

### Study Description

A **Hydrogeological Study** is an objective science-based review of the subsurface hydrogeologic and geologic conditions in an area or location to identify development suitability and constraints.

### Purpose

A **Hydrogeological Study** is undertaken to assess matters such as: groundwater infiltration and recharge, groundwater discharge and baseflow, groundwater elevations and flow paths, water quality and temperature, cumulative watershed impacts, coldwater fisheries supported by groundwater discharge, and impacts to the City's drinking water sources.

### Who should prepare this?

A licensed, professional geoscientist or exempted engineer as set out in the *Professional Geoscientist Act of Ontario*. All reports and drawings must be stamped, signed and dated by a qualified professional, licensed in the Province of Ontario.

### When is this required?

To support the following applications:

- Official Plan Amendment
- Zoning By-law Amendment
- Draft Plan of Subdivision/Condominium
- Site Plan Control

### Required Contents

The **Hydrogeological Study** at a minimum shall include an assessment of the Existing Conditions, Impacts Assessment, and Mitigation Measures.

Below is a summary of the elements that should be included within the report. The scope of the assessment is site specific. The proponent is encouraged to undertake pre-consultation with the City of Barrie, and the applicable Conservation Authority to confirm the scope prior to undertaking any technical work.

#### Existing conditions

- Introduction and background
- Site location and description
- Description of Topography and Drainage, physiography, geology and soils
- Test pits/boreholes
- Monitoring Wells
- Private Well Survey
- Hydrostratigraphy/Hydrogeology: Aquifer properties, groundwater levels, groundwater flow direction
- Description of surface water features and functions
- Water Taking Permit Details
- Water Quality
- D-5-5 (Water Supply)
- Source Water Protection: Wellhead Protection Areas, Transport Pathways, Significant Drinking Water Threats, Existing Conditions/Issues
- Ecologically Significant Groundwater Recharge Areas

#### Impact assessment

- Groundwater Levels
- Pumping Tests

- Groundwater Discharge (Baseflow)
- Water Balance
- Groundwater Quality
- D-5-4 (Onsite Sewage Systems)
- Source Water Protection: Wellhead Protection Areas, Creation of a Transport Pathway, Significant Drinking Water Threats, Existing Conditions/Issues
- Quantity and Quality of an aquifer used for the supply of drinking water
- Dewatering: Temporary and Permanent
- Contaminant Migration
- Flowing Conditions

#### Mitigation measures

- Maintenance of Infiltration/Recharge
- Maintenance Groundwater Quality
- Monitoring Program
- Contingency Plans

Please ensure consistency with the Hydrogeological Assessment Submissions Guidelines: Conservation Authority Guidelines for Development Applications (June 2013) and the Ministry of Environment, Conservation and Parks Hydrogeological Assessment Guidelines (1995).

#### What else should we know?

If dewatering is expected to be discharged into the municipal storm or sanitary sewers, applications must be made to Environmental Operations for their review under the Sewer Use By-law (2012-172).

#### What other resources are available?

Hydrogeological Assessment Submissions: Conservation Authority Guidelines for Development Applications (June, 2013).

[https://www.lsrca.on.ca/Shared%20Documents/permits/hydrogeological%20\\_guidelines.pdf?pdf=Hydrogeological-Guidelines](https://www.lsrca.on.ca/Shared%20Documents/permits/hydrogeological%20_guidelines.pdf?pdf=Hydrogeological-Guidelines)

Ministry of Environment. 2003, Stormwater Management Planning and Design Manual

<https://www.ontario.ca/document/stormwater-management-planning-and-design-manual-0>

Ministry of Environment and Energy. 1995, MOEE Hydrogeological Technical Information Requirements for Land Development Applications.

<https://archive.org/details/moeehydrogeologi00ontauoft/page/n0>

#### Notes

If the proposed development is revised, the study/report shall reflect the revisions by an updated report or letter from the author indicating the recommendations and conclusions are the same.

Please note that a peer review may be required. The cost of the peer review will be borne by the applicant.

Please note that the requirements of this study may vary depending on the nature of the proposal. This will be determined through the pre-consultation process and in consultation with any applicable external agencies.

If the submitted study is incomplete, is authored by an unqualified individual, or does not contain adequate analysis, the application will be considered incomplete and returned to the applicant.