

Background Briefing

Water supplies

December 2014

From the earliest days of the GRCA, one of its prime responsibilities has been to ensure adequate water supplies.

Originally, it addressed that issue by using water stored in its reservoirs to augment flows during dry summer months.

That continues to be an important job. However, today the work goes beyond that to answering questions about the sustainable use of water resources, now and into the future.

The goal is to learn how much water we have, how it is used and how to manage it to meet the needs of people and the environment.

Water budgets

A water budget tracks the volume of water entering, moving through and leaving the watershed. This involves measuring precipitation and groundwater flows (the 'income' part of the budget). Then the 'expenditures' are examined: how much water leaves through consumption, surface water flows, groundwater movements and evaporation. The 'balance' is the difference between the two.

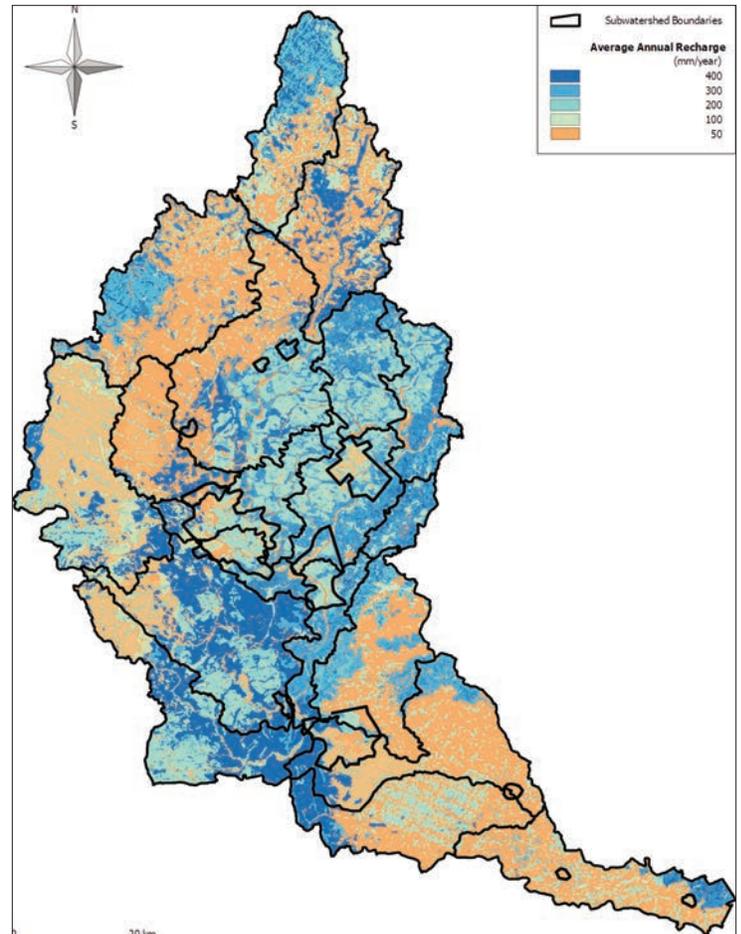
A high-level water budget for the entire Grand River watershed was first developed in the 1990s. Since then, water budgets have been developed for subwatersheds.

As part of the Source Protection planning process, detailed water budgets have been developed for the municipal drinking water systems serving Waterloo Region, Guelph and Guelph-Eramosa to examine the potential impact on supplies because of population growth, drought and other conditions. A study is also underway in the Whitemans Creek area, where demand for water for farm irrigation is high.

Water use reporting

People draw water from ground and surface sources for a wide variety of reasons. The Water Use Inventory Report provides an overview of the amounts of water taken by water users.

The most recent inventory, completed in February 2011, includes information on four main categories: municipal systems, rural domestic use, agricultural use and water



Information on groundwater recharge rates is used to develop a water budget.

taken under other provincial Permits To Take Water.

About 152 million cubic metres of water is used each year, with about 70 per cent of that coming from wells and the rest from surface water sources such as rivers, streams, Lake Erie and other sources.

About 60 per cent of water is used by municipal water systems. Other key uses include dewatering of pits and mines, agricultural irrigation and livestock watering, aggregate washing and rural domestic supply.

Water quantity demand assessment

A demand assessment uses information from the water budget and water use assessment to estimate the share of

available water that is being used for human activities.

Assessments are done for surface water and groundwater systems. For surface water, the assessment looks at how much water is removed relative to the amount available in the river or stream. For groundwater, the assessment looks at how much water is removed relative to the amount that goes back into the ground each year (i.e. aquifer recharge.)

For surface water, water demand is low relative to supply in most of the watershed. The exceptions are the Whitemans Creek-McKenzie Creek region near Brantford where agricultural irrigation is common in the sandy soils of the Norfolk Sand Plain, and the Eramosa River because of the Guelph municipal intake near Arkell.

For groundwater, demand is low across much of the watershed as well. The exceptions are the area around Waterloo Region and Guelph, which depend on groundwater for most of their municipal water supplies.

Low Water Response Program

The Ontario government created the Low Water Response Program after several dry years in the late 1990s and early 2000s. In the Grand River watershed, a Low Water Response Team has been formed with representatives from major water users: municipalities, farmers, the aggregate industry, golf courses, water bottlers, anglers and hunters, First Nations, provincial and federal departments and others. The GRCA provides technical and administrative support, but decisions are made and communicated by team members.

GRCA staff monitor water levels and if they start to drop, a team meeting is convened. Under the program, the team can decide to implement a Level 1, 2 or 3 status for part, or all of the watershed. In Levels 1 and 2, water consumers are asked to voluntarily cut consumption by 10 and 20 per cent respectively. In Level 3, mandatory cutbacks can be ordered by the Ministry of the Environment. Levels 1 and 2 have been declared many times in the watershed; there has never been a Level 3 declaration.

Review of Permits To Take Water (PTTW)

Almost all those who want to take more than 50,000 litres a day from a surface or groundwater source must hold a Permit To Take Water issued by the Ministry of the Environment. (Permits are not required for rural domestic use or livestock watering.)

These permits are subject to public comment through the Environmental Registry. As well, conservation authorities have the opportunity to provide comment directly to the ministry.

Each year the GRCA receives about 30 new and renewal



GRCA staff check a groundwater monitoring well.

applications. These are screened according to several criteria including the size of the taking, potential conflict in the regulated reaches of the river system and a municipal request for the GRCA to comment. In an average year the GRCA provides comments on about five permits.

Groundwater monitoring

The state of groundwater resources is monitored at 27 wells across the watershed. The wells, which range from six to 27 metres in depth, monitor water levels and water quality.

They are part of the Provincial Groundwater Monitoring Network, a partnership of conservation authorities and the Ministry of the Environment.

Demand management

With population growth and the growing cost of providing water, municipalities are putting more emphasis on managing demand. Outdoor water use bylaws, price increases and incentives for installation of water efficient appliances are among the tools in place in Grand River communities.

Municipal water supply master plans in Guelph and Waterloo Region include targets for reduced household consumption. Municipalities are also looking at the next phase of conservation tools such as water re-use and grey water harvesting.

Because of reductions in water use, the Region of Waterloo has concluded that it does not need a Great Lakes pipeline before 2051.

Water Management Plan

One of the important issues studied in the Grand River Watershed Water Management Plan is the security of future water supplies.

The plan contains several recommendations supporting water demand management and outlines some of the steps needed to identify water sources and protect their future availability.