○ $^{\varepsilon_f}$=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-46

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-17-2018

REF. NO.: 18-519-10
ENCL NO.: 43

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
81.4									
0.0	**FILI:** sand and gravel, grey, moist	1	AS			81			
80.6									
0.8	**SILTY CLAY TILL :** sandy, trace gravel, brown, moist, hard to very stiff	2	SS	16		80	>225		
		3	SS	48					
	grey below 2.3 m	4	SS	33		79	>225		
		5	SS	36		78	>225		
		6	SS	24		77	200		
		7	SS	22		76	200		
73.8					▽	75			
7.6	**SANDY SILT :** trace to some clay, grey, wet, compact to very dense	8	SS	24	W. L. 73.8 m during drilling	74			
		9	SS	94		73			
						72			

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-46

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-17-2018

REF. NO.: 18-519-10
ENCL NO.: 43

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
70.7	**SANDY SILT :** trace to some clay, grey, wet, compact to very dense(Continued)						71
10.7	**SILT TO SANDY SILT:** trace to some clay, grey, moist to very moist, very dense		10	SS	50		70
			11	SS	50/ 127mm		69
67.7							68
13.7	**CLAYEY SILT:** trace sand, grey, moist, hard		12	SS	77		67
			13	SS	36		66
			14	SS	31		65
			15	SS	51		64
61.6							63
19.8							62

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
>225		
>225		

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH18-46

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-17-2018

REF. NO.: 18-519-10
ENCL NO.: 43

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
61.0	**SILT :** some clay, grey, wet, very dense(Continued)		16	SS	62		61		○		
20.4	**END OF BOREHOLE:** Notes: 1) Water level at 7.6 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-47

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jun-28-2018

REF. NO.: 18-519-10
ENCL NO.: 44

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
82.4 / 0.0	**TOPSOIL:** 200mm					
82.2 / 0.2	**FILL:** silty clay, trace gravel, brown, moist, loose	1	SS	5		82
81.6 / 0.8	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, very stiff to stiff	2	SS	18		
		3	SS	22		81
	grey below 2.3 m	4	SS	13		80
79.3 / 3.1	**SILT:** some clay, trace sand, grey, moist, compact	5	SS	21		79
77.8 / 4.6	**SILTY SAND TO SANDY SILT:** trace clay, trace gravel, grey, wet, dense	6	SS	32	▽	78
76.3 / 6.1	**SHALE:** Georgian Bay Formation	7	SS	50/ 100mm		77
76.1 / 6.3	**END OF BOREHOLE**					

Notes:
1) Water level at 4.6 mbgl during drilling

W. L. 77.8 m during drilling

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH18-48

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-05-2018

REF. NO.: 18-519-10
ENCL NO.: 45

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
81.1 / 0.0	**TOPSOIL:** 200mm						81
80.9 / 0.2	**FILL :** clayey silt mixed with asphalt, trace organics, some sand, dark grey, moist, compact		1	SS	17		
1			2	SS	11		80
79.6 / 1.5	**CLAYEY SILT TILL:** sandy, trace gravel, greyish brown, moist, very stiff		3	SS	17		79
2 / 78.8 / 2.3	**SANDY SILT TILL :** trace to some clay, trace gravel, brown, moist, dense		4	SS	34		
3 / 78.0 / 3.1	**SILTY SAND :** trace clay, brown, wet, very dense		5	SS	50/ 150mm	▽ W. L. 78.0 m during drilling	78
4							77
76.5 / 4.6	**SAND:** trace silt, trace gravel, grey, wet, very dense		6	SS	66		
5 / 75.0 / 6.1	**SILTY SAND:** trace clay, grey, wet, very dense		7	SS	87		76
7							75
8			8	SS	50/ 50mm		74
9 / 72.0 / 9.1	**SAND AND GRAVEL:** trace silt, grey, wet, very dense		9	SS	50/ 150mm		73
10							72

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

LOG OF BOREHOLE BH18-48

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-05-2018

REF. NO.: 18-519-10
ENCL NO.: 45

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
	SAND AND GRAVEL: trace silt, grey, wet, very dense(Continued)						71
11			10	SS	50/ 100mm		70
12 68.9							69
12.2	**SILTY SAND:** trace clay, grey, wet, very dense		11	SS	57		
13 67.4							68
13.7	**SILT :** trace clay, grey, wet, very dense		12	SS	50/ 150mm		
14 15 65.8							67
15.3	**SILTY CLAY TILL :** some sand to sandy, trace gravel, grey, moist hard		13	SS	79		66
16 64.3							65
16.8	**SILTY CLAY:** trace sand, grey, moist, hard		14	SS	47		64
17 18 62.8							63
18.3	**SILT TO CLAYEY SILT:** trace sand, grey, very moist, very dense		15	SS	50		62
19 20							

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)
>225
>225
>225

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ε=3% Strain at Failure

LOG OF BOREHOLE BH18-48

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-05-2018

REF. NO.: 18-519-10
ENCL NO.: 45

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	METHANE AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
60.7	**SILT TO CLAYEY SILT:** trace sand, grey, very moist, very dense(Continued)		16	SS	64		61			>225	
20.4	**END OF BOREHOLE:** Notes: 1) Water level at 3.1 mbgl during drilling										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_f=3% Strain at Failure

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LOG OF BOREHOLE BH18-49

PROJECT: Preliminary Geotechnical Investigation- Proposed Development
CLIENT: Lakeview Community Partners Ltd.
PROJECT LOCATION: 800 Hydro Road, Mississauga, ON
DATUM: Geodetic
BOREHOLE LOCATION: See Drawing 1

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 150mm
Date: Jul-04-2018

REF. NO.: 18-519-10
ENCL NO.: 46

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
80.8							
0.0 / 80.8	**TOPSOIL:** 200 mm						
0.2 / 80.0	**FILL:** silty clay, trace asphalt, some gravel, dark grey, moist, firm		1	SS	5		
0.8 / 78.5	**FILL :** sandy silt, dark grey, moist, very dense		2	SS	50/ 50mm		
			3	SS	50/ 75mm		
2.3 / 76.3	**SANDY SILT TILL :** some clay, trace gravel, grey, moist, compact to dense		4	SS	29		
			5	SS	31		
4.5 / 76.1	**SHALE:** Georgian Bay Formation, weathered, grey		6	SS	50/ 25mm		
4.7	**END OF BOREHOLE:**						

Notes:
1) Borehole dry and open upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

METHANE AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS SOIL LOG 18-519-10 800 HYDRO ROAD.GPJ DS.GDT 18-10-12

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LOG OF BOREHOLE BH22-13

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-19-2022

REF. NO.: 22-200-100
ENCL NO.:

ELEV / DEPTH (m)	DESCRIPTION	NUMBER	TYPE	BLOWS / 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 180mm					
0.2	**GRANULAR BASE:** sand and gravel, 380mm	1	SS	23		
0.6	**FILL:** crusher run limestone, brown, wet, compact					
0.8	**FILL:** silty clay, some organics, some sand, trace gravel, grey, moist, stiff to very stiff	2	SS	10		
		3	SS	22		
2.3	**SILTY CLAY TILL:** some sand, some gravel, brown, moist, hard	4	SS	50		13 18 47 22
	trace shale fragments below 3.0m	5	SS	75		
3.7	**END OF BOREHOLE:**					

Notes:
1) Augar refusal @3.7m due to possible shale bedrock.
2) 50mm dia. monitoring well installed upon completion.
3) Water Level Readings:

Date: Water Level(mbgl):

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%): 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-15

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-15-2022

REF. NO.: 22-200-100
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
0.0	**GRANULAR FILL:** sand and gravel, 280mm		1	SS	21		
0.3	**FILL:** sand & gravel, trace brick pieces, grey, moist, compact						
0.8	**FILL:** silty clay, trace organics, grey, moist, firm		2	SS	5		
1.5	**CLAYEY SILT:** trace sand, trace gravel, brown, moist, stiff		3	SS	11		
2.3	**CLAYEY SILT TILL:** sandy, trace gravel, occasional cobble, brown, moist, hard		4	SS	44		
			5	SS	86		
	grey below 6.1m		6	SS	47		
			7	SS	50		
			8	SS	46		
8.2	**END OF BOREHOLE:**						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-16

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-18-2022

REF. NO.: 22-200-100
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 150mm											
0.2	**GRANULAR BASE:** sand and gravel, 250mm		1	SS	9							
0.4	**FILL:** silty clay, some organics, some sand, trace gravel, grey, moist, stiff											
1			2	SS	11							
1.2	**SILT TO CLAYEY SILT:** trace sand, brown, moist, stiff to hard											
2			3	SS	30							0 7 76 17
2.3	**CLAYEY SILT:**, trace sand, trace gravel, brown, moist, hard											
3			4	SS	77							
3.1	**SHALE BEDROCK:** grey,		5	SS	50/							
3.2	weathered **END OF BOREHOLE:**				130mm							

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-17

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-18-2022

REF. NO.: 22-200-100
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 150mm											
0.2	**GRANULAR BASE:** sand and gravel, 380mm		1	SS	12							
0.5	**FILL:** crusher run limestone											
0.8	**FILL:** clayey silt, trace organics, grey, moist, firm to very stiff		2	SS	7							
1.7	**SILTY CLAY TILL:** some sand, trace to some gravel, trace shale fragements, brown, moist, very stiff to hard		3	SS	29							
			4	SS	54							10 10 56 24
	augar refusal at 3.1m on possible shale bedrock											
3.1	**END OF BOREHOLE:**											

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-18

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-18-2022

REF. NO.: 22-200-100
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 130mm										
0.1	**GRANULAR BASE:** sand and gravel, 380mm		1	SS	16						
0.5	**FILL:** silty clay, some organics, trace asphalt, grey, moist, firm to very stiff		2	SS	6						
1.5	**SILT TO CLAYEY SILT:** trace sand, trace gravel, brown to grey, moist, very stiff to hard		3	SS	15						
			4	SS	31						
			5	SS	29						
	no recovery@4.3m		6	SS	50/ 25mm						
4.4	augar refusal on possible shale bedrock **END OF BOREHOLE:**										

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH22-21

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-19-2022

REF. NO.: 22-200-100
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
0.0	**ASPHALT:** 150mm						
0.2	**GRANULAR BASE:** sand and gravel, 380mm		1	SS	13		
0.5	**FILL:** sand, some asphalt pieces, trace gravel, dark brown, moist, loose to compact						
1.0	**SILTY CLAY:** trace sand, trace gravel, brown, moist, stiff to very stiff		2	SS	8		
			3	SS	20		
			4	SS	25		
3.1	**CLAYEY SILT TILL/SHALE COMPLEX:** trace sand, trace gravel, grey, moist, hard		5	SS	69		
4.5	**SHALE BEDROCK:** grey, weathered		6	SS	50/ 50mm		
4.7	**END OF BOREHOLE:**						

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	4	68	28

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-4

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-15-2022

REF. NO.: 22-200-100
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 180mm										
0.2	**GRANULAR BASE:** sand and gravel, 460mm		1	SS	4				○		
0.6	**FILL:** crusher run limestone										
0.8	**SILT TO CLAYEY SILT:** trace sand, trace gravel, brown, moist, very stiff to hard		2	SS	17				○ — ○		2 8 62 28
			3	SS	30				○		
2.3	**CLAYEY SILT TILL:** sandy, trace gravel, brown, moist, hard		4	SS	50/ 25mm				○		
2.4	**SHALE BEDROCK:** Georgian Bay Formation, grey, weathered TCR=75%, SCR=14%, RQD=0		R1	RC	50/ 75mm						
3.4	TCR=96%, SCR=98%, RQD=28% Hard layer=18%, Maximum hard layer thickness=50mm		R2	RC							
4.9	TCR=93%, SCR=90%, RQD=63% Hard layer=1%, Maximum hard layer thickness=25mm		R3	RC							
6.4	TCR=100%, SCR=98%, RQD=70% Hard layer=9%, Maximum hard layer thickness=25mm		R4	RC							
7.8	**END OF BOREHOLE:**										

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

DS CONSULTANTS LTD.
Geotechnical ◆ Environmental ◆ Materials ◆ Hydrogeology

LOG OF BOREHOLE BH22-6

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-15-2022

REF. NO.: 22-200-100
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 200mm											
0.2	**GRANULAR BASE:** sand and gravel, 380mm		1	SS	8				○			
0.6	**FILL:** silty clay, some organics, brown, moist, stiff											
0.8	**CLAYEY SILT TILL:** some sand, trace gravel, brown, moist, stiff to hard		2	SS	11				○			
	trace shale fragments below 1.5m		3	SS	50				○			
2.3	**SHALE BEDROCK:** grey, weathered		4	SS	50/ 50mm							
3.1	**END OF BOREHOLE:**											

Notes:
1) 50mm dia. monitoring well installed upon completion.
2) Water Level Readings:

Date: Water Level(mbgl):

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

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LOG OF BOREHOLE BH22-8

PROJECT: Geotechnical Investigation
CLIENT: Rangeview Estate Precinct Development
PROJECT LOCATION: 855 Rangeview Road, Mississauga, ON
DATUM: Geodetic
BH LOCATION: See Drawing 1

DRILLING DATA
Method: Solid Stem Auger
Diameter: 150mm
Date: Jul-15-2022

REF. NO.: 22-200-100
ENCL NO.:

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**ASPHALT:** 130mm										
0.1	**GRANULAR FILL:** sand and gravel, 330mm		1	SS	12						
0.5	**FILL:** clayey silt, trace organics, trace gravel, brown, moist, stiff										
0.8	**CLAYEY SILT TILL/SHALE COMPLEX:** trace sand, trace gravel, brown to grey, moist, stiff to hard		2	SS	14						no recovery
			3	SS	53						
2.3	**SHALE BEDROCK:** weathered, grey		4	SS	50/ 150mm						
2.6	**END OF BOREHOLE:**										

DRAFT

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: +3, ×3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

Appendix B
Water Supply Support Information

Appendix B-1

Lakeview Community – Water Modelling Methodology and Analysis

(TMIG, 2021)

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

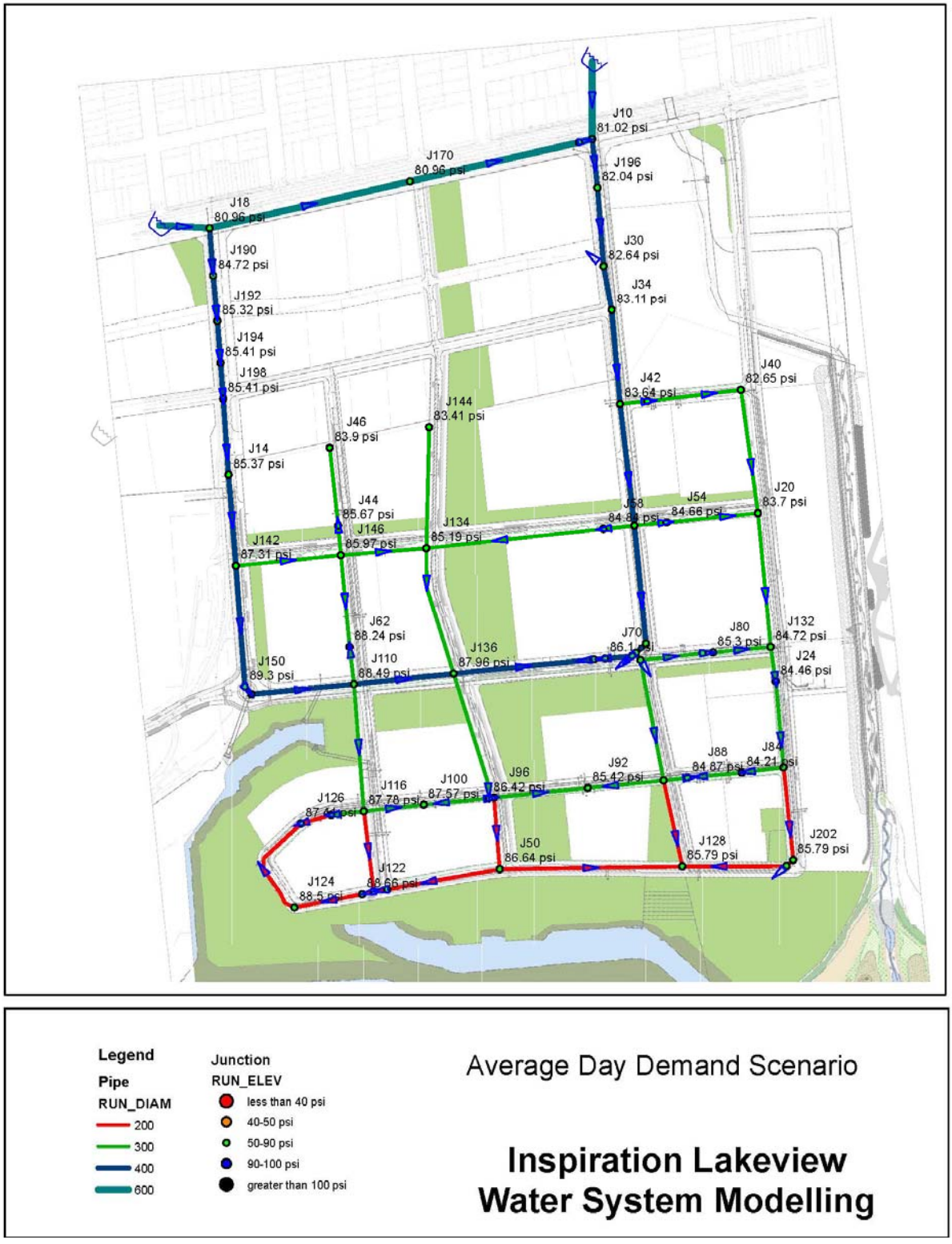


FIGURE 2 MAXIMUM DAY DEMAND SCENARIO PRESSURE

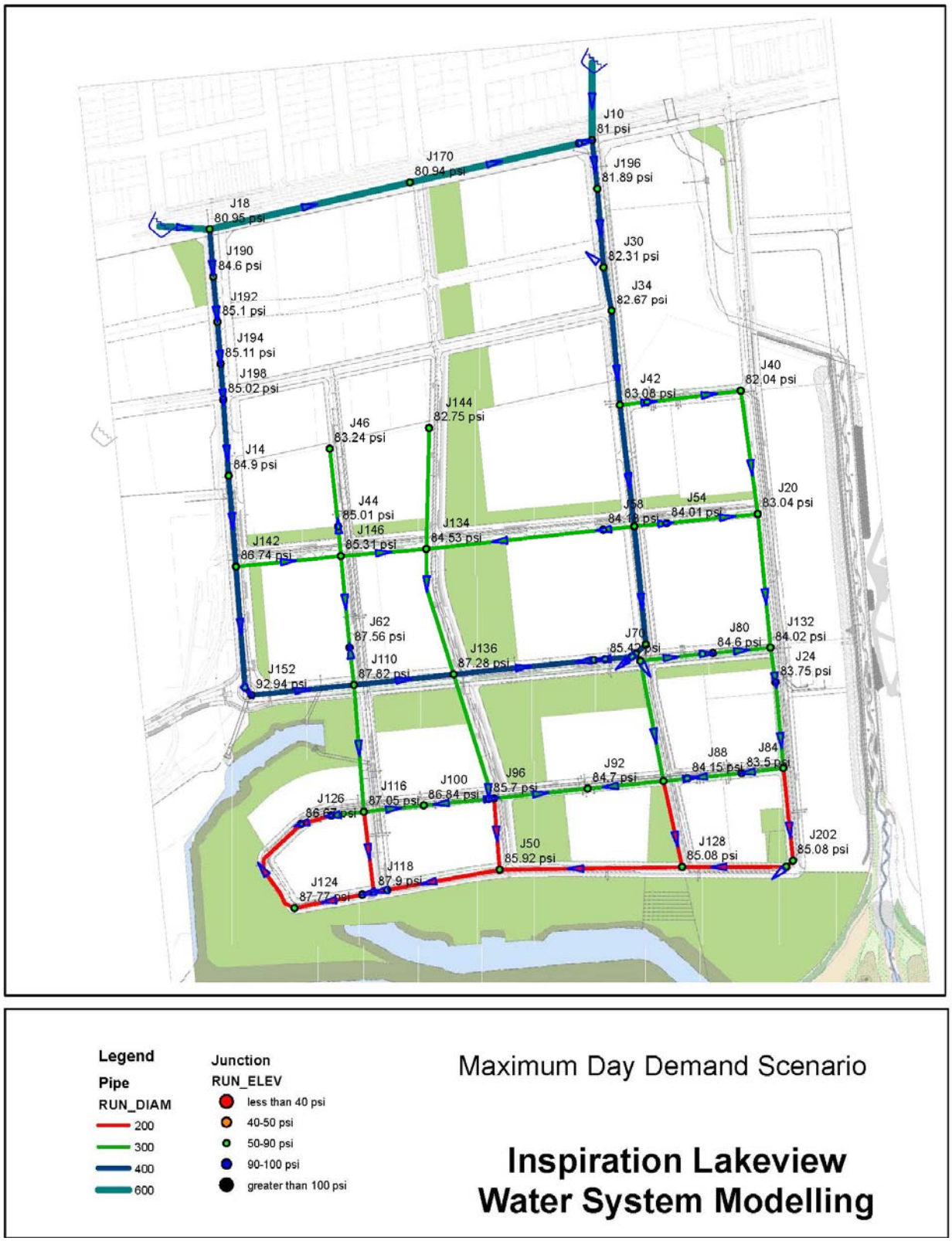


FIGURE 3 PEAK HOUR DEMAND SCENARIO PRESSURE

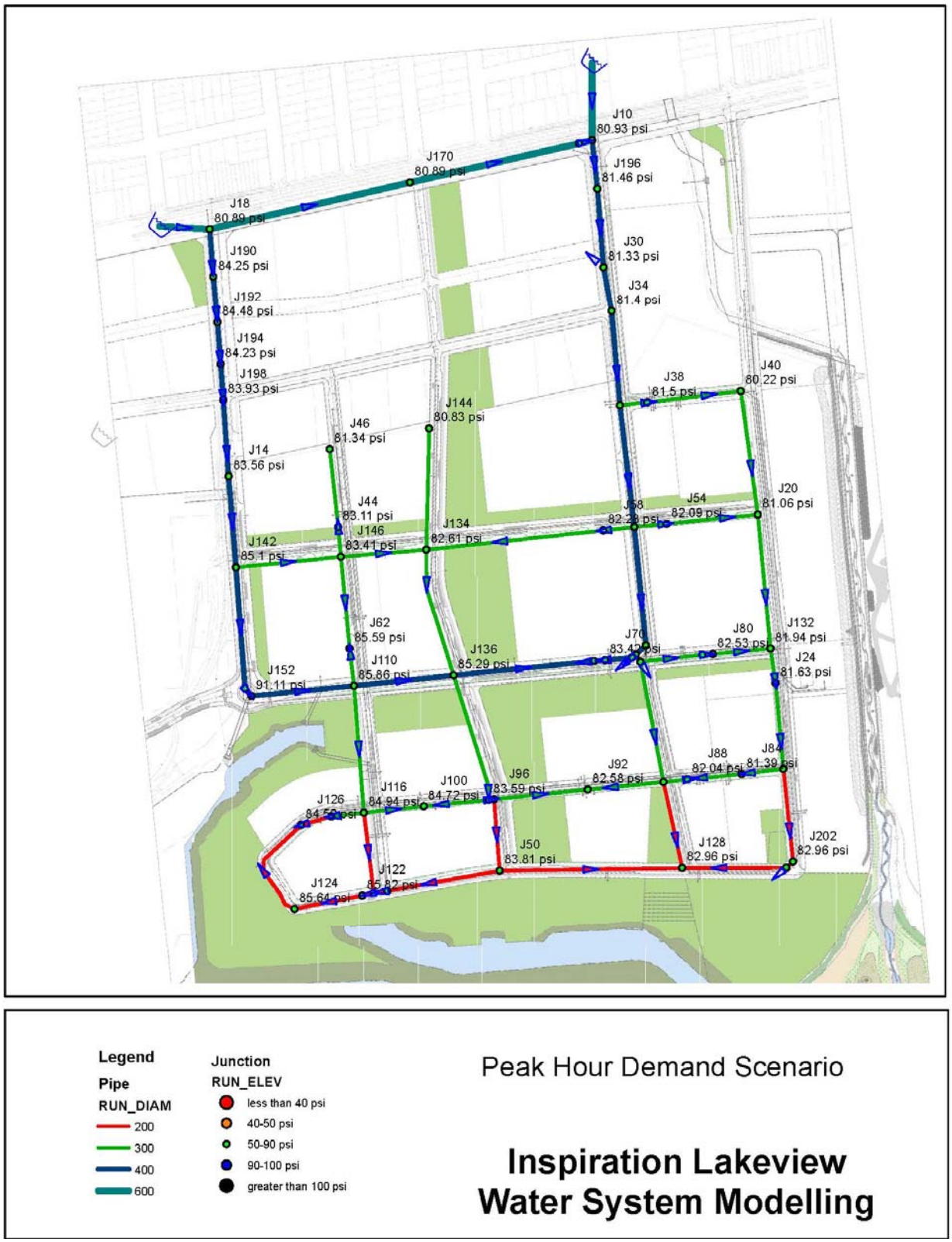


FIGURE 4 MAXIMUM DAY PLUS FIRE FLOW SCENARIO AVAILABLE FIREFLOW

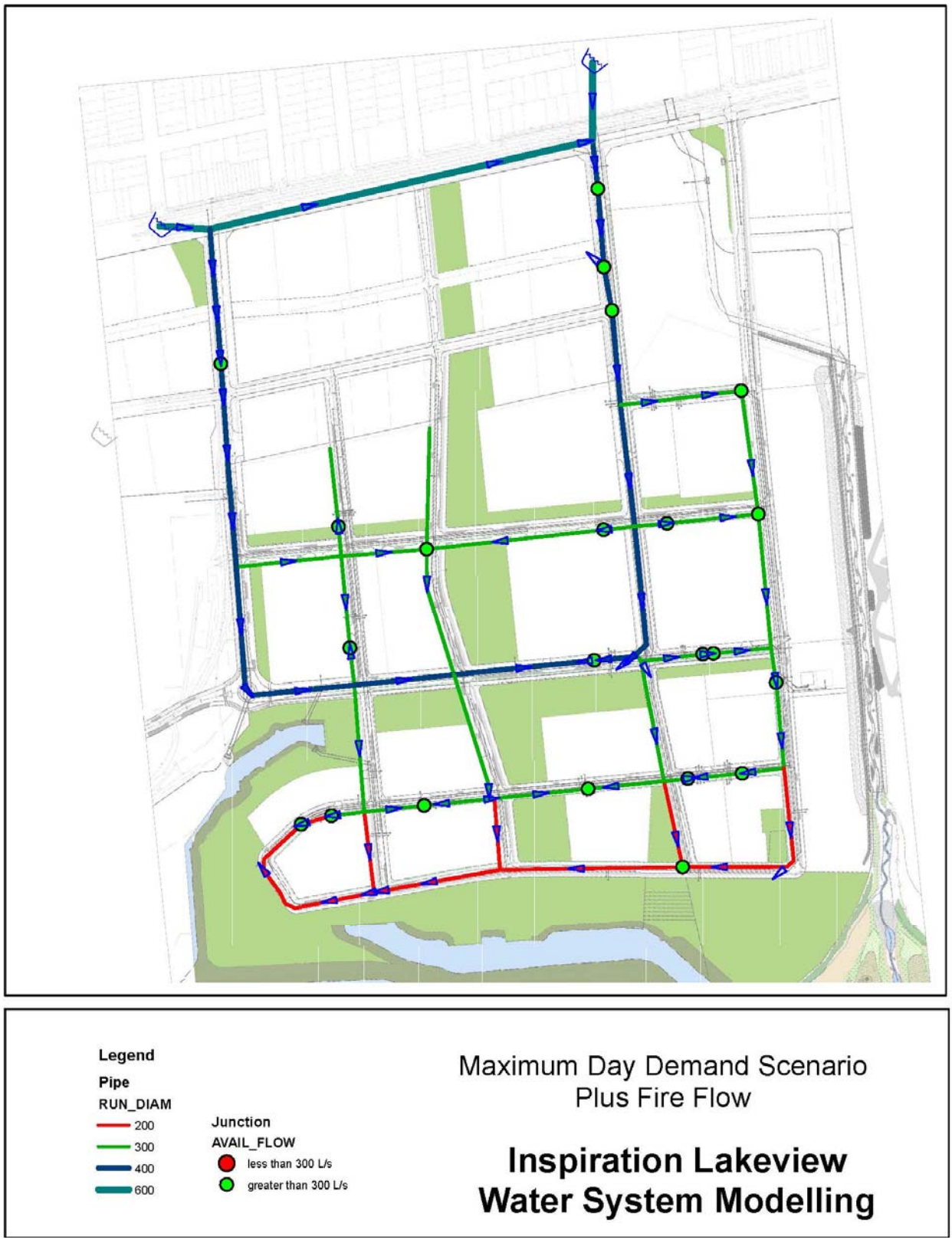
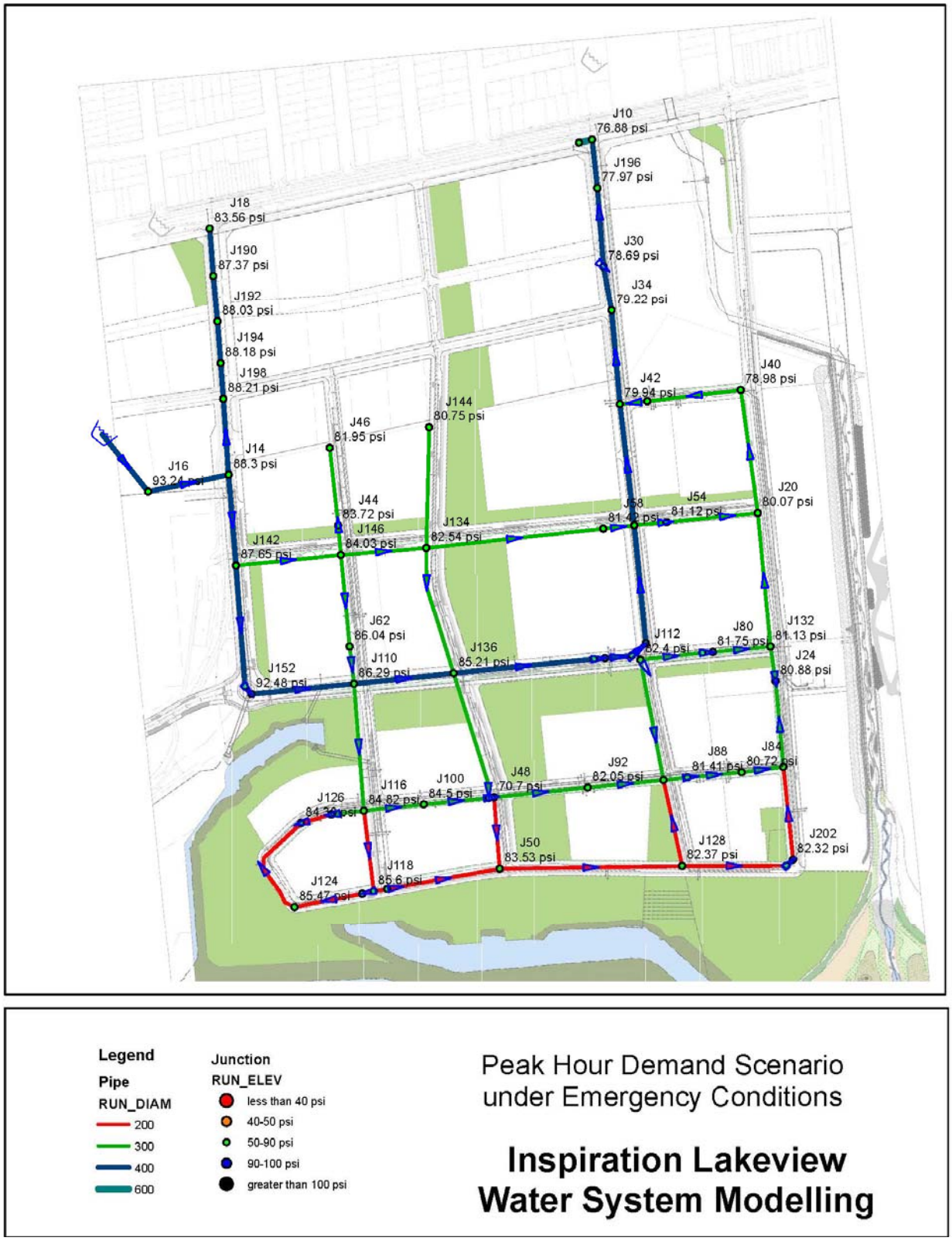


FIGURE 5 PEAK HOUR DEMAND UNDER EMERGENCY CONDITIONS



APPENDIX A


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

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 E 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

Appendix B-2

E-mail Correspondence with the Region of Peel: Equivalent Population Values

Jonathan Nishio

From: Janaani Pathmanapan
Sent: October 3, 2022 10:17 AM
To: Jonathan Nishio
Subject: FW: Request for some information - San Trunk under Lakeshore Road East draining to Beechwood SPS

Hi Jonathan,

We received a response back for the townhouse densities – 3.5ppu

---

From: Motamedi, Kolsoom <kolsoom.motamedi@peelregion.ca>
Sent: October 3, 2022 10:03 AM
To: Koryun Shahbikian <kshahbikian@schaeffers.com>; Polga, Miriam <miriam.polga@peelregion.ca>; Borowiec, Laura <laura.borowiec@peelregion.ca>; Lee, Justin <Justin.Lee@peelregion.ca>; Leyburne, Troy <troy.leyburne@peelregion.ca>
Cc: Michael May <mikem@deltaurban.com>; Andrew Lam <andrewl@deltaurban.com>; Myron Pestaluky <myronp@deltaurban.com>; Hovig Tozcu <hhtozcu@schaeffers.com>; Janaani Pathmanapan <jpathmanapan@schaeffers.com>; Heather Milukow <hmilukow@schaeffers.com>; LeDrew, Lyle <lyle.ledrew@peelregion.ca>
Subject: RE: Request for some information - San Trunk under Lakeshore Road East draining to Beechwood SPS

Hi Koryun,

For your information, The plan is that all flow from the Beach Street Sewage Pumping Station drainage areas will be conveyed by gravity to the Beechwood SPS, through the proposed Aviation Trunk and Lakeshore Road East trunk.
My understanding is that the entire flow from the Rangeview development is planned to be conveyed to the future Lakeshore Road gravity sewer.
For the townhouse please use 3.5 people per unit.

Thanks and Regards,

Kolsoom Motamedi, P.Eng., PMP
Project Manager
Infrastructure Planning - Growth
Public Works, Region of Peel
10 Peel Centre Drive, Suite A, 4th Floor
Brampton, ON L6T 4B9
Tel. (905) 791-7800, ext. 4196
Kolsoom.Motamedi@peelregion.ca

From: Koryun Shahbikian <kshahbikian@schaeffers.com>
Sent: Monday, October 3, 2022 9:46 AM

To: Motamedi, Kolsoom <kolsoom.motamedi@peelregion.ca>; Polga, Miriam <miriam.polga@peelregion.ca>; Borowiec, Laura <laura.borowiec@peelregion.ca>; Lee, Justin <Justin.Lee@peelregion.ca>; Leyburne, Troy <troy.leyburne@peelregion.ca>
Cc: Michael May <mikem@deltaurban.com>; Andrew Lam <andrewl@deltaurban.com>; Myron Pestaluky <myronp@deltaurban.com>; Hovig Tozcu <hhtozcu@schaeffers.com>; Janaani Pathmanapan <jpathmanapan@schaeffers.com>; Heather Milukow <hmilukow@schaeffers.com>; LeDrew, Lyle <lyle.ledrew@peelregion.ca>
Subject: RE: Request for some information - San Trunk under Lakeshore Road East draining to Beechwood SPS

CAUTION: EXTERNAL MAIL. DO NOT CLICK ON LINKS OR OPEN ATTACHMENTS YOU DO NOT TRUST.

Hi Kolsoom,
Thanks for your prompt reply.
I will try to provide some clarifications but we will try to provide answers to all your four items through a separate email later.
Concerning item 4, we estimated the population based on units but we used the ppu that we got from the region for another project. The ppu was slightly less than what you have mentioned so we are going to revise our population based on 2.7 ppu per apartment unit. Please also let us know what ppu we should consider for townhouses.
Concerning trunk sewer, in our previous meetings with the region, we were told that all flows from range view should be drained to Beechwood SPS. If you recall, we originally had a plan to split the flow and use the lakeshore trunk as well as Beach Street SPS.
I will talk to LOG for phasing questions and we will provide information.
Thanks,

Koryun Shahbikian, LLB, LLM, M.Eng., P.Eng.
Partner

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From: Motamedi, Kolsoom <kolsoom.motamedi@peelregion.ca>
Sent: October 3, 2022 9:00 AM
To: Koryun Shahbikian <kshahbikian@schaeffers.com>; Polga, Miriam <miriam.polga@peelregion.ca>; Borowiec, Laura <laura.borowiec@peelregion.ca>; Lee, Justin <Justin.Lee@peelregion.ca>; Leyburne, Troy

<troy.leyburne@peelregion.ca>
Cc: Michael May <mikem@deltaurban.com>; Andrew Lam <andrewl@deltaurban.com>; Myron Pestaluky <myronp@deltaurban.com>; Hovig Tozcu <hhtozcu@schaeffers.com>; Janaani Pathmanapan <jpathmanapan@schaeffers.com>; Heather Milukow <hmilukow@schaeffers.com>; LeDrew, Lyle <lyle.ledrew@peelregion.ca>
Subject: RE: Request for some information - San Trunk under Lakeshore Road East draining to Beechwood SPS

Hi Koryun,

Thank you for updating us about Rangview development. Troy Leyburne is the project manager for this project, so I have copied him and also Lyle LeDrew, Manager of wastewater Engineering Service.
The detailed drawings are not ready yet. I had a meeting with Engineering Service and the following information should be clarified.

1- Rangeview project phasing, when service be required
2- Coordination with regards to the connection point location
3- What is your plan for conveying sanitary flows to the future trunk on Lakeshore Road East
4- The final proposed population, at this stage people per unit, be considered (2.7 ppu for apartment buildings and 4.2 for single detached)

Please do not hesitate to contact me if you have any questions.

Thanks and Regards,

Kolsoom Motamedi, P.Eng., PMP
Project Manager
Infrastructure Planning - Growth
Public Works, Region of Peel
10 Peel Centre Drive, Suite A, 4th Floor
Brampton, ON L6T 4B9
Tel. (905) 791-7800, ext. 4196
Kolsoom.Motamedi@peelregion.ca

From: Koryun Shahbikian <kshahbikian@schaeffers.com>
Sent: Saturday, October 1, 2022 9:21 AM
To: Motamedi, Kolsoom <kolsoom.motamedi@peelregion.ca>; Polga, Miriam <miriam.polga@peelregion.ca>; Borowiec, Laura <laura.borowiec@peelregion.ca>; Lee, Justin <Justin.Lee@peelregion.ca>
Cc: Michael May <mikem@deltaurban.com>; Andrew Lam <andrewl@deltaurban.com>; Myron Pestaluky <myronp@deltaurban.com>; Hovig Tozcu <hhtozcu@schaeffers.com>; Janaani Pathmanapan <jpathmanapan@schaeffers.com>; Heather Milukow <hmilukow@schaeffers.com>
Subject: RE: Request for some information - San Trunk under Lakeshore Road East draining to Beechwood SPS

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Appendix B-3

Water Demand Calculations

Water Supply Calculations

Project Title: 4938 - Rangeview
Last Edited: 2022-10-28

Municipality Region of Peel

Project: 4938 Rangeview Mississauga
2022-10-28

Design Criteria

Unit Type	Population Density	Unit	Source
Rowhouses/Other Multiples	3.5	ppu	Per correspondence with Region of Peel (Oct 3, 2022)
Apartment	2.7	ppu	Per correspondence with Region of Peel (Oct 3, 2022)

Land Use	Population Density	Unit	Source
Single Family (>10m frontage)	50	ppha	Per Region of Peel Sanitary Sewer Design Criteria (July 2009)
Single Family (<10m frontage)	70	ppha	Per Region of Peel Sanitary Sewer Design Criteria (July 2009)
Semi-detached	70	ppha	Per Region of Peel Sanitary Sewer Design Criteria (July 2009)
Row dwellings	175	ppha	Per Region of Peel Sanitary Sewer Design Criteria (July 2009)
Apartments	475	ppha	Per Region of Peel Sanitary Sewer Design Criteria (July 2009)

							Townhouse Units					**Mid-rise Units**	**Tall Building Units**	**Equivalent Population**					
							Townhouses	*Back-to-Back Townhouses*	*Stacked Townhouses*	*Stacked Back-to-Back Townhouses*	*Apartments*	*Mid-rise Buildings*	*Tall Buildings*	*Unit Type Method*			*Land Use Method*		
Parcel	**Landowners**	**Parcel Area (Gross)**		**Net Developable**		**Parcel Area (Townhouse)**	**Parcel Area (Apartments)**	*(Up to 4-Storeys)*					*(5- to 8-Storeys)*	*(9- to 15-Storeys)*	**Townhouses**	**Apartments**	**Total**	**Townhouses**	**Apartments**	**Total**
		sq.m.	*ha*	*sq.m.*	*ha*	*ha*	*ha*								*persons*	*persons*	*persons*	*persons*	*persons*	*persons*
1	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	6,198.99	0.62	5,211.39	0.52		0.52					204	62		719	719		247	247
2	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	8,451.90	0.85	7,632.77	0.77	0.32	0.45			48		159		168	430	598	56	214	270
3	1127792 ONTARIO LIMITED (Dino Collini)	4,339.04	0.43	3,868.37	0.38		0.38					145			392	392		181	181
4	*896 Lakeshore Road East*	4,338.68	0.43	3,868.33	0.38		0.38					142			384	384		181	181
5	*910 - 920 Lakeshore Road East*	8,686.81	0.87	5,244.66	0.52		0.52					170	62		627	627		247	247
6	*946 Lakeshore Road East*	7,040.36	0.70	5,723.87	0.57		0.57					179	62		651	651		271	271
7	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	10,735.57	1.07	9,334.79	0.93	0.77	0.16		22	44		135		231	365	596	135	76	211
8	447111 ONTARIO LIMITED (Norstar)	7,833.20	0.78	7,133.15	0.71	0.54	0.17		12	24		138		126	373	499	95	81	176
9	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	8,590.92	0.86	2,089.15	0.21		0.21					96	62		427	427		100	100
10	ILSCO OF CANADA LIMITED (Thomas Quinn)	6,980.11	0.70	5,820.65	0.59		0.59					197	62		700	700		281	281
11	*1076 Lakeshore Road East*	13,573.97	1.36	8,924.70	0.90	0.52	0.38	12				216	62	42	751	793	91	181	272
12	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	15,357.62	1.54	8,586.32	0.86	0.45	0.41			68		159		238	430	668	79	195	274
13	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	4,189.30	0.42	2,036.86	0.20	0.20		10						35		35	35		35
14	*895 Rangeview Road*	4,465.52	0.45	3,975.17	0.40	0.40			22					77		77	70		70
15	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	5,653.29	0.57	3,403.54	0.34		0.34					148	62		567	567		162	162
16	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	7,259.45	0.73	7,109.98	0.72	0.27	0.45			20		194	62	70	692	762	48	214	262
17	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	3,627.10	0.36	1,120.74	0.11	0.11				40				140		140	20		20
18	2547046 ONTARIO INC./2545488 ONTARIO INC. (Vittorio Torchia)	3,627.76	0.36	1,856.79	0.18	0.18			18					63		63	32		32
19	DORSAY (LAKESHORE) INC./DORSAY (LAKEFRONT PROMENADE) INC./DORSAY (RANGEVIEW) INC.	5,075.55	0.51	3,554.25	0.36		0.36					154	62		584	584		171	171
20	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	4,587.89	0.46	1,612.07	0.16		0.16					155	62		586	586		76	76
21	RANGEVIEW 1035 HOLDING INC./RANGEVIEW 1045 HOLDING INC./1207238 ONTARIO INC. (Oasis Banquet Hall)	4,829.66	0.48	4,205.37	0.42	0.42			18					63		63	74		74
22	2547046 ONTARIO INC./2545488 ONTARIO INC. (Vittorio Torchia)	6,054.50	0.61	5,493.77	0.55	0.27	0.28		16			144	62	56	557	613	48	133	181
23	*850 Rangeview Road*	10,354.01	1.04	9,964.00	1.00		1.00	16	20		54			126	146	272		475	475
24	WHITEROCK 880 RANGEVIEW INC. (Dream)	13,146.95	1.31	12,996.05	1.29		1.29	12	36			160	62	168	600	768		613	613
25	*890 Rangeview Road (Canada Post)*	8,627.44	0.86	6,034.17	0.60		0.60		14			120	62	49	492	541		285	285
26	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	7,258.96	0.73	7,128.45	0.72	0.14	0.58		16			212	62	56	740	796	25	276	301
27	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	3,621.46	0.36	2,087.67	0.21														
28	ELGROUP HOLDINGS INC./ELIAS BROS. CONSTRUCTION LIMITED (Elias Brothers Construction)	3,625.21	0.36	3,573.98	0.35	0.12	0.23		16			81		56	219	275	21	110	131
29	*1008 Rangeview Road*	3,621.63	0.36	3,569.56	0.35		0.35					108	62		459	459		167	167
30	*1024 Rangeview Road*	3,623.21	0.36	276.43	0.02														
31	2120412 ONTARIO INC. (Xtreme Tire)	7,248.77	0.72	6,069.05	0.60	0.27	0.33	5	12			138	62	60	540	600	48	157	205
32	*1062 Rangeview Road*	3,273.04	0.33	3,232.41	0.33	0.33		5	12					60		60	58		58
33	KOTYCK INVESTMENTS LTD. (Laurie McPherson)	3,491.56	0.35	3,244.53	0.33		0.33					100	62		438	438		157	157
	TOTALS	**219,389.45**	**21.94**	**165,982.98**	**16.58**	**5.31**	**11.04**	**60**	**150**	**84**	**244**	**54**	**3,654**	**1,054**	**1,884**	**12,869**	**14,753**	**935**	**5,251**	**6,186**

LEGEND
Non-participating Landowners

Water Supply Calculations

Project Title: 4938 - Rangeview
Last Edited: 2022-10-28

Municipality Region of Peel

Water Supply Parameters

Residential Parameters

Water Demand	280	L/cap./d
Max Day Factor	2.0	
Peak Hour Factor	3.0	

ICI Parameters

Water Demand	300	L/cap./d
Max Day Factor	1.4	
Peak Hour Factor	3.0	

Water Demand

Residential	280	L/cap./d	Per Region of Peel Watermain Design Criteria (June 2010)
ICI	300	L/emp./d	Per Region of Peel Watermain Design Criteria (June 2010)

Peaking Factors

Residential Max Day Factor	2.00	Per Region of Peel Watermain Design Criteria (June 2010)
Residential Peak Hour Factor	3.00	Per Region of Peel Watermain Design Criteria (June 2010)
ICI Max Day Factor	1.40	Per Region of Peel Watermain Design Criteria (June 2010)
ICI Peak Hour Factor	3.00	Per Region of Peel Watermain Design Criteria (June 2010)

Demands - Rangeview Non-participating Landowners

*Population data per Rangeview Statistics from Bousefield (September 30, 2022)

Parcel	Residential Population	Flow (L/s)				
		Average Day Demand	*Max Day Demand*	*Peak Hour Demand*	*Fire Flow*	*MDD + Fire Flow*
1	719	2.33	4.66	6.99	317	321.66
2	598	1.94	3.88	5.81	317	320.88
3	392	1.27	2.54	3.81	317	319.54
4	384	1.24	2.49	3.73	317	319.49
5	627	2.03	4.06	6.10	317	321.06
6	651	2.11	4.22	6.33	317	321.22
7	596	1.93	3.86	5.79	317	320.86
8	499	1.62	3.23	4.85	317	320.23
9	427	1.38	2.77	4.15	317	319.77
10	700	2.27	4.54	6.81	317	321.54
11	793	2.57	5.14	7.71	317	322.14
12	668	2.16	4.33	6.49	317	321.33
13	35	0.11	0.23	0.34	317	317.23
14	77	0.25	0.50	0.75	317	317.50
15	567	1.84	3.68	5.51	317	320.68
16	762	2.47	4.94	7.41	317	321.94
17	140	0.45	0.91	1.36	317	317.91
18	63	0.20	0.41	0.61	317	317.41
19	584	1.89	3.79	5.68	317	320.79
20	586	1.90	3.80	5.70	317	320.80
21	63	0.20	0.41	0.61	317	317.41
22	613	1.99	3.97	5.96	317	320.97
23	272	0.88	1.76	2.64	317	318.76
24	768	2.49	4.98	7.47	317	321.98
25	541	1.75	3.51	5.26	317	320.51
26	796	2.58	5.16	7.74	317	322.16
27		0.00	0.00	0.00	317	317.00
28	275	0.89	1.78	2.67	317	318.78
29	459	1.49	2.98	4.46	317	319.98
30		0.00	0.00	0.00	317	317.00
31	600	1.94	3.89	5.83	317	320.89
32	60	0.19	0.39	0.58	317	317.39
33	438	1.42	2.84	4.26	317	319.84
Total	14753	47.81	95.62	143.43		

Residential Demands - Lakeview

*Population data per TMIG Lakeview Community Water Modelling Methodology and Analysis Memo (May 6, 2021)

Block Number	Residential Population	Flow (L/s)				
		Average Day Demand	*Max Day Demand*	*Peak Hour*	*Fire Flow*	*MDD + Fire Flow*
1	380	1.23	2.46	3.69	300	302.46
2	620	2.01	4.02	6.03	300	304.02
3	1052	3.41	6.82	10.23	300	306.82
4	836	2.71	5.42	8.13	300	305.42
5	384	1.24	2.49	3.73	300	302.49
6	2128	6.90	13.79	20.69	300	313.79
7	2161	7.00	14.01	21.01	300	314.01
8	2712	8.79	17.58	26.37	300	317.58
9	2220	7.19	14.39	21.58	300	314.39
10	1161	3.76	7.53	11.29	300	307.53
11	1367	4.43	8.86	13.29	300	308.86
12	1745	5.66	11.31	16.97	300	311.31
13	1194	3.87	7.74	11.61	300	307.74
14	1359	4.40	8.81	13.21	300	308.81
15	1056	3.42	6.84	10.27	300	306.84
16	956	3.10	6.20	9.29	300	306.20
17	0	0.00	0.00	0.00	300	300.00
18	711	2.30	4.61	6.91	300	304.61
19	0	0.00	0.00	0.00	300	300.00
20	0	0.00	0.00	0.00	300	300.00
21	0	0.00	0.00	0.00	300	300.00
22	0	0.00	0.00	0.00	300	300.00
23	0	0.00	0.00	0.00	300	300.00
24	0	0.00	0.00	0.00	300	300.00
39	0	0.00	0.00	0.00	300	300.00
31 (park)	0	0.00	0.00	0.00	300	300.00
Total	**22042**	**71.43**	**142.86**	**214.30**		

Employment Demands - Lakeview

*Population data per TMIG Lakeview Community Water Modelling Methodology and Analysis Memo (May 6, 2021)

Block Number	Employment Population	Flow (L/s)		
		Average Day Demand	*Max Day Demand*	*Peak Hour Demand*
1	0	0.00	0.00	0.00
2	0	0.00	0.00	0.00
3	0	0.00	0.00	0.00
4	0	0.00	0.00	0.00
5	0	0.00	0.00	0.00
6	0	0.00	0.00	0.00
7	108	0.35	0.49	1.05
8	0	0.00	0.00	0.00
9	0	0.00	0.00	0.00
10	0	0.00	0.00	0.00
11	74	0.24	0.34	0.72
12	0	0.00	0.00	0.00
13	87	0.28	0.39	0.85
14	0	0.00	0.00	0.00
15	157	0.51	0.71	1.53
16	0	0.00	0.00	0.00
17	87	0.28	0.39	0.85
18	46	0.15	0.21	0.45
19	0	0.00	0.00	0.00
20	217	0.70	0.98	2.11
21	59	0.19	0.27	0.57
22	2980	9.66	13.52	28.97
23	214	0.69	0.97	2.08
24	3197	10.36	14.50	31.08
39	589	1.91	2.67	5.73
31 (park)	229	0.74	1.04	2.23
Total	**8044**	**26.07**	**36.50**	**78.21**

Demands - External Lands per Lakeview Report, PVT 16/17

*Population data per TMIG Lakeview Community Water Modelling Methodology and Analysis Memo (May 6, 2021)

ID	Residential Population	Flow (L/s)				
		Average Day Demand	*Max Day Demand*	*Peak Hour Demand*	*Fire Flow*	*MDD + Fire Flow*
Pvt 16	1493	4.84	9.68	14.52	300	309.68
Pvt 17	1254	4.06	8.13	12.19	300	308.13
Total	**2747**	**8.90**	**17.80**	**26.71**		

Appendix B-4

Hydrant Test Results

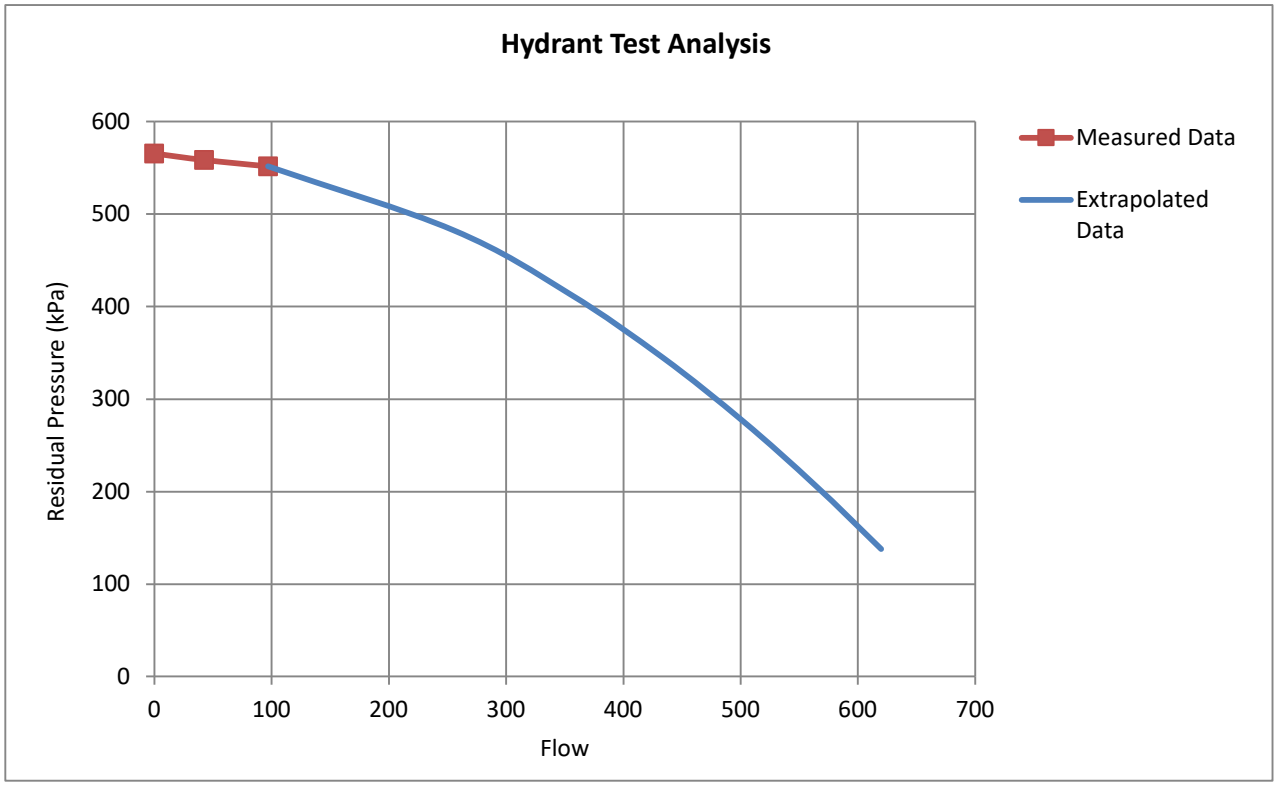
Rangeview Mississauga

Project No. 4938

Date of Test: 04/23/2021
Test Location: Residual: 1000 Lakeshore Road East, Mississauga
Flow: 1000 Lakeshore Road East, Mississauga

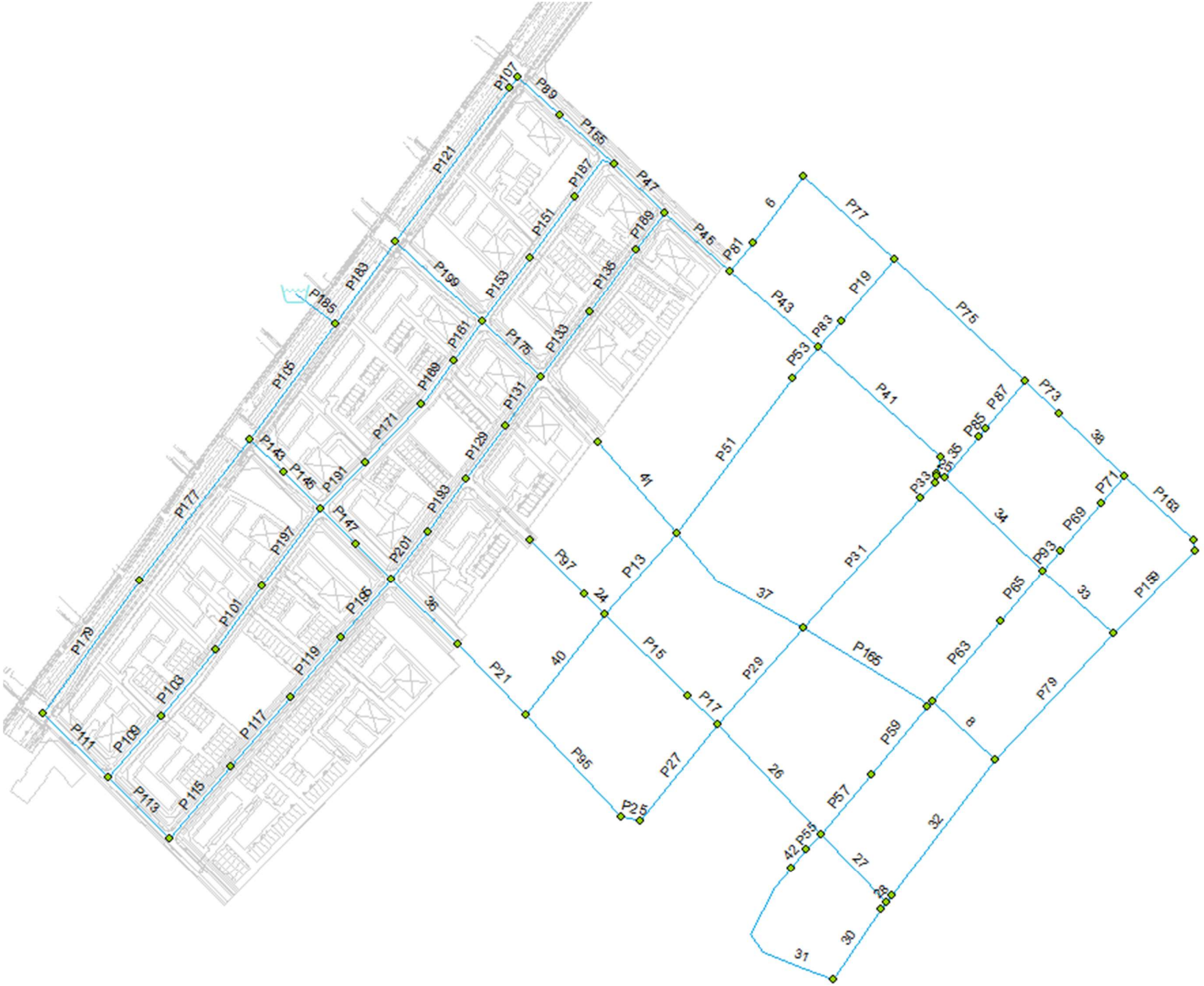
Test Results

	Flow		Residual Pressure	
	US. GPM	L/s	psi	kPa
Measured Data	0	0	82	565
	674	43	81	558
	1538	97	80	552
Extrapolated Data	4047	255	70	483
	5614	354	60	414
	6874	434	50	345
	7961	502	40	276
	8934	564	30	207
	9824	620	20	138



Appendix B-5

InfoWater Model Outputs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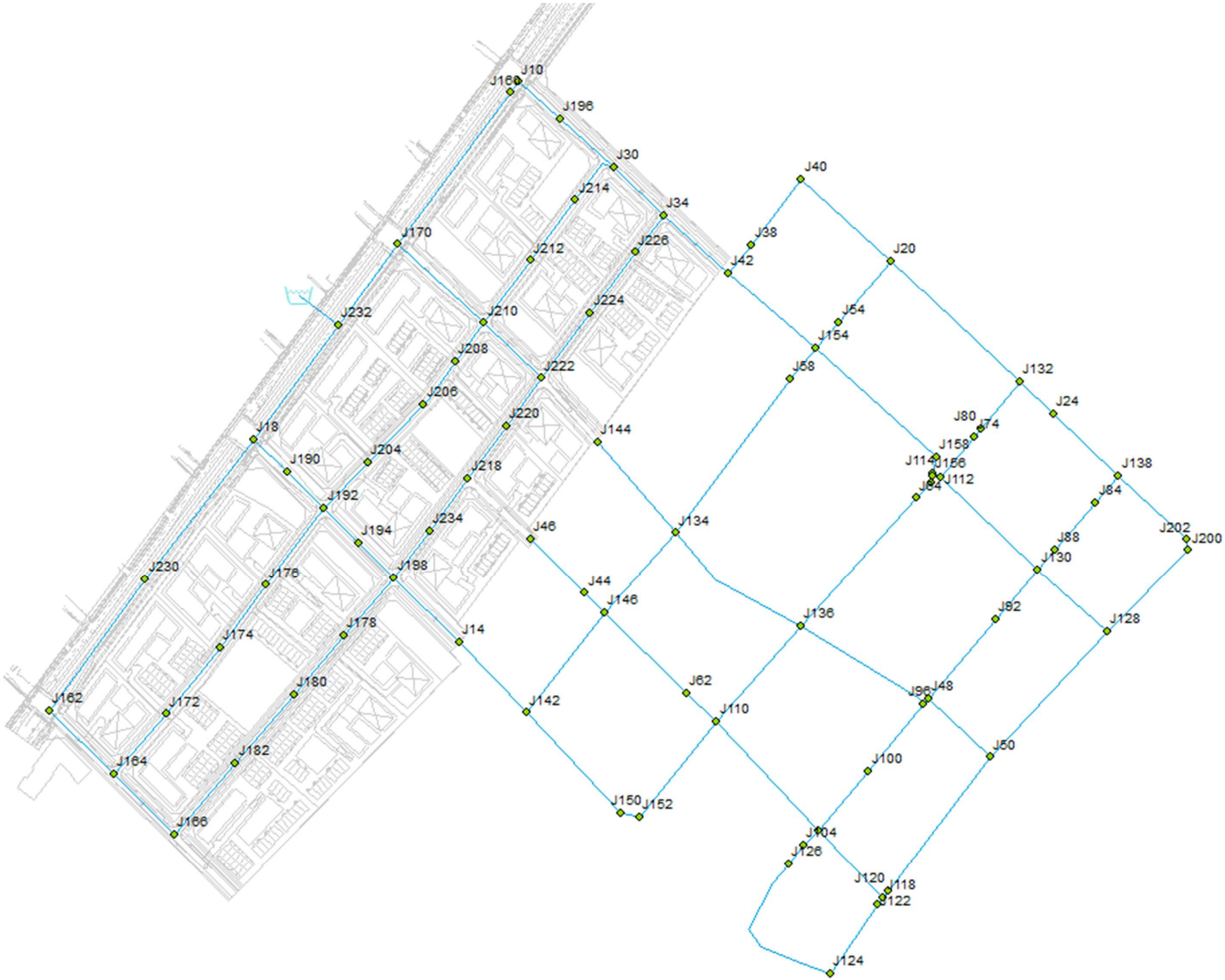
P155
P121
P187
P47
P151
P189
P45
P81
6
P77
P183
P199
P153
P135
P19
P185
P43
P75
P161
P175
P133
P83
P53
P105
P189
P131
P41
P73
P171
P87
P85
P143
P129
P51
38
P145
P191
P33
P71
P163
P177
P193
41
34
P69
P147
P197
P201
P97
P13
P31
P93
P65
P159
P101
P195
24
37
33
P179
P15
P165
P63
P119
P21
40
P29
P103
P17
P79
P111
P109
P117
P59
8
P95
P27
26
P113
P115
P25
P57
32
42
P55
27
28
30
31


J10
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J196
J30
J214
J34
J170
J212
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J232
J210
J224
J208
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J18
J204
J190
J218
J192
J234
J194
J230
J176
J198
J174
J178
J14
J162
J172
J180
J164
J182
J166
J40
J38
J20
J42
J54
J154
J58
J132
J24
J80
J74
J144
J158
J114
J156
J112
J138
J64
J84
J46
J134
J202
J200
J88
J130
J44
J146
J82
J136
J128
J62
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J100
J150
J152
J104
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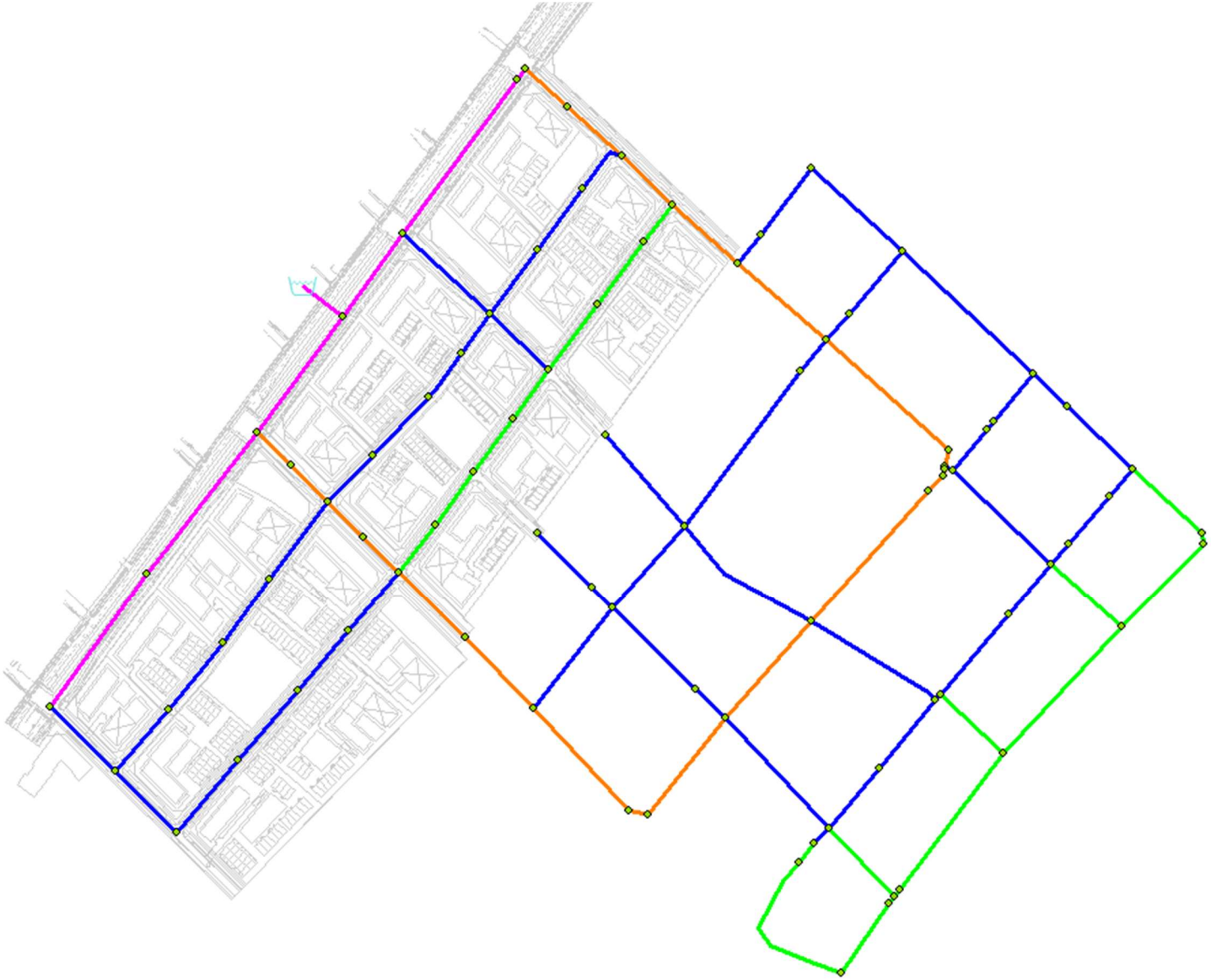
J122
J124



	Color	Size	Break	Label
1		2.00	250.00	less than 250.00
2		2.00	300.00	250.00 ~ 300.00
3		2.00	400.00	300.00 ~ 400.00
4		2.00	600.00	400.00 ~ 600.00

Hydraulic Model Results: Average Day Demand

Project Title: 4938 Rangeview Mississauga
Last Edited: 2022-10-24
Municipality Region of Peel

Junction Pressure (ADD)

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J10	0	84.9	144.07	84.12
J100	9.81	80.1	143.82	90.58
J104	3.76	79.92	143.82	90.84
J110	0	79.47	143.84	91.51
J112	0	81.34	143.83	88.84
J114	0	81.23	143.84	89
J116	0	79.95	143.82	90.8
J118	0	79.36	143.82	91.63
J120	0	78.33	143.82	93.1
J122	0	79.33	143.82	91.68
J124	0	79.44	143.82	91.52
J126	4.67	80.21	143.81	90.42
J128	1.91	81.35	143.82	88.81
J130	0	82.01	143.82	87.87
J132	0	82.11	143.83	87.74
J134	0.74	81.8	143.85	88.21
J136	0	79.85	143.84	90.97
J138	0	82.78	143.82	86.78
J14	0	81.75	143.94	88.41
J142	0	80.35	143.89	90.33
J144	0	83.05	143.85	86.43
J146	0	81.26	143.85	88.98
J150	0	78.92	143.87	92.33
J152	0	75.92	143.86	96.59
J154	0	82.07	143.85	87.83
J156	0	81.32	143.84	88.87
J158	0	81.44	143.84	88.71
J160	0	85.03	144.07	83.94
J162	0	83.72	144.08	85.81
J164	0	81.79	144.03	88.48
J166	0	80.85	144.02	89.8
J170	0	86.05	144.09	82.51
J172	4.27	82.23	144.02	87.85
J174	1.27	82.89	144.02	86.9
J176	3.28	83.56	144.02	85.95
J178	3.84	82.34	143.98	87.63
J18	0	86.12	144.09	82.4
J180	2.6	82	143.99	88.12
J182	3.04	81.32	144	89.1
J190	0	82.36	144.05	87.7
J192	0	81.89	144.02	88.32
J194	0	81.79	144	88.43
J196	2.45	84.23	144.04	85.02
J198	0	81.77	143.98	88.44
J20	10.36	82.84	143.84	86.72
J200	0	81.35	143.82	88.81
J202	0	81.35	143.82	88.81
J204	2.11	84.51	144.01	84.59
J206	1.93	85.01	144.01	83.87
J208	1.62	85.31	144.01	83.45
J210	1.38	85.52	144.01	83.15
J212	2.27	84.83	144	84.11
J214	2.57	84.13	143.99	85.09
J218	0.66	83.55	143.98	85.9
J220	4.27	83.93	143.98	85.36
J222	0	83.84	143.99	85.5
J224	4.05	83.31	143.96	86.22
J226	3.61	82.99	143.95	86.66
J230	0	85.14	144.08	83.79
J232	0	86.44	144.11	81.98
J234	5.05	82.62	143.98	87.23
J24	9.66	82.29	143.82	87.47
J30	2.71	83.73	143.99	85.66
J34	8.9	83.36	143.95	86.14
J38	0	82.86	143.89	86.76
J40	0.69	83.61	143.87	85.66
J42	0	82.93	143.89	86.67
J44	3.24	81.47	143.85	88.68
J46	0	82.71	143.85	86.92
J48	0	80.79	143.82	89.6
J50	0	80.75	143.82	89.66
J54	1.24	82.17	143.85	87.68
J58	3.41	82.05	143.85	87.86
J62	14.25	79.65	143.84	91.25
J64	8.79	81.1	143.84	89.19
J70	0	81.15	143.84	89.12
J74	7.19	81.63	143.83	88.42
J80	0.19	81.7	143.83	88.32
J84	0.7	82.46	143.82	87.23
J88	3.38	82	143.82	87.88
J92	8.34	81.61	143.82	88.44
J96	0	80.91	143.82	89.43

Pipe Data (ADD)

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status
24	J44	J146	37.79	300	120	-3.24	0.05	0	0.01	Open
25	J112	J114	11.08	300	120	-17.92	0.25	0	0.31	Open
26	J110	J116	162.84	300	120	11.89	0.17	0.02	0.14	Open
27	J116	J118	103.23	200	120	0.74	0.02	0	0.01	Open
28	J120	J118	17.79	200	120	0.72	0.02	0	0.01	Open
29	J118	J122	14.95	200	120	1.46	0.05	0	0.02	Open
30	J122	J124	88.59	200	120	1.46	0.05	0	0.02	Open
31	J124	J126	144.09	200	120	1.46	0.05	0	0.02	Open
32	J50	J120	146.51	200	120	0.72	0.02	0	0.01	Open
33	J130	J128	112.4	200	120	1.08	0.03	0	0.01	Open
34	J130	J112	156.59	300	120	-8.84	0.12	0.01	0.08	Open
35	J74	J112	79.98	300	120	-9.08	0.13	0.01	0.09	Open
36	J198	J14	97.33	400	120	44.45	0.35	0.04	0.41	Open
37	J134	J136	166.63	300	120	7.15	0.1	0.01	0.06	Open
38	J138	J24	110.22	300	120	-1.44	0.02	0	0	Open
40	J142	J146	135.17	300	120	17.44	0.25	0.04	0.29	Open
41	J144	J134	154.56	300	120	0	0	0	0	Open
42	J126	J104	40.45	200	120	-3.21	0.1	0	0.09	Open
6	J40	J38	120.78	300	120	-13.02	0.18	0.02	0.17	Open
8	J48	J50	91.46	200	120	0.97	0.03	0	0.01	Open
P101	J176	J174	85.38	300	120	-3.8	0.05	0	0.02	Open
P103	J174	J172	93.42	300	120	-5.07	0.07	0	0.03	Open
P105	J18	J232	155.9	600	120	-74.85	0.26	0.02	0.15	Open
P107	J160	J10	17.35	600	120	52.78	0.19	0	0.08	Open
P109	J172	J164	87.09	300	120	-9.34	0.13	0.01	0.09	Open
P111	J162	J164	99.75	300	120	22.66	0.32	0.05	0.48	Open
P113	J164	J166	93.28	300	120	13.32	0.19	0.02	0.18	Open
P115	J166	J182	103.28	300	120	13.32	0.19	0.02	0.18	Open
P117	J182	J180	97.96	300	120	10.28	0.15	0.01	0.11	Open
P119	J180	J178	85.13	300	120	7.68	0.11	0.01	0.06	Open
P121	J170	J160	222.37	600	120	52.78	0.19	0.02	0.08	Open
P129	J218	J220	71.02	250	110	-2.07	0.04	0	0.02	Open
P13	J146	J134	109.84	300	120	5.01	0.07	0	0.03	Open
P131	J220	J222	64.95	250	110	-6.34	0.13	0.01	0.13	Open
P133	J222	J224	89.72	250	110	9.83	0.2	0.03	0.29	Open
P135	J224	J226	83.02	250	110	5.78	0.12	0.01	0.11	Open
P143	J18	J190	61.03	400	120	52.19	0.42	0.03	0.55	Open
P145	J190	J192	58.87	400	120	52.19	0.42	0.03	0.55	Open
P147	J192	J194	53.81	400	120	44.24	0.35	0.02	0.41	Open
P15	J146	J62	118.8	300	120	9.19	0.13	0.01	0.09	Open
P151	J214	J212	82.47	300	120	-9.56	0.14	0.01	0.1	Open
P153	J212	J210	85.62	300	120	-11.83	0.17	0.01	0.14	Open
P155	J196	J30	100.45	400	120	50.33	0.4	0.05	0.51	Open
P157	J194	J198	45.99	400	120	44.24	0.35	0.02	0.41	Open
P159	J128	J200	133.31	200	120	-0.58	0.02	0	0	Open
P161	J210	J208	52.95	300	120	-2.81	0.04	0	0.01	Open
P163	J202	J138	119.12	200	120	-0.58	0.02	0	0	Open
P165	J136	J96	166.15	300	120	10.41	0.15	0.02	0.11	Open
P167	J200	J202	11.25	200	120	-0.58	0.02	0	0	Open
P169	J208	J206	57.99	300	120	-4.43	0.06	0	0.02	Open
P17	J62	J110	47.94	300	120	-5.06	0.07	0	0.03	Open
P171	J206	J204	88.86	300	120	-6.36	0.09	0	0.05	Open
P175	J210	J222	86.86	300	120	16.17	0.23	0.02	0.26	Open
P177	J18	J230	193.5	600	120	22.66	0.08	0	0.02	Open
P179	J230	J162	178.15	600	120	22.66	0.08	0	0.02	Open
P183	J232	J170	110.92	600	120	79.35	0.28	0.02	0.17	Open
P185	RES9002	J232	1	600	120	154.21	0.55	0	0.57	Open
P187	J214	J30	62.97	300	120	6.99	0.1	0	0.05	Open
P189	J226	J34	51.07	250	110	2.17	0.04	0	0.02	Open
P19	J20	J54	117.59	300	120	-7.42	0.11	0.01	0.06	Open
P191	J204	J192	68.52	300	120	-8.47	0.12	0.01	0.08	Open
P193	J218	J234	71.16	250	110	1.41	0.03	0	0.01	Open
P195	J198	J178	83.36	300	120	-3.84	0.05	0	0.02	Open
P197	J192	J176	106.15	300	120	-0.52	0.01	0	0	Open
P199	J170	J210	128.03	300	120	26.57	0.38	0.08	0.64	Open
P201	J234	J198	64.68	250	110	-3.64	0.07	0	0.05	Open
P21	J14	J142	116.76	400	120	44.45	0.35	0.05	0.41	Open
P25	J150	J152	12.66	400	120	27.01	0.21	0	0.16	Open
P27	J152	J110	132.14	400	120	27.01	0.21	0.02	0.16	Open
P29	J110	J136	128.24	400	120	10.06	0.08	0	0.03	Open
P31	J136	J64	180.81	400	120	6.8	0.05	0	0.01	Open
P33	J64	J70	14.43	400	120	-1.99	0.02	0	0	Open
P35	J70	J156	34.75	400	120	-1.99	0.02	0	0	Open
P37	J156	J114	6.2	400	120	-1.99	0.02	0	0	Open
P39	J114	J158	17.17	400	120	-19.91	0.16	0	0.09	Open
P41	J154	J158	153.05	400	120	19.91	0.16	0.01	0.09	Open
P43	J42	J154	156.43	400	120	34.86	0.28	0.04	0.26	Open
P45	J34	J42	120.68	400	120	47.88	0.38	0.06	0.47	Open
P47	J30	J34	57.66	400	120	54.61	0.43	0.03	0.6	Open
P51	J58	J134	228.31	300	120	2.88	0.04	0	0.01	Open
P53	J154	J58	39.98	300	120	6.29	0.09	0	0.04	Open
P55	J104	J116	41.94	300	120	-6.97	0.1	0	0.05	Open
P57	J116	J100	77.25	300	120	4.18	0.06	0	0.02	Open
P59	J100	J96	84.08	300	120	-5.63	0.08	0	0.04	Open
P61	J96	J48	6.45	300	120	4.78	0.07	0	0.03	Open
P63	J48	J92	120.82	300	120	3.81	0.05	0	0.02	Open
P65	J92	J130	97.59	300	120	-4.53	0.06	0	0.02	Open
P69	J84	J88	69.9	300	120	0.15	0	0	0	Open
P71	J138	J84	53.85	300	120	0.85	0.01	0	0	Open
P73	J132	J24	44.79	300	120	11.1	0.16	0.01	0.13	Open
P75	J20	J132	172.6	300	120	9.39	0.13	0.02	0.09	Open
P77	J40	J20	159.11	300	120	12.33	0.17	0.02	0.15	Open
P79	J50	J128	234.05	200	120	0.25	0.01	0	0	Open
P81	J38	J42	35.3	300	120	-13.02	0.18	0.01	0.17	Open
P83	J54	J154	41.53	300	120	-8.66	0.12	0	0.08	Open
P85	J80	J74	13.52	300	120	-1.89	0.03	0	0	Open
P87	J132	J80	74.26	300	120	-1.7	0.02	0	0	Open
P89	J10	J196	62.59	400	120	52.78	0.42	0.04	0.56	Open
P93	J130	J88	30.88	300	120	-3.23	0.05	0	0.01	Open
P95	J142	J150	156.08	400	120	27.01	0.21	0.03	0.16	Open
P97	J46	J44	100.05	300	120	0	0	0	0	Open

Hydraulic Model Results: Maximum Day Demand

Project Title: 4938 Rangeview Mississauga
Last Edited: 2022-10-24
Municipality Region of Peel

Junction Pressure (MDD)

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J10	0	84.9	143.99	84
J100	19.44	80.1	143.18	89.67
J104	7.53	79.92	143.18	89.93
J110	0	79.47	143.26	90.68
J112	0	81.34	143.24	87.99
J114	0	81.23	143.25	88.16
J116	0	79.95	143.19	89.89
J118	0	79.36	143.18	90.73
J120	0	78.33	143.19	92.2
J122	0	79.33	143.18	90.77
J124	0	79.44	143.18	90.61
J126	9.2	80.21	143.16	89.5
J128	2.67	81.35	143.19	87.92
J130	0	82.01	143.2	86.98
J132	0	82.11	143.22	86.87
J134	1.04	81.8	143.28	87.4
J136	0	79.85	143.25	90.13
J138	0	82.78	143.2	85.89
J14	0	81.75	143.56	87.87
J142	0	80.35	143.41	89.65
J144	0	83.05	143.28	85.62
J146	0	81.26	143.29	88.18
J150	0	78.92	143.33	91.57
J152	0	75.92	143.33	95.82
J154	0	82.07	143.3	87.04
J156	0	81.32	143.25	88.03
J158	0	81.44	143.25	87.87
J160	0	85.03	143.99	83.82
J162	0	83.72	144.01	85.71
J164	0	81.79	143.85	88.23
J166	0	80.85	143.8	89.49
J170	0	86.05	144.05	82.45
J172	8.54	82.23	143.83	87.57
J174	2.54	82.89	143.82	86.62
J176	6.55	83.56	143.81	85.66
J178	7.68	82.34	143.69	87.21
J18	0	86.12	144.03	82.33
J180	5.2	82	143.7	87.72
J182	6.07	81.32	143.74	88.73
J190	0	82.36	143.92	87.51
J192	0	81.89	143.81	88.03
J194	0	81.79	143.74	88.07
J196	4.82	84.23	143.87	84.79
J198	0	81.77	143.68	88.02
J20	14.5	82.84	143.28	85.91
J200	0	81.35	143.2	87.92
J202	0	81.35	143.2	87.92
J204	4.22	84.51	143.8	84.28
J206	3.86	85.01	143.78	83.55
J208	3.23	85.31	143.78	83.12
J210	2.77	85.52	143.78	82.82
J212	4.54	84.83	143.74	83.75
J214	5.14	84.13	143.72	84.71
J218	1.32	83.55	143.67	85.47
J220	8.54	83.93	143.68	84.94
J222	0	83.84	143.71	85.1
J224	8.1	83.31	143.62	85.74
J226	7.21	82.99	143.6	86.16
J230	0	85.14	144.02	83.7
J232	0	86.44	144.11	81.98
J234	10.1	82.62	143.67	86.79
J24	13.52	82.29	143.2	86.59
J30	5.42	83.73	143.71	85.26
J34	17.8	83.36	143.6	85.63
J38	0	82.86	143.41	86.07
J40	0.97	83.61	143.35	84.92
J42	0	82.93	143.42	86
J44	6.48	81.47	143.29	87.88
J46	0	82.71	143.29	86.12
J48	0	80.79	143.19	88.71
J50	0	80.75	143.19	88.77
J54	2.49	82.17	143.29	86.89
J58	6.82	82.05	143.29	87.06
J62	28.29	79.65	143.25	90.42
J64	17.58	81.1	143.25	88.35
J70	0	81.15	143.25	88.27
J74	14.39	81.63	143.22	87.55
J80	0.27	81.7	143.22	87.45
J84	0.98	82.46	143.2	86.35
J88	6.59	82	143.2	87
J92	16.37	81.61	143.19	87.54
J96	0	80.91	143.19	88.54

Pipe Data (MDD)

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status
24	J44	J146	37.79	300	120	-6.48	0.09	0	0.05	Open
25	J112	J114	11.08	300	120	-31.07	0.44	0.01	0.86	Open
26	J110	J116	162.84	300	120	22.16	0.31	0.07	0.46	Open
27	J116	J118	103.23	200	120	0.9	0.03	0	0.01	Open
28	J120	J118	17.79	200	120	2.08	0.07	0	0.04	Open
29	J118	J122	14.95	200	120	2.97	0.09	0	0.08	Open
30	J122	J124	88.59	200	120	2.97	0.09	0.01	0.08	Open
31	J124	J126	144.09	200	120	2.97	0.09	0.01	0.08	Open
32	J50	J120	146.51	200	120	2.08	0.07	0.01	0.04	Open
33	J130	J128	112.4	200	120	2.09	0.07	0	0.04	Open
34	J130	J112	156.59	300	120	-15.91	0.23	0.04	0.25	Open
35	J74	J112	79.98	300	120	-15.16	0.21	0.02	0.23	Open
36	J198	J14	97.33	400	120	81.98	0.65	0.12	1.27	Open
37	J134	J136	166.63	300	120	13.34	0.19	0.03	0.18	Open
38	J138	J24	110.22	300	120	-5.5	0.08	0	0.03	Open
40	J142	J146	135.17	300	120	32.13	0.45	0.12	0.91	Open
41	J144	J134	154.56	300	120	0	0	0	0	Open
42	J126	J104	40.45	200	120	-6.23	0.2	0.01	0.31	Open
6	J40	J38	120.78	300	120	-23	0.33	0.06	0.49	Open
8	J48	J50	91.46	200	120	1.14	0.04	0	0.01	Open
P101	J176	J174	85.38	300	120	-6.8	0.1	0	0.05	Open
P103	J174	J172	93.42	300	120	-9.34	0.13	0.01	0.09	Open
P105	J18	J232	155.9	600	120	-142.45	0.5	0.08	0.49	Open
P107	J160	J10	17.35	600	120	99.78	0.35	0	0.25	Open
P109	J172	J164	87.09	300	120	-17.88	0.25	0.03	0.31	Open
P111	J162	J164	99.75	300	120	43.21	0.61	0.16	1.58	Open
P113	J164	J166	93.28	300	120	25.33	0.36	0.05	0.59	Open
P115	J166	J182	103.28	300	120	25.33	0.36	0.06	0.59	Open
P117	J182	J180	97.96	300	120	19.26	0.27	0.03	0.35	Open
P119	J180	J178	85.13	300	120	14.06	0.2	0.02	0.2	Open
P121	J170	J160	222.37	600	120	99.78	0.35	0.06	0.25	Open
P129	J218	J220	71.02	250	110	-3.76	0.08	0	0.05	Open
P13	J146	J134	109.84	300	120	8.21	0.12	0.01	0.07	Open
P131	J220	J222	64.95	250	110	-12.3	0.25	0.03	0.44	Open
P133	J222	J224	89.72	250	110	18.34	0.37	0.08	0.92	Open
P135	J224	J226	83.02	250	110	10.24	0.21	0.03	0.31	Open
P143	J18	J190	61.03	400	120	99.24	0.79	0.11	1.81	Open
P145	J190	J192	58.87	400	120	99.24	0.79	0.11	1.81	Open
P147	J192	J194	53.81	400	120	83.26	0.66	0.07	1.31	Open
P15	J146	J62	118.8	300	120	17.45	0.25	0.03	0.29	Open
P151	J214	J212	82.47	300	120	-17.52	0.25	0.02	0.3	Open
P153	J212	J210	85.62	300	120	-22.06	0.31	0.04	0.45	Open
P155	J196	J30	100.45	400	120	94.96	0.76	0.17	1.67	Open
P157	J194	J198	45.99	400	120	83.26	0.66	0.06	1.31	Open
P159	J128	J200	133.31	200	120	-1.51	0.05	0	0.02	Open
P161	J210	J208	52.95	300	120	-4.92	0.07	0	0.03	Open
P163	J202	J138	119.12	200	120	-1.51	0.05	0	0.02	Open
P165	J136	J96	166.15	300	120	19.21	0.27	0.06	0.35	Open
P167	J200	J202	11.25	200	120	-1.51	0.05	0	0.02	Open
P169	J208	J206	57.99	300	120	-8.15	0.12	0	0.07	Open
P17	J62	J110	47.94	300	120	-10.84	0.15	0.01	0.12	Open
P171	J206	J204	88.86	300	120	-12.01	0.17	0.01	0.15	Open
P175	J210	J222	86.86	300	120	30.64	0.43	0.07	0.83	Open
P177	J18	J230	193.5	600	120	43.21	0.15	0.01	0.05	Open
P179	J230	J162	178.15	600	120	43.21	0.15	0.01	0.05	Open
P183	J232	J170	110.92	600	120	150.32	0.53	0.06	0.54	Open
P185	RES9002	J232	1	600	120	292.78	1.04	0	1.87	Open
P187	J214	J30	62.97	300	120	12.38	0.18	0.01	0.16	Open
P189	J226	J34	51.07	250	110	3.03	0.06	0	0.03	Open
P19	J20	J54	117.59	300	120	-10.99	0.16	0.01	0.12	Open
P191	J204	J192	68.52	300	120	-16.23	0.23	0.02	0.26	Open
P193	J218	J234	71.16	250	110	2.44	0.05	0	0.02	Open
P195	J198	J178	83.36	300	120	-6.38	0.09	0	0.05	Open
P197	J192	J176	106.15	300	120	-0.25	0	0	0	Open
P199	J170	J210	128.03	300	120	50.55	0.72	0.27	2.11	Open
P201	J234	J198	64.68	250	110	-7.66	0.16	0.01	0.18	Open
P21	J14	J142	116.76	400	120	81.98	0.65	0.15	1.27	Open
P25	J150	J152	12.66	400	120	49.85	0.4	0.01	0.51	Open
P27	J152	J110	132.14	400	120	49.85	0.4	0.07	0.51	Open
P29	J110	J136	128.24	400	120	16.84	0.13	0.01	0.07	Open
P31	J136	J64	180.81	400	120	10.97	0.09	0.01	0.03	Open
P33	J64	J70	14.43	400	120	-6.61	0.05	0	0.01	Open
P35	J70	J156	34.75	400	120	-6.61	0.05	0	0.01	Open
P37	J156	J114	6.2	400	120	-6.61	0.05	0	0.01	Open
P39	J114	J158	17.17	400	120	-37.68	0.3	0.01	0.3	Open
P41	J154	J158	153.05	400	120	37.68	0.3	0.05	0.3	Open
P43	J42	J154	156.43	400	120	64.15	0.51	0.13	0.81	Open
P45	J34	J42	120.68	400	120	87.15	0.69	0.17	1.42	Open
P47	J30	J34	57.66	400	120	101.92	0.81	0.11	1.9	Open
P51	J58	J134	228.31	300	120	6.17	0.09	0.01	0.04	Open
P53	J154	J58	39.98	300	120	12.99	0.18	0.01	0.17	Open
P55	J104	J116	41.94	300	120	-13.76	0.19	0.01	0.19	Open
P57	J116	J100	77.25	300	120	7.51	0.11	0	0.06	Open
P59	J100	J96	84.08	300	120	-11.93	0.17	0.01	0.15	Open
P61	J96	J48	6.45	300	120	7.27	0.1	0	0.06	Open
P63	J48	J92	120.82	300	120	6.13	0.09	0.01	0.04	Open
P65	J92	J130	97.59	300	120	-10.24	0.14	0.01	0.11	Open
P69	J84	J88	69.9	300	120	3.01	0.04	0	0.01	Open
P71	J138	J84	53.85	300	120	3.99	0.06	0	0.02	Open
P73	J132	J24	44.79	300	120	19.02	0.27	0.02	0.34	Open
P75	J20	J132	172.6	300	120	18.52	0.26	0.06	0.33	Open
P77	J40	J20	159.11	300	120	22.03	0.31	0.07	0.45	Open
P79	J50	J128	234.05	200	120	-0.93	0.03	0	0.01	Open
P81	J38	J42	35.3	300	120	-23	0.33	0.02	0.49	Open
P83	J54	J154	41.53	300	120	-13.48	0.19	0.01	0.18	Open
P85	J80	J74	13.52	300	120	-0.77	0.01	0	0	Open
P87	J132	J80	74.26	300	120	-0.5	0.01	0	0	Open
P89	J10	J196	62.59	400	120	99.78	0.79	0.11	1.83	Open
P93	J88	J130	30.88	300	120	-3.58	0.05	0	0.02	Open
P95	J142	J150	156.08	400	120	49.85	0.4	0.08	0.51	Open
P97	J46	J44	100.05	300	120	0	0	0	0	Open

Hydraulic Model Results: Peak Hour Demand

Project Title: 4938 Rangeview Mississauga
Last Edited: 2022-10-24
Municipality Region of Peel

Junction Pressure (PHD)

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
J10	0	84.9	143.82	83.76
J100	29.42	80.1	141.88	87.82
J104	11.29	79.92	141.87	88.07
J110	0	79.47	142.07	88.99
J112	0	81.34	142	86.24
J114	0	81.23	142.03	86.43
J116	0	79.95	141.89	88.05
J118	0	79.36	141.89	88.89
J120	0	78.33	141.89	90.35
J122	0	79.33	141.88	88.92
J124	0	79.44	141.87	88.75
J126	14.01	80.21	141.84	87.62
J128	5.73	81.35	141.89	86.06
J130	0	82.01	141.9	85.14
J132	0	82.11	141.94	85.06
J134	2.23	81.8	142.12	85.74
J136	0	79.85	142.04	88.41
J138	0	82.78	141.9	84.04
J14	0	81.75	142.81	86.8
J142	0	80.35	142.44	88.27
J144	0	83.05	142.12	83.97
J146	0	81.26	142.14	86.55
J150	0	78.92	142.25	90.03
J152	0	75.92	142.23	94.27
J154	0	82.07	142.15	85.41
J156	0	81.32	142.03	86.3
J158	0	81.44	142.04	86.15
J160	0	85.03	143.83	83.59
J162	0	83.72	143.88	85.53
J164	0	81.79	143.52	87.75
J166	0	80.85	143.39	88.91
J170	0	86.05	143.96	82.33
J172	12.8	82.23	143.46	87.04
J174	3.81	82.89	143.43	86.07
J176	9.83	83.56	143.42	85.1
J178	11.52	82.34	143.13	86.41
J18	0	86.12	143.93	82.18
J180	7.81	82	143.17	86.95
J182	9.11	81.32	143.25	88.04
J190	0	82.36	143.67	87.16
J192	0	81.89	143.42	87.47
J194	0	81.79	143.26	87.38
J196	7.36	84.23	143.55	84.33
J198	0	81.77	143.11	87.21
J20	31.08	82.84	142.07	84.2
J200	0	81.35	141.89	86.07
J202	0	81.35	141.9	86.07
J204	6.33	84.51	143.38	83.69
J206	5.79	85.01	143.35	82.94
J208	4.85	85.31	143.34	82.5
J210	4.15	85.52	143.34	82.19
J212	6.81	84.83	143.24	83.04
J214	7.71	84.13	143.18	83.95
J218	1.97	83.55	143.1	84.65
J220	12.81	83.93	143.1	84.12
J222	0	83.84	143.17	84.34
J224	12.14	83.31	142.97	84.81
J226	10.82	82.99	142.9	85.17
J230	0	85.14	143.9	83.54
J232	0	86.44	144.11	81.98
J234	15.15	82.62	143.09	85.97
J24	28.97	82.29	141.9	84.74
J30	8.13	83.73	143.16	84.48
J34	26.71	83.36	142.89	84.63
J38	0	82.86	142.41	84.66
J40	2.08	83.61	142.26	83.37
J42	0	82.93	142.46	84.63
J44	9.72	81.47	142.14	86.24
J46	0	82.71	142.14	84.48
J48	0	80.79	141.9	86.87
J50	0	80.75	141.89	86.92
J54	3.73	82.17	142.12	85.23
J58	10.23	82.05	142.13	85.41
J62	42.75	79.65	142.06	88.72
J64	26.37	81.1	142.03	86.61
J70	0	81.15	142.03	86.54
J74	21.58	81.63	141.95	85.75
J80	0.57	81.7	141.95	85.65
J84	2.11	82.46	141.9	84.5
J88	10.14	82	141.9	85.15
J92	25.01	81.61	141.88	85.68
J96	0	80.91	141.9	86.7

Pipe Data (PHD)

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status
24	J44	J146	37.79	300	120	-9.72	0.14	0	0.1	Open
25	J112	J114	11.08	300	120	-53.76	0.76	0.03	2.36	Open
26	J110	J116	162.84	300	120	35.67	0.5	0.18	1.1	Open
27	J116	J118	103.23	200	120	2.23	0.07	0	0.05	Open
28	J120	J118	17.79	200	120	2.17	0.07	0	0.04	Open
29	J118	J122	14.95	200	120	4.4	0.14	0	0.16	Open
30	J122	J124	88.59	200	120	4.4	0.14	0.01	0.16	Open
31	J124	J126	144.09	200	120	4.4	0.14	0.02	0.16	Open
32	J50	J120	146.51	200	120	2.17	0.07	0.01	0.04	Open
33	J130	J128	112.4	200	120	3.22	0.1	0.01	0.09	Open
34	J130	J112	156.59	300	120	-26.5	0.37	0.1	0.64	Open
35	J74	J112	79.98	300	120	-27.26	0.39	0.05	0.67	Open
36	J198	J14	97.33	400	120	133.36	1.06	0.3	3.13	Open
37	J134	J136	166.63	300	120	21.43	0.3	0.07	0.43	Open
38	J138	J24	110.22	300	120	-4.31	0.06	0	0.02	Open
40	J142	J146	135.17	300	120	52.32	0.74	0.3	2.25	Open
41	J144	J134	154.56	300	120	0	0	0	0	Open
42	J126	J104	40.45	200	120	-9.61	0.31	0.03	0.7	Open
6	J40	J38	120.78	300	120	-39.06	0.55	0.16	1.31	Open
8	J48	J50	91.46	200	120	2.93	0.09	0.01	0.08	Open
P101	J176	J174	85.38	300	120	-11.41	0.16	0.01	0.13	Open
P103	J174	J172	93.42	300	120	-15.22	0.22	0.02	0.23	Open
P105	J18	J232	155.9	600	120	-224.55	0.79	0.18	1.14	Open
P107	J160	J10	17.35	600	120	158.35	0.56	0.01	0.6	Open
P109	J172	J164	87.09	300	120	-28.02	0.4	0.06	0.71	Open
P111	J162	J164	99.75	300	120	67.99	0.96	0.36	3.65	Open
P113	J164	J166	93.28	300	120	39.97	0.57	0.13	1.36	Open
P115	J166	J182	103.28	300	120	39.97	0.57	0.14	1.36	Open
P117	J182	J180	97.96	300	120	30.86	0.44	0.08	0.84	Open
P119	J180	J178	85.13	300	120	23.05	0.33	0.04	0.49	Open
P121	J170	J160	222.37	600	120	158.35	0.56	0.13	0.6	Open
P129	J218	J220	71.02	250	110	-6.21	0.13	0.01	0.12	Open
P13	J146	J134	109.84	300	120	15.03	0.21	0.02	0.22	Open
P131	J220	J222	64.95	250	110	-19.02	0.39	0.06	0.98	Open
P133	J222	J224	89.72	250	110	29.5	0.6	0.2	2.22	Open
P135	J224	J226	83.02	250	110	17.36	0.35	0.07	0.83	Open
P143	J18	J190	61.03	400	120	156.56	1.25	0.26	4.21	Open
P145	J190	J192	58.87	400	120	156.56	1.25	0.25	4.21	Open
P147	J192	J194	53.81	400	120	132.73	1.06	0.17	3.1	Open
P15	J146	J62	118.8	300	120	27.57	0.39	0.08	0.69	Open
P151	J214	J212	82.47	300	120	-28.68	0.41	0.06	0.74	Open
P153	J212	J210	85.62	300	120	-35.49	0.5	0.09	1.09	Open
P155	J196	J30	100.45	400	120	150.99	1.2	0.4	3.94	Open
P157	J194	J198	45.99	400	120	132.73	1.06	0.14	3.1	Open
P159	J128	J200	133.31	200	120	-1.75	0.06	0	0.03	Open
P161	J210	J208	52.95	300	120	-8.44	0.12	0	0.08	Open
P163	J202	J138	119.12	200	120	-1.75	0.06	0	0.03	Open
P165	J136	J96	166.15	300	120	31.22	0.44	0.14	0.86	Open
P167	J200	J202	11.25	200	120	-1.75	0.06	0	0.03	Open
P169	J208	J206	57.99	300	120	-13.29	0.19	0.01	0.18	Open
P17	J62	J110	47.94	300	120	-15.18	0.21	0.01	0.23	Open
P171	J206	J204	88.86	300	120	-19.08	0.27	0.03	0.35	Open
P175	J210	J222	86.86	300	120	48.52	0.69	0.17	1.95	Open
P177	J18	J230	193.5	600	120	67.99	0.24	0.02	0.12	Open
P179	J230	J162	178.15	600	120	67.99	0.24	0.02	0.12	Open
P183	J232	J170	110.92	600	120	238.07	0.84	0.14	1.27	Open
P185	RES9002	J232	1	600	120	462.63	1.64	0	4.35	Open
P187	J214	J30	62.97	300	120	20.97	0.3	0.03	0.41	Open
P189	J226	J34	51.07	250	110	6.54	0.13	0.01	0.14	Open
P19	J20	J54	117.59	300	120	-22.27	0.32	0.05	0.46	Open
P191	J204	J192	68.52	300	120	-25.41	0.36	0.04	0.59	Open
P193	J218	J234	71.16	250	110	4.24	0.09	0	0.06	Open
P195	J198	J178	83.36	300	120	-11.53	0.16	0.01	0.14	Open
P197	J192	J176	106.15	300	120	-1.58	0.02	0	0	Open
P199	J170	J210	128.03	300	120	79.72	1.13	0.63	4.9	Open
P201	J234	J198	64.68	250	110	-10.91	0.22	0.02	0.35	Open
P21	J14	J142	116.76	400	120	133.36	1.06	0.37	3.13	Open
P25	J150	J152	12.66	400	120	81.03	0.64	0.02	1.24	Open
P27	J152	J110	132.14	400	120	81.03	0.64	0.16	1.24	Open
P29	J110	J136	128.24	400	120	30.18	0.24	0.03	0.2	Open
P31	J136	J64	180.81	400	120	20.39	0.16	0.02	0.1	Open
P33	J64	J70	14.43	400	120	-5.98	0.05	0	0.01	Open
P35	J70	J156	34.75	400	120	-5.98	0.05	0	0.01	Open
P37	J156	J114	6.2	400	120	-5.98	0.05	0	0.01	Open
P39	J114	J158	17.17	400	120	-59.74	0.48	0.01	0.71	Open
P41	J154	J158	153.05	400	120	59.74	0.48	0.11	0.71	Open
P43	J42	J154	156.43	400	120	104.6	0.83	0.31	1.99	Open
P45	J34	J42	120.68	400	120	143.66	1.14	0.43	3.59	Open
P47	J30	J34	57.66	400	120	163.83	1.3	0.26	4.58	Open
P51	J58	J134	228.31	300	120	8.63	0.12	0.02	0.08	Open
P53	J154	J58	39.98	300	120	18.86	0.27	0.01	0.34	Open
P55	J104	J116	41.94	300	120	-20.9	0.3	0.02	0.41	Open
P57	J116	J100	77.25	300	120	12.54	0.18	0.01	0.16	Open
P59	J100	J96	84.08	300	120	-16.88	0.24	0.02	0.28	Open
P61	J96	J48	6.45	300	120	14.35	0.2	0	0.2	Open
P63	J48	J92	120.82	300	120	11.42	0.16	0.02	0.13	Open
P65	J92	J130	97.59	300	120	-13.59	0.19	0.02	0.18	Open
P69	J84	J88	69.9	300	120	0.45	0.01	0	0	Open
P71	J138	J84	53.85	300	120	2.56	0.04	0	0.01	Open
P73	J132	J24	44.79	300	120	33.28	0.47	0.04	0.97	Open
P75	J20	J132	172.6	300	120	28.17	0.4	0.12	0.71	Open
P77	J40	J20	159.11	300	120	36.98	0.52	0.19	1.18	Open
P79	J50	J128	234.05	200	120	0.76	0.02	0	0.01	Open
P81	J38	J42	35.3	300	120	-39.06	0.55	0.05	1.31	Open
P83	J54	J154	41.53	300	120	-26	0.37	0.03	0.62	Open
P85	J80	J74	13.52	300	120	-5.68	0.08	0	0.04	Open
P87	J132	J80	74.26	300	120	-5.11	0.07	0	0.03	Open
P89	J10	J196	62.59	400	120	158.35	1.26	0.27	4.3	Open
P93	J88	J130	30.88	300	120	-9.69	0.14	0	0.1	Open
P95	J142	J150	156.08	400	120	81.03	0.64	0.19	1.24	Open
P97	J46	J44	100.05	300	120	0	0	0	0	Open

Hydraulic Model Results - MDD + Fire Flow

Project Title: 4938 Rangeview Mississauga
Last Edited: 2022-10-24
Municipality Region of Peel

Fire Flow Data (MDD_FF)

ID	Static Demand (L/s)	Static Pressure (psi)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (psi)	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (psi)	Junctions with Pressure Violation
J10	0	84	143.99	317	82.66	3,573.26	20.01	0
J100	19.44	89.67	143.18	300	79.77	1,019.67	20	0
J104	7.53	89.93	143.18	300	77.45	858.37	20	0
J110	0	90.68	143.26	300	85.02	1,514.51	20	0
J112	0	87.99	143.24	300	81.74	1,377.63	20	0
J114	0	88.16	143.25	300	82.29	1,450.07	20	0
J116	0	89.89	143.19	300	80.36	1,027.02	20	0
J118	0	90.73	143.18	300	69.32	597.45	20	0
J120	0	92.2	143.19	300	68.17	563.24	20	0
J122	0	90.77	143.18	300	65.93	546.31	20	0
J124	0	90.61	143.18	300	55.31	444.25	20	0
J126	9.2	89.5	143.16	300	64.5	552.71	20	0
J128	2.67	87.92	143.19	300	66.08	579.13	20	0
J130	0	86.98	143.2	300	78.82	1,115.61	20	0
J132	0	86.87	143.22	300	78.91	1,125.28	20	0
J134	1.04	87.4	143.28	300	80.56	1,238.46	20	0
J136	0	90.13	143.25	300	84.36	1,490.95	20	0
J138	0	85.89	143.2	300	76.17	963.62	20	0
J14	0	87.87	143.56	300	83.98	1,855.57	20	0
J142	0	89.65	143.41	300	84.83	1,652.41	20	0
J144	0	85.62	143.28	300	66.26	601.55	20	0
J146	0	88.18	143.29	300	81.73	1,303.31	20	0
J150	0	91.57	143.33	300	85.88	1,474.94	20	0
J152	0	95.82	143.33	300	90.12	1,522.91	20	0
J154	0	87.04	143.3	300	81.8	1,547.18	20	0
J156	0	88.03	143.25	300	82.12	1,440.18	20	0
J158	0	87.87	143.25	300	81.99	1,440.57	20	0
J160	0	83.82	143.99	317	82.53	3,641.23	20.01	0
J162	0	85.71	144.01	317	84.15	2,811.48	20	0
J164	0	88.23	143.85	317	84.22	1,613.00	20	0
J166	0	89.49	143.8	317	82.56	1,173.32	20	0
J170	0	82.45	144.05	317	81.91	6,046.94	20.02	0
J172	8.54	87.57	143.83	317	81.23	1,229.52	20	0
J174	2.54	86.62	143.82	317	79.73	1,156.27	20	0
J176	6.55	85.66	143.81	317	79.67	1,262.29	20	0
J178	7.68	87.21	143.69	317	80.86	1,267.66	20	0
J18	0	82.33	144.03	317	81.63	5,193.72	20.01	0
J180	5.2	87.72	143.7	317	79.78	1,092.06	20	0
J182	6.07	88.73	143.74	317	80.48	1,067.16	20	0
J190	0	87.51	143.92	317	85.94	3,286.78	20.01	0
J192	0	88.03	143.81	317	86.1	3,017.45	20	0
J194	0	88.07	143.74	317	85.5	2,538.58	20	0
J196	4.82	84.79	143.87	317	82.61	2,691.96	20	0
J198	0	88.02	143.68	317	85.09	2,376.27	20	0
J20	14.5	85.91	143.28	300	78.59	1,180.75	20	0
J200	0	87.92	143.2	300	55.83	458.06	20	0
J202	0	87.92	143.2	300	56.32	462.22	20	0
J204	4.22	84.28	143.8	317	79.91	1,508.35	20	0
J206	3.86	83.55	143.78	317	78.52	1,359.55	20	0
J208	3.23	83.12	143.78	317	78.8	1,490.63	20	0
J210	2.77	82.82	143.78	317	80.13	2,077.07	20	0
J212	4.54	83.75	143.74	317	78.84	1,421.63	20	0
J214	5.14	84.71	143.72	317	80.06	1,509.81	20	0
J218	1.32	85.47	143.67	317	72.71	803.81	20	0
J220	8.54	84.94	143.68	317	73.71	870.36	20	0
J222	0	85.1	143.71	317	79.82	1,366.84	20	0
J224	8.1	85.74	143.62	317	74.59	882.14	20	0
J226	7.21	86.16	143.6	317	77.03	1,006.89	20	0
J230	0	83.7	144.02	317	82.5	3,344.08	20.01	0
J232	0	81.98	144.11	317	81.97	65,316.46	22.31	0
J234	10.1	86.79	143.67	317	76.34	932.46	20	0
J24	13.52	86.59	143.2	300	77.47	1,030.81	20	0
J30	5.42	85.26	143.71	317	82.39	2,366.11	20	0
J34	17.8	85.63	143.6	317	82.14	2,115.77	20	0
J38	0	86.07	143.41	300	79.8	1,280.50	20	0
J40	0.97	84.92	143.35	300	76.28	1,003.13	20	0
J42	0	86	143.42	300	81.48	1,686.74	20	0
J44	6.48	87.88	143.29	300	78.24	971.03	20	0
J46	0	86.12	143.29	300	68.37	637.93	20	0
J48	0	88.71	143.19	300	80.5	1,132.70	20	0
J50	0	88.77	143.19	300	69.14	618.63	20	0
J54	2.49	86.89	143.29	300	80.1	1,244.77	20	0
J58	6.82	87.06	143.29	300	80.14	1,233.05	20	0
J62	28.29	90.42	143.25	300	83.17	1,269.80	20	0
J64	17.58	88.35	143.25	300	82.2	1,416.58	20	0
J70	0	88.27	143.25	300	82.19	1,408.03	20	0
J74	14.39	87.55	143.22	300	79.15	1,103.47	20	0
J80	0.27	87.45	143.22	300	78.98	1,080.03	20	0
J84	0.98	86.35	143.2	300	76.46	957.72	20	0
J88	6.59	87	143.2	300	77.92	1,035.25	20	0
J92	16.37	87.54	143.19	300	77.72	999.60	20	0
J96	0	88.54	143.19	300	80.44	1,142.80	20	0

Appendix B-6

Water Age Analysis

Water Turnover Calculations

Project Title: 4938 - Rangeview Mississauga
Last Edited: 2022-10-24

Municipality Region of Peel

Average Consumption:	0.28	L/cap/day	(Residential Land Use)
	0.3	L/cap/day	(Employment Land Use)
Minimum Consumption:	0.196	L/cap/day[1]	

Turnover Rate Calculation								
Service	**Length**	**Diameter**	**Area**	**Volume**	**Average Consumption (100% Population)**	**Minimum Consumption (70% Population)**	**Minimum Consumption (20% Population)**	**Days for Turnover**
	(m)	**(mm)**	**(m^2)**	**(m^3)**	**(m^3/day)**	**(m^3/day)**	**(m^3/day)**	**(Day)**
Complete System	1257	200	0.03	39.50	13323.80	9326.66	1865.33	0.47
	496	250	0.05	24.33				
	4837	300	0.07	341.92				
	1767	400	0.13	222.06				
	879	600	0.28	248.59				

1 - Minimum consumption calculated using: average day consumption * 0.7

Appendix C
Sanitary Servicing Support Information

Sanitary Flow Calculation

Rangeview Estates Master Functional Servicing Plan (Ulimate

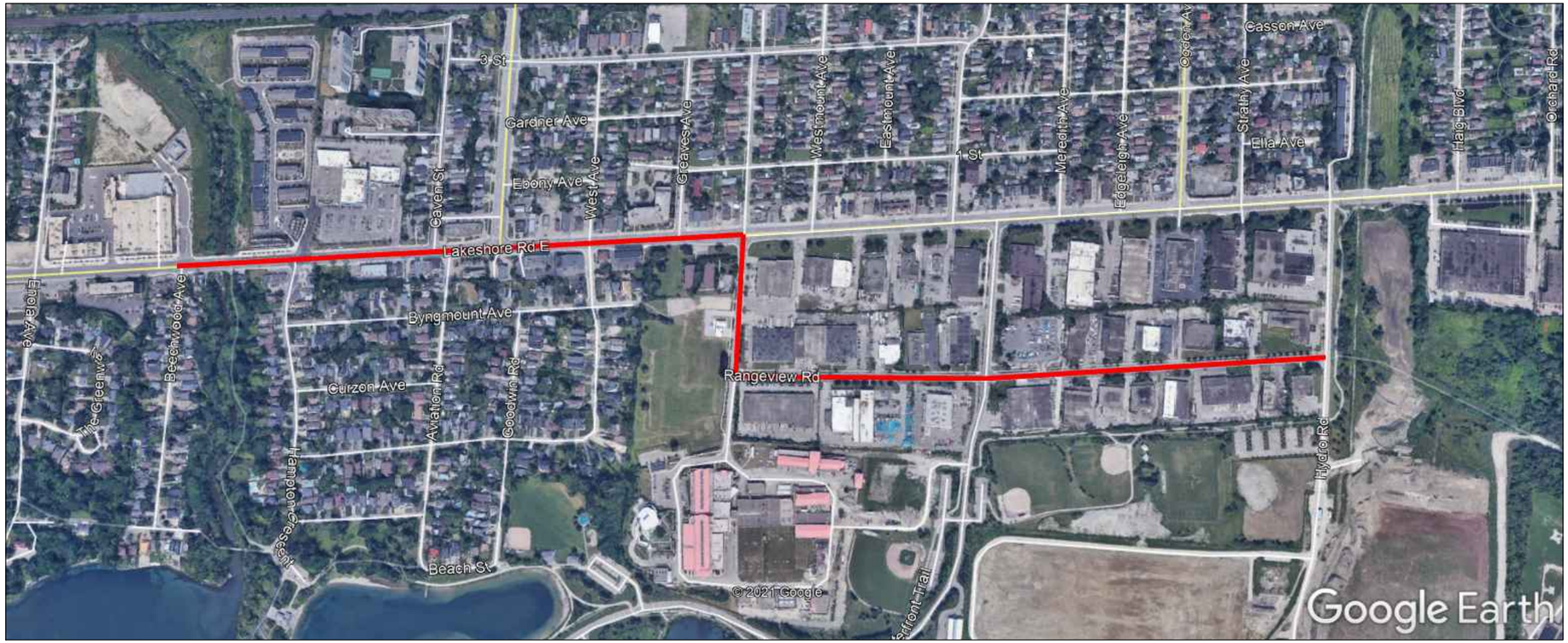
Project No 4938

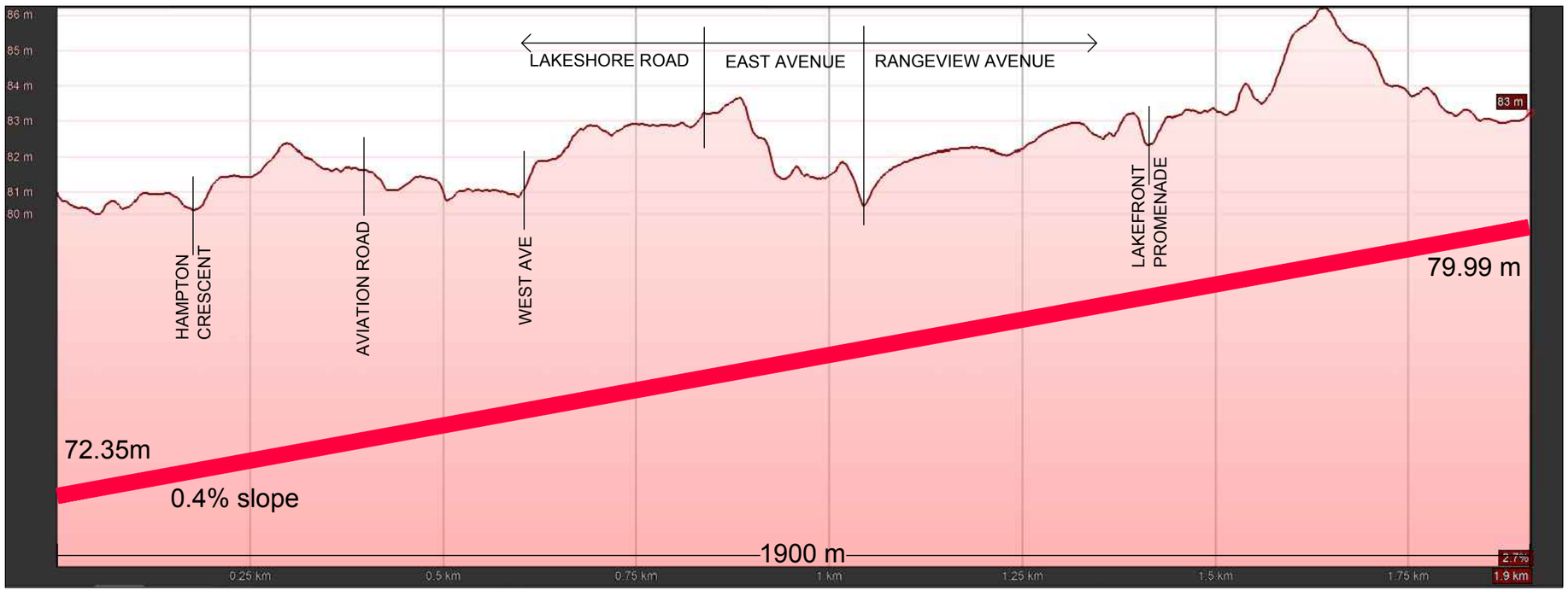
Infiltration Rate:		0.2	L/s/ha
Generation Rate:	Residential and Employment Areas	302.8	L/capita/day

Estimated Site Discharge

Site Discharge	Population****	Average Demand (L/S)	Harmon's Peaking Factor	Flow (L/s) **	Infiltration (L/s)***	Total PeakFlow (L/s)
Townhouse	1884	6.60	3.61	23.81	4.39	**23.81**
Apartment	12869	45.10	2.85	128.32		**128.32**
					Total Flow =	**156.52**

*As per Region of Peel Guidelines
**Sanitary flow as per Region of Peel Guidelines Drawing 2-9-2
*** Infiltration for the total site =21.94 (full Site)
****Refer to Population Statisitics





RANGEVIEW
MIXED USE DEVELOPMENT

LEGEND

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ATTACHMENT C-1
POTENTIAL TRUNK SEWER ALIGNMENT
AND PROFILE SCHEMATIC

2020-4938	OCTOBER 2022	SCALE: N.T.S

Pavel Recnik

W:\4900's\4938 - Rangeview, Mississauga\Drawings\trunk sewer alignment\2021-06-22-Trunk sewer.dwg

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SANITARY SEWER DESIGN SHEET

CITY OF MISSISSAUGA

Rangeview Road Development
Pre-Development Condition

Designed By: J.P
Checked By: K.Sh
Date: October 11, 2022
Project No.: 4938

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STREET	SECTION		RESIDENTIAL						OTHER											Sewer Design				
	From MH	To MH	Sect Area (ha)	Apart. (ha)	ROW (ha)	SF >10m front. (ha)	SF <10m front. (ha)	Semi Detac. (ha)	Ind. (@ 70 ppha) (ha)	Comm. (@ 50 ppha) (ha)	Inst.	Pop	Acc Pop	Avg Day (L/s)	Peaking Factor	Peak Day (L/s)	ACC AREA (ha)	Infiltration (L/s)	TOTAL Peak Flow (L/s)	Pipe Dia Act. (mm)	Grade (%)	Length (m)	Capacity (L/s)	Remarks
Design Criteria																								
Residential																								
SF (> 10m frontage)	*50*	*persons/ha*																						
SF(< 10m frontage)	*70*	*persons/ha*																						
Semi-Detached	*70*	*persons/ha*																						
ROW Dwellings	*175*	*persons/ha*																						
Apartments	*475*	*persons/ha*																						
ICI																								
Industrial	*70*	*persons/ha*																						
Commercial	*50*	*persons/ha*																						
Infiltration	*0.20*	*L/s/ha*																						
Average Domestic Flow	*302.80*	*L/c/d*																						
Rangeview Rd Downstream System																								
Rangeview Rd	40	39	1.49						0.68	0.61		78	78	0.27	4.27	1.17	1.49	0.30	1.47	250	0.28	93.6	31.29	5%
Rangeview Rd	39	38	2.26						2.03			142	220	0.77	4.13	3.19	3.75	0.75	3.94	250	0.33	91.1	34.22	12%
Rangeview Rd	38	37	1.79						1.23	0.36		105	325	1.14	4.06	4.63	5.54	1.11	5.74	250	0.31	91.3	32.95	17%
Rangeview Rd	37	36	0.85						0.72			51	376	1.32	4.03	5.32	6.40	1.28	6.60	250	0.24	91.9	29.26	23%
Rangeview Rd	36	35	1.63						1.45			102	478	1.68	3.98	6.67	8.03	1.61	8.28	250	0.37	91.0	36.26	23%
Rangeview Rd	35	34	2.17						1.43			100	578	2.03	3.94	7.98	10.20	2.04	10.02	250	0.44	90.2	39.41	25%
Rangeview Rd	34	33	1.72						1.53			107	685	2.40	3.90	9.36	11.92	2.38	11.75	250	0.59	91.4	45.81	26%
Rangeview Rd	33	32	2.69						2.19			154	839	2.94	3.85	11.31	14.61	2.92	14.24	250	0.61	92.0	46.54	31%
Rangeview Rd	32	31	1.43						1.04			73	912	3.20	3.83	12.23	16.04	3.21	15.43	250	1.10	82.9	62.45	25%
Rangeview Rd	31	9	0.00									0	912	3.20	3.83	12.23	16.04	3.21	15.43	250	0.53	11.0	43.20	36%
Subtotal			**16.04**									**912**	**912**				**16.04**							
East Ave	9	10	1.84									0	912	3.20	3.83	12.23	17.87	3.57	15.80	250	0.30	83.5	32.73	48%
East Ave (Treatment Plant Lateral)		10	12.85						12.85			900	1812	6.35	3.62	22.98	30.73	6.15	29.13					
Easment - West of East Ave	10	11	0.35									0	1812	6.35	3.62	22.98	31.07	6.21	29.19	300	0.29	90.5	52.04	56%
Easment - West of East Ave	11	12	0.16									0	1812	6.35	3.62	22.98	31.23	6.25	29.23	300	0.35	39.6	56.89	51%
Easment - West of East Ave	12	13	0.06									0	1812	6.35	3.62	22.98	31.29	6.26	29.24	300	0.37	66.1	58.71	50%
Subtotal			**31.29**									**1812**	**1812**				**31.29**							
Lateral from Montbeck North		13	1.73			1.73						87	87				1.73							
Montbeck Cres	13	19	0.11			0.11						6	1905	6.68	3.60	24.05	33.13	6.63	30.68	375	0.14	27.00	64.90	47%
Montbeck Cres	19	20	0.62			0.62						31	1936	6.78	3.60	24.40	33.75	6.75	31.15	375	0.38	40.54	107.71	29%
Montbeck Cres	20	21	0.58			0.58						29	1965	6.89	3.59	24.73	34.32	6.86	31.60	375	0.28	91.74	92.43	34%
Subtotal			**34.32**									**1965**	**1965**				**34.32**							

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SANITARY SEWER DESIGN SHEET

CITY OF MISSISSAUGA

Rangeview Road Development
Pre-Development Condition

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Project No.: 4938

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STREET	SECTION From MH	SECTION To MH	RESIDENTIAL Sect Area (ha)	Apart. (ha)	ROW (ha)	SF >10m front. (ha)	SF <10m front. (ha)	Semi Detac. (ha)	OTHER Ind. (@ 70 ppha) (ha)	Comm. (@ 50 ppha) (ha)	Inst.	Pop	Acc Pop	Avg Day (L/s)	Peaking Factor	Peak Day (L/s)	ACC AREA (ha)	Infiltration (L/s)	TOTAL Peak Flow (L/s)	Sewer Design Pipe Dia Act. (mm)	Grade (%)	Length (m)	Capacity (L/s)	Remarks
*Lateral from North Goodwin & West Montbeck**		21	29.50	0.21	0.38	11.67		0.479	1.32	5.05		1582	1582				29.50							
Goodwin Rd	21	31	0.70			0.70						35	3582	12.55	3.38	42.38	64.52	12.90	55.28	375	0.46	91.44	118.81	47%
Goodwin Rd	31	32	0.41			0.41						21	3603	12.63	3.37	42.60	64.93	12.99	55.59	375	0.29	92.35	94.49	59%
Subtotal			**64.93**									**3603**	**3603**				**64.93**							
Beach St	32	25	0.44			0.44						23	3626	12.71	3.37	42.84	65.38	13.08	55.92	375	0.33	98.00	100.97	55%
Beach St to PS	25	26	0.09						0.091			7	3633	12.73	3.37	42.91	65.47	13.09	56.01	300	0.17	24.99	40.35	139%
Subtotal			**65.47**									**3633**	**3633**				**65.47**							
Lateral from West of PS via Aviation Rd		26	44.78	0.43	19.12	12.29		1.333		3.53		4435	4435				44.78							
Subtotal for Rangeview Rd Downstream System			**110.25**									**8068**	**8068**	**28.28**	**3.05**	**86.15**	**110.25**	**22.05**	**108.19**					
Lakeshore Rd Western Downstream System																								
Lakeshore Rd E	121	111	1.70						0.868	0.434		83	83	0.29	4.26	1.24	1.70	0.34	1.58	250	0.60	66.87	46.06	3%
Lakeshore Rd E	111	110	0.56						0.452			32	115	0.40	4.23	1.70	2.25	0.45	2.15	250	0.74	73.91	51.16	4%
Lakeshore Rd E	110	109	1.77							0.921		47	162	0.57	4.18	2.37	4.02	0.80	3.18	250	0.69	49.68	49.40	6%
Lakeshore Rd E	109	108	5.12			2.78				0.982		235	397	1.39	4.02	5.60	9.14	1.83	7.43	250	0.37	51.11	36.17	21%
Lakeshore Rd E	108	107	2.43			2.15				0.142		115	512	1.79	3.97	7.12	11.56	2.31	9.43	250	0.99	50.69	59.17	16%
Lakeshore Rd E	107	106	0.27							0.144		8	520	1.82	3.97	7.23	11.83	2.37	9.59	250	0.84	47.06	54.50	18%
Lakeshore Rd E	106	105	2.72	0.21		1.33						166	686	2.40	3.90	9.38	14.55	2.91	12.29	250	0.76	65.78	51.84	24%
Lakeshore Rd E	105	104	0.28							0.106		6	692	2.43	3.90	9.45	14.84	2.97	12.42	250	0.80	76.38	53.19	23%
Lakeshore Rd E	104	103	8.71		0.22	2.87		0.479		1.257		278	970	3.40	3.81	12.95	23.54	4.71	17.66	250	0.50	15.85	42.05	42%
Montbeck Cres	103	102	2.26		0.17					1.06		491	1461	5.12	3.69	18.88	25.80	5.16	24.04	250	0.46	86.26	40.33	60%
Byngmount Ave	102	101	0.79			0.79						40	1501	5.26	3.68	19.36	26.59	5.32	24.67	250	0.55	57.91	44.10	56%
Byngmount Ave	101	100	0.23			0.23						12	1513	5.30	3.68	19.50	26.82	5.36	24.86	250	0.44	49.07	39.45	63%
Goodwin Ave	100	99	1.42			1.01						51	1564	5.48	3.67	20.10	28.24	5.65	25.74	250	0.51	91.44	42.47	61%
Goodwin Ave	99	21	0.75			0.50						26	1590	5.57	3.66	20.40	28.99	5.80	26.20	250	0.49	96.32	41.63	63%
Subtotal			**28.99**									**1590**	**1590**				**28.99**							
Lateral from east of MH21		21	34.32									1965	1965				34.32							
Lateral from west of MH 21		21	0.51			0.25						13	1978				34.83							
Subtotal			**63.83**									**3568**	**3568**				**63.83**							
Goodwin Rd	21	31	0.70			0.70						35	3603	12.63	3.37	42.60	64.52	12.90	55.50	375	0.46	91.44	118.81	47%
Goodwin Rd	31	32	0.41			0.41						21	3624	12.70	3.37	42.82	64.93	12.99	55.81	375	0.29	92.35	94.49	59%
Subtotal			**64.93**									**3603**	**3603**				**64.93**							
Beach St	32	25	0.44			0.44						23	3626	12.71	3.37	42.84	65.38	13.08	55.92	375	0.33	98.00	100.97	55%
Beach St to PS	25	26	0.09						0.091			7	3633	12.73	3.37	42.91	65.47	13.09	56.01	300	0.17	24.99	40.35	139%
Subtotal			**65.47**									**3633**	**3633**				**65.47**							

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SANITARY SEWER DESIGN SHEET

CITY OF MISSISSAUGA

Rangeview Road Development
Pre-Development Condition

Designed By: J.P
Checked By: K.Sh
Date: October 11, 2022
Project No.: 4938

:(AutoRecovered).xls]PRE

STREET	SECTION		RESIDENTIAL						OTHER											Sewer Design				
	From MH	To MH	Sect Area (ha)	Apart. (ha)	ROW (ha)	SF >10m front. (ha)	SF <10m front. (ha)	Semi Detac. (ha)	Ind. (@ 70 ppha) (ha)	Comm. (@ 50 ppha) (ha)	Inst.	Pop	Acc Pop	Avg Day (L/s)	Peaking Factor	Peak Day (L/s)	ACC AREA (ha)	Infiltration (L/s)	TOTAL Peak Flow (L/s)	Pipe Dia Act. (mm)	Grade (%)	Length (m)	Capacity (L/s)	Remarks
Lateral from West of PS via Aviation Rd		26	44.82	0.43	19.12	12.29		1.333		3.53		4435	4435				44.82							
Subtotal for Lakeshore Rd Western Downstream System			**110.29**									**8068**	**8068**	**28.28**	**3.05**	**86.15**	**110.29**	**22.06**	**108.20**					
Lakeshore Rd Eastern Downstream System																								
Lakeshore Rd E	7	6	1.06						0.70			50	50	0.18	4.31	0.76	1.06	0.21	0.97	300	0.35	86.26	57.19	2%
Lakeshore Rd E	6	5	1.29						1.074			76	126	0.44	4.21	1.86	2.35	0.47	2.33	300	0.23	91.44	46.71	5%
Lakeshore Rd E	5	4	1.91						0.783	0.858		98	224	0.79	4.13	3.24	4.27	0.85	4.10	300	0.38	91.44	59.35	7%
Lakeshore Rd E	4	3	0.84						0.70			49	273	0.96	4.10	3.92	5.11	1.02	4.94	300	0.20	62.48	42.72	12%
Lakeshore Rd E	3	2	0.00						0.00			0	273	0.96	4.10	3.92	5.11	1.02	4.94	300	0.43	63.70	63.10	8%
Lakeshore Rd E	2	1	1.57						1.356			95	368	1.29	4.04	5.21	6.68	1.34	6.54	300	0.34	65.99	56.15	12%
Lakeshore Rd E	1	001	0.00									0	368	1.29	4.04	5.21	6.68	1.34	6.54	300	1.56	28.50	120.70	5%
Lakeshore Rd E	001	002	126.88		2.04	86.34				2.409	1600	6396	6764	23.71	3.12	73.98	133.56	26.71	100.69	600	0.34	119.00	355.99	28%
Lakeshore Rd E	002	003	3.81									0	6764	23.71	3.12	73.98	137.37	27.47	101.46	600	0.11	91.00	203.54	50%
Subtotal for Lakeshore Rd Eastern Downstream System			**137.37**									**6764**	**6764**				**137.37**							

SANITARY SEWER DESIGN SHEET

CITY OF MISSISSAUGA

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Rangeview Road Development
Ultimate Conditions

STREET	SECTION		RESIDENTIAL					OTHER												Sewer Design			
	From MH	To MH	Sect Area (ha)	Apart. (ha)	ROW (ha)	SF (ha)	Semi Detac. (ha)	Ind. (@ 70 ppha) (ha)	Comm. (@ 50 ppha) (ha)	Inst.	Pop	Acc Pop	Avg Day (L/s)	Peaking Factor	Peak Day (L/s)	ACC AREA (ha)	Infiltration (L/s)	TOTAL Peak Flow (L/s)	Length (m)	Prop. Grade (%)	Proposed Pipe Dia Act. (mm)	Proposed Capacity (L/s)	Proposed Ratio
Design Criteria																							
Residential																							
SF (> 10m frontage)	*50*	*persons/ha*																					
SF(< 10m frontage)	*70*	*persons/ha*																					
Semi-Detached	*70*	*persons/ha*																					
ROW Dwellings	*175*	*persons/ha*																					
Apartments	*475*	*persons/ha*																					
ICI																							
Industrial	*70*	*persons/ha*																					
Commercial	*50*	*persons/ha*																					
Infiltration	*0.20*	*L/s/ha*																					
Average Domestic Flow	*302.80*	*L/c/d*																					
Rangeview Rd	40	39	1.45	507	112						1761	1761	6.17	3.63	22.39	1.45	0.29	22.68	93.6	1.00	250	59.47	38.1%
Rangeview Rd	39	38	1.39		18						63	1824	6.39	3.62	23.12	2.83	0.57	23.68	91.1	0.35	250	35.18	67.3%
Rangeview Rd	38	37	7.03	1652	130						4906	6730	23.59	3.12	73.66	9.86	1.97	75.63	91.3	0.35	**375**	103.73	72.9%
Rangeview Rd	37	36	1.45		58						203	6933	24.30	3.11	75.58	11.31	2.26	77.84	91.9	0.35	**375**	103.73	75.0%
Rangeview Rd	36	35	1.77	530	36						1547	8480	29.72	3.03	89.91	13.08	2.62	92.53	91.0	0.35	**450**	168.67	54.9%
Rangeview Rd	35	34	3.58	825							2218	10698	37.49	2.93	109.68	16.66	3.33	113.02	90.2	0.35	**450**	168.67	67.0%
Rangeview Rd	34	33	2.99	404	94						1420	12118	42.47	2.87	121.95	19.65	3.93	125.87	91.4	0.35	**450**	168.67	74.6%
Rangeview Rd	33	32	2.92	212	104						927	13045	45.72	2.84	129.80	22.57	4.51	134.32	92.0	0.35	**450**	168.67	79.6%
Rangeview Rd	32	31									0	13045	45.72	2.84	129.80	22.57	4.51	134.32	82.9	0.35	**450**	168.67	79.6%
Rangeview Rd to East Ave	31	9									0	13045	45.72	2.84	129.80	22.57	4.51	134.32	11.0	0.35	**450**	168.67	79.6%
East Ave to Lakeshore Rd E *(Proposed Subtrunk Sewer)*	8	7	2.25	570	48						1707	14752	51.70	2.79	144.01	24.82	4.96	148.98	108.1	0.35	**525**	254.43	58.6%
Subtotal for Rangeview Rd Downstream System			**24.82**	**4700**	**600**						**14752**	**14752**				**24.82**							

Appendix D
Stormwater Management Support Information

Project 4938 Rangeview Estates Development
Right of Way and Park SWM Requirements Summary

SCHAEFFERS
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Rainfall intensity

Rainfall Intensity-City of Mississauga

Design Storm Event	A	B	C	I (mm/hr)
2-Year	610.0	4.6	0.78	59.9
5-Year	820.0	4.6	0.78	80.5
10-Year	1010.0	4.6	0.78	99.2
25-Year	1160.0	4.6	0.78	113.9
50-Year	1300.0	4.7	0.78	127.1
100-Year	1450.0	4.9	0.780	140.7

Tc= 15 minutes

I=A/((T+B)^C)

Description	Catchment #	Area (ha)	Runoff coefficent	Allowable Release (10-year flows) Rate (L/s)	Required On-site storage (m3)	Volumetric Requirement (m3)* (5mm)
Site Plan	201	0.52	0.90	128.92	75.58	26.00
Site Plan	202	0.76	0.90	188.41	110.46	38.00
Site Plan	203	0.39	0.90	96.69	56.68	19.50
Site Plan	204	0.39	0.90	96.69	56.68	19.50
Site Plan	205	0.52	0.90	128.92	75.58	26.00
Site Plan	206	0.54	0.90	133.87	78.48	27.00
Site Plan	207	0.93	0.90	230.56	135.17	46.50
Site Plan	208	0.92	0.90	228.08	133.71	46.00
Site Plan	209	0.58	0.90	143.79	84.30	29.00
Site Plan	210	0.89	0.90	220.64	129.35	44.50
Site Plan	211	0.86	0.90	213.21	124.99	43.00
Site Plan	212	0.20	0.90	49.58	29.07	10.00
Site Plan	213	0.40	0.90	99.17	58.14	20.00
Site Plan	214	0.34	0.90	84.29	49.42	17.00
Site Plan	215	0.86	0.90	213.21	124.99	43.00
Site Plan	216	0.19	0.90	47.10	27.61	9.50
Site Plan	217	0.36	0.90	89.25	52.32	18.00
Site Plan	218	0.58	0.90	143.79	84.30	29.00
Site Plan	219	0.55	0.90	136.35	79.94	27.50
Site Plan	220	1.00	0.90	247.91	145.34	50.00
Site Plan	221	1.30	0.90	322.29	188.94	65.00
Site Plan	222	0.60	0.90	148.75	87.20	30.00
Site Plan	223	0.82	0.90	203.29	119.18	41.00
Site Plan	224	0.46	0.90	114.04	66.86	23.00
Site Plan	225	0.38	0.90	94.21	55.23	19.00
Site Plan	226	0.61	0.90	151.23	88.66	30.50
Site Plan	227	0.32	0.90	79.33	46.51	16.00
Site Plan	228	0.33	0.90	81.81	47.96	16.50

* Volumetric Requirement =Area x TIMP x 5mm x 10

Storage Volume Calculation

Project: 4938 Catchment 201

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.520
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	128.92
	Actual Release Rate (l/s) =	128.92
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	254.88	0.00	0.00	254.88	152.93	77.35	75.58
11	167.60	242.28	0.00	0.00	242.28	159.91	85.08	74.82
12	159.81	231.03	0.00	0.00	231.03	166.34	92.82	73.52
13	152.81	220.90	0.00	0.00	220.90	172.30	100.55	71.75
14	146.46	211.73	0.00	0.00	211.73	177.85	108.29	69.56
15	140.69	203.38	0.00	0.00	203.38	183.04	116.02	67.02
16	135.41	195.75	0.00	0.00	195.75	187.92	123.76	64.16
17	130.56	188.74	0.00	0.00	188.74	192.52	131.49	61.02
18	126.09	182.28	0.00	0.00	182.28	196.86	139.23	57.64
19	121.96	176.31	0.00	0.00	176.31	200.99	146.96	54.02
20	118.12	170.76	0.00	0.00	170.76	204.91	154.70	50.21
21	114.55	165.59	0.00	0.00	165.59	208.65	162.43	46.21
22	111.21	160.77	0.00	0.00	160.77	212.22	170.17	42.05
85	43.39	62.73	0.00	0.00	62.73	319.93	657.47	0.00
90	41.60	60.14	0.00	0.00	60.14	324.74	696.14	0.00
100	38.47	55.62	0.00	0.00	55.62	333.70	773.49	0.00
105	37.10	53.63	0.00	0.00	53.63	337.89	812.17	0.00
110	35.84	51.80	0.00	0.00	51.80	341.91	850.84	0.00
115	34.66	50.11	0.00	0.00	50.11	345.77	889.52	0.00
120	33.58	48.54	0.00	0.00	48.54	349.49	928.19	0.00
125	32.57	47.08	0.00	0.00	47.08	353.07	966.87	0.00
130	31.62	45.71	0.00	0.00	45.71	356.53	1005.54	0.00
135	30.73	44.43	0.00	0.00	44.43	359.88	1044.22	0.00
140	29.90	43.23	0.00	0.00	43.23	363.13	1082.89	0.00

Required Storage (m^3):	**75.58**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 202

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.760
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	188.41
	Actual Release Rate (l/s) =	188.41
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	372.51	0.00	0.00	372.51	223.51	113.05	110.46
11	167.60	354.11	0.00	0.00	354.11	233.71	124.35	109.36
12	159.81	337.66	0.00	0.00	337.66	243.11	135.66	107.45
13	152.81	322.85	0.00	0.00	322.85	251.82	146.96	104.86
14	146.46	309.45	0.00	0.00	309.45	259.94	158.27	101.67
15	140.69	297.25	0.00	0.00	297.25	267.52	169.57	97.95
16	135.41	286.10	0.00	0.00	286.10	274.65	180.88	93.77
17	130.56	275.85	0.00	0.00	275.85	281.37	192.18	89.19
18	126.09	266.41	0.00	0.00	266.41	287.73	203.49	84.24
19	121.96	257.68	0.00	0.00	257.68	293.75	214.79	78.96
20	118.12	249.57	0.00	0.00	249.57	299.48	226.10	73.39
21	114.55	242.02	0.00	0.00	242.02	304.95	237.40	67.54
22	111.21	234.97	0.00	0.00	234.97	310.17	248.71	61.46
85	43.39	91.68	0.00	0.00	91.68	467.59	960.92	0.00
90	41.60	87.89	0.00	0.00	87.89	474.63	1017.44	0.00
100	38.47	81.29	0.00	0.00	81.29	487.72	1130.49	0.00
105	37.10	78.39	0.00	0.00	78.39	493.84	1187.01	0.00
110	35.84	75.71	0.00	0.00	75.71	499.71	1243.54	0.00
115	34.66	73.24	0.00	0.00	73.24	505.35	1300.06	0.00
120	33.58	70.94	0.00	0.00	70.94	510.79	1356.59	0.00
125	32.57	68.80	0.00	0.00	68.80	516.03	1413.11	0.00
130	31.62	66.81	0.00	0.00	66.81	521.09	1469.64	0.00
135	30.73	64.94	0.00	0.00	64.94	525.99	1526.16	0.00
140	29.90	63.18	0.00	0.00	63.18	530.73	1582.69	0.00

Required Storage (m^3):	**110.46**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 203

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.390
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	96.69
	Actual Release Rate (l/s) =	96.69
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	191.16	0.00	0.00	191.16	114.69	58.01	56.68
11	167.60	181.71	0.00	0.00	181.71	119.93	63.81	56.12
12	159.81	173.27	0.00	0.00	173.27	124.76	69.61	55.14
13	152.81	165.67	0.00	0.00	165.67	129.23	75.42	53.81
14	146.46	158.80	0.00	0.00	158.80	133.39	81.22	52.17
15	140.69	152.54	0.00	0.00	152.54	137.28	87.02	50.26
16	135.41	146.81	0.00	0.00	146.81	140.94	92.82	48.12
17	130.56	141.56	0.00	0.00	141.56	144.39	98.62	45.77
18	126.09	136.71	0.00	0.00	136.71	147.65	104.42	43.23
19	121.96	132.23	0.00	0.00	132.23	150.74	110.22	40.52
20	118.12	128.07	0.00	0.00	128.07	153.68	116.02	37.66
21	114.55	124.19	0.00	0.00	124.19	156.49	121.83	34.66
22	111.21	120.58	0.00	0.00	120.58	159.16	127.63	31.54
85	43.39	47.05	0.00	0.00	47.05	239.95	493.10	0.00
90	41.60	45.10	0.00	0.00	45.10	243.56	522.11	0.00
100	38.47	41.71	0.00	0.00	41.71	250.28	580.12	0.00
105	37.10	40.23	0.00	0.00	40.23	253.42	609.13	0.00
110	35.84	38.85	0.00	0.00	38.85	256.43	638.13	0.00
115	34.66	37.58	0.00	0.00	37.58	259.33	667.14	0.00
120	33.58	36.40	0.00	0.00	36.40	262.11	696.14	0.00
125	32.57	35.31	0.00	0.00	35.31	264.80	725.15	0.00
130	31.62	34.28	0.00	0.00	34.28	267.40	754.16	0.00
135	30.73	33.32	0.00	0.00	33.32	269.91	783.16	0.00
140	29.90	32.42	0.00	0.00	32.42	272.35	812.17	0.00

Required Storage (m^3):	**56.68**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 204

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.390
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	96.69
	Actual Release Rate (l/s) =	96.69
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	191.16	0.00	0.00	191.16	114.69	58.01	56.68
11	167.60	181.71	0.00	0.00	181.71	119.93	63.81	56.12
12	159.81	173.27	0.00	0.00	173.27	124.76	69.61	55.14
13	152.81	165.67	0.00	0.00	165.67	129.23	75.42	53.81
14	146.46	158.80	0.00	0.00	158.80	133.39	81.22	52.17
15	140.69	152.54	0.00	0.00	152.54	137.28	87.02	50.26
16	135.41	146.81	0.00	0.00	146.81	140.94	92.82	48.12
17	130.56	141.56	0.00	0.00	141.56	144.39	98.62	45.77
18	126.09	136.71	0.00	0.00	136.71	147.65	104.42	43.23
19	121.96	132.23	0.00	0.00	132.23	150.74	110.22	40.52
20	118.12	128.07	0.00	0.00	128.07	153.68	116.02	37.66
21	114.55	124.19	0.00	0.00	124.19	156.49	121.83	34.66
22	111.21	120.58	0.00	0.00	120.58	159.16	127.63	31.54
85	43.39	47.05	0.00	0.00	47.05	239.95	493.10	0.00
90	41.60	45.10	0.00	0.00	45.10	243.56	522.11	0.00
100	38.47	41.71	0.00	0.00	41.71	250.28	580.12	0.00
105	37.10	40.23	0.00	0.00	40.23	253.42	609.13	0.00
110	35.84	38.85	0.00	0.00	38.85	256.43	638.13	0.00
115	34.66	37.58	0.00	0.00	37.58	259.33	667.14	0.00
120	33.58	36.40	0.00	0.00	36.40	262.11	696.14	0.00
125	32.57	35.31	0.00	0.00	35.31	264.80	725.15	0.00
130	31.62	34.28	0.00	0.00	34.28	267.40	754.16	0.00
135	30.73	33.32	0.00	0.00	33.32	269.91	783.16	0.00
140	29.90	32.42	0.00	0.00	32.42	272.35	812.17	0.00

Required Storage (m^3):	**56.68**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 205

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.520
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	128.92
	Actual Release Rate (l/s) =	128.92
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	254.88	0.00	0.00	254.88	152.93	77.35	75.58
11	167.60	242.28	0.00	0.00	242.28	159.91	85.08	74.82
12	159.81	231.03	0.00	0.00	231.03	166.34	92.82	73.52
13	152.81	220.90	0.00	0.00	220.90	172.30	100.55	71.75
14	146.46	211.73	0.00	0.00	211.73	177.85	108.29	69.56
15	140.69	203.38	0.00	0.00	203.38	183.04	116.02	67.02
16	135.41	195.75	0.00	0.00	195.75	187.92	123.76	64.16
17	130.56	188.74	0.00	0.00	188.74	192.52	131.49	61.02
18	126.09	182.28	0.00	0.00	182.28	196.86	139.23	57.64
19	121.96	176.31	0.00	0.00	176.31	200.99	146.96	54.02
20	118.12	170.76	0.00	0.00	170.76	204.91	154.70	50.21
21	114.55	165.59	0.00	0.00	165.59	208.65	162.43	46.21
22	111.21	160.77	0.00	0.00	160.77	212.22	170.17	42.05
85	43.39	62.73	0.00	0.00	62.73	319.93	657.47	0.00
90	41.60	60.14	0.00	0.00	60.14	324.74	696.14	0.00
100	38.47	55.62	0.00	0.00	55.62	333.70	773.49	0.00
105	37.10	53.63	0.00	0.00	53.63	337.89	812.17	0.00
110	35.84	51.80	0.00	0.00	51.80	341.91	850.84	0.00
115	34.66	50.11	0.00	0.00	50.11	345.77	889.52	0.00
120	33.58	48.54	0.00	0.00	48.54	349.49	928.19	0.00
125	32.57	47.08	0.00	0.00	47.08	353.07	966.87	0.00
130	31.62	45.71	0.00	0.00	45.71	356.53	1005.54	0.00
135	30.73	44.43	0.00	0.00	44.43	359.88	1044.22	0.00
140	29.90	43.23	0.00	0.00	43.23	363.13	1082.89	0.00

Required Storage (m^3):	**75.58**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 206

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.540
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	133.87
	Actual Release Rate (l/s) =	133.87
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	264.68	0.00	0.00	264.68	158.81	80.32	78.48
11	167.60	251.60	0.00	0.00	251.60	166.06	88.36	77.70
12	159.81	239.91	0.00	0.00	239.91	172.74	96.39	76.35
13	152.81	229.39	0.00	0.00	229.39	178.93	104.42	74.51
14	146.46	219.87	0.00	0.00	219.87	184.69	112.45	72.24
15	140.69	211.20	0.00	0.00	211.20	190.08	120.49	69.60
16	135.41	203.28	0.00	0.00	203.28	195.15	128.52	66.63
17	130.56	196.00	0.00	0.00	196.00	199.92	136.55	63.37
18	126.09	189.29	0.00	0.00	189.29	204.44	144.58	59.85
19	121.96	183.09	0.00	0.00	183.09	208.72	152.62	56.10
20	118.12	177.33	0.00	0.00	177.33	212.79	160.65	52.14
21	114.55	171.96	0.00	0.00	171.96	216.67	168.68	47.99
22	111.21	166.96	0.00	0.00	166.96	220.38	176.71	43.67
85	43.39	65.14	0.00	0.00	65.14	332.23	682.76	0.00
90	41.60	62.45	0.00	0.00	62.45	337.24	722.92	0.00
100	38.47	57.76	0.00	0.00	57.76	346.54	803.24	0.00
105	37.10	55.70	0.00	0.00	55.70	350.89	843.40	0.00
110	35.84	53.80	0.00	0.00	53.80	355.06	883.57	0.00
115	34.66	52.04	0.00	0.00	52.04	359.07	923.73	0.00
120	33.58	50.41	0.00	0.00	50.41	362.93	963.89	0.00
125	32.57	48.89	0.00	0.00	48.89	366.65	1004.05	0.00
130	31.62	47.47	0.00	0.00	47.47	370.25	1044.22	0.00
135	30.73	46.14	0.00	0.00	46.14	373.73	1084.38	0.00
140	29.90	44.89	0.00	0.00	44.89	377.10	1124.54	0.00

Required Storage (m^3):	**78.48**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 207

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.930
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	230.56
	Actual Release Rate (l/s) =	230.56
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	455.84	0.00	0.00	455.84	273.50	138.34	135.17
11	167.60	433.32	0.00	0.00	433.32	285.99	152.17	133.82
12	159.81	413.18	0.00	0.00	413.18	297.49	166.00	131.49
13	152.81	395.07	0.00	0.00	395.07	308.15	179.84	128.31
14	146.46	378.67	0.00	0.00	378.67	318.08	193.67	124.41
15	140.69	363.74	0.00	0.00	363.74	327.37	207.50	119.86
16	135.41	350.09	0.00	0.00	350.09	336.09	221.34	114.75
17	130.56	337.56	0.00	0.00	337.56	344.31	235.17	109.14
18	126.09	326.00	0.00	0.00	326.00	352.09	249.01	103.08
19	121.96	315.32	0.00	0.00	315.32	359.46	262.84	96.62
20	118.12	305.39	0.00	0.00	305.39	366.47	276.67	89.80
21	114.55	296.16	0.00	0.00	296.16	373.16	290.51	82.65
22	111.21	287.53	0.00	0.00	287.53	379.54	304.34	75.21
85	43.39	112.19	0.00	0.00	112.19	572.18	1175.86	0.00
90	41.60	107.55	0.00	0.00	107.55	580.79	1245.03	0.00
100	38.47	99.47	0.00	0.00	99.47	596.82	1383.36	0.00
105	37.10	95.92	0.00	0.00	95.92	604.31	1452.53	0.00
110	35.84	92.65	0.00	0.00	92.65	611.49	1521.70	0.00
115	34.66	89.62	0.00	0.00	89.62	618.39	1590.87	0.00
120	33.58	86.81	0.00	0.00	86.81	625.04	1660.03	0.00
125	32.57	84.19	0.00	0.00	84.19	631.45	1729.20	0.00
130	31.62	81.75	0.00	0.00	81.75	637.65	1798.37	0.00
135	30.73	79.46	0.00	0.00	79.46	643.64	1867.54	0.00
140	29.90	77.31	0.00	0.00	77.31	649.44	1936.71	0.00

Required Storage (m^3):	**135.17**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 208

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.920
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	228.08
	Actual Release Rate (l/s) =	228.08
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	450.94	0.00	0.00	450.94	270.56	136.85	133.71
11	167.60	428.66	0.00	0.00	428.66	282.91	150.53	132.38
12	159.81	408.74	0.00	0.00	408.74	294.29	164.22	130.08
13	152.81	390.82	0.00	0.00	390.82	304.84	177.90	126.94
14	146.46	374.59	0.00	0.00	374.59	314.66	191.59	123.07
15	140.69	359.83	0.00	0.00	359.83	323.85	205.27	118.57
16	135.41	346.33	0.00	0.00	346.33	332.47	218.96	113.52
17	130.56	333.93	0.00	0.00	333.93	340.61	232.64	107.96
18	126.09	322.50	0.00	0.00	322.50	348.30	246.33	101.97
19	121.96	311.93	0.00	0.00	311.93	355.59	260.01	95.58
20	118.12	302.11	0.00	0.00	302.11	362.53	273.70	88.83
21	114.55	292.97	0.00	0.00	292.97	369.15	287.38	81.76
22	111.21	284.44	0.00	0.00	284.44	375.46	301.07	74.40
85	43.39	110.99	0.00	0.00	110.99	566.03	1163.21	0.00
90	41.60	106.40	0.00	0.00	106.40	574.55	1231.64	0.00
100	38.47	98.40	0.00	0.00	98.40	590.40	1368.49	0.00
105	37.10	94.89	0.00	0.00	94.89	597.81	1436.91	0.00
110	35.84	91.65	0.00	0.00	91.65	604.92	1505.34	0.00
115	34.66	88.66	0.00	0.00	88.66	611.75	1573.76	0.00
120	33.58	85.88	0.00	0.00	85.88	618.32	1642.18	0.00
125	32.57	83.29	0.00	0.00	83.29	624.66	1710.61	0.00
130	31.62	80.87	0.00	0.00	80.87	630.79	1779.03	0.00
135	30.73	78.61	0.00	0.00	78.61	636.72	1847.46	0.00
140	29.90	76.48	0.00	0.00	76.48	642.46	1915.88	0.00

Required Storage (m^3):	**133.71**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 209

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.580
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	143.79
	Actual Release Rate (l/s) =	143.79
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	284.29	0.00	0.00	284.29	170.57	86.27	84.30
11	167.60	270.24	0.00	0.00	270.24	178.36	94.90	83.46
12	159.81	257.69	0.00	0.00	257.69	185.53	103.53	82.00
13	152.81	246.39	0.00	0.00	246.39	192.18	112.16	80.02
14	146.46	236.16	0.00	0.00	236.16	198.37	120.78	77.59
15	140.69	226.85	0.00	0.00	226.85	204.16	129.41	74.75
16	135.41	218.34	0.00	0.00	218.34	209.60	138.04	71.56
17	130.56	210.52	0.00	0.00	210.52	214.73	146.67	68.06
18	126.09	203.31	0.00	0.00	203.31	219.58	155.29	64.29
19	121.96	196.65	0.00	0.00	196.65	224.18	163.92	60.26
20	118.12	190.46	0.00	0.00	190.46	228.55	172.55	56.00
21	114.55	184.70	0.00	0.00	184.70	232.72	181.18	51.55
22	111.21	179.32	0.00	0.00	179.32	236.71	189.80	46.90
85	43.39	69.97	0.00	0.00	69.97	356.84	733.33	0.00
90	41.60	67.08	0.00	0.00	67.08	362.22	776.47	0.00
100	38.47	62.03	0.00	0.00	62.03	372.21	862.74	0.00
105	37.10	59.82	0.00	0.00	59.82	376.88	905.88	0.00
110	35.84	57.78	0.00	0.00	57.78	381.36	949.02	0.00
115	34.66	55.89	0.00	0.00	55.89	385.67	992.15	0.00
120	33.58	54.14	0.00	0.00	54.14	389.81	1035.29	0.00
125	32.57	52.51	0.00	0.00	52.51	393.81	1078.43	0.00
130	31.62	50.98	0.00	0.00	50.98	397.67	1121.56	0.00
135	30.73	49.56	0.00	0.00	49.56	401.41	1164.70	0.00
140	29.90	48.22	0.00	0.00	48.22	405.03	1207.84	0.00

Required Storage (m^3):	**84.30**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 210

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.890
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	220.64
	Actual Release Rate (l/s) =	220.64
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	436.23	0.00	0.00	436.23	261.74	132.39	129.35
11	167.60	414.68	0.00	0.00	414.68	273.69	145.62	128.06
12	159.81	395.41	0.00	0.00	395.41	284.70	158.86	125.83
13	152.81	378.07	0.00	0.00	378.07	294.90	172.10	122.80
14	146.46	362.38	0.00	0.00	362.38	304.40	185.34	119.06
15	140.69	348.09	0.00	0.00	348.09	313.29	198.58	114.71
16	135.41	335.03	0.00	0.00	335.03	321.63	211.82	109.81
17	130.56	323.04	0.00	0.00	323.04	329.50	225.06	104.44
18	126.09	311.98	0.00	0.00	311.98	336.94	238.30	98.65
19	121.96	301.75	0.00	0.00	301.75	344.00	251.53	92.47
20	118.12	292.26	0.00	0.00	292.26	350.71	264.77	85.94
21	114.55	283.42	0.00	0.00	283.42	357.11	278.01	79.10
22	111.21	275.17	0.00	0.00	275.17	363.22	291.25	71.97
85	43.39	107.37	0.00	0.00	107.37	547.57	1125.28	0.00
90	41.60	102.93	0.00	0.00	102.93	555.81	1191.48	0.00
100	38.47	95.19	0.00	0.00	95.19	571.15	1323.86	0.00
105	37.10	91.80	0.00	0.00	91.80	578.32	1390.06	0.00
110	35.84	88.67	0.00	0.00	88.67	585.19	1456.25	0.00
115	34.66	85.77	0.00	0.00	85.77	591.80	1522.44	0.00
120	33.58	83.08	0.00	0.00	83.08	598.16	1588.64	0.00
125	32.57	80.57	0.00	0.00	80.57	604.29	1654.83	0.00
130	31.62	78.23	0.00	0.00	78.23	610.22	1721.02	0.00
135	30.73	76.04	0.00	0.00	76.04	615.96	1787.21	0.00
140	29.90	73.99	0.00	0.00	73.99	621.51	1853.41	0.00

Required Storage (m^3):	**129.35**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 211

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.860
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	213.21
	Actual Release Rate (l/s) =	213.21
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	421.53	0.00	0.00	421.53	252.92	127.92	124.99
11	167.60	400.70	0.00	0.00	400.70	264.46	140.72	123.75
12	159.81	382.08	0.00	0.00	382.08	275.10	153.51	121.59
13	152.81	365.33	0.00	0.00	365.33	284.96	166.30	118.66
14	146.46	350.16	0.00	0.00	350.16	294.14	179.09	115.04
15	140.69	336.36	0.00	0.00	336.36	302.73	191.89	110.84
16	135.41	323.74	0.00	0.00	323.74	310.79	204.68	106.11
17	130.56	312.15	0.00	0.00	312.15	318.39	217.47	100.92
18	126.09	301.47	0.00	0.00	301.47	325.58	230.26	95.32
19	121.96	291.58	0.00	0.00	291.58	332.40	243.06	89.35
20	118.12	282.41	0.00	0.00	282.41	338.89	255.85	83.04
21	114.55	273.87	0.00	0.00	273.87	345.07	268.64	76.43
22	111.21	265.89	0.00	0.00	265.89	350.98	281.43	69.54
85	43.39	103.75	0.00	0.00	103.75	529.11	1087.35	0.00
90	41.60	99.46	0.00	0.00	99.46	537.08	1151.31	0.00
100	38.47	91.98	0.00	0.00	91.98	551.90	1279.24	0.00
105	37.10	88.70	0.00	0.00	88.70	558.82	1343.20	0.00
110	35.84	85.68	0.00	0.00	85.68	565.46	1407.16	0.00
115	34.66	82.88	0.00	0.00	82.88	571.85	1471.12	0.00
120	33.58	80.28	0.00	0.00	80.28	578.00	1535.09	0.00
125	32.57	77.86	0.00	0.00	77.86	583.93	1599.05	0.00
130	31.62	75.60	0.00	0.00	75.60	589.65	1663.01	0.00
135	30.73	73.48	0.00	0.00	73.48	595.19	1726.97	0.00
140	29.90	71.50	0.00	0.00	71.50	600.56	1790.93	0.00

Required Storage (m^3):	**124.99**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 212

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.200
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	49.58
	Actual Release Rate (l/s) =	49.58
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	98.03	0.00	0.00	98.03	58.82	29.75	29.07
11	167.60	93.19	0.00	0.00	93.19	61.50	32.72	28.78
12	159.81	88.86	0.00	0.00	88.86	63.98	35.70	28.28
13	152.81	84.96	0.00	0.00	84.96	66.27	38.67	27.59
14	146.46	81.43	0.00	0.00	81.43	68.40	41.65	26.75
15	140.69	78.22	0.00	0.00	78.22	70.40	44.62	25.78
16	135.41	75.29	0.00	0.00	75.29	72.28	47.60	24.68
17	130.56	72.59	0.00	0.00	72.59	74.05	50.57	23.47
18	126.09	70.11	0.00	0.00	70.11	75.72	53.55	22.17
19	121.96	67.81	0.00	0.00	67.81	77.30	56.52	20.78
20	118.12	65.68	0.00	0.00	65.68	78.81	59.50	19.31
21	114.55	63.69	0.00	0.00	63.69	80.25	62.47	17.77
22	111.21	61.84	0.00	0.00	61.84	81.62	65.45	16.17
85	43.39	24.13	0.00	0.00	24.13	123.05	252.87	0.00
90	41.60	23.13	0.00	0.00	23.13	124.90	267.75	0.00
100	38.47	21.39	0.00	0.00	21.39	128.35	297.50	0.00
105	37.10	20.63	0.00	0.00	20.63	129.96	312.37	0.00
110	35.84	19.92	0.00	0.00	19.92	131.50	327.25	0.00
115	34.66	19.27	0.00	0.00	19.27	132.99	342.12	0.00
120	33.58	18.67	0.00	0.00	18.67	134.42	357.00	0.00
125	32.57	18.11	0.00	0.00	18.11	135.80	371.87	0.00
130	31.62	17.58	0.00	0.00	17.58	137.13	386.75	0.00
135	30.73	17.09	0.00	0.00	17.09	138.42	401.62	0.00
140	29.90	16.63	0.00	0.00	16.63	139.67	416.50	0.00

Required Storage (m^3):	**29.07**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 213

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.400
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	99.17
	Actual Release Rate (l/s) =	99.17
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	196.06	0.00	0.00	196.06	117.64	59.50	58.14
11	167.60	186.37	0.00	0.00	186.37	123.01	65.45	57.56
12	159.81	177.71	0.00	0.00	177.71	127.95	71.40	56.55
13	152.81	169.92	0.00	0.00	169.92	132.54	77.35	55.19
14	146.46	162.87	0.00	0.00	162.87	136.81	83.30	53.51
15	140.69	156.45	0.00	0.00	156.45	140.80	89.25	51.55
16	135.41	150.58	0.00	0.00	150.58	144.55	95.20	49.35
17	130.56	145.19	0.00	0.00	145.19	148.09	101.15	46.94
18	126.09	140.22	0.00	0.00	140.22	151.43	107.10	44.34
19	121.96	135.62	0.00	0.00	135.62	154.61	113.05	41.56
20	118.12	131.35	0.00	0.00	131.35	157.62	119.00	38.62
21	114.55	127.38	0.00	0.00	127.38	160.50	124.95	35.55
22	111.21	123.67	0.00	0.00	123.67	163.25	130.90	32.35
85	43.39	48.25	0.00	0.00	48.25	246.10	505.75	0.00
90	41.60	46.26	0.00	0.00	46.26	249.80	535.49	0.00
100	38.47	42.78	0.00	0.00	42.78	256.70	594.99	0.00
105	37.10	41.26	0.00	0.00	41.26	259.92	624.74	0.00
110	35.84	39.85	0.00	0.00	39.85	263.01	654.49	0.00
115	34.66	38.55	0.00	0.00	38.55	265.98	684.24	0.00
120	33.58	37.34	0.00	0.00	37.34	268.84	713.99	0.00
125	32.57	36.21	0.00	0.00	36.21	271.59	743.74	0.00
130	31.62	35.16	0.00	0.00	35.16	274.26	773.49	0.00
135	30.73	34.18	0.00	0.00	34.18	276.83	803.24	0.00
140	29.90	33.25	0.00	0.00	33.25	279.33	832.99	0.00

Required Storage (m^3):	**58.14**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 214

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.340
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	84.29
	Actual Release Rate (l/s) =	84.29
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	166.65	0.00	0.00	166.65	99.99	50.57	49.42
11	167.60	158.42	0.00	0.00	158.42	104.56	55.63	48.92
12	159.81	151.06	0.00	0.00	151.06	108.76	60.69	48.07
13	152.81	144.43	0.00	0.00	144.43	112.66	65.75	46.91
14	146.46	138.44	0.00	0.00	138.44	116.29	70.80	45.48
15	140.69	132.98	0.00	0.00	132.98	119.68	75.86	43.82
16	135.41	127.99	0.00	0.00	127.99	122.87	80.92	41.95
17	130.56	123.41	0.00	0.00	123.41	125.88	85.98	39.90
18	126.09	119.18	0.00	0.00	119.18	128.72	91.03	37.69
19	121.96	115.28	0.00	0.00	115.28	131.42	96.09	35.32
20	118.12	111.65	0.00	0.00	111.65	133.98	101.15	32.83
21	114.55	108.27	0.00	0.00	108.27	136.42	106.21	30.22
22	111.21	105.12	0.00	0.00	105.12	138.76	111.26	27.49
85	43.39	41.02	0.00	0.00	41.02	209.18	429.88	0.00
90	41.60	39.32	0.00	0.00	39.32	212.33	455.17	0.00
100	38.47	36.37	0.00	0.00	36.37	218.19	505.75	0.00
105	37.10	35.07	0.00	0.00	35.07	220.93	531.03	0.00
110	35.84	33.87	0.00	0.00	33.87	223.56	556.32	0.00
115	34.66	32.77	0.00	0.00	32.77	226.08	581.61	0.00
120	33.58	31.74	0.00	0.00	31.74	228.51	606.89	0.00
125	32.57	30.78	0.00	0.00	30.78	230.85	632.18	0.00
130	31.62	29.89	0.00	0.00	29.89	233.12	657.47	0.00
135	30.73	29.05	0.00	0.00	29.05	235.31	682.76	0.00
140	29.90	28.27	0.00	0.00	28.27	237.43	708.04	0.00

Required Storage (m^3):	**49.42**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 215

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.860
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	213.21
	Actual Release Rate (l/s) =	213.21
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	421.53	0.00	0.00	421.53	252.92	127.92	124.99
11	167.60	400.70	0.00	0.00	400.70	264.46	140.72	123.75
12	159.81	382.08	0.00	0.00	382.08	275.10	153.51	121.59
13	152.81	365.33	0.00	0.00	365.33	284.96	166.30	118.66
14	146.46	350.16	0.00	0.00	350.16	294.14	179.09	115.04
15	140.69	336.36	0.00	0.00	336.36	302.73	191.89	110.84
16	135.41	323.74	0.00	0.00	323.74	310.79	204.68	106.11
17	130.56	312.15	0.00	0.00	312.15	318.39	217.47	100.92
18	126.09	301.47	0.00	0.00	301.47	325.58	230.26	95.32
19	121.96	291.58	0.00	0.00	291.58	332.40	243.06	89.35
20	118.12	282.41	0.00	0.00	282.41	338.89	255.85	83.04
21	114.55	273.87	0.00	0.00	273.87	345.07	268.64	76.43
22	111.21	265.89	0.00	0.00	265.89	350.98	281.43	69.54
85	43.39	103.75	0.00	0.00	103.75	529.11	1087.35	0.00
90	41.60	99.46	0.00	0.00	99.46	537.08	1151.31	0.00
100	38.47	91.98	0.00	0.00	91.98	551.90	1279.24	0.00
105	37.10	88.70	0.00	0.00	88.70	558.82	1343.20	0.00
110	35.84	85.68	0.00	0.00	85.68	565.46	1407.16	0.00
115	34.66	82.88	0.00	0.00	82.88	571.85	1471.12	0.00
120	33.58	80.28	0.00	0.00	80.28	578.00	1535.09	0.00
125	32.57	77.86	0.00	0.00	77.86	583.93	1599.05	0.00
130	31.62	75.60	0.00	0.00	75.60	589.65	1663.01	0.00
135	30.73	73.48	0.00	0.00	73.48	595.19	1726.97	0.00
140	29.90	71.50	0.00	0.00	71.50	600.56	1790.93	0.00

Required Storage (m^3):	**124.99**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 216

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.190
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	47.10
	Actual Release Rate (l/s) =	47.10
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	93.13	0.00	0.00	93.13	55.88	28.26	27.61
11	167.60	88.53	0.00	0.00	88.53	58.43	31.09	27.34
12	159.81	84.41	0.00	0.00	84.41	60.78	33.91	26.86
13	152.81	80.71	0.00	0.00	80.71	62.96	36.74	26.21
14	146.46	77.36	0.00	0.00	77.36	64.98	39.57	25.42
15	140.69	74.31	0.00	0.00	74.31	66.88	42.39	24.49
16	135.41	71.52	0.00	0.00	71.52	68.66	45.22	23.44
17	130.56	68.96	0.00	0.00	68.96	70.34	48.05	22.30
18	126.09	66.60	0.00	0.00	66.60	71.93	50.87	21.06
19	121.96	64.42	0.00	0.00	64.42	73.44	53.70	19.74
20	118.12	62.39	0.00	0.00	62.39	74.87	56.52	18.35
21	114.55	60.51	0.00	0.00	60.51	76.24	59.35	16.89
22	111.21	58.74	0.00	0.00	58.74	77.54	62.18	15.36
85	43.39	22.92	0.00	0.00	22.92	116.90	240.23	0.00
90	41.60	21.97	0.00	0.00	21.97	118.66	254.36	0.00
100	38.47	20.32	0.00	0.00	20.32	121.93	282.62	0.00
105	37.10	19.60	0.00	0.00	19.60	123.46	296.75	0.00
110	35.84	18.93	0.00	0.00	18.93	124.93	310.88	0.00
115	34.66	18.31	0.00	0.00	18.31	126.34	325.02	0.00
120	33.58	17.74	0.00	0.00	17.74	127.70	339.15	0.00
125	32.57	17.20	0.00	0.00	17.20	129.01	353.28	0.00
130	31.62	16.70	0.00	0.00	16.70	130.27	367.41	0.00
135	30.73	16.23	0.00	0.00	16.23	131.50	381.54	0.00
140	29.90	15.80	0.00	0.00	15.80	132.68	395.67	0.00

Required Storage (m^3):	**27.61**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 217

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.360
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	89.25
	Actual Release Rate (l/s) =	89.25
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	176.45	0.00	0.00	176.45	105.87	53.55	52.32
11	167.60	167.74	0.00	0.00	167.74	110.71	58.90	51.80
12	159.81	159.94	0.00	0.00	159.94	115.16	64.26	50.90
13	152.81	152.93	0.00	0.00	152.93	119.28	69.61	49.67
14	146.46	146.58	0.00	0.00	146.58	123.13	74.97	48.16
15	140.69	140.80	0.00	0.00	140.80	126.72	80.32	46.40
16	135.41	135.52	0.00	0.00	135.52	130.10	85.68	44.42
17	130.56	130.67	0.00	0.00	130.67	133.28	91.03	42.25
18	126.09	126.20	0.00	0.00	126.20	136.29	96.39	39.90
19	121.96	122.06	0.00	0.00	122.06	139.15	101.74	37.40
20	118.12	118.22	0.00	0.00	118.22	141.86	107.10	34.76
21	114.55	114.64	0.00	0.00	114.64	144.45	112.45	31.99
22	111.21	111.30	0.00	0.00	111.30	146.92	117.81	29.11
85	43.39	43.43	0.00	0.00	43.43	221.49	455.17	0.00
90	41.60	41.63	0.00	0.00	41.63	224.82	481.95	0.00
100	38.47	38.50	0.00	0.00	38.50	231.03	535.49	0.00
105	37.10	37.13	0.00	0.00	37.13	233.93	562.27	0.00
110	35.84	35.86	0.00	0.00	35.86	236.71	589.04	0.00
115	34.66	34.69	0.00	0.00	34.69	239.38	615.82	0.00
120	33.58	33.60	0.00	0.00	33.60	241.95	642.59	0.00
125	32.57	32.59	0.00	0.00	32.59	244.43	669.37	0.00
130	31.62	31.65	0.00	0.00	31.65	246.83	696.14	0.00
135	30.73	30.76	0.00	0.00	30.76	249.15	722.92	0.00
140	29.90	29.93	0.00	0.00	29.93	251.40	749.69	0.00

Required Storage (m^3):	**52.32**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 218

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.580
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	143.79
	Actual Release Rate (l/s) =	143.79
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	284.29	0.00	0.00	284.29	170.57	86.27	84.30
11	167.60	270.24	0.00	0.00	270.24	178.36	94.90	83.46
12	159.81	257.69	0.00	0.00	257.69	185.53	103.53	82.00
13	152.81	246.39	0.00	0.00	246.39	192.18	112.16	80.02
14	146.46	236.16	0.00	0.00	236.16	198.37	120.78	77.59
15	140.69	226.85	0.00	0.00	226.85	204.16	129.41	74.75
16	135.41	218.34	0.00	0.00	218.34	209.60	138.04	71.56
17	130.56	210.52	0.00	0.00	210.52	214.73	146.67	68.06
18	126.09	203.31	0.00	0.00	203.31	219.58	155.29	64.29
19	121.96	196.65	0.00	0.00	196.65	224.18	163.92	60.26
20	118.12	190.46	0.00	0.00	190.46	228.55	172.55	56.00
21	114.55	184.70	0.00	0.00	184.70	232.72	181.18	51.55
22	111.21	179.32	0.00	0.00	179.32	236.71	189.80	46.90
85	43.39	69.97	0.00	0.00	69.97	356.84	733.33	0.00
90	41.60	67.08	0.00	0.00	67.08	362.22	776.47	0.00
100	38.47	62.03	0.00	0.00	62.03	372.21	862.74	0.00
105	37.10	59.82	0.00	0.00	59.82	376.88	905.88	0.00
110	35.84	57.78	0.00	0.00	57.78	381.36	949.02	0.00
115	34.66	55.89	0.00	0.00	55.89	385.67	992.15	0.00
120	33.58	54.14	0.00	0.00	54.14	389.81	1035.29	0.00
125	32.57	52.51	0.00	0.00	52.51	393.81	1078.43	0.00
130	31.62	50.98	0.00	0.00	50.98	397.67	1121.56	0.00
135	30.73	49.56	0.00	0.00	49.56	401.41	1164.70	0.00
140	29.90	48.22	0.00	0.00	48.22	405.03	1207.84	0.00

Required Storage (m^3):	**84.30**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 219

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.550
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	136.35
	Actual Release Rate (l/s) =	136.35
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	269.58	0.00	0.00	269.58	161.75	81.81	79.94
11	167.60	256.26	0.00	0.00	256.26	169.13	89.99	79.14
12	159.81	244.36	0.00	0.00	244.36	175.94	98.17	77.76
13	152.81	233.64	0.00	0.00	233.64	182.24	106.36	75.89
14	146.46	223.94	0.00	0.00	223.94	188.11	114.54	73.57
15	140.69	215.11	0.00	0.00	215.11	193.60	122.72	70.89
16	135.41	207.04	0.00	0.00	207.04	198.76	130.90	67.86
17	130.56	199.63	0.00	0.00	199.63	203.62	139.08	64.54
18	126.09	192.80	0.00	0.00	192.80	208.22	147.26	60.96
19	121.96	186.48	0.00	0.00	186.48	212.58	155.44	57.14
20	118.12	180.61	0.00	0.00	180.61	216.73	163.62	53.11
21	114.55	175.15	0.00	0.00	175.15	220.68	171.80	48.88
22	111.21	170.05	0.00	0.00	170.05	224.46	179.99	44.48
85	43.39	66.35	0.00	0.00	66.35	338.39	695.40	0.00
90	41.60	63.61	0.00	0.00	63.61	343.48	736.31	0.00
100	38.47	58.83	0.00	0.00	58.83	352.96	818.12	0.00
105	37.10	56.73	0.00	0.00	56.73	357.39	859.02	0.00
110	35.84	54.79	0.00	0.00	54.79	361.63	899.93	0.00
115	34.66	53.00	0.00	0.00	53.00	365.72	940.83	0.00
120	33.58	51.34	0.00	0.00	51.34	369.65	981.74	0.00
125	32.57	49.79	0.00	0.00	49.79	373.44	1022.65	0.00
130	31.62	48.35	0.00	0.00	48.35	377.10	1063.55	0.00
135	30.73	46.99	0.00	0.00	46.99	380.65	1104.46	0.00
140	29.90	45.72	0.00	0.00	45.72	384.08	1145.36	0.00

Required Storage (m^3):	**79.94**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 220

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	1.00
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	247.91
	Actual Release Rate (l/s) =	247.91
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	490.15	0.00	0.00	490.15	294.09	148.75	145.34
11	167.60	465.93	0.00	0.00	465.93	307.52	163.62	143.89
12	159.81	444.28	0.00	0.00	444.28	319.88	178.50	141.39
13	152.81	424.80	0.00	0.00	424.80	331.35	193.37	137.97
14	146.46	407.17	0.00	0.00	407.17	342.02	208.25	133.77
15	140.69	391.12	0.00	0.00	391.12	352.01	223.12	128.88
16	135.41	376.44	0.00	0.00	376.44	361.38	238.00	123.39
17	130.56	362.97	0.00	0.00	362.97	370.23	252.87	117.35
18	126.09	350.54	0.00	0.00	350.54	378.59	267.75	110.84
19	121.96	339.05	0.00	0.00	339.05	386.52	282.62	103.89
20	118.12	328.38	0.00	0.00	328.38	394.06	297.50	96.56
21	114.55	318.45	0.00	0.00	318.45	401.24	312.37	88.87
22	111.21	309.18	0.00	0.00	309.18	408.11	327.25	80.87
85	43.39	120.64	0.00	0.00	120.64	615.25	1264.36	0.00
90	41.60	115.65	0.00	0.00	115.65	624.51	1338.74	0.00
100	38.47	106.96	0.00	0.00	106.96	641.74	1487.49	0.00
105	37.10	103.14	0.00	0.00	103.14	649.79	1561.86	0.00
110	35.84	99.62	0.00	0.00	99.62	657.52	1636.23	0.00
115	34.66	96.37	0.00	0.00	96.37	664.94	1710.61	0.00
120	33.58	93.35	0.00	0.00	93.35	672.09	1784.98	0.00
125	32.57	90.53	0.00	0.00	90.53	678.98	1859.36	0.00
130	31.62	87.90	0.00	0.00	87.90	685.64	1933.73	0.00
135	30.73	85.44	0.00	0.00	85.44	692.09	2008.11	0.00
140	29.90	83.13	0.00	0.00	83.13	698.33	2082.48	0.00

Required Storage (m^3):	**145.34**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 221

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	1.300
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	322.29
	Actual Release Rate (l/s) =	322.29
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	637.19	0.00	0.00	637.19	382.32	193.37	188.94
11	167.60	605.71	0.00	0.00	605.71	399.77	212.71	187.06
12	159.81	577.57	0.00	0.00	577.57	415.85	232.05	183.80
13	152.81	552.24	0.00	0.00	552.24	430.75	251.39	179.36
14	146.46	529.32	0.00	0.00	529.32	444.63	270.72	173.90
15	140.69	508.45	0.00	0.00	508.45	457.61	290.06	167.55
16	135.41	489.38	0.00	0.00	489.38	469.80	309.40	160.40
17	130.56	471.86	0.00	0.00	471.86	481.29	328.73	152.56
18	126.09	455.71	0.00	0.00	455.71	492.16	348.07	144.09
19	121.96	440.76	0.00	0.00	440.76	502.47	367.41	135.06
20	118.12	426.89	0.00	0.00	426.89	512.27	386.75	125.53
21	114.55	413.98	0.00	0.00	413.98	521.62	406.08	115.53
22	111.21	401.93	0.00	0.00	401.93	530.55	425.42	105.13
85	43.39	156.83	0.00	0.00	156.83	799.82	1643.67	0.00
90	41.60	150.34	0.00	0.00	150.34	811.86	1740.36	0.00
100	38.47	139.04	0.00	0.00	139.04	834.26	1933.73	0.00
105	37.10	134.08	0.00	0.00	134.08	844.73	2030.42	0.00
110	35.84	129.51	0.00	0.00	129.51	854.77	2127.11	0.00
115	34.66	125.28	0.00	0.00	125.28	864.42	2223.79	0.00
120	33.58	121.35	0.00	0.00	121.35	873.72	2320.48	0.00
125	32.57	117.69	0.00	0.00	117.69	882.68	2417.16	0.00
130	31.62	114.27	0.00	0.00	114.27	891.34	2513.85	0.00
135	30.73	111.08	0.00	0.00	111.08	899.71	2610.54	0.00
140	29.90	108.07	0.00	0.00	108.07	907.82	2707.22	0.00

Required Storage (m^3):	**188.94**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 222

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.600
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	148.75
	Actual Release Rate (l/s) =	148.75
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	294.09	0.00	0.00	294.09	176.45	89.25	87.20
11	167.60	279.56	0.00	0.00	279.56	184.51	98.17	86.34
12	159.81	266.57	0.00	0.00	266.57	191.93	107.10	84.83
13	152.81	254.88	0.00	0.00	254.88	198.81	116.02	82.78
14	146.46	244.30	0.00	0.00	244.30	205.21	124.95	80.26
15	140.69	234.67	0.00	0.00	234.67	211.20	133.87	77.33
16	135.41	225.87	0.00	0.00	225.87	216.83	142.80	74.03
17	130.56	217.78	0.00	0.00	217.78	222.14	151.72	70.41
18	126.09	210.33	0.00	0.00	210.33	227.15	160.65	66.50
19	121.96	203.43	0.00	0.00	203.43	231.91	169.57	62.34
20	118.12	197.03	0.00	0.00	197.03	236.43	178.50	57.94
21	114.55	191.07	0.00	0.00	191.07	240.75	187.42	53.32
22	111.21	185.51	0.00	0.00	185.51	244.87	196.35	48.52
85	43.39	72.38	0.00	0.00	72.38	369.15	758.62	0.00
90	41.60	69.39	0.00	0.00	69.39	374.71	803.24	0.00
100	38.47	64.17	0.00	0.00	64.17	385.04	892.49	0.00
105	37.10	61.89	0.00	0.00	61.89	389.88	937.12	0.00
110	35.84	59.77	0.00	0.00	59.77	394.51	981.74	0.00
115	34.66	57.82	0.00	0.00	57.82	398.96	1026.37	0.00
120	33.58	56.01	0.00	0.00	56.01	403.25	1070.99	0.00
125	32.57	54.32	0.00	0.00	54.32	407.39	1115.61	0.00
130	31.62	52.74	0.00	0.00	52.74	411.39	1160.24	0.00
135	30.73	51.27	0.00	0.00	51.27	415.25	1204.86	0.00
140	29.90	49.88	0.00	0.00	49.88	419.00	1249.49	0.00

Required Storage (m^3):	**87.20**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 223

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.820
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	203.29
	Actual Release Rate (l/s) =	203.29
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	401.92	0.00	0.00	401.92	241.15	121.97	119.18
11	167.60	382.06	0.00	0.00	382.06	252.16	134.17	117.99
12	159.81	364.31	0.00	0.00	364.31	262.31	146.37	115.94
13	152.81	348.34	0.00	0.00	348.34	271.70	158.57	113.14
14	146.46	333.88	0.00	0.00	333.88	280.46	170.76	109.69
15	140.69	320.72	0.00	0.00	320.72	288.64	182.96	105.68
16	135.41	308.68	0.00	0.00	308.68	296.34	195.16	101.18
17	130.56	297.63	0.00	0.00	297.63	303.59	207.36	96.23
18	126.09	287.45	0.00	0.00	287.45	310.44	219.55	90.89
19	121.96	278.02	0.00	0.00	278.02	316.94	231.75	85.19
20	118.12	269.27	0.00	0.00	269.27	323.13	243.95	79.18
21	114.55	261.13	0.00	0.00	261.13	329.02	256.15	72.88
22	111.21	253.52	0.00	0.00	253.52	334.65	268.34	66.31
85	43.39	98.92	0.00	0.00	98.92	504.50	1036.78	0.00
90	41.60	94.83	0.00	0.00	94.83	512.10	1097.76	0.00
100	38.47	87.70	0.00	0.00	87.70	526.23	1219.74	0.00
105	37.10	84.58	0.00	0.00	84.58	532.83	1280.73	0.00
110	35.84	81.69	0.00	0.00	81.69	539.16	1341.71	0.00
115	34.66	79.02	0.00	0.00	79.02	545.25	1402.70	0.00
120	33.58	76.54	0.00	0.00	76.54	551.11	1463.69	0.00
125	32.57	74.24	0.00	0.00	74.24	556.77	1524.67	0.00
130	31.62	72.08	0.00	0.00	72.08	562.23	1585.66	0.00
135	30.73	70.06	0.00	0.00	70.06	567.51	1646.65	0.00
140	29.90	68.17	0.00	0.00	68.17	572.63	1707.63	0.00

Required Storage (m^3):	**119.18**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 224

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.460
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	114.04
	Actual Release Rate (l/s) =	114.04
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	225.47	0.00	0.00	225.47	135.28	68.42	66.86
11	167.60	214.33	0.00	0.00	214.33	141.46	75.27	66.19
12	159.81	204.37	0.00	0.00	204.37	147.15	82.11	65.04
13	152.81	195.41	0.00	0.00	195.41	152.42	88.95	63.47
14	146.46	187.30	0.00	0.00	187.30	157.33	95.79	61.54
15	140.69	179.91	0.00	0.00	179.91	161.92	102.64	59.29
16	135.41	173.16	0.00	0.00	173.16	166.24	109.48	56.76
17	130.56	166.96	0.00	0.00	166.96	170.30	116.32	53.98
18	126.09	161.25	0.00	0.00	161.25	174.15	123.16	50.99
19	121.96	155.96	0.00	0.00	155.96	177.80	130.01	47.79
20	118.12	151.06	0.00	0.00	151.06	181.27	136.85	44.42
21	114.55	146.49	0.00	0.00	146.49	184.57	143.69	40.88
22	111.21	142.22	0.00	0.00	142.22	187.73	150.53	37.20
85	43.39	55.49	0.00	0.00	55.49	283.01	581.61	0.00
90	41.60	53.20	0.00	0.00	53.20	287.27	615.82	0.00
100	38.47	49.20	0.00	0.00	49.20	295.20	684.24	0.00
105	37.10	47.45	0.00	0.00	47.45	298.90	718.46	0.00
110	35.84	45.83	0.00	0.00	45.83	302.46	752.67	0.00
115	34.66	44.33	0.00	0.00	44.33	305.87	786.88	0.00
120	33.58	42.94	0.00	0.00	42.94	309.16	821.09	0.00
125	32.57	41.64	0.00	0.00	41.64	312.33	855.30	0.00
130	31.62	40.44	0.00	0.00	40.44	315.40	889.52	0.00
135	30.73	39.30	0.00	0.00	39.30	318.36	923.73	0.00
140	29.90	38.24	0.00	0.00	38.24	321.23	957.94	0.00

Required Storage (m^3):	**66.86**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 225

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.380
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	94.21
	Actual Release Rate (l/s) =	94.21
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	186.26	0.00	0.00	186.26	111.75	56.52	55.23
11	167.60	177.05	0.00	0.00	177.05	116.86	62.18	54.68
12	159.81	168.83	0.00	0.00	168.83	121.56	67.83	53.73
13	152.81	161.43	0.00	0.00	161.43	125.91	73.48	52.43
14	146.46	154.72	0.00	0.00	154.72	129.97	79.13	50.83
15	140.69	148.62	0.00	0.00	148.62	133.76	84.79	48.98
16	135.41	143.05	0.00	0.00	143.05	137.33	90.44	46.89
17	130.56	137.93	0.00	0.00	137.93	140.69	96.09	44.59
18	126.09	133.21	0.00	0.00	133.21	143.86	101.74	42.12
19	121.96	128.84	0.00	0.00	128.84	146.88	107.40	39.48
20	118.12	124.78	0.00	0.00	124.78	149.74	113.05	36.69
21	114.55	121.01	0.00	0.00	121.01	152.47	118.70	33.77
22	111.21	117.49	0.00	0.00	117.49	155.08	124.35	30.73
85	43.39	45.84	0.00	0.00	45.84	233.79	480.46	0.00
90	41.60	43.95	0.00	0.00	43.95	237.31	508.72	0.00
100	38.47	40.64	0.00	0.00	40.64	243.86	565.24	0.00
105	37.10	39.19	0.00	0.00	39.19	246.92	593.51	0.00
110	35.84	37.86	0.00	0.00	37.86	249.86	621.77	0.00
115	34.66	36.62	0.00	0.00	36.62	252.68	650.03	0.00
120	33.58	35.47	0.00	0.00	35.47	255.39	678.29	0.00
125	32.57	34.40	0.00	0.00	34.40	258.01	706.56	0.00
130	31.62	33.40	0.00	0.00	33.40	260.54	734.82	0.00
135	30.73	32.47	0.00	0.00	32.47	262.99	763.08	0.00
140	29.90	31.59	0.00	0.00	31.59	265.36	791.34	0.00

Required Storage (m^3):	**55.23**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 226

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.610
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	151.23
	Actual Release Rate (l/s) =	151.23
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	298.99	0.00	0.00	298.99	179.39	90.74	88.66
11	167.60	284.22	0.00	0.00	284.22	187.58	99.81	87.77
12	159.81	271.01	0.00	0.00	271.01	195.13	108.88	86.25
13	152.81	259.13	0.00	0.00	259.13	202.12	117.96	84.16
14	146.46	248.37	0.00	0.00	248.37	208.63	127.03	81.60
15	140.69	238.58	0.00	0.00	238.58	214.72	136.10	78.62
16	135.41	229.63	0.00	0.00	229.63	220.44	145.18	75.27
17	130.56	221.41	0.00	0.00	221.41	225.84	154.25	71.59
18	126.09	213.83	0.00	0.00	213.83	230.94	163.33	67.61
19	121.96	206.82	0.00	0.00	206.82	235.77	172.40	63.38
20	118.12	200.31	0.00	0.00	200.31	240.37	181.47	58.90
21	114.55	194.25	0.00	0.00	194.25	244.76	190.55	54.21
22	111.21	188.60	0.00	0.00	188.60	248.95	199.62	49.33
85	43.39	73.59	0.00	0.00	73.59	375.30	771.26	0.00
90	41.60	70.55	0.00	0.00	70.55	380.95	816.63	0.00
100	38.47	65.24	0.00	0.00	65.24	391.46	907.37	0.00
105	37.10	62.92	0.00	0.00	62.92	396.37	952.73	0.00
110	35.84	60.77	0.00	0.00	60.77	401.09	998.10	0.00
115	34.66	58.78	0.00	0.00	58.78	405.61	1043.47	0.00
120	33.58	56.94	0.00	0.00	56.94	409.97	1088.84	0.00
125	32.57	55.22	0.00	0.00	55.22	414.18	1134.21	0.00
130	31.62	53.62	0.00	0.00	53.62	418.24	1179.58	0.00
135	30.73	52.12	0.00	0.00	52.12	422.17	1224.94	0.00
140	29.90	50.71	0.00	0.00	50.71	425.98	1270.31	0.00

Required Storage (m^3):	**88.66**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 227

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.320
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	79.33
	Actual Release Rate (l/s) =	79.33
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	156.85	0.00	0.00	156.85	94.11	47.60	46.51
11	167.60	149.10	0.00	0.00	149.10	98.40	52.36	46.05
12	159.81	142.17	0.00	0.00	142.17	102.36	57.12	45.24
13	152.81	135.94	0.00	0.00	135.94	106.03	61.88	44.15
14	146.46	130.29	0.00	0.00	130.29	109.45	66.64	42.81
15	140.69	125.16	0.00	0.00	125.16	112.64	71.40	41.24
16	135.41	120.46	0.00	0.00	120.46	115.64	76.16	39.48
17	130.56	116.15	0.00	0.00	116.15	118.47	80.92	37.55
18	126.09	112.17	0.00	0.00	112.17	121.15	85.68	35.47
19	121.96	108.50	0.00	0.00	108.50	123.69	90.44	33.25
20	118.12	105.08	0.00	0.00	105.08	126.10	95.20	30.90
21	114.55	101.90	0.00	0.00	101.90	128.40	99.96	28.44
22	111.21	98.94	0.00	0.00	98.94	130.60	104.72	25.88
85	43.39	38.60	0.00	0.00	38.60	196.88	404.60	0.00
90	41.60	37.01	0.00	0.00	37.01	199.84	428.40	0.00
100	38.47	34.23	0.00	0.00	34.23	205.36	476.00	0.00
105	37.10	33.01	0.00	0.00	33.01	207.93	499.80	0.00
110	35.84	31.88	0.00	0.00	31.88	210.41	523.60	0.00
115	34.66	30.84	0.00	0.00	30.84	212.78	547.39	0.00
120	33.58	29.87	0.00	0.00	29.87	215.07	571.19	0.00
125	32.57	28.97	0.00	0.00	28.97	217.27	594.99	0.00
130	31.62	28.13	0.00	0.00	28.13	219.41	618.79	0.00
135	30.73	27.34	0.00	0.00	27.34	221.47	642.59	0.00
140	29.90	26.60	0.00	0.00	26.60	223.46	666.39	0.00

Required Storage (m^3):	**46.51**
Provided Storage (m^3):	

Storage Volume Calculation

Project: 4938 Catchment 228

SCHAEFFERS CONSULTING ENGINEERS

Modified Rational Method

Internal Area	Controlled Drainage Area (ha) =	0.330
	5-year C =	0.90
	100-year C =	1.00
	Allocated Release Rate (l/s) =	81.81
	Actual Release Rate (l/s) =	81.81
External Area	Area (ha) =	0.00
	C =	0.00
External Flows		

100 Year Storm

Design Storm =	Mississauga
A =	1450
B =	4.9
C =	0.78

	100 Year					Total	Maximum	Required
Time	Intensity	Total	Rooftop	External	Total	Runoff	Release	Storage
(min)	100 year	Runoff	Runoff	Runoff	Runoff	Volume	Volume	Volume
	(mm/hr)	(l/s)	(l/s)	(l/s)	(l/s)	(m^3)	(m^3)	(m^3)
10	176.31	161.75	0.00	0.00	161.75	97.05	49.09	47.96
11	167.60	153.76	0.00	0.00	153.76	101.48	54.00	47.48
12	159.81	146.61	0.00	0.00	146.61	105.56	58.90	46.66
13	152.81	140.18	0.00	0.00	140.18	109.34	63.81	45.53
14	146.46	134.37	0.00	0.00	134.37	112.87	68.72	44.14
15	140.69	129.07	0.00	0.00	129.07	116.16	73.63	42.53
16	135.41	124.23	0.00	0.00	124.23	119.26	78.54	40.72
17	130.56	119.78	0.00	0.00	119.78	122.17	83.45	38.73
18	126.09	115.68	0.00	0.00	115.68	124.93	88.36	36.58
19	121.96	111.89	0.00	0.00	111.89	127.55	93.27	34.28
20	118.12	108.37	0.00	0.00	108.37	130.04	98.17	31.86
21	114.55	105.09	0.00	0.00	105.09	132.41	103.08	29.33
22	111.21	102.03	0.00	0.00	102.03	134.68	107.99	26.69
85	43.39	39.81	0.00	0.00	39.81	203.03	417.24	0.00
90	41.60	38.16	0.00	0.00	38.16	206.09	441.78	0.00
100	38.47	35.30	0.00	0.00	35.30	211.77	490.87	0.00
105	37.10	34.04	0.00	0.00	34.04	214.43	515.41	0.00
110	35.84	32.88	0.00	0.00	32.88	216.98	539.96	0.00
115	34.66	31.80	0.00	0.00	31.80	219.43	564.50	0.00
120	33.58	30.80	0.00	0.00	30.80	221.79	589.04	0.00
125	32.57	29.88	0.00	0.00	29.88	224.06	613.59	0.00
130	31.62	29.01	0.00	0.00	29.01	226.26	638.13	0.00
135	30.73	28.20	0.00	0.00	28.20	228.39	662.68	0.00
140	29.90	27.43	0.00	0.00	27.43	230.45	687.22	0.00

Required Storage (m^3):	**47.96**
Provided Storage (m^3):	

Project 4938 Rangeview Estates Development
Right of Way and Park SWM Requirements Summary

SCHAEFFERS
CONSULTING ENGINEERS

Rainfall intensity

Rainfall Intensity-City of Mississauga

Design Storm Event	A	B	C	I (mm/hr)
2-Year	610.0	4.6	0.78	59.9
5-Year	820.0	4.6	0.78	80.5
10-Year	1010.0	4.6	0.78	99.2
25-Year	1160.0	4.6	0.78	113.9
50-Year	1300.0	4.7	0.78	127.1
100-Year	1450.0	4.9	0.780	140.7

Tc= 15 minutes

I=A/((T+B)^C)

Description	Catchment #	Area (ha)	Runoff coefficent	10-year minor flows (L/s)	100-year flows (L/s)	Volumetric Requirement (m3)*	LID Refrence ID**
Park	300	0.24	0.30	19.83	28.14	-	-
Park	301	0.33	0.30	27.27	38.69	-	-
Park	302	0.25	0.30	20.66	29.31	-	-
Park	303	0.62	0.30	51.24	72.69	-	-
Park	304	0.16	0.30	13.22	18.76	-	-
Park	305	0.35	0.30	28.92	41.03	-	-
Park	306	0.16	0.30	13.22	18.76	-	-
Park	307	0.29	0.30	23.97	34.00	-	-
Park	308	0.26	0.30	21.49	30.48	-	-
Municipal ROW	401	0.20	0.90	49.58	70.34	10.00	1
Municipal ROW	402	0.19	0.90	47.10	66.83	9.50	
Municipal ROW	403	0.27	0.90	66.94	94.97	13.50	
Municipal ROW	404	0.72	0.90	178.50	253.24	36.00	2
Municipal ROW	405	0.83	0.90	205.77	291.93	41.50	3
Municipal ROW	406	0.24	0.90	59.50	84.41	12.00	4
Municipal ROW	407	0.27	0.90	66.94	94.97	13.50	5
Municipal ROW	408	0.36	0.90	89.25	126.62	18.00	6
Municipal ROW	409	0.52	0.90	128.92	182.90	26.00	7
Municipal ROW	410	0.59	0.90	146.27	207.52	29.50	8
Municipal ROW	411	0.18	0.90	44.62	63.31	9.00	9
Municipal ROW	412	0.16	0.90	39.67	56.28	8.00	10
Municipal ROW	413	0.36	0.90	89.25	126.62	18.00	11
Municipal ROW	414	0.43	0.90	106.60	151.24	21.50	12
Municipal ROW	415	0.50	0.90	123.96	175.86	25.00	13
Municipal ROW	416	0.21	0.90	52.06	73.86	10.50	-
Municipal ROW	417	0.20	0.90	49.58	70.34	10.00	-
Municipal ROW	418	0.37	0.90	91.73	130.14	18.50	-
Municipal ROW	419	0.17	0.90	42.15	59.79	8.50	14

* Volumetric Requirement =Area x TIMP x 5mm x 10

**Refer to LID Figure Location and Volume Requirements

Project# 4938

Rangeview Estates

West of Lakefront Promenade Cumulative Requirements
WATER QUALITY REQUIREMENT CALCULATIONS

Table: Water Quality Storage Requirements Based on Receiving Waters

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level					
		0%	35%	55%	70%	85%	100%
Level 3	Infiltration/Filtration	20	20	20	20	20	20

Input:

Estimated Imperviousness =	100%	
Total ROW Area =	2.21	ha
Level of Protection:	3	
SWMP Type :	nfiltration/Filtration	

Calculation:

Total Filter Volume Required = 20 m^3/ha → **44**

5mm Retention Requirement= 111 m^3

Use LID Sizing Greater of 5mm retention or volume required for 60% TSS removal filtration

Project# 4938

Rangeview Estates

East of Lakefront Promenade Treepit Cumulative Requirements
WATER QUALITY REQUIREMENT CALCULATIONS

Table: Water Quality Storage Requirements Based on Receiving Waters

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level					
		0%	35%	55%	70%	85%	100%
Level 3	Infiltration/Filtration	20	20	20	20	20	20

Input:

Estimated Imperviousness =	100%	
Total ROW Area =	2.56	ha
Level of Protection:	3	
SWMP Type :	Infiltration/Filtration	

Calculation:

Total Filter Volume Required =	20	m^3/ha →	**51**

5mm Retention Requirement= 128 m^3

Use LID Sizing Greater of 5mm retention or volume required for 60% TSS removal filtration

Project# 4938

Rangeview Estates

Lakefront Promenade Cumulative Treepit Requirements
WATER QUALITY REQUIREMENT CALCULATIONS

Table: Water Quality Storage Requirements Based on Receiving Waters

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level					
		0%	35%	55%	70%	85%	100%
Level 1	Infiltration/Filtration	53	25	30	35	40	45

Input:

Estimated Imperviousness =	100%	
Total ROW Area =	0.87	ha
Level of Protection:	1	
SWMP Type :	Infiltration/Filtration	

Calculation:

Total Filter Volume Required =	45	m^3/ha →	**39**

5mm Retention Requirement= 44 m^3

Use LID Sizing Greater of 5mm retention or volume required for 80% TSS removal filtration

Full Capture Flow Calulations

Street Name	Area ID	Capture MH	Trib. Area 10-Year Captured from Upstream CBs (ha)	Trib. Area 100-Year (ha)	R_{10}	R_{100}	AR_{10}	AR_{100}	Flow Length (m)	Flow Velocity (m/s)	Time of Conc. (min)	I_{10} (mm/hr)	I_{100} (mm/hr)	Q_{10} (L/s)	Q_{100} (L/s)	Q_{100}-Q_{10} (L/s)	Constant Flow (L/s)
Hydro Road / Rangeview (East)		5	0.34	1.25	0.9	1.00	0.31	1.25	200	1.5	20.0	83.1	118.1	70.6	410.2	339.6	339.6
Street L (East of Ogden)		15	0.16	0.72	0.9	1.00	0.14	0.72	215	1.5	20.4	82.1	116.8	32.8	233.5	200.7	200.7
East Ave / Rangeview (West)		31	1.11	1.20	0.9	1.00	1.00	1.20	370	1.5	24.3	73.4	104.5	203.6	348.2	144.7	144.7
Street L (West of Lakefront)		28	0.61	0.71	0.9	1.00	0.55	0.71	270	1.5	21.8	78.7	112.0	120.1	221.0	100.9	100.9
Ogden		7	0.48	0.97	0.9	1.00	0.43	0.97	210	1.5	20.3	82.4	117.2	98.9	315.8	216.9	216.9
Street L (West of Ogden)		23	0.35	0.51	0.9	1.00	0.32	0.51	260	1.5	21.5	79.3	112.9	69.4	159.9	90.5	90.5
Rangeview East		10	0.38	0.95	0.9	1.00	0.34	0.95	280	1.5	7	149.3	210.1	141.8	554.5	412.7	412.7
Lakeshore East (@ East)		Ex. F3-63	0.63	0.63	0.9	1.00	0.57	0.63	150	1.5	18.8	86.5	123.0	136.3	215.2	78.9	78.9
Lakeshore East (@ Lakefront)		Ex. 1	2.32	2.32	0.9	1.00	2.09	2.32	550	1.5	28.8	65.5	93.4	380.0	601.9	221.9	221.9
Hydro Road		4	0	0	0.9	1.00	0.00	0.00	90	1.5	17.3	91.1	129.4	0.0	0.0	0.0	0.0

IDF Parameters

	10-YR	100-YR
A	1010	1450
b	4.6	4.9
c	0.78	0.78

$I = A / (T.C.+b)^c$
T.C. = Time of Conc. (min)
I = Rainfall Intensity (mm/hr)
*Calculations Assume 10-year Minor Flows are Captured

Run-off Coefficients

R100 = R10 x 1.25
Max. R = 0.90

Time of Concentration

T.C. (min) = Flow Length (m) x Flow Velocity (m/s)

Flow Velocity Overland = 1.5 m/s

Caledon

Rangeview

Hydro Road / Rangeview (East)

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.340	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	2	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	200	mm

Output:

Flow Capacity per Inlet =	0.416	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.208	m^3/s
Number of Inlet =	2	
Total Flow Capacity with 50% Blockage =	0.416	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview
Street L (East of Ogden)

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.201	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	2	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	150	mm

Output:

Flow Capacity per Inlet =	0.289	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.144	m^3/s
Number of Inlet =	2	
Total Flow Capacity with 50% Blockage =	0.289	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview

East Ave / Rangeview (West)

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.145	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	2	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	150	mm

Output:

Flow Capacity per Inlet =	0.289	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.144	m^3/s
Number of Inlet =	2	
Total Flow Capacity with 50% Blockage =	0.289	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview
Street L (West of Lakefront)

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.101	m^3/s
Catchbasin Type =	1	*
Number of Catchbasins =	1	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	150	mm

Output:

Flow Capacity per Inlet =	0.204	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.102	m^3/s
Number of Inlet =	1	
Total Flow Capacity with 50% Blockage =	0.102	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview
Ogden

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.217	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	2	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	150	mm

Output:

Flow Capacity per Inlet =	0.289	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.144	m^3/s
Number of Inlet =	2	
Total Flow Capacity with 50% Blockage =	0.289	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview
Street L (West of Ogden)

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.090	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	1	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	150	mm

Output:

Flow Capacity per Inlet =	0.289	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.144	m^3/s
Number of Inlet =	1	
Total Flow Capacity with 50% Blockage =	0.144	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

Caledon

Rangeview

Rangeview East

Job: 4938 Oct-22

Input:

Design Specification (OPSD)	403.01	
100-Year Overland Flow =	0.413	m^3/s
Catchbasin Type =	2	*
Number of Catchbasins =	2	
Allowable Depth of Ponding =	250	mm
Actual Depth of Ponding =	200	mm

Output:

Flow Capacity per Inlet =	0.416	m^3/s **
Flow Capacity per Inlet with 50% Blockage =	0.208	m^3/s
Number of Inlet =	2	
Total Flow Capacity with 50% Blockage =	0.416	m^3/s

Total flow capacity with 50% blockage is greater than the incoming 100-Year overland flow, therefore the inlet structure is sized adequately.

Notes:

* Catchbasin Type (1 for single, 2 for twin)

** Calculation based on MTO Design Chart 4.19: Inlet Capacity at Road Sag

Allowable Depth of Ponding is based on Grading Plans

MTO Design Chart 4.19: Inlet Capacity (OPSD 400.01,400.03)

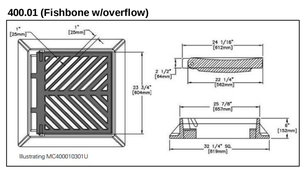
SINGLE										TWIN									
Depth	400.01	400.03	400.02	400.02B	400.07	400.10	400.11	400.12	403.01	Depth	400.01	400.03	400.02	400.02B	400.07	400.10	400.11	400.12	403.01
	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow		Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.01	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.003	0.01	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.003
0.02	0.004	0.004	0.003	0.003	0.003	0.004	0.004	0.005	0.007	0.02	0.004	0.004	0.003	0.003	0.003	0.004	0.004	0.005	0.007
0.03	0.006	0.006	0.005	0.004	0.005	0.006	0.006	0.007	0.010	0.03	0.006	0.006	0.005	0.004	0.005	0.006	0.006	0.007	0.010
0.04	0.008	0.008	0.007	0.005	0.006	0.007	0.008	0.010	0.014	0.04	0.012	0.012	0.010	0.008	0.009	0.011	0.011	0.015	0.020
0.05	0.010	0.010	0.008	0.006	0.008	0.009	0.010	0.012	0.017	0.05	0.018	0.018	0.015	0.011	0.013	0.016	0.017	0.022	0.030
0.06	0.018	0.018	0.015	0.012	0.014	0.017	0.017	0.022	0.031	0.06	0.025	0.025	0.021	0.016	0.019	0.023	0.024	0.031	0.042
0.07	0.025	0.025	0.021	0.016	0.019	0.023	0.024	0.031	0.042	0.07	0.038	0.038	0.032	0.024	0.029	0.035	0.036	0.047	0.065
0.08	0.038	0.038	0.031	0.024	0.028	0.035	0.036	0.046	0.064	0.08	0.057	0.057	0.048	0.037	0.043	0.053	0.054	0.071	0.097
0.09	0.048	0.048	0.040	0.031	0.036	0.044	0.046	0.060	0.082	0.09	0.070	0.070	0.059	0.045	0.053	0.065	0.067	0.087	0.119
0.10	0.060	0.060	0.050	0.038	0.045	0.056	0.057	0.074	0.102	0.10	0.090	0.090	0.075	0.058	0.068	0.083	0.086	0.112	0.153
0.11	0.070	0.070	0.059	0.045	0.053	0.065	0.067	0.087	0.119	0.11	0.110	0.110	0.092	0.070	0.083	0.102	0.105	0.136	0.187
0.12	0.085	0.085	0.071	0.054	0.064	0.079	0.081	0.105	0.144	0.12	0.125	0.125	0.105	0.080	0.094	0.116	0.119	0.155	0.212
0.13	0.095	0.095	0.080	0.061	0.071	0.088	0.091	0.118	0.161	0.13	0.140	0.140	0.117	0.090	0.105	0.130	0.134	0.174	0.238
0.14	0.110	0.110	0.092	0.070	0.083	0.102	0.105	0.136	0.187	0.14	0.157	0.157	0.132	0.101	0.118	0.145	0.150	0.195	0.267
0.15	0.120	0.120	0.101	0.077	0.090	0.111	0.115	0.149	0.204	0.15	0.170	0.170	0.143	0.109	0.128	0.157	0.162	0.211	0.289
0.16	0.123	0.123	0.103	0.079	0.093	0.114	0.117	0.152	0.209	0.16	0.180	0.180	0.151	0.115	0.135	0.167	0.172	0.223	0.306
0.17	0.138	0.138	0.116	0.088	0.104	0.128	0.132	0.171	0.234	0.17	0.198	0.198	0.166	0.127	0.149	0.183	0.189	0.245	0.336
0.18	0.145	0.145	0.122	0.093	0.109	0.134	0.138	0.180	0.246	0.18	0.210	0.210	0.176	0.135	0.158	0.194	0.200	0.260	0.357
0.19	0.150	0.150	0.126	0.096	0.113	0.139	0.143	0.186	0.255	0.19	0.230	0.230	0.193	0.147	0.173	0.213	0.220	0.285	0.391
0.20	0.158	0.158	0.133	0.101	0.119	0.146	0.151	0.196	0.268	0.20	0.245	0.245	0.206	0.157	0.184	0.227	0.234	0.304	0.416
0.21	0.160	0.160	0.134	0.102	0.120	0.148	0.153	0.198	0.272	0.21	0.260	0.260	0.218	0.167	0.196	0.241	0.248	0.322	0.442
0.22	0.165	0.165	0.138	0.106	0.124	0.153	0.158	0.205	0.280	0.22	0.275	0.275	0.231	0.176	0.207	0.255	0.263	0.341	0.467
0.23	0.170	0.170	0.143	0.109	0.128	0.157	0.162	0.211	0.289	0.23	0.290	0.290	0.243	0.186	0.218	0.268	0.277	0.360	0.493
0.24	0.175	0.175	0.147	0.112	0.132	0.162	0.167	0.217	0.297	0.24	0.310	0.310	0.260	0.199	0.233	0.287	0.296	0.384	0.526
0.25	0.180	0.180	0.151	0.115	0.135	0.167	0.172	0.223	0.306	0.25	0.325	0.325	0.273	0.208	0.244	0.301	0.310	0.403	0.552
0.26	0.185	0.185	0.155	0.118	0.139	0.171	0.177	0.229	0.314	0.26	0.340	0.340	0.285	0.218	0.256	0.315	0.325	0.421	0.577
0.27	0.190	0.190	0.159	0.122	0.143	0.176	0.181	0.236	0.323	0.27	0.355	0.355	0.298	0.227	0.267	0.329	0.339	0.440	0.603
0.28	0.195	0.195	0.164	0.125	0.147	0.180	0.186	0.242	0.331	0.28	0.370	0.370	0.310	0.237	0.278	0.342	0.353	0.459	0.628
0.29	0.200	0.200	0.168	0.128	0.150	0.185	0.191	0.248	0.340	0.29	0.390	0.390	0.327	0.250	0.293	0.361	0.372	0.483	0.662
0.30	0.205	0.205	0.172	0.131	0.154	0.190	0.196	0.254	0.348	0.30	0.405	0.405	0.340	0.259	0.305	0.375	0.387	0.502	0.688

LEGEND

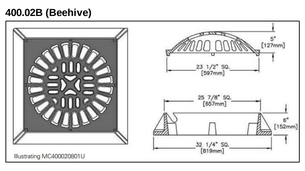
OPSD	Type	Open Area (sqin)	Open Area (sqm)
400.01	Fishbone w/overflow	242	0.156
400.03	Fishbone, V grate	203	0.131
400.02	Fishbone	203	0.131
400.02B	Beehive	155	0.100
400.07	Circular	182	0.117
400.10	Checkerboard	224	0.145
400.11	Checkerboard w/overflow	231	0.149
400.12	Birdcage	300	0.194
403.01	Honeycomb*	411	0.265

**72% open area per Stepcon, assumed total area = 400.01 type grate*

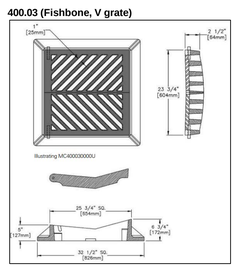
400.01 (Fishbone w/overflow)



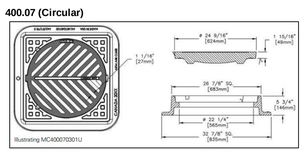
400.02B (Beehive)



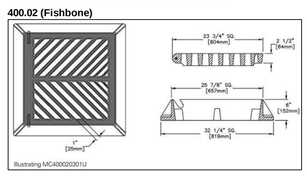
400.03 (Fishbone, V grate)



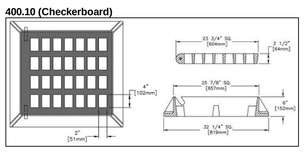
400.07 (Circular)



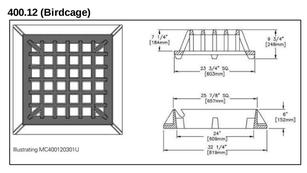
400.02 (Fishbone)



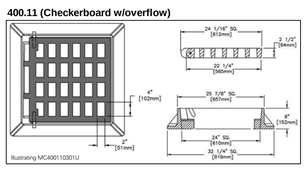
400.10 (Checkerboard)



400.12 (Birdcage)

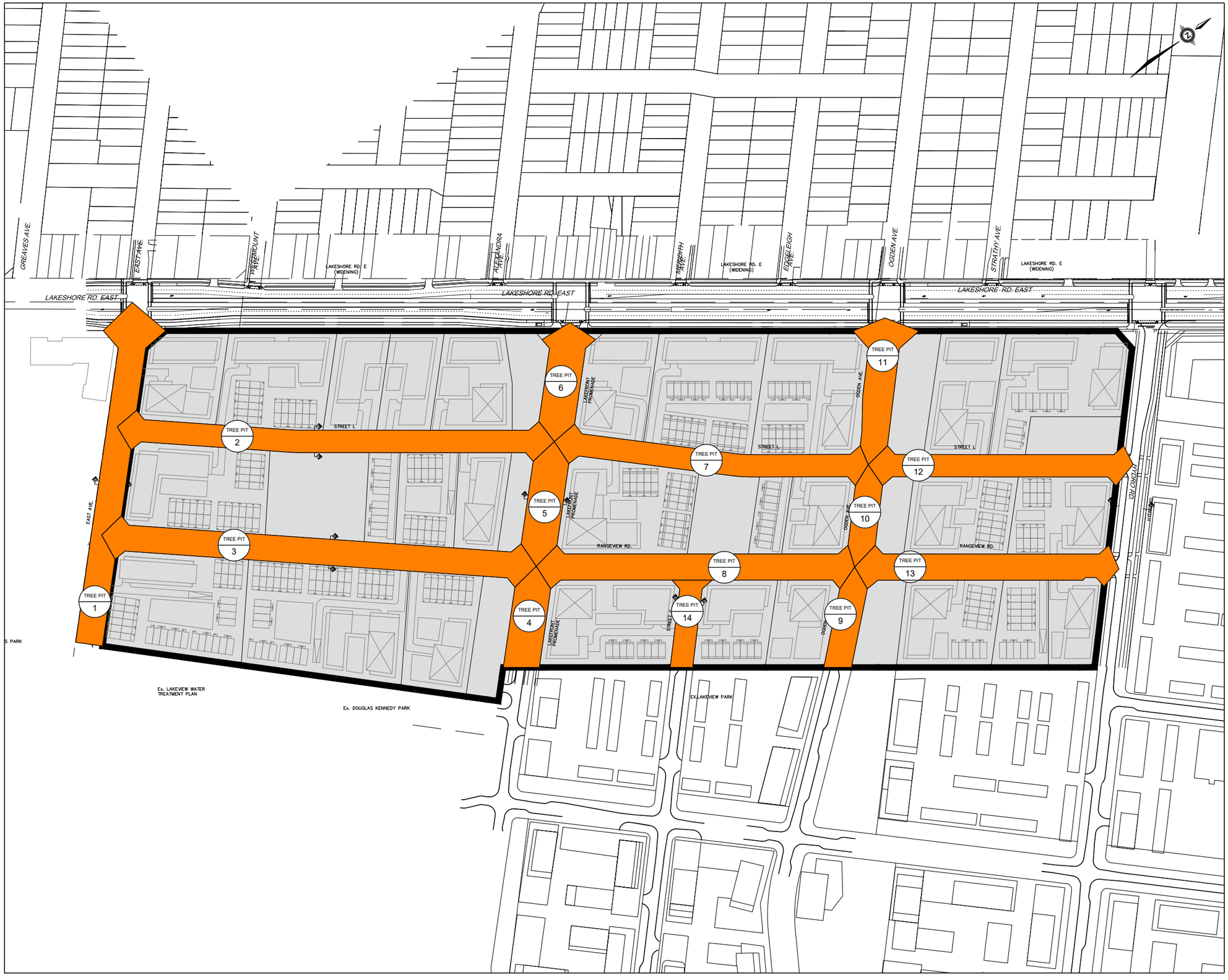


400.11 (Checkerboard w/overflow)



Phil Gotfried

W:\4900's\4938 - Rangeview, Mississauga\Drawings\Drainage\2022-11-09-4938-Proposed Drainage.dwg



RANGEVIEW ESTATES PRECINCT AREA
CITY OF MISSISSAUGA
COMMUNITY COST SHARING

LEGEND

SUBJECT AREA

TREE PIT DRAINAGE AREA

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www.schaeffers.com

FIGURE D.2
TREE PID LID LOCATIONS

2020-4938	NOVEMBER 2022	SCALE: N.T.S.

Appendix E
Engineering Drawings

(See Submission Package)