



Region of Waterloo

## **Potable Groundwater Criteria Use in the Region of Waterloo**

March 2010

The Region of Waterloo provides municipal drinking water to the seven local area municipalities of Cambridge, Kitchener, North Dumfries, Waterloo, Wellesley, Wilmot, and Woolwich. The Region's municipal water supply is obtained from two sources: groundwater (126 supply wells) and the Grand River. The Region has the responsibility of meeting the current and future water supply needs for all municipal systems and is the municipal authority for the use of potable/non-potable or risk-based groundwater criteria for sites within the boundaries of Waterloo Region.

Actions to manage and protect local drinking water sources are carried out according to the Region's Water Resources Protection Master Plan (January 2008) and Long Term Water Supply Strategy (May 2000). As part of the Water Resources Protection Master Plan process, Region staff comment on the appropriate use of groundwater clean-up criteria for sites throughout Waterloo Region.

To ensure the protection of local drinking water sources, Region staff only accepts the use of clean-up standards and guidelines that consider effects on local potable groundwater supplies. Risk Assessment based standards are supported but should incorporate site-specific hydrogeological data and must assess the contaminant pathways to current and future municipal drinking water aquifers and other potential potable groundwater users (i.e. "potable pathways"). Specifically, Region staff will not agree to the use of "Generic Site Condition Standards in a Non-Potable Groundwater Condition" as referenced by Ontario Regulation 153/04 and associated technical documents.

The Region's position regarding the use of potable groundwater criteria applies to municipal notification required under the Ontario Environmental Protection Act (Regulation 153/04 as amended), as well as work done to satisfy the requirements of the Region's "Implementation Guideline for the Review of Development Applications on or Adjacent to Known and Potentially Contaminated Sites" as supported by Region Council (June 2009).

This position on potable groundwater criteria is based on recognition of the good quality of local groundwater resources, on the municipal investment in managing and protecting

local water drinking water resources and on technical information regarding the complex hydrogeological systems in the Region. More technical information is provided below.

Several regional-scale studies of the hydrogeology of Waterloo Region have been completed. These studies have shown that, unlike in some other areas of Ontario, groundwater throughout Waterloo Region is of good quality and is suitable for drinking water. At some sources within Waterloo Region, groundwater may be treated for aesthetic reasons to reduce the amount of naturally occurring dissolved minerals, but this natural mineralization does not pose a health risk. In all areas of the Region, natural groundwater is safe and appropriate for use as drinking water. There are municipal wells and private (homeowner) wells which depend on access to potable groundwater located throughout the urban and rural parts of Waterloo Region.

Technical studies have identified that all areas in Waterloo Region are potentially connected to potable groundwater resources. Much of the local municipal water is derived from buried “semi-confined” aquifers. These aquifers are recharged primarily by leakage through overlying and underlying protective layers (“aquitards”). The leakage, or aquifer recharge, occurs over large areas of Waterloo Region including urban and rural areas. Areas of recharge to the municipal wells generally fall within Well Head Protection Areas which have been mapped through technical studies. Areas outside of Well Head Protection Areas may still be areas of groundwater recharge to other (non-municipal) groundwater users or to aquifers not currently supplying municipal wells.

Most of the water supply in the Kitchener-Waterloo area is derived from sand and gravel aquifers associated with the Waterloo Moraine, the major glacial landform in the area. Near the centre of the moraine, geologic layers of sand, gravel and silt till are relatively continuous. However, on the flanks of the moraine, the geology is more complex and in some cases there is no clear separation of shallow and deep aquifers.

In the Cambridge area, municipal supplies are taken mainly from fractured bedrock aquifers. Over most of the area sand and gravel sediments overlie the bedrock and provide recharge to the bedrock and municipal supply wells. Geological studies of the area indicate only irregular and discontinuous aquitard zones within the overburden and the bedrock; zones which do not consistently separate shallow and deep aquifers.

Groundwater may potentially be used as a source of potable water in any area within Waterloo Region. The Region is following the Long Term Water Supply Strategy which plans increased groundwater use over the next several decades, supplemented in the

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long term by a pipeline to the Great Lakes. Accordingly, it will remain important to protect the quality of local groundwater sources in anticipation of future municipal needs.

Region staff encourages site-specific studies of potential groundwater contamination in order to determine the appropriate groundwater clean-up criteria (generic potable standards or risk assessment). The Region offers support to those undertaking groundwater assessment and clean-up through technical information, hydrogeological reports, mapping, and brownfield redevelopment initiatives including redevelopment grants.

More information about Hydrogeology and Source Protection is available on the Region website [www.regionofwaterloo.ca](http://www.regionofwaterloo.ca) or by calling the Region's 24 hour Call Centre at 519 575-4400; Deaf and Hard of Hearing (TTY) at 519-575-4608.