



MTE Consultants

123 St. George St., London, Ontario N6A 3A1

December 2, 2024

MTE File No.: C43353-100

5026214 Ontario Inc.  
304-1886 Oxford Street West  
London, ON N6H 4N2

Attention: Dan Gole

**RE: 459 Hale Street, Proposed Ten Unit VLC  
Water Supply for Fire Fighting Report**

MTE Consultants Inc. was retained to provide fire flow calculations to ensure adequate water supply for fire-fighting for a ten unit vacant land condo (VLC) at the rear of 459 Hale Street.

### **Water Supply for Fire Fighting Analysis**

Section 7.3.1 of the City of London Design Specification & Requirements Manual (DS&RM), updated January 2024, requires the minimal residual pressure during Maximum Day plus Fire scenarios be not less than 140 kPa (20 psi) at any at any hydrant lateral or fire service connection. Section 7.3.3 of DS&RM states that the “on private property, adequate water for fire-fighting shall be determined in accordance with the Ontario Building Code (OBC)”.

The proposed buildings are not more than 3 stories high and have footprints less than 600m<sup>2</sup>, thus the proposed buildings are not subject to the fire flow requirements of OBC *Div. B – A-3.2.5.7*. The minimum requirement for buildings meeting the threshold at which the OBC requirements begin is 45 L/s. Thus, a flow rate of 45 L/s has been applied for conservatism.

The OBC sentence 3.2.5.7.(1) states that fire hydrants shall be located within 90 m horizontally of any portion of a building perimeter that is required to face a street. The closest municipal hydrant in Hale Street Right-of-Way (R.O.W) is more than 90 m. Therefore, one on-site fire hydrant (to be approximately 42.5 m away from the Hale St. watermain) is proposed to provide fire-fighting for the proposed ten unit vacant land condo (VLC) at the rear of 459 Hale Street

The site is located within the City’s Low Level supply system which has an operating HGL elevation of 301.8masl. Grades across the site range from 257.8 to 259.1 masl. Thus, the static pressure at the site is expected to be between 418.6 and 431.4 kPa. A fire hydrant flow test, No. 18-02, was performed at the closest municipal hydrant H2778 (457 Hale St.) by the City of London forces on 28 February 2018 and a copy of this report is attached to this report. The flow test results show that the static pressure of the water distribution system in the area is 462 kPa (67 psi) and the residual pressures are 441 kPa (64 psi) and 414 kPa (60 psi) at the test flow rates of 4013 L/min (1060 USGPM) and 5981 L/min (1580 USGPM) respectively. There is an existing 150mm watermain on Hale Street and it is proposed to connect to the existing 150mm watermain with a 150x150 Tee, then upsize the service to the site to 200mm using a reducer fitting.

As noted above, the proposed site will consist of 10 multi-family units resulting in an expected population of 24 persons using the City’s standard population guidelines. Assuming a daily

consumption rate of 255 L/person/day, an average flow rate of 0.071 L/s is expected. Applying the City's max day demand factor of 3.5, the max day demand was calculated to be 0.248 L/s. Combining the assumed fire flow and calculated maximum day demand gives a design flow rate of 45.25 L/s. Given the size of the proposed service a peak flow velocity of 1.44m/s is expected which exceeds the maximum velocity criteria of 2.4m/s.

The elevation at the entrance of the proposed site is approximately 258.5 masl resulting in an expected static pressure of 424.5 kPa. The length of the proposed service from the existing watermain to the proposed hydrant location is approximately 64m. Using this static pressure as a boundary condition, Hazen Williams calculations were utilized (to account for losses in the pipes) to calculate pressure at the proposed on-site fire hydrant as follows:

$$h_f = 10.7 \times (Q / C)^{1.852} \times L_p / D^{4.87}$$

Where:  $h_f$  = Headloss (m)

$Q$  = Flow rate in m<sup>3</sup>/s (0.04525)

$C$  = Hazen Williams 'C' coefficient (110)

$L_p$  = Length of Pipe in m (63.8)

$D$  = Inside diameter of the pipe in m (0.200)

$$h_f(200\text{mm}) = 10.7 \times (0.04525 / 110)^{1.852} \times 63.8 / 0.200^{4.87} = 0.9284\text{m} (9.102 \text{ kPa})$$

Therefore, the headloss across the pipe during the peak hour scenario is 9.1 kPa and the required domestic flow can be provided at the building with a residual pressure of approximately 415.4 kPa which exceeds the minimum pressure requirement for fire flow scenarios (140 kPa).

Since the proposed on-site fire hydrant is within 90 m of the entrances of the proposed condo units and the fire flow and Hazen Williams calculations show that the proposed water distribution system is capable of providing the calculated minimum required water supply flow rate, it can be concluded that adequate water supply for fire-fighting is available for the proposed ten unit vacant land condo (VLC) at the rear of 459 Hale Street.

We trust this meets your satisfaction and current needs. Should you have any questions and require additional information, please do not hesitate to contact undersigned.

Sincerely,

**MTE Consultants Inc.**



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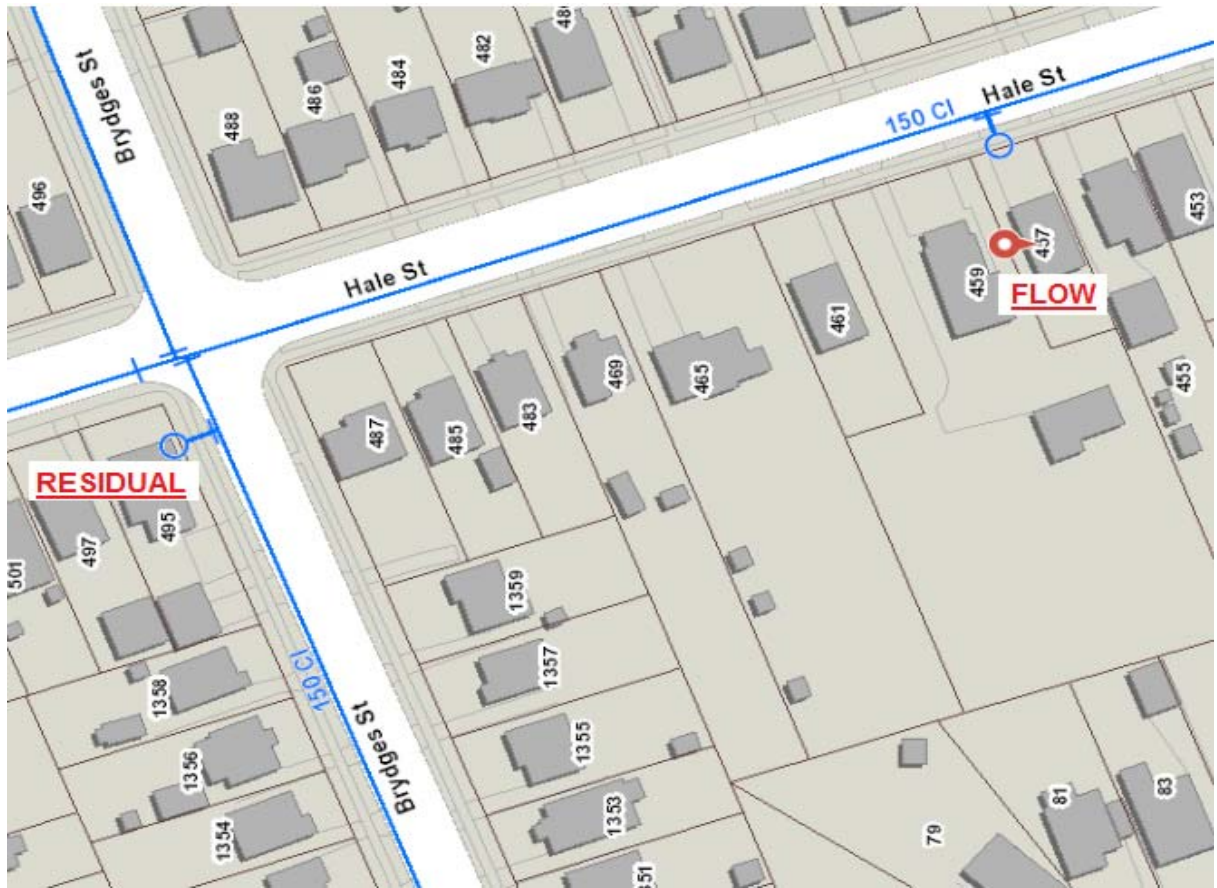
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Attch:  
Fire Hydrant Flow Test

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**CITY OF LONDON  
WATER OPERATIONS FLOW TEST**

<b>DATE:</b>	Wednesday, February 28, 2018	FLOW TEST No.		<b>18-02</b>
<b>TIME:</b>	1:00 PM	HYDRANT ID		H2778
<b>OPERATOR:</b>	Will Mather	CHLORINE RESIDUAL mg/L		0.53
<b>OPERATOR:</b>	Jon Miller	WATER QUALITY AFTER TEST	POOR	GOOD
<b>REQUESTED BY:</b>	MTE Consulting - Kyle McIntosh			EXCELLENT
<b>LOCATION:</b>	457 Hale St	TIME USED FOR FLUSHING		10 min

TEST NUMBER	STATIC PRESSURE P.S.I.	OUTLET SIZE IN.	PITOT READING P.S.I.	INDIVIDUAL FLOW U.S.G.P.M.	TOTAL FLOW U.S.G.P.M.	RESIDUAL HYDRANT	
						RESIDUAL PRESSURE P.S.I.	STATIC PRESSURE P.S.I.
1	63	2 1/2"	40	1060	1060	64	67
2		2 1/2	22	790	1580	60	
		2 1/2	22	790			



Information contained in this report is representative of flows and pressure losses at the time of the test and depends on reservoir levels, pump operation and customer water demand. Results will vary throughout the day and time of year. Available pressure at other times should be based on a design hydraulic grade line for the pressure zone in which the hydrants are located. By issuing this information report, neither the City nor any of its employees makes any warranty, express or implied, concerning the location, type or extent of services described in this report. Furthermore, neither the City nor any of its employees shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this information or incomplete information.