

Water and Wastewater Area Servicing Plan— Addendum 2

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Water and Wastewater Area Servicing Plan– Addendum 2

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Acronyms and abbreviations

ADD	Average Day Demand
ASP	Area Servicing Plan
d	day
DC	Development Charges
d/D	depth over diameter
DWF	Dry-Weather Flow
FSR	Functional Servicing Report
ha	hectare(s)
I&I	Infiltration and Inflow
JBPE	Joint Best Planning Estimates
kPa	kilopascal(s)
LDM	Linear Design Manual
L/min	litre(s) per minute
L/s	litre(s) per second
m	metre(s)
mm	millimetre(s)
MDD	Maximum Day Demand
MH	Maintenance Hole
Midtown	Midtown Oakville
MLD	megalitre per day
O1	Oakville Zone 1
O2	Oakville Zone 2
OPA	Official Plan Amendment
PHD	Peak Hour Demand

psi	pounds per square inch
PZ	pressure zone
Region	Regional Municipality of Halton
RTK	Runoff Coefficient, Time to Peak, Recession Ratio
WWF	Wet-Weather Flow
WWTP	Wastewater Treatment Plant

1. Introduction

The Regional Municipality of Halton (Region) initiated the Water and Wastewater Area Servicing Plan (ASP) for Midtown Oakville (Midtown) in 2016 to identify and evaluate water and wastewater servicing alternatives and recommend conceptual servicing for the study area. This report summarizes the changes made with respect to Midtown area planning estimates and related water and wastewater servicing requirements. The Midtown study area, including the proposed road network and the development blocks, is shown in Figure 1-1.

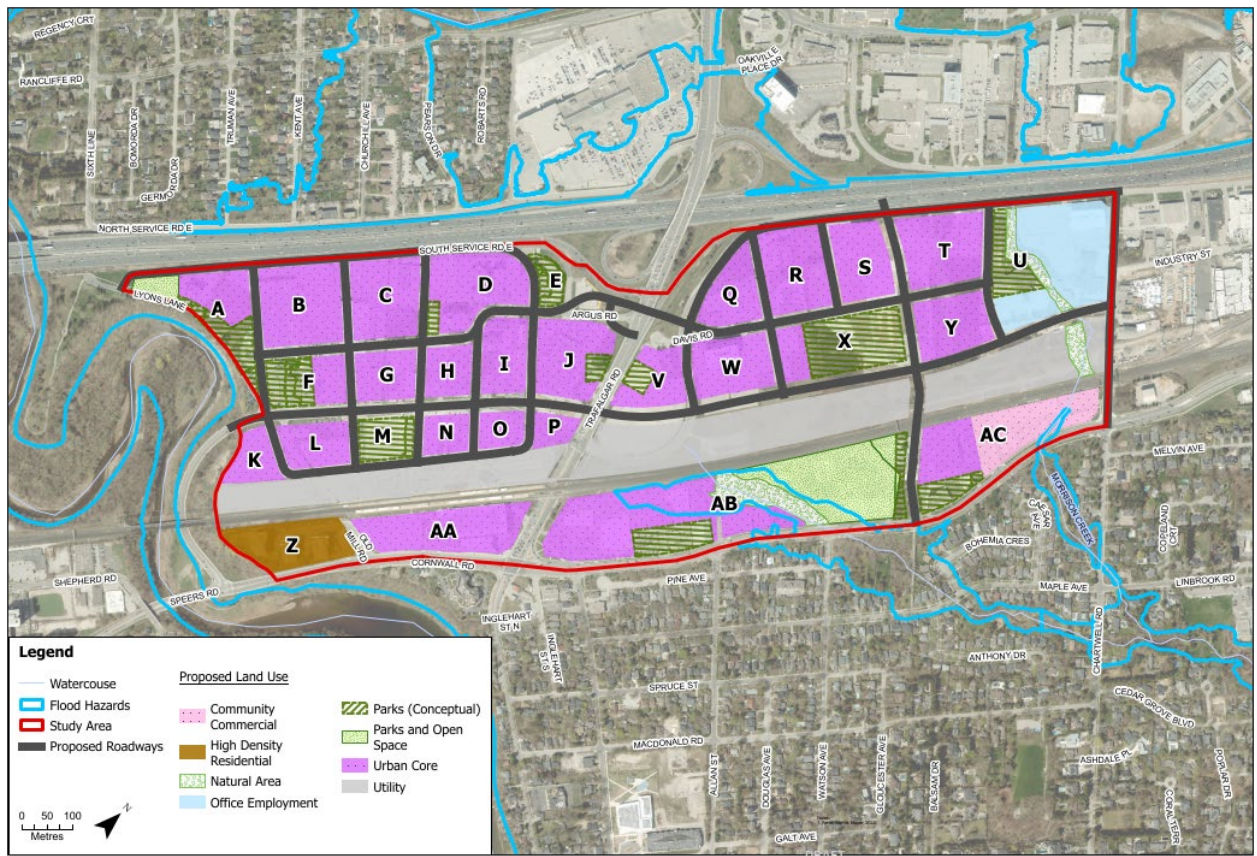


Figure 1-1. Midtown Oakville Study Area

2. Servicing Strategy for Midtown Oakville

The following subsections outline the Midtown growth forecasts, and proposed water, and wastewater servicing strategies.

2.1 Growth Forecasts

The Midtown residential and employment population projections for each design year and for the full build-out (which does not have a specific year) are summarized in Table 2–1. The population forecasts for the 2031, 2041, and 2051 years were obtained from the Joint Best Planning Estimates (JBPE) version 3.032 provided by the Region December 19, 2023. The full build-out population forecasts were developed from the projected yields based on the Adopted Official Plan Amendment #70 (OPA).

Table 2–1. Residential and Employment Population Forecasts

Population Type	2021	2031	2041	2051	Full Build-Out
Residential	630	11,710	24,142	32,468	38,146
Employment	1,936	6,780	13,531	17,998	16,397
Total Equivalent	2,566	18,490	37,673	50,466	54,543

2.2 Water Servicing Strategy

The following sections outline the assumptions made in the hydraulic analysis, the hydraulic model results, and recommended water servicing strategy. The overall water servicing strategy is based on the full build-out population forecasts, and interim 2031, 2041, and 2051 values are provided for information only.

2.2.1 Methodology and Assumptions

Water consumption per capita and peaking factors were applied based on the recommended design criteria from the Region’s Linear Design Manual (LDM) (Regional Municipality of Halton, 2024) and feedback provided by the Region in the email dated March 25, 2025 (Regional Municipality of Halton, 2025) to calculate the average day demand (ADD), maximum day demand (MDD), and peak hour demand (PHD). The following parameters were used in the analysis:

- 230 litres/ capita/ day for residential ADD
- 190 litres/ capita/ day for employment ADD
- 1.9 times ADD peaking factor for MDD
- 3.0 times ADD peaking factor for PHD

Using the above parameters, the ADD, MDD, and PHD are calculated and summarized in Table 2–2. The demand is entirely located in Pressure Zone (PZ) O2 (see Figure 2-1 for PZ-O1 / PZ-O2 boundary).

Table 2–2. Water Demand Summary

Demand Type	Population Type	Water Demands (L/s): 2021	Water Demands (L/s): 2031	Water Demands (L/s): 2041	Water Demands (L/s): 2051	Water Demands (L/s): Full Build-Out
ADD	Residential	1.68	31.17	64.27	86.43	101.55
ADD	Employment	4.26	14.91	29.76	39.58	36.06
ADD	Total	5.93	46.08	94.02	126.01	137.60
MDD	Residential	3.19	59.23	122.11	164.22	192.94
MDD	Employment	8.09	28.33	56.54	75.20	68.51
MDD	Total	11.28	87.56	178.64	239.42	261.45
PHD	Residential	5.03	93.52	192.80	259.29	304.64
PHD	Employment	12.77	44.73	89.27	118.74	108.17
PHD	Total	17.80	138.25	282.07	378.03	412.81

The following watermain design criteria were used in the analysis

- Minimum pressures greater than 40 psi (276 kPa) in the PHD scenario. Preferred minimum pressure above 55 psi (379 kPa).
- Maximum pressures less than 100 psi (689 kPa) in any demand scenario.
- Available fire flow greater than or equal to 18,660 L/min or 311 L/s in the MDD scenario.

The model, shared by the Region, was an InfoWater Pro Steady State model called “INFOWATER-02AUG22.v3”, received on December 19, 2024. A new full build-out model scenario was created using the full build-out population for the Midtown study area based on the OPA and based on the SS-2031 ADD, SS-2031 MDD, and SS-2031 PHD model scenarios in the hydraulic model provided. Therefore, the other areas in the hydraulic model would continue to have the 2031 water demand in each of the ADD, MDD and PHD scenarios. With respect to infrastructure assumptions, the Davis Rd pumping station capacity was assumed to be 100 MLD, and the Wycroft 600 mm diameter watermain connecting Burlington Zone 2 to Oakville Zone 2 was assumed to be in place for the analysis.

2.2.2 Water Servicing Results

The hydraulic analysis results are presented in colour-coded maps in Appendix A. The following summarizes the results:

- Maximum Pressure:
 - In the ADD scenario, the maximum pressures within the Midtown servicing area range from 94 to 123 psi (648 to 848 kPa).
 - The highest pressures are on Cornwall Rd. between Cross Ave. and Chartwell Rd. and on Trafalgar Rd. between Cornwall Rd. and Cross Ave. These high pressures are due to the low ground elevations in this area and being connected to PZ O2.
 - The high pressures are also resulting from the high flows and pressures coming from the upgraded Davis St Booster Station, and the preliminary pump information input into the hydraulic model provided by the Region. If the Region has updated information for the pump curves and control philosophy for this booster station, the pump information could be updated in the hydraulic model.
 - Areas with municipal water pressure expected to exceed 80 psi (552 kPa) will require private Pressure Reducing Valves as per Ontario Building Code requirement.
- Minimum Pressure:
 - In the PHD scenario, the minimum pressures within the Midtown servicing area range from 89 to 123 psi (614 to 848 kPa). The lowest pressures in the service area are located on South Service Rd East which is at the highest elevation. All locations achieved the minimum required pressure of 40 psi (276 kPa) and the preferred minimum pressure of 55 psi (379 kPa).
- Fire Flow:
 - Available fire flows for all development locations within the proposed Rights-of-Ways in the Midtown study area exceed the required 311 L/s (18,660 L/min) during the MDD scenario, meeting the Region's latest fire flow requirement developed in the Infrastructure Master Plan update.
 - There is an existing section of 150 mm watermain across the rail tracks at the Lyons Lane - Old Mill Rd crossing that has lower available fire flows, but this is under the rail tracks. Areas outside the tracks achieve the target fire flow.
 - There is an existing 150 mm private watermain within the Metrolinx area north of the rail tracks and west of Trafalgar, that is currently a dead end due to a break and partial closure. Without the loop to Trafalgar due to the break, the available fire flow within this section is very poor. It is recommended that Metrolinx loop that watermain up to Cross Ave.

2.2.3 Water Servicing Recommendations

The summary of watermain lengths by diameter (either new watermains or replacement of existing) is shown in Table 2–3. There are 6,262 m of non-DC Eligible watermains proposed, of 200 mm and 300 mm diameters. The watermain sizes for existing, replaced, and new pipes are shown in Figure 2-1. Note that some watermains outside of the Midtown study area have been updated around Trafalgar Rd and Cornwall Rd based on comments from the Region, however they’re not included in the lengths noted in Table 2–3 since they’re outside of the study area.

Table 2–3. Watermain Upgrade Summary

Description	Length of Watermains by Diameter : 200 mm	Length of Watermains by Diameter : 300 mm	Length of Watermains by Diameter : Total
Length Replaced (m)	-	376	376
Length New (m)	2,963	2,923	5,886
Length Total (m)	2,963	3,299	6,262
DC Eligible	No	No	-

Water and Wastewater Area Servicing Plan Addendum 2

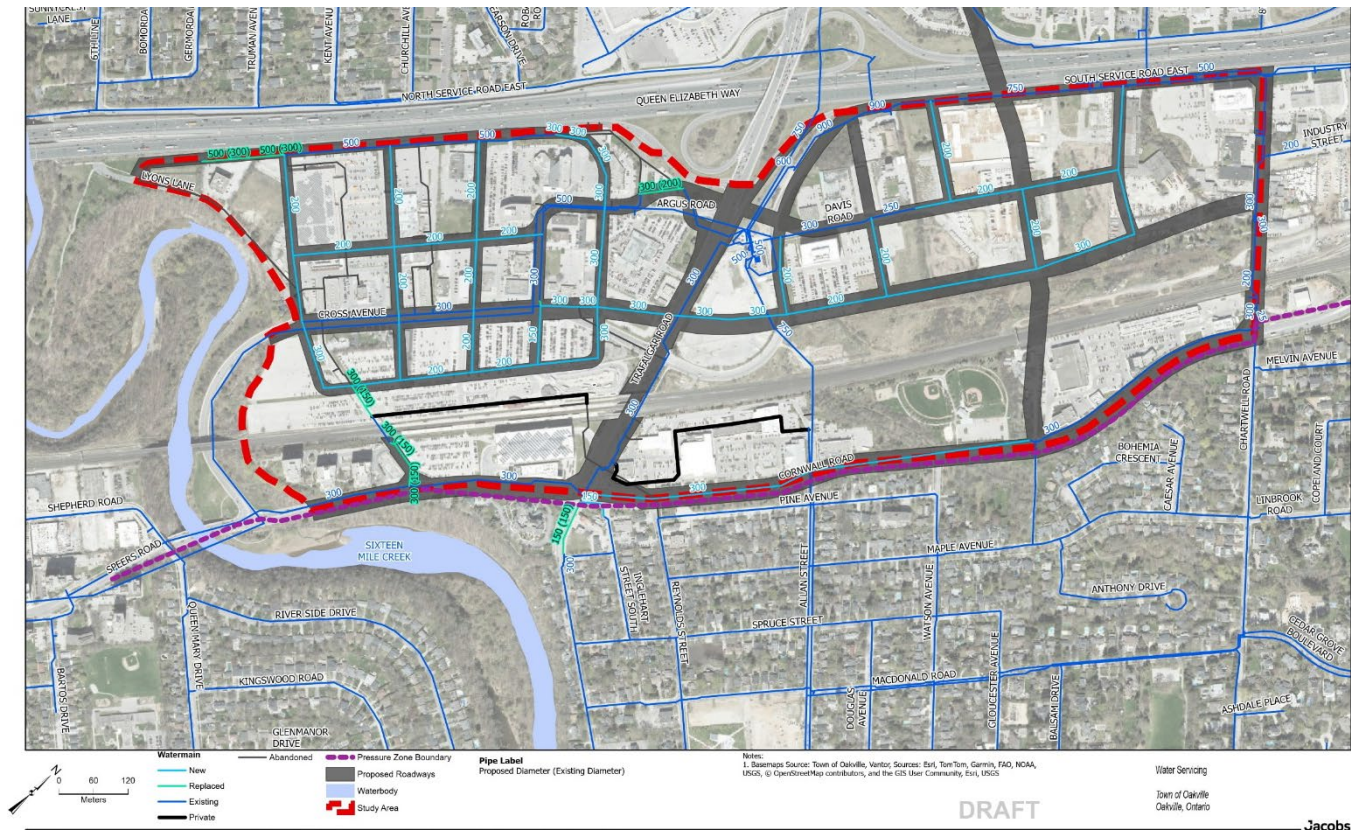


Figure 2-1. Water Servicing Map

2.3 Wastewater Servicing Strategy

The following sections outline the assumptions made in the analysis, the hydraulic model results, and recommended wastewater servicing strategy. The overall wastewater servicing strategy is based on the full build-out population forecasts, and interim 2031, 2041, and 2051 values are provided for information only.

2.3.1 Methodology and Assumptions

Wastewater generation per capita, peaking factors, and infiltration and inflow rates were applied based on the recommended design criteria from the Region's LDM (Regional Municipality of Halton, 2024) and feedback provided by the Region in the email dated March 18, 2025 (Regional Municipality of Halton, 2025) to calculate the dry-weather flow (DWF) and wet-weather flow (WWF). The Modified Harmon formula was used to calculate peaking factors for local and sub-trunk sewers based on the average catchment level value for local sewers, and the average sub-trunk level value for sub-trunk sewers. Subcatchment delineation was completed based on the proposed sewer network and the subcatchment area was used to calculate the infiltration and inflow (I&I) flow component. The total subcatchment area was found to be 88 ha and the I&I flow was proportionately added based on the anticipated population for each year. The following parameters were used in the analysis:

- 215 litres/ capita/ day for Residential DWF for linear infrastructure design
- 185 litres/ capita/ day for Employment DWF for linear infrastructure design
- 320 litres/ capita/ day for Residential DWF for wastewater treatment capacity
- 260 litres/ capita/ day for Residential DWF for wastewater treatment capacity
- Modified Harmon used to calculate peaking factors:
 - Local Sewers: 3.47
 - Sub-Trunk Sewers: 2.27
- 0.280 litres/ second/ hectare for Infiltration and Inflow

Using the above linear parameters, the DWF, and WWF are calculated and summarized in Table 2–4. Using the above treatment parameters, the average day flows are calculated and the flow splits between the Oakville Southeast and Oakville Southwest Wastewater Treatment Plants is presented in Table 2–5.

Table 2–4. Wastewater Flow Summary – Linear

Flow Type	Population Type	Wastewater Flows (L/s): 2021	Wastewater Flows (L/s): 2031	Wastewater Flows (L/s): 2041	Wastewater Flows (L/s): 2051	Wastewater Flows (L/s): Full Build - Out
Peak DWF*	Residential	3.6	66.1	136.4	183.4	215.5
Peak DWF*	Employment	9.4	33.0	65.8	87.5	79.7
Peak DWF*	Total	13.0	99.1	202.1	270.9	295.2
WWF	-	1.1	8.3	16.9	22.6	24.6
Total Peak Flow	-	14.1	107.4	219.0	293.5	319.8

* A peaking factor of 2.27 was used to calculate the values in this table.

Table 2–5. Oakville Southeast and Oakville Southwest Wastewater Flow Splits

Wastewater Treatment Plant	Wastewater Average Flows (L/s): 2021	Wastewater Average Flows (L/s): 2031	Wastewater Average Flows (L/s): 2041	Wastewater Average Flows (L/s): 2051	Wastewater Average Flows (L/s): Full Build - Out
Oakville Southeast WWTP ¹	0.2	1.6	3.2	4.3	4.8
Oakville Southwest WWTP	8.0	62.2	126.9	170.1	185.9
Total Flow	8.2	63.8	130.1	174.4	190.6

Note 1 - It is assumed that 100% of Block AC, 67% of Block U, and 10% of Block AB go to the Oakville SE WWTP.

The model, shared by the Region, was an InfoWorks Dynamic State model called “Oakville_12Sept2023.icmt”, received on September 12, 2023. The model was updated to include one Full-Build-Out scenario of the Midtown study area to assess the wastewater servicing requirements. The population within the Midtown study area was updated to the Full Build-Out population, while the areas upstream (River Oaks and Trafalgar Corridor areas) and downstream (Oakville Southeast area) of the study area assume the 2051 population based on the JBPE as shown in Table 2–1). It is noted that for wet weather conditions, the sub-catchments outside of the study area use the calibrated RTK wet weather parameters provided in the model from the Region, while areas within the study area are assigned an allowance of 0.28 L/s/ha based on the assumptions outlined above. Future residential population were assigned to the subcatchment ID with "RES_FUT_". Future employment were assigned to the subcatchment ID with "EMP_FUT_". Infiltration and inflow (0.28 L/s/ha) were assigned to the "base flow" within the future subcatchment.

The following sewer design criteria were used in the analysis

- Maximum depth over diameter (d/D) less than or equal to 1 during 5-year SCS-Type II design storm
- Minimum Maintenance Hole (MH) freeboard of 1.8 m during 10-year SCS-Type II design storm
- Minimum depth of cover of 2.75 m for proposed sewers.

2.3.2 Wastewater Servicing Results

The hydraulic analysis results are presented in the hydraulic profiles and MH freeboard colour-coded maps in Appendix B. The following summarizes the results:

- Surcharge State:
 - The proposed sewers within Midtown have a d/D of less than or equal to 1 for the 5-year storm event.
- MH Freeboard:
 - The proposed MHs within Midtown have freeboard depths greater than 1.8 m for the 10-year storm event.
- Minimum Depth of Cover:
 - The depth of cover for all sewers within Midtown meet the 2.75 m requirement except for MHs MH-MO-16 (southeast of Davis Rd and north of railway), SMH4663 (on Old Mill Rd north of Cornwall Rd), and SMH14078 (on laneway in a shopping plaza north of Cornwall Rd and east of Allan St) which are limited based on the tie-in elevation downstream and the existing ground elevations.

2.3.3 Wastewater Servicing Recommendations

The summary of wastewater sewer lengths by diameter (either new sewers or replacement of existing sewers) is shown in Table 2–6. There are 630 m of DC Eligible sewers (525 mm and 600 mm) and 8,130 m of non-DC Eligible sewers proposed, (mainly 300 mm diameter). Note that the proposed Trafalgar Trunk Sewer that starts on Argus Rd and goes down Trafalgar Rd south of the Midtown study area is assumed to be in service for all the design scenarios of the Midtown study. Therefore, it isn't included in the length summary noted in Table 2–6.

Table 2–6. Sewer Upgrade Summary

Description	Length of Sewers by Diameter : 200 mm	Length of Sewers by Diameter : 300 mm	Length of Sewers by Diameter : 375 mm	Length of Sewers by Diameter : 450 mm	Length of Sewers by Diameter : 525 mm	Length of Sewers by Diameter : 600 mm	Length of Sewers by Diameter : Total
Length Replaced (m)	-	390	250	140	-	260	1,040
Length New (m)	190	6,500	-	660	250	120	7,720
Length Total (m)	190	6,890	250	800	250	380	8,760
DC Eligible	No	No	No	No	Yes	Yes	-
Length DC Eligible (m)	-	-	-	-	250	380	630



Figure 2-2. Wastewater Servicing Map

3. Next Steps

The ASP for Midtown Oakville will be used to determine the water and wastewater infrastructure requirements and inform the following:

- Functional Servicing Report (FSR) based on Town of Oakville's Adopted OPA #70 to review development applications to ensure water and wastewater infrastructure alignment.
- Development Charges projects and servicing strategies in Midtown.
- Phasing of infrastructure to allow for development in the study area.

It is noted that development applications are to be confirmed and referenced against the Midtown FSR and ASP. Potential location and density changes compared to the allowable yields in OPA # 70 could impact the recommended water and wastewater infrastructure.

4. References

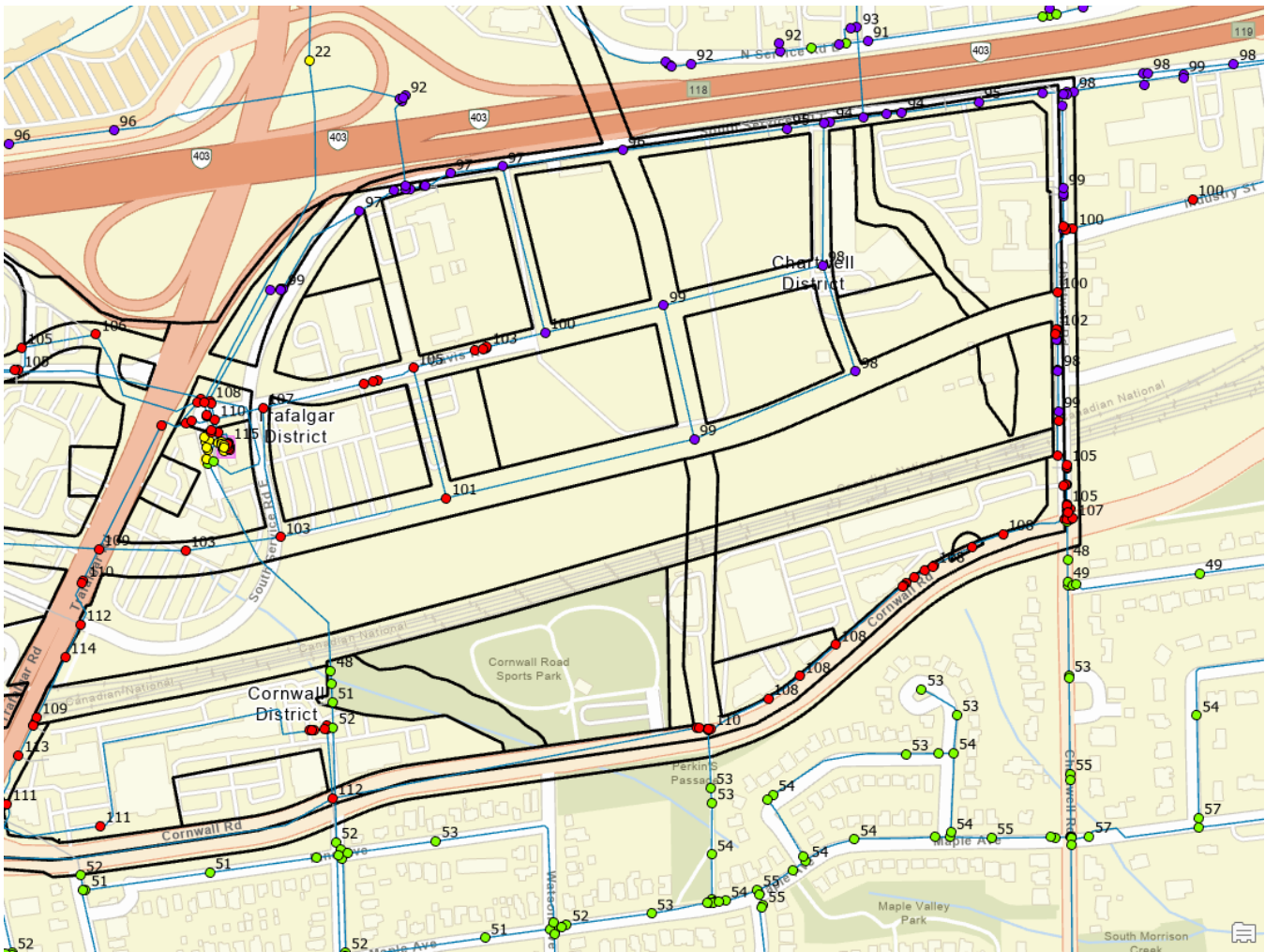
Regional Municipality of Halton. (2024). *Linear Design Manual*. Regional Municipality of Halton.
Regional Municipality of Halton. (2025, March 25). Email: Midtown Area Servicing Plan and Functional Servicing Update. Oakville, Ontario, Canada.

Appendix A: Water Modeling Results

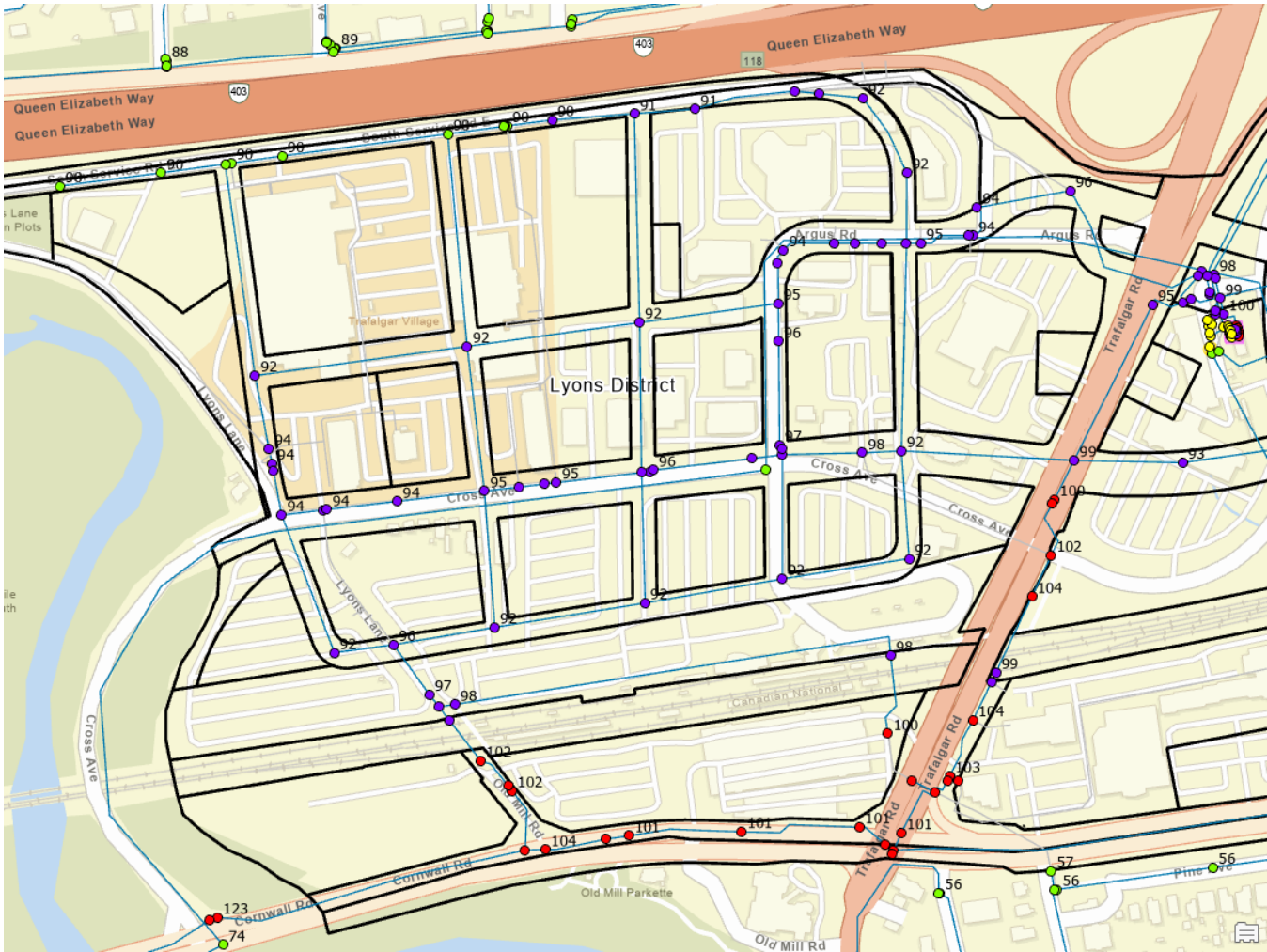
A.1 Maximum Pressure – ADD Scenario – Midtown West



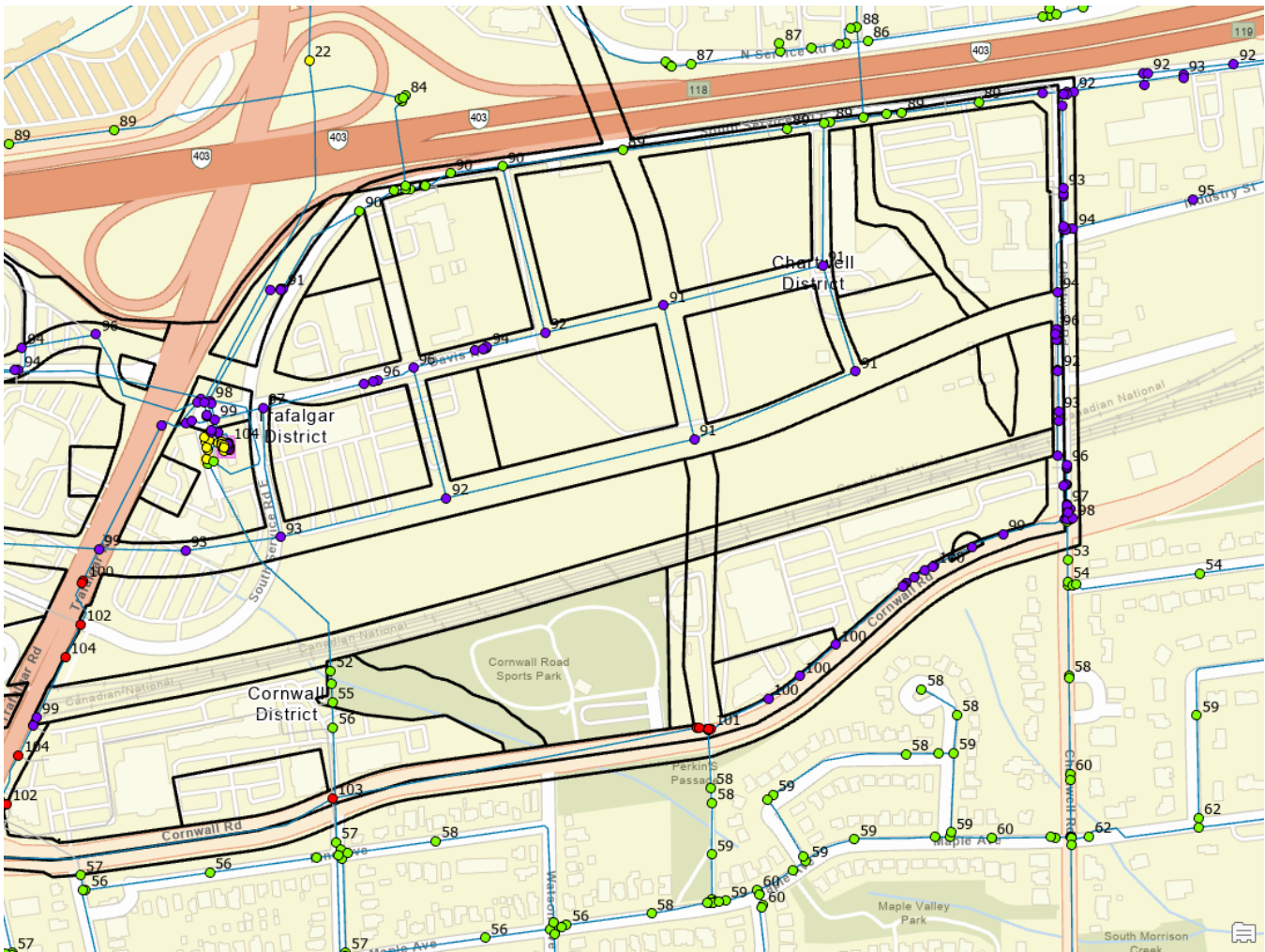
A.2 Maximum Pressure – ADD Scenario – Midtown East



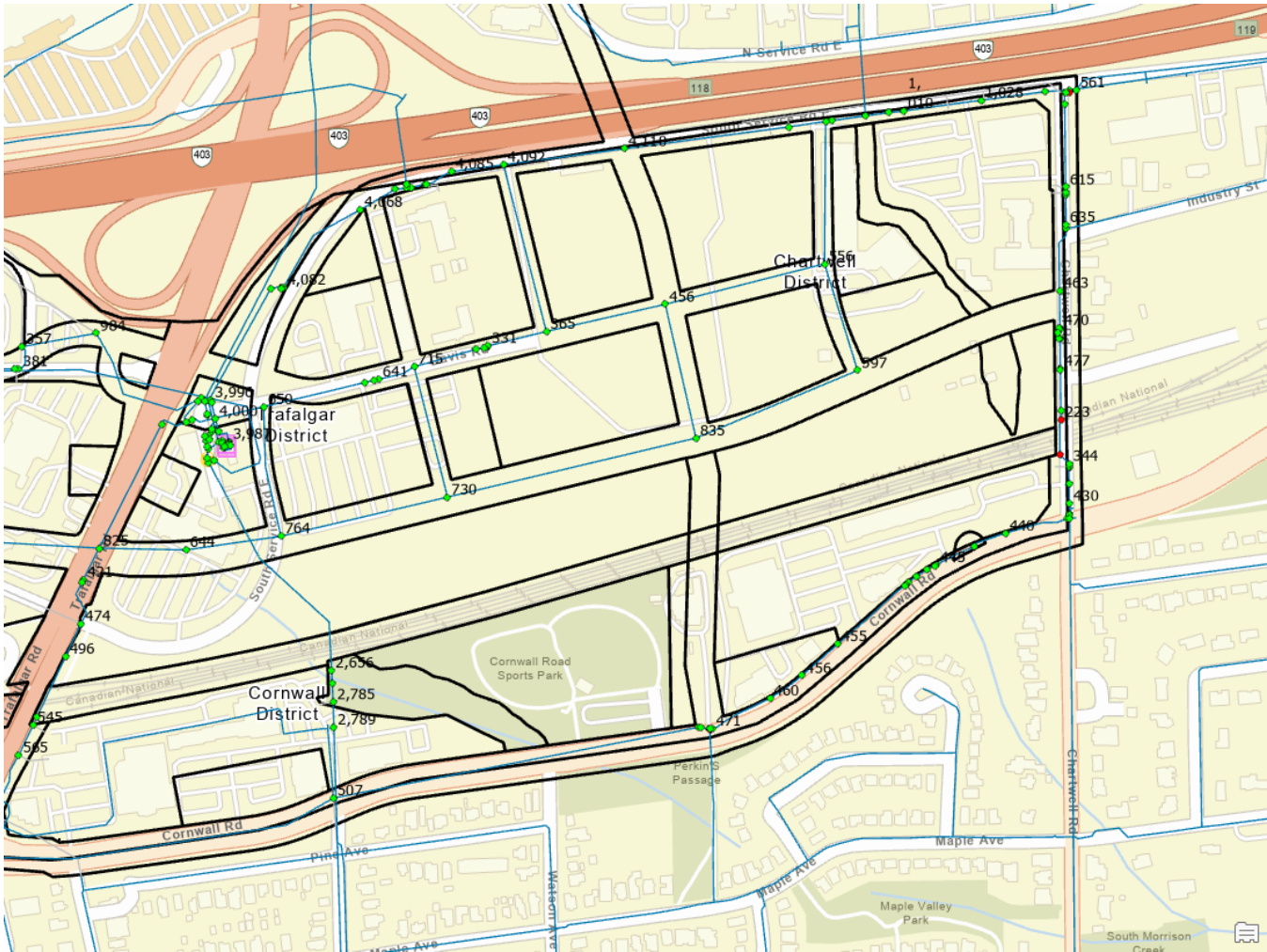
A.3 Minimum Pressure- PHD Scenario- Midtown West



A.4 Minimum Pressure- PHD Scenario- Midtown East



A.6 Available Fire Flow – MDD Scenario – Midtown East



Appendix B: Wastewater Modeling Results

Available as a separate document.