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WATER LEVELS, BASEMENT, AND DEWATERING
16-18 MILL ST, GEORGETOWN, ONTARIO

In support of a development proposal at 16-18 Mill St, Georgetown, ON, EAL was requested to comment on the water levels and dewatering required for the basement depth.

The water levels as recorded by EAL had a maximum elevation of 237.26m Above Sea Level (ASL) in July 2020. The architectural drawings dated 2023-04-03 state that the minimum basement floor elevation is to be 237.714m ASL, which is 0.45m above the recorded water elevation. Footings will be excavated below this elevation. In addition, data from three Halton wells adjacent to the site show that the water levels are seasonal and spring water levels can be higher than the proposed basement depth.

Therefore, temporary dewatering will be required for the construction of the footings. In addition, the basement should be waterproofed and a permanent dewatering system should be installed to account for high water levels.

A preliminary calculation for dewatering quantities required during construction is attached in the Appendix. Assuming a drawdown of 1m from the current water table, the required pump rate would be about 0.11m^3/sec (1740 GPM). A more detailed dewatering calculation and dewatering system design should be completed during the structural design stage of the project when the footing depths are known.

It is advised to avoid construction of the foundations during the spring season when ground water levels area highest to minimize pumping requirements.

LIMITATIONS

This letter was prepared for the consideration of the city, EAL, and Client only. Its contents cannot be used or disclosed to any other party without the prior written consent of Egmond Associates Ltd (EAL).

EAL accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

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LICENSED PROFESSIONAL ENGINEER
John Van Egmond
April 24, 2023
PROVINCE OF ONTARIO

APPENDIX
PRELIMINARY DEWATERING CALCULATIONS

416-782-7227

16-18 Mill Street — EAL
Dewatering for Footings - PRELIMINARY CALCULATIONS — 2023-04-24

Log Used

Elevation ASL (m)	Start m	End m	thickness m	material	Colour	k = Permeability m/sec
245	0	0.1	0.1	Asphalt Pavement		na
	0	1.6	1.6	Fill, sand, gravel, topsoil	Brown	na
243.4	1.6	4	2.4	Sand, fine, silt layers	Brown	0.00001
241	4	7.4	3.4	Sand, coarse	Brown	0.001
237.6	7.4	14.5	7.1	Sand, coarse, saturated - WL	brown	0.001
230.5	14.5	30	15.5	Sand, coarse, saturated,packed	Grey and Brown	0.001
215	30	100	70	Queenston Formation - bedrock	Red	
145	100					

H - Height above bedrock to "current" water table	22.6	m

Want to drop water level 1 m at middle of excavation so edges will be dry.

Want to drop from depth (m)	to depth (m)	static height above water table in middle of excavation - h_w	
7.4	8.4	21.6	
7.4	9.4	20.6	
7.4	10.4	19.6	

		Length (m)
Excavation Width		43
Narrowest width of excavation		32
Distance from well to edge of Excavation		0.3
H = Height of static water above bedrock		22.6
D = Aquifer thickness from bedrock to 6m allowed		24

Equivalent Radius of the Array of wells if the wells are on or near Property Line.

r_e =	23.9	m		
alternate				
r_e =	20.9	m	use larger in m	23.9

R_o The Radius of influence of pumping is

$R_o = r_e + 3000(H-h_w)*k^{0.5}$

hw	Ro	Q m^3/sec to drop to h_w shown
21.6	94.87	0.11
20.6	189.74	0.15
19.6	284.60	0.18

$$Q = \frac{2\pi k D(H - h_w)}{\ln\left[R_o / r_e\right]}$$