



Hydrogeological Assessment

FINAL REPORT

Western Prestige Village

Project Name:

Proposed Apartment Complex
735 Southdale Road West
London, Ontario

Project Number:

KCH-00257251-A0

Prepared By:

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Date Submitted:

April 25, 2022
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Executive Summary

EXP Services Inc. (EXP) was retained by **Western Prestige Village** to conduct a hydrogeological assessment relating to the proposed development of an apartment complex to be located at 735 Southdale Road West in London, Ontario, hereinafter referred to as the 'Site'.

The objective of the hydrogeological assessment was to examine the hydrogeological characteristics of the Site by reviewing the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records (WWR), reviewing the soils and groundwater information provided from a series of sampled boreholes and monitoring wells at the Site, compiling a site wide water balance, collecting a full year of groundwater elevations to identify any seasonal variations, and assess the natural heritage features on the property. It is understood that the hydrogeological assessment will be submitted for review and approval by the City of London and the Upper Thames River Conservation Authority (UTRCA).

Based on the results of the hydrogeological assessment, the following findings are presented:

- The Site is situated within the Dingman Creek sub-watershed;
- A non-Provincially Significant Wetland (PSW) is located at the southern border of the Site. Three (3) Unevaluated Wetlands (UWs) are also present within the east and west areas of the Site. An area encompassing both the non-PSW and west UW is considered regulated lands of the UTRCA;
- The Site is covered with a low-permeability silty clay till with occasional wet sand and silt pockets. The till unit thins out towards the west part of the Site. Underlying the till in this area is an extensive sand stratum. The sand stratum was found to be dry and is likely connected to a fluvial terrace extending west of the Site;
- Overall, groundwater elevations within the shallow till wells installed on Site (MW3, MW8B) ranged from seasonal lows of roughly 4.26 mbgs (December 2019) to seasonal highs of 0.5 mbgs (April 2020). The saturated conditions of the shallow soils will need to be considered for construction and design;
- The non-PSW shows surface water fluctuations with seasonal ponding up to 1m of water and dry surface conditions occurring throughout summer into fall, 2020;
- A total of two (2) domestic groundwater supply wells are located within a 500 m radius of the Site. These wells were installed into overburden sand aquifers encountered at depths of 39 m and 49 mbgs;
- The domestic water supply well for the original farmhouse will need to be properly decommissioned prior to development of the property;
- Single Well Response Tests (SWRT) were completed on three (3) of the monitoring wells. Three (3) grain size analyses were carried out on samples of the silty clay till. Hydraulic conductivities based on SWRTs and grain size analyses ranged between 1.7×10^{-9} m/s to 7.3×10^{-11} m/s for the till soils;

- During construction, short term dewatering may be required where excavations extend into the shallow groundwater table. Based on the water levels and hydraulic conductivity of the shallow soils on Site, it is not expected that a dewatering permit from the MECP will be required; however, the need for a more detailed dewatering assessment should be reassessed at the detailed design stage of the project;
- Surface drainage follows Site topography and generally drains towards the non-PSW and the UWs. Due to the low permeability surficial soils across the Site, the surface water ponds at these locations during periods of rainfall;
- The monitoring wells on Site have been maintained for ongoing study past the completion of this report. When the wells are no longer required, they should be decommissioned in accordance with O. Reg. 903;
- Feature-based water balance calculations are provided and indicate LIDs will be required to provide appropriate runoff volumes to the non-PSW feature in the post-development environment. The current stormwater management plans for the Site include routing clean rooftop runoff to the wetland feature which will assist in providing these necessary volumes;
- It is recommended that prior to construction, additional monitoring wells be installed to the depths of construction in order to confirm the dry sand conditions at the appropriate excavation depths.

Groundwater and surface water elevations were collected for 1 year from November 2019 to December 2020. A pre-consultation meeting was held with the UTRCA and the agreed scope of work was circulated to the City. The results of the scoped study requirements are included in the following report.