Halton-Hamilton Source Protection Region

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER

The Campbellville Municipal Well Field

The municipal drinking water system for Campbellville is included in the Halton-Hamilton Drinking Water Source Protection project under the Ontario *Clean Water Act, 2006*.

Source protection is the first step toward safeguarding our drinking water, followed by adequate treatment, safe distribution and regular testing. Protecting sources of drinking water – whether groundwater or the lake – eases the strain on costly treatment processes and reduces the need to find alternate sources.

The Campbellville municipal well field is owned and operated by Halton Region. The well field comprises two wells that extract groundwater to service 35 homes. The wells were constructed in 1972 and 2003. They extend up to 13 metres deep and tap into the sand and gravel deposited in a valley carved into the shale bedrock. The valley extends to the east and the Kelso wells that service Milton also take water from this aquifer.

Drinking water quality to preserve and protect

A wellhead protection area (WHPA) is the surface area under which water flows through an aquifer to a pumping well. WHPAs are mapped to identify the areas to be protected. Existing and potential activities that could contaminate the groundwater supplying municipal wells have been listed.

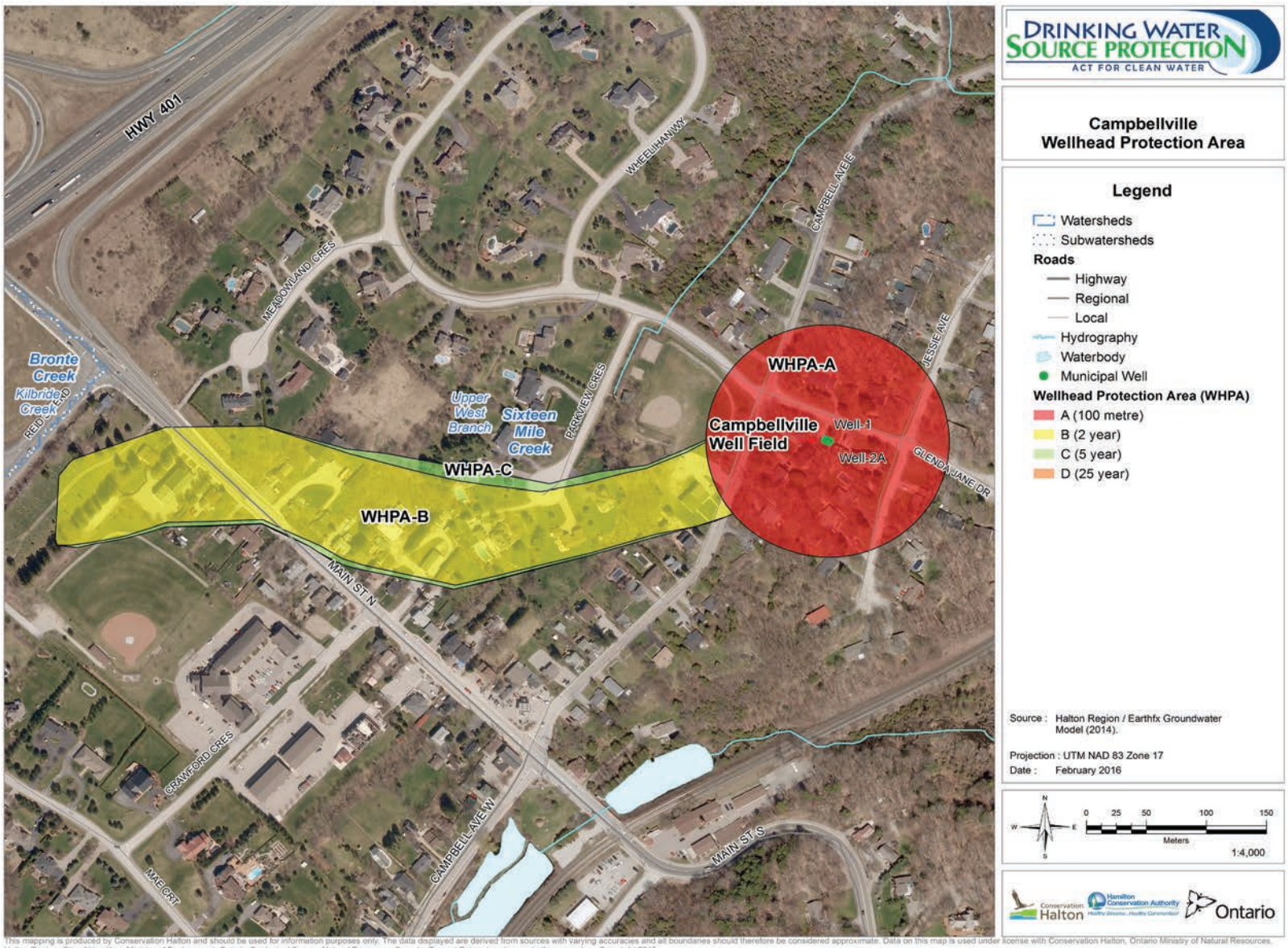
A calibrated integrated groundwater/surface water model is considered the best science-based method for identifying wellhead protection areas and determining the vulnerability of the area to contamination from activities. An integrated flow model was used to assess the Campbellville municipal supply.

The level of risk to the water quality at a well reflects the time it takes for a contaminant to travel to the well and the time for authorities to react. The two Campbellville wells are located close together, so one wellhead protection area is used for both wells. The wellhead protection area is divided into the following parts.

- WHPA-A – an area of 100 metre radius around the wellhead
- WHPA-B – the zone through which it takes groundwater up to two years to reach the well
- WHPA-C – the zone through which it takes groundwater two to five years to reach the well
- WHPA-D – the zone through which it takes groundwater five to 25 years to reach the well.

Based on the results of groundwater and treated water analyses between 1985 and 2009, as measured at the Campbellville well supply, no drinking water issues under the *Clean Water Act* were identified. The quality of the source water is good and the treated water meets the provincial standards.

Sodium and chloride concentrations are higher than concentrations typically measured in groundwater in the area and approach their provincial aesthetic objectives for treated water. Sodium and chloride are not health-related parameters for most of the population. The Medical Officer of Health has been notified of the higher than 20 milligrams per litre concentration of sodium in the source water as people on sodium-restricted diets should be aware of the situation. The source of these parameters in groundwater can be from road salt application, water softener and septic system use and also may be naturally occurring. The concentrations of these parameters in the source water will be monitored, as ways to reduce their release to the environment are sought.



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Drinking water quantity
conservation is critical

Halton Region holds a Permit To Take Water (PTTW) that allows the taking of up to 523.7 cubic metres per day from the Campbellville wells. The operators manage the water taking to maintain a sustainable supply at much less than the permitted rate. In 2009, the Campbellville well pumped a total of about 9,100 cubic metres of water.

The Campbellville municipal wells are located in the Upper West Branch subwatershed, part of the Sixteen Mile Creek watershed that drains to Lake Ontario. Surface water and groundwater stress assessments, completed for the year 2007, compared the supply and the demand on water resources within the Source Protection Region. Users of water in this subwatershed include municipal, domestic, commercial, agriculture, aggregate operations, and golf courses. Based on the assessments completed, the surface demands within the Upper West Branch subwatershed result in a low stress level, while the groundwater demands place stresses on the resources. A focused assessment of the sustainability of the Campbellville municipal well supply during planned water use, planned land use changes, and a 10-year drought was completed using an integrated groundwater/surface water model. The well field was able to meet peak demand under all scenarios. The well field does have a moderate risk, however, because water use could decrease groundwater discharge to local creeks.

Drinking water threats

The Ministry of the Environment and Climate Change has legislated specific activities as drinking water threats at low, moderate and significant levels. Significant threats are addressed through policies in the Source Protection Plan.

There are 19 prescribed drinking water threats to water quality. They are related to

1. Waste disposal sites – their establishment, operation or maintenance
2. Sewage systems – their establishment, operation or maintenance
3. Agricultural source material – application to land
4. Agricultural source material – storage
5. Agricultural source material – management
6. Non-Agricultural source material – application
7. Non-Agricultural source material – handling and storage
8. Commercial fertilizer – application
9. Commercial fertilizer – handling and storage
10. Pesticide – application
11. Pesticide – handling and storage
12. Road salt – application
13. Road salt – handling and storage
14. Snow – storage
15. Fuel – handling and storage
16. Dense non-aqueous phase liquid – handling and storage
17. Organic solvent – handling and storage
18. Chemicals used to de-ice aircraft – management of runoff
19. Land associated with livestock – for grazing, or confinement such as a feedlot.

Of these threats, only sewage systems and fuel storage are assessed as being existing threats in the Campbellville wellhead protection area.

There are also two prescribed threats that relate to water quantity.

1. An activity that reduces the recharge of an aquifer.
2. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.

There are no existing water quantity threats in Campbellville.

Above: Campbellville water treatment plant
Below: Campbellville well

For more information about Drinking Water Source Protection in the Halton-Hamilton Region, please visit our website www.protectingwater.ca. The site contains a wealth of information including advice about how you can ask questions and become involved in the Halton-Hamilton Source Protection project. We encourage you to do so.

You may also call us at 905-854-9229 ext. 223 or reach us by email at **sourceprotection@hrca.on.ca**

Conservation Halton

Ontario

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Hamilton Conservation Authority

Healthy Streams...Healthy Communities!

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