News for Brantford, Cambridge, Guelph, Kitchener, Waterloo and other communities in the Grand River Watershed

Watershed report

The GRAND

GRAND RIVER CONSERVATION AUTHORITY
2005 FALL REPORT

Distribution 200,000 copies

Grappling with growth

How will the population boom in the Grand River watershed affect the environment?

By David Schultz
GRCA Communications Co-ordinator

The urban areas of the Grand River watershed, and especially its cities – Kitchener, Waterloo, Cambridge, Guelph and Brantford – are some of the fastest growing in the country.

The watershed is feeling the impact of the explosive growth of the Greater Toronto Area, which is pushing more people to look farther for jobs and homes.

The Grand River cities are also growing because they are attracting new residents in their own right, from across the country and around the world.

The prospect of all of this growth has caused a lot of people – municipal leaders, provincial officials, environmentalists and many average citizens – to wonder how this growth can be accommodated.

- ❑ Will there be enough water?
- ❑ Can sewage systems keep up?
- ❑ What impact will it have on natural areas – rivers, wetlands, moraines and forests?
- ❑ How will agriculture be affected?

Growth has become a subject of intense study at municipal offices and at Queen's Park, where the provincial government is developing new planning policies for the Greater Golden Horseshoe.

In February, the province published Places To Grow, a growth plan for the Greater Golden Horseshoe area. In June, the principles of the Places To Grow plan were written into provincial law, including a provision that municipal land-use plans and policies will have to conform with the growth plans that will be developed for the Greater Golden Horseshoe.

The Places To Grow plan notes that about

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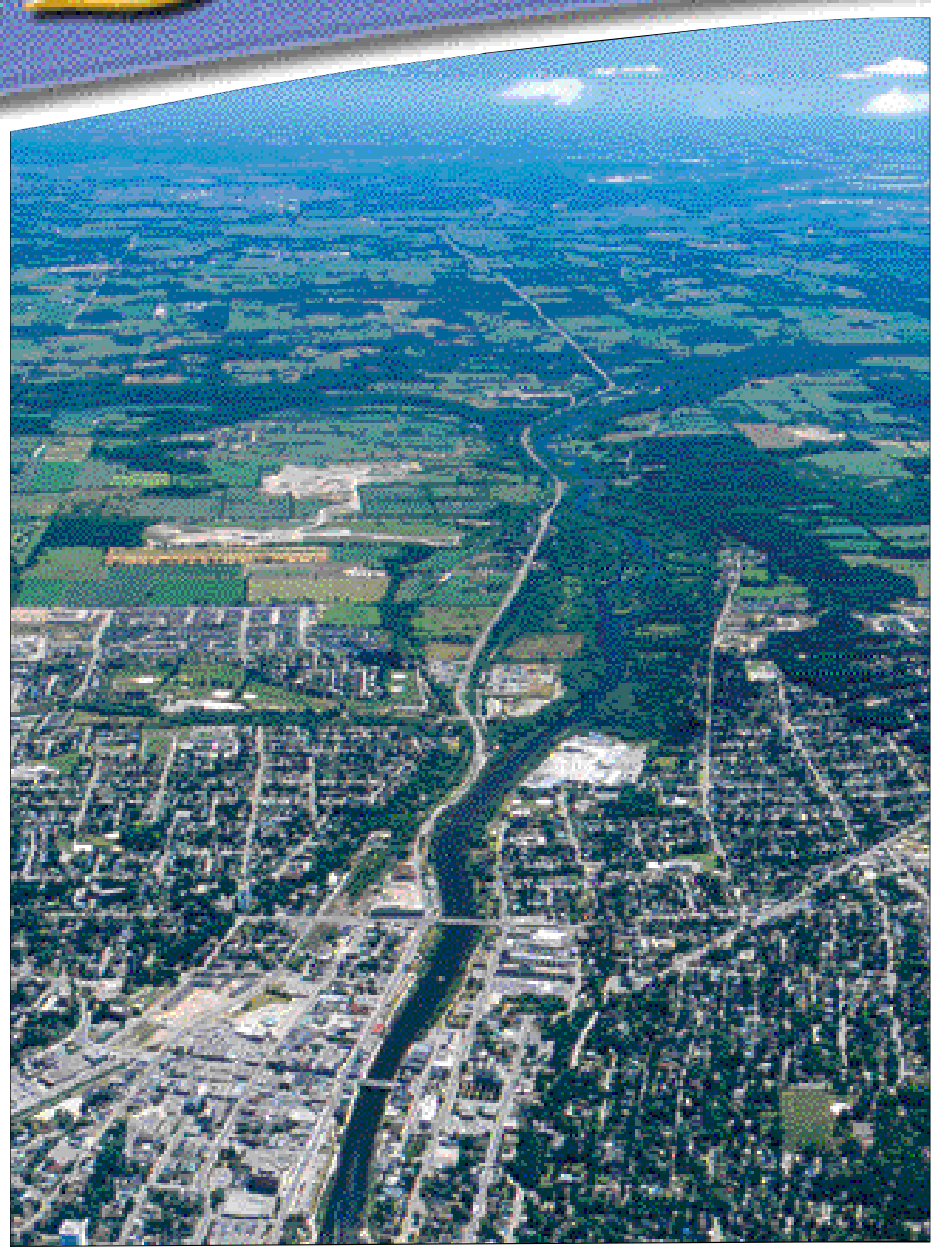

As the cities of the Grand River watershed grow over the coming decades, there will be more pressure on the river and other natural areas. GRCA *photo by Carl Hiebert*

Along the Grand

THE GRAND RIVER
A Canadian Heritage River

The GRCA
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THE GRAND
is published twice a year by the GRCA, and distributed in newspapers to households in the Grand River watershed.
Additional copies are available.

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Printed by Grand River Valley Newspapers

A Message FROM THE CHAIRMAN AND THE CAO

Growth and balance

This year, our annual Watershed Report is focused on the issue of growth. As the articles and illustrations make clear, the Grand River watershed is facing a period of explosive growth, with most of it concentrated in the cities.

We know that there will be an immense strain on our infrastructure such as roads, sewers, water and waste disposal. Many of the municipalities of the watershed are already looking at these issues, as is the province, which has laid the foundation for a new strategy to address growth issues in the Greater Golden Horseshoe.

As they look at these issues, they have to measure them against their impact on the environment. What will it mean to the river, streams, forests, wetlands and other natural areas?

In nature, everything is connected to everything else. The quality of our drinking water, whether we get it out of the river or out of the ground, depends on how we manage our land, from farm field to city street.

The challenge for all of us is to find the right balance, to live within our resources, to ensure that the decisions we make today will protect the environment tomorrow. Healthy cities depend on a healthy environment.

One big question we need to ask is whether there are limits to growth? At what point do we conclude that growth has to end, that our natural resources simply can't sustain any additional development?

Consider one example. Almost all of the water we use in the Grand River watershed comes from the surface and groundwater resources of the watershed. In the future, however, consideration is being given to tapping into the Great Lakes for part of our water supply.

But if we think of a Great Lakes pipeline as a symbol, what does it represent? Is a pipeline a tool to aid sustainable growth? Or is it a symptom of unsustainable growth?

The Grand River Conservation Authority will be playing a role in the discussion about growth, balance and our future. It is our role to work with municipalities, the province, researchers, environmentalists and the people of the watershed to address environmental issues.

The GRCA is researching how much water is available to serve our cities as they grow. We are conducting studies that will provide municipalities with advice on how to improve their sewage treatment systems. We are working with the farming community to help them adopt better practices to protect water quality.

The GRCA is uniquely positioned to do this work because it works across municipal boundaries, seeing environmental issues from a watershed-wide perspective. The residents of Dufferin County and Haldimand County may be hundreds of kilometres apart, but they are joined together by the Grand River, and what each does and needs matters to the other.

When it comes to questions of growth and balance, no one has all the answers, but many are asking the right questions.

Peter Krause
Chairman

Paul Emerson
Chief Administrative Officer

WHO SPEAKS FOR YOU?

The municipality where you live appoints one or more representatives to the Grand River Conservation Authority (GRCA) board to oversee the budget and activities of the Conservation Authority. These members, who have often been elected in your municipality, speak on your behalf at the GRCA.

REGIONAL MUNICIPALITY OF WATERLOO
(including Cities of Cambridge, Kitchener, Waterloo, and Townships of North Dumfries, Wellesley, Wilmot and Woolwich)
Jane Brewer, Jean Haalboom, Ross Kelterborn, Peter Krause (GRCA chair), Joe Martens, Claudette Millar, Jane Mitchell, Ralph Shantz, Bill Strauss, Lynne Woolstencroft

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Brain Coleman, Gord Moore

The GRCA's Vision

To be a leader in ensuring a healthy and sustaining relationship between the natural environment of the Grand River watershed and the demands on this environment by all forms of life.

The GRCA's Mission

To work with partners to conserve the natural process and resources that support a safe and healthy environment for future generations in the Grand River watershed.

The GRCA's values

Openness, clarity, understanding, sensitivity, action, holism, integrity, accountability, trust, flexibility, fairness, preparedness, creativity, innovation.

Population boom predicted for Grand River cities

Continued from Page 1

7.8 million people live in the Greater Golden Horseshoe, which stretches from Waterloo Region on the west to Port Hope on the east, and from Barrie in the north to St. Catharines in the south.

"By 2031 the future population of this area is forecast to grow by an additional 3.7 million to 11.5 million people," says the report.

About three-quarters of that growth will take place in the Greater Toronto Area and the City of Hamilton, which it calls the "Inner Ring."

"Most of the remaining growth will occur in the urban centres of the Outer Ring in Kitchener, Waterloo, Cambridge, Guelph, Barrie, St. Catharines and Peterborough."

Separating the Inner and Outer Rings is a new Greenbelt that includes the Niagara Escarpment and the Oak Ridges Moraine. The Greenbelt was approved by the province earlier this year and imposes strict limits on urban development. Some parts of the Grand River watershed are in the Greenbelt area, including the western part of the City of Hamilton and part of the Town of Milton in Halton Region.

Places To Grow offers some startling statistics on population growth in the communities of the Grand River watershed.

It identifies five urban areas and their surrounding counties and regions as major growth centres: the cities of Kitchener, Waterloo and Cambridge in Waterloo Region; the City of Guelph and Wellington County; and the City of Brantford and Brant County.

In 2001, says the report, the population of the five Grand River watershed cities and their surrounding municipalities was 780,000. By 2031, it says, they will grow another 57 per cent to a total population of 1,223,000.

Places To Grow has identified these five cities as "urban growth centres" and its policies are geared to promoting more intensive development within existing built-up areas while restricting sprawl into undeveloped "greenfield" areas.

'Economic driver'

The report singles out Waterloo Region, noting that it will remain one of the "primary economic drivers within Ontario" and that much of the growth in the area will be driven by international immigration.

Municipal leaders have been aware for some time that the Grand River watershed is a high growth area and they have been developing their own strategies to accommodate the growth.

However, the Places To Grow report points to a faster rate of growth than earlier studies. That has made an already difficult issue that much more complex, and the search for solutions to growth-related issues that are much more pressing.

"This report shows a significant increase in forecasted population, employment and housing units to 2031," says a report produced by Hemson Consulting Ltd. as part of the research for Places To Grow.

The Hemson report highlights the issues that this rapid growth will create.

"The infrastructure required to support anticipated growth is not currently in place, nor are all of the infrastructure needs currently planned or even identified. For efficiency purposes, municipalities generally do not build infrastructure 25 years in advance and few have undertaken significant infrastructure planning as far out as 2031.

"In many areas of the Outer Ring, supplying water and wastewater services will become increasingly challenging.

Expensive solutions

"This is particularly true….in Wellington, Waterloo and Brant where there are both water and wastewater limitations associated with groundwater and the Grand River. Addressing these limitations could, potentially, be very expensive," said the Hemson report.

"Alternative approaches to servicing, including systems from the Great Lakes, may need to be considered during the forecast period."

With Places To Grow, the province wants to develop a new approach to planning in the Inner and Outer Rings. Places To Grow divides the Outer Ring into four zones. One zone — Zone 3 – takes in most of the Grand River watershed including Brant, Brantford, Guelph, Wellington, Waterloo Region and Dufferin.

The province proposes a new approach to planning in these zones. Traditionally, municipalities have developed their own growth strategies and servicing plans. In Place to Grow, the province says it wants to foster a "collaborative" approach and establish "a foundation for inter-regional planning" that will look at infrastructure needs and natural systems across a wider area."

Places To Grow recognizes that urban growth inevitably puts pressure on the natural environment.

The document proposes policies to protect natural areas for several reasons: the role they play in providing clean drinking water, the opportunities they provide for recreation and tourism, and the inherent value in protecting biological diversity and ecosystems.

"The natural system will recognize the linkages between and among natural heritage features and areas, groundwater features and surface water features, which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems," says Places To Grow.

Municipality	2001 Population	2031 Population	Population Growth	% Population Growth
Brantford-Brant	129,000	173,000	44,000	34%
Waterloo Region	456,000	729,000	273,000	60%
Guelph-Wellington	195,000	321,000	126,000	65%
TOTAL	**780,000**	**1,223,000**	**443,000**	**57%**

Population projections done by Hemson Consulting Ltd. for the provincial government forecast a population boom in the cities of the Grand River watershed.

The cities of the Grand River watershed are booming. The Ontario government's new growth strategy for the area proposes that future urban growth should be more intensive to limit urban sprawl.

The municipalities named on the map are all part of the "Greater Golden Horseshoe" region, where high growth is expected over the next 25 years. Most of the Grand River watershed is in Zone 3, one of four "outer ring" zones where the province wants to work with municipalities to develop a broadly-based growth management plan.

The big question: Is there enough?

Water supply issues are top of the list in discussions about population growth

Any discussion of population growth in the Grand River watershed inevitably turns to this question:

Will there be enough water?

The question has become a common one recently. The cities of the Grand River watershed are growing rapidly, and a lot more growth is forecast for the next 25 years. Meanwhile, some municipalities have imposed restrictions on outdoor water use to reduce demand in the summer. How can that growth be accommodated when there already appears to be a water shortage?

But as simple as the question may be, the answer is more complex.

In a sense, there are really two parts to the question, one short-term and one long term.

The short term issues relate to municipal water conservation programs.

Most municipalities have introduced these programs to deal with big spikes in demand, usually in the summer. Some of the rules are just common sense – not watering the driveway or not overwatering the lawn. By introducing these measures, municipalities are not only saving water, they're saving the money it takes to treat and deliver the water.

Some conservation measures address temporary situations, such as the need to repair a well or the need to conserve during an extended drought .

The bigger, long-term issue is what needs to be done to prepare for the population boom. According to one prediction, the population of the five watershed cities could grow by a total of 57% over the next 25 years.

As things stand today, there's enough water in the Grand River system – surface and groundwater – to meet the needs of residents for decades to come, if it is used wisely.

Part of the equation

But the supply of raw water is just part of the equation. Municipalities have to do a lot of work to get that raw water out of the ground or river and deliver it to each home, institution and business. It is a costly and time-consuming process to plan and build a water delivery system to meet demand that will grow for decades.

It's hard work getting water out of the ground and into a pipeline, as these children learned during the Waterloo-Wellington Children's Groundwater Festival. GRCA *photo by Janet Baine*

Municipal planners have to make projections on population patterns and the effectiveness of conservation programs. They have to take into account new technologies that may come into play. They have to identify the best, most reliable sources of water and determine how to get the water, treat it and deliver it in the most cost-efficient way.

Many of the numbers in the equation are moving targets. Even a small change in one variable, such as population growth, can make a big difference in the outcome.

Currently, about 70 per cent of the 875,000 watershed residents get their water from one of 40 municipal water systems. The vast majority of those people live in one of the five watershed cities –Waterloo, Kitchener, Cambridge, Guelph and Brantford – which is where most of the population growth is taking place.

The water systems can provide more than enough water to meet the routine needs of households, schools, hospitals, businesses and industry. However, the water systems have to be built to meet the peak demand that comes during hot, dry summers. Water demand can soar by 20 to 40 per cent above average demand, and most of the additional water goes right into the ground in lawns and gardens. Water conservation programs can reduce the peaks, but demand will still rise and fall with the seasons.

Unforeseen events

Unforeseen events can affect water supplies. For example, the Region of Waterloo decided to shut down a well in Kitchener in 2004 when chemical contaminants were found in the water. That cut into water supplies for most of the Waterloo Region, leading to outdoor water use restrictions this year. In 2003, Brantford had to call for water use reductions in mid-winter because of a build-up of ammonia in the ice-bound Grand River, where the city gets all of its water.

Those are some of the issues that municipal water managers wrestle with to ensure that there's enough water to meet current demand.

Predicting future demand introduces several other complexities.

Growth rates are one example. In 2000, the Region of Waterloo adopted a Long Term Water Strategy to ensure an adequate water supply to 2041 when the population would be about 700,000. However, a new study done for the provincial government suggests that the region might hit that population target 10 years sooner.

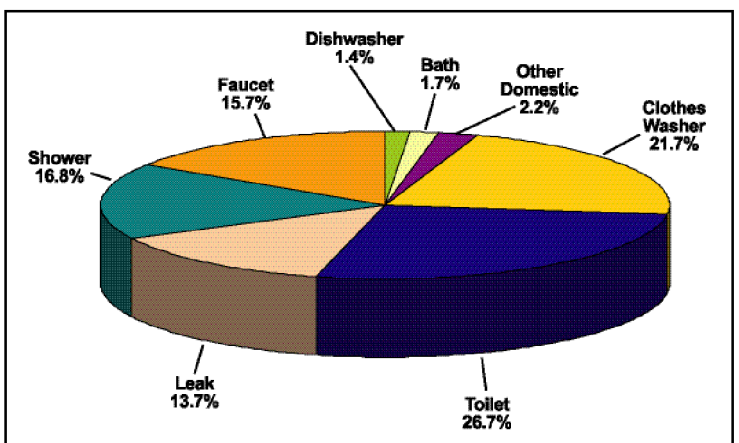
The City of Guelph is developing its own long-term water strategy and is using population growth rates ranging from 1.5 per cent a year to 2.5 per cent. The range may be small, but compounded over decades it can make a difference of tens of thousands of residents.

A population report prepared this year by Hemson Consulting Ltd. for the provincial government says that "the forecast growth will challenge the limits" of the groundwater supplies serving Waterloo Region and Guelph.

Water conservation programs have had a big impact on water demand, particularly in Waterloo Region and the City of Guelph, where the municipalities have had programs for several years. They have many elements, such as incentives to homeowners to install low-flow toilets, and projects to repair leaks in water mains.

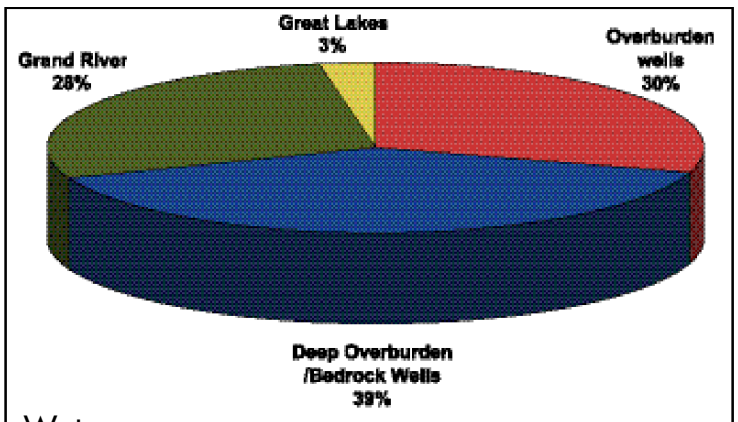
The result is that per capita water use in these areas has dropped below the national average. The question, though, is whether there are further gains to be won through conservation programs and new technologies.

A lot is riding on finding the



Indoor water use

We think of the stuff coming out of our taps as "drinking water" but actually, not much of it makes its way into a water glass. Most of the water coming into our houses ends up going right back down the drain without ever being consumed. The single biggest water use is flushing the toilet, which represents more than a quarter of the water used in a typical household. Washing our bodies and our clothes make up about 40 per cent or our household water consumption. *(Source: City of Guelph)*



Water sources

The municipalities of the Grand River watershed get their water from a variety of sources. About 69 per cent comes from wells, about 29 per cent from the Grand River and about three per cent from the Great Lakes.

right answer to the water supply equation. If the answer is too low, future generations may not have the water they need. If the answer is too high, municipalities may spend a lot of taxpayer money on water systems that are too big.

The province's new Places To Grow growth strategy proposes that discussions of a growth plan for the area will include a "review of the availability of water supply, wastewater treatment and solid waste disposal capacities within each of the sub-area municipalities to ensure availability to serve forecasted growth."

The work on development of that plan still lies in the future. Meanwhile, here's the state of the water systems of the cities of the watershed and their current plans to deal with growth.

Waterloo Region

Waterloo Region operates five major water systems serving about 425,000 people.

Across the system, about 75 per cent of the raw water comes from 125 wells, many of which tap into rich aquifers in the Waterloo Moraine and Paris-Galt Moraine. The remaining 25 per cent comes from the Grand River. It is treated at the Mannheim Water Treatment Plant in Kitchener and then blended with the groundwater.

One large system serves Cambridge, Kitchener, Waterloo, St. Jacobs and Elmira. Called the Integrated Urban System, it draws water from wells and the Grand River.

Four systems serve Baden-New Hamburg, Ayr, Wellesley and St. Clements. Several additional systems serve individual neighbourhoods and developments.

During the 1990s, the regional government developed a Long-Term Water Strategy to identify water supplies to meet needs until 2041, based on the population growth projections available during the planning process.

The first phase is underway with the construction of an Aquifer Storage and Recovery facility at the region's Mannheim Water Treatment Plant in Kitchener. Water will be pulled from the Grand River, treated and then injected into the ground during times of low demand in fall, winter and early spring. Then the water will be pumped up to the surface for use during the summer. The first phase of the program is underway and additional storage will be added in 2008.

The region also expects to develop several new wells by 2018.

These improvements will meet the Region's needs to 2035. A pipeline to the Great Lakes is being studied to meet demand after that.

The estimated cost of the Long-Term Water Strategy is estimated at about $570 million, with most of that going to pipeline costs.

Pipeline possibility

The Region of Waterloo's Long Term Water Strategy proposes development of a pipeline to the Great Lakes by 2035.

The City of Guelph has also put a pipeline on its list of alternatives for its own long-term water needs.

The Waterloo strategy, completed in 2000, says the region should pursue a pipeline to Lake Huron "based on the public perception that water quality in Huron is better than (Lake) Erie," even though "technical evaluations of treated water from either lake show essentially the same water quality."

However, recent international agreements covering the Great Lakes make it unlikely that Huron will be available as a source. Now, the region is turning its attention to Lake Erie.

A water intake pipe in Lake Erie near the Nanticoke industrial complex is one possible source. The intake has a huge capacity – about 1.8 million cubic metres per day – but currently only a small percentage of that is used to provide water to the Nanticoke industrial area as well as some nearby communities.

The County of Haldimand has commissioned a study to expand its Nanticoke water treatment plant to allow it to serve Caledonia and Cayuga, which are in Haldimand but get their water from the City of Hamilton.

As part of the study, Haldimand is also considering the possibility that this intake pipe might eventually serve Six Nations, Brantford, Waterloo Region and Guelph, as well as other towns and villages in the Grand River watershed.

Guelph

Guelph operates a water system serving about 125,000 residents, including students.

The system runs at about 80 per cent capacity on an average day, but during the summer, peak demand approaches the system's limits.

The city has 23 production wells, of which 17 are used continuously. The city sometimes uses water from the Eramosa River to supplement the water it collects from natural springs.

The city's water conservation program has had a big impact on use, especially during the summer. Historically, summer demand was about 40 per cent higher than winter demand, but in recent years, the summer increase has been cut to 20 per cent.

Shand Dam creates Lake Belwood, near Fergus, which is one of the seven reservoirs operated by the GRCA to keep rivers flowing.

Reservoirs keep the flow going

For the communities that draw their water from the Grand River, the GRCA's reservoirs are a vital part of their drinking water supply system.

Waterloo Region gets about 25 per cent of its water from the Grand. Brantford and Ohsweken (in the Six Nations Territory) get all of their water from the river.

The GRCA operates seven reservoirs which trap water in the spring and release it gradually during the summer, to ensure that there is an adequate volume of water to meet the needs of these communities.

During exceptionally dry summers, there are times when about 90 per cent of the water in the Grand River at Kitchener comes from the reservoirs.

At Brantford, about 50 per cent of the water in the Grand comes from the reservoirs.

If the reservoir flow wasn't there, the treatment plants handling this water would face a much bigger job of making the water drinkable.

The city is developing a Water Supply Master Plan which should be completed early in 2006.

The city estimates that its current water supplies will meet needs until 2015. The purpose of the study is to identify alternatives that will take the city well beyond 2054.

The city is examining the possibility of maximizing the supply from existing groundwater sources. It's also reviewing the potential effect of water conservation programs.

When it comes to new sources of water, the city is examining several, including new wells, new surface water sources (Speed River, Eramosa River or Guelph Lake reservoir), an Aquifer Recovery System or a Great Lakes pipeline.

Another alternative is limiting growth.

To make its projections, the city is using population growth rates ranging from 1.5 per cent a year up to 2.5 per cent a year until 2054. At the lower end, the city will need to double the capacity of its water system; at the high end, the increase is 2.5 times the current capacity.

Brantford

The Brantford water treatment plant has a capacity that is close to double the average daily consumption.

Brantford draws all of its drinking water from the Grand River. On an average day, the plant takes only 2.5 per cent of the water in the Grand at Brantford.

While the plant has plenty of capacity, the quality of raw water in the Grand River sometimes places limits on the plant's operation.

Brantford has had to invest heavily in treatment processes to make the plant one of the most advanced around. A recently completed project cost the city about $9 million.

Plant operators have to pay close attention to river conditions. They will close the city's water intake if there is a spill upstream of the river intake. That means the city has to maintain significant amounts of water in storage reservoirs to deal with long closures.

It all starts with a flush

Wastewater plant upgrades will help system keep pace with growth

Every time you flush the toilet, many litres of water – along with the other stuff – swooshes down the pipe.

Same thing when you take a shower, empty the sink or when an industry disposes of water used in a manufacturing process. A lot of water mixed up with stuff we'd rather not see again goes down a pipe to somewhere.

The "somewhere" is usually one of the 25 municipal wastewater treatment plants in the Grand River watershed.

The plants serve about 80 per cent of the 875,000 people of the watershed. The remaining houses and businesses rely on household septic systems or privately-owned sewage systems such as those used in some mobile home parks.

Millions of flushes

To get a sense of the volume handled by these 25 plants, think about the number of times the toilet is flushed in a typical household every day and then multiply that by the approximately 300,000 households plugged into municipal sewer lines.

Then add in the water from all the other daily household activities, as well as schools, hospitals, stores and factories. That's a lot of material to be cleaned and treated before it is allowed back into the environment.

Most of the raw sewage entering these plants is water – a typical toilet flush is mostly water – so the plants concentrate on removing solids, killing bacteria and reducing the volumes of chemicals such as phosphorus and nitrates.

Those 25 wastewater plants discharge about 270,000 cubic meters of treated effluent on an average day. That's enough to cover a football field to the height of a 12-storey building – every day.

By the time the plants have done their work, they have eliminated most of the pollutants in the water: more than 95 per cent of solids, 90 per cent of the phosphorus and 95 per cent of the organic material.

The volume of pollutants allowed in effluent is controlled by the provincial Ministry of the Environment. Every wastewater treatment plant must have a Certificate of Approval from the ministry which sets limits on the materials in the discharged effluent, including suspended solids, phosphorus, E. coli bacteria and other contaminants.

The combination of pollutants from point sources (such as wastewater plants) and non-point sources (such as farm fields and streets) results in a deterioration of water quality downstream of major agricultural and urban areas.

The river has a certain capacity to cope with the pollutants and, in fact, natural processes carry on treatment work that started in the plant, allowing water quality to recover somewhat as the river moves downstream.

Still, the health of the river and surrounding land depends on the success of efforts to reduce pollutants coming from all sources. That's why watershed municipalities, the GRCA, the province and other agencies are developing answers to two key questions relating to the watershed's wastewater treatment plants.

- ❑ What needs to be done to make them even more effective in removing pollutants?
- ❑ How will they cope with the population boom in the watershed's urban areas?

Close to 90 per cent of the treated effluent entering the Grand River system comes from the seven wastewater treatment plants serving the watershed's five cities. The Region of Waterloo operates five of the plants, with one each in Kitchener and Waterloo and three in Cambridge. The cities of Brantford and Guelph each operate one plant.

The Ontario government released a report this year that outlines growth projections for the cities and the municipalities that surround them: Waterloo Region including Kitchener, Waterloo and Cambridge; Brant County including Brantford; and Wellington County including Guelph.

Large cities on small rivers

The report says that these five cities and the surrounding municipalities had a total population of 780,000 in 2001. They're expected to grow by 57 per cent to 1.2 million in 2031. Almost all of that growth will take place in the cities themselves, says the report by Hemson Consulting Ltd. for the province's Places To Grow study.

One of the common characteristics of these Grand River cities is that they are large cities on small rivers. In the Grand River watershed, the combined total of the effluent from treatment plants represents an average of five per cent of the total flow in the central part of the Grand. During the summer, when river flows are at their lowest, the proportion rises to about 12 to 15 per cent.

Other major Ontario cities – Toronto, Hamilton, St. Catharines, Windsor, Kingston – put their wastewater effluent into the Great Lakes system, where it makes up a tiny proportion of the water in the receiving lake or river.

The Hemson report says "there are potentially very significant servicing issues for the larger urban communities as well as the smaller communities" of the Grand River watershed.

Waterloo Region, Guelph and Brantford are already looking at their long-term wastewater treatment needs. However, the population projections in Places To Grow – which call for more growth and faster growth in the watershed cities – may require municipalities and the province to update their growth projections and servicing plans.

Waterloo Region

The Region of Waterloo operates 10 large and three small wastewater treatment plants, including the ones serving the cities of Kitchener, Waterloo and Cambridge.

The regional government has launched a study to look at wastewater issues up to 2045.

According to the region, about 75 per cent of the capacity of its 13 plants is already in use or committed. The Kitchener and Galt plants are operating at less than 60 per

Continued on Page 7

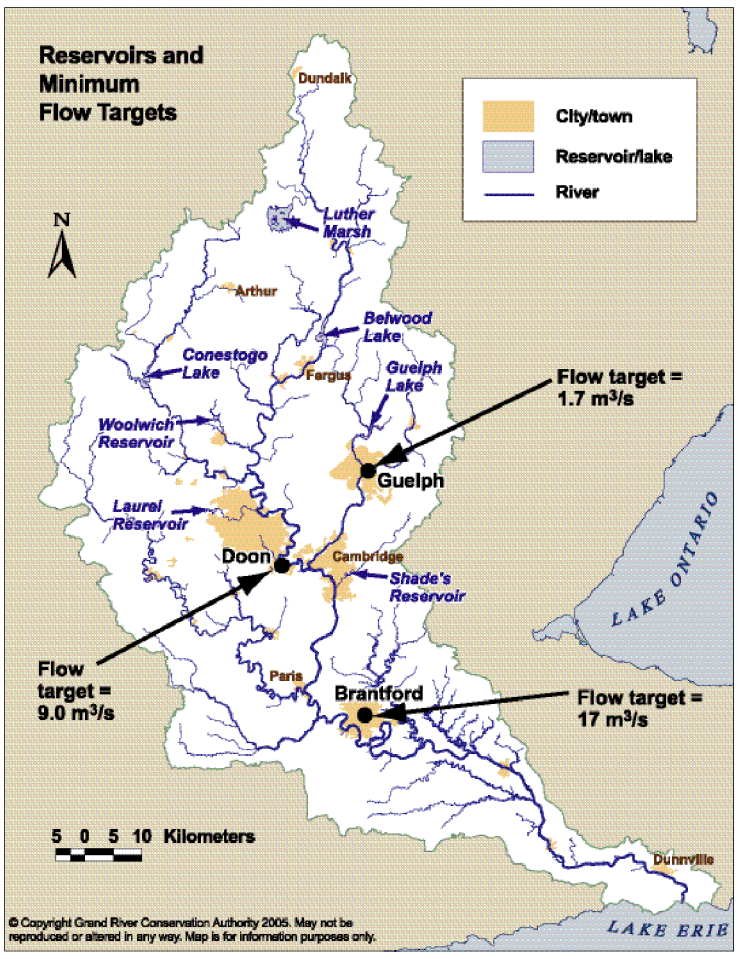
Kitchener wastewater treatment plant

The Kitchener plant, near Doon on the Grand River, is one of 25 wastewater treatment plants in the Grand River watershed serving the homes, businesses and industries of more than 700,000 people. Municipalities are planning upgrades and improvements to many of the plants to meet the needs of a growing population and to raise the level of treatment.

Foam on the water

It's a sight seen on rivers and streams during the spring runoff: foam accumulating downstream of a dam. The foam is created when water high in organic material, such as phosphorus, is stirred up. Some of the nutrients come from natural sources, but most come from water running off fields, or the effluent from wastewater treatment plants. Reducing the volume of nutrients in the water will reduce the instances of foaming.

Reservoirs, river play role in wastewater treatment



Seven reservoirs operated by the GRCA store water from the spring runoff and release it gradually over the summer. This ensures that flow targets are met at various locations throughout the watershed so the river can deal with effluent from 25 wastewater treatment plants.

For most people, their mental image of their community's sewage system probably starts at their toilet and ends at their local sewage treatment plant.

But in the Grand River watershed, the complete picture also includes elements upstream and downstream of the city and its plant.

On the upstream side are the seven reservoirs operated by the GRCA to ensure there's enough water in the river, year round, to deal with the effluent coming out of the 25 wastewater treatment plants.

On the downstream side are the "receiving streams" – the Grand River and its tributaries – where the plants discharge their treated effluent.

Wastewater treatment plants are big, expensive operations, but most of the work is actually carried out by tiny bacteria that feed on human waste and other organic material. After they have finished gorging themselves, the bacteria sink to the bottom of huge vats where they form a sludge that is eventually cleared out, treated and disposed of.

The liquid goes through more cleansing steps before it is treated with chlorine or subjected to ultraviolet rays to kill more bacteria. Then it is sent down a pipe to a river or stream.

The treatment plants get rid of almost all of the material in raw sewage, eliminating more than 90 per cent of most pollutants such as phosphorus, suspended solids and organic material.

But the cleanup process doesn't end there. It carries on in the river.

Plants and algae in the river absorb phosphorus and other nutrients, removing them from the water. As the river tumbles over rocks and through rapids it is aerated – takes in oxygen – which aids the breakdown of pollutants. Naturally-occurring bacteria will consume organic material.

However, there's a limit to what the water can do and only so much effluent it can handle. The volume of pollutants that a river or lake can deal with is called its "assimilative capacity."

Many factors are taken into account to establish the assimilative capacity of a river: the volume of pollutants from upstream sources, the size of the river, water temperature, aquatic plant growth and others.

In the Grand River system, the tiny volume of pollutants coming from a large number of sources can add up and hurt water quality.

If a river is overloaded with pollutants – if the volume exceeds the assimilative capacity of the river – then the river starts to suffer and so do all of the living things that depend on it, from fish to people.

Excessive levels of nutrients such as phosphorus and nitrates lead to excessive plant growth. The plants take up so much oxygen from the water that fish and other aquatic life can literally suffocate to death. Excessive plant and algae growth can result in taste and odour problems, creating difficulties for com-

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A GRCA water engineer conducts a water quality study to help determine the impact of pollution on the water.

Flush

Continued from Page 6

cent of their total capacity. On the other hand, the Cambridge (Preston), St. Jacobs and Ayr plants are at, or near, their full capacity.

The region is looking at future population patterns, the total volume of wastewater that will be generated and which plants need to be upgraded or enlarged. The study hasn't reached the point yet where costs can be predicted.

The region is also looking at new and innovative technologies to improve the quality of the effluent leaving regional plants.

A discussion paper prepared for the region's study notes that "as wastewater volumes increase, the Region will be faced with pressures from the provincial and federal regulators on meeting more stringent effluent criteria at their larger wastewater treatment plants," especially the ones in Waterloo, Kitchener and Cambridge (Galt).

Guelph

The City of Guelph is currently updating the 1998 Class Environment Assessment to confirm the best way to improve its wastewater treatment plant complex which serves Guelph and the village of Rockwood.

A major, $18 million expansion was completed in 2002 which increased the capacity of the plant to about 64,000 cubic metres per day.

Currently, the plant serves about 125,000 people, including students. About 98 per cent of its capacity is in use or committed.

The planned enlargement, which will be worth $19 to $23 million, will increase capacity to 73,300 cubic metres per day to handle a population of 169,000.

However, a population projection done for the province under Places to Grow predicts "significantly higher growth rates" for Guelph than earlier provincial and municipal projections," says a report done by the City of Guelph. If those higher rates come true, then the city's "infrastructure capacities" will be reached sooner than expected, says the city report.

Guelph is embarking on a 50-year Wastewater Master Plan to investigate future alternatives to provide wastewater capacity beyond those in current plans.

An important part of the enlargement of the plant will be upgrades to the treatment process.

The Guelph plant is already one of the most advanced in the watershed, providing a third level of treatment – known as "tertiary" treatment – to reduce impurities in the effluent even further than the standard "secondary" level of treatment applied in most plants.

After the next expansion, even though the daily volume of sewage treated by the plant will be higher, the amount of pollutants in the effluent, such as phosphorus and suspended sediments, will be equal to or lower than today.

Brantford

The wastewater treatment plant for the City of Brantford underwent significant upgrades during the 1990s and today has a capacity of 82,000 cubic metres per day. It is operating at just above 50 per cent of its capacity, serving a population of about 85,000.

The city commissioned a study of the plant in 2003 to examine what other upgrades will be required in the next 20 years to cope with population growth and quality improvements.

By 2031 the plant will be serving a population of about 111,000 and will be operating at about 90 per cent of its capacity.

The report recommends expenditures of about $17 million in the future, with most of the money invested in improving the quality of the effluent entering the Grand River.

Other communities

In addition to the wastewater plants serving the cities of the watershed, there are another 18 serving towns and villages.

Several of these communities have recently completed upgrades or are in the process of planning future improvements.

Wastewater treatment systems serving Fergus, Drayton, St. George, Cayuga and Dunnville have recently been upgraded or are undergoing improvements. New or expanded plants are proposed for Grand Valley and Elora.

Moraines are the backbone of Grand

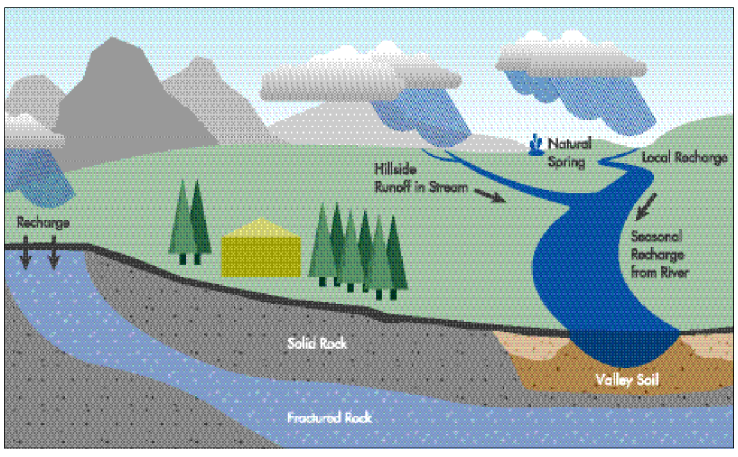
Take a close look at the landscape of the Grand River watershed and you'll be taking a look back thousands of years in time.

The rivers, valleys and hills that define this part of the province are remnants of an ice age that lasted tens of thousand of years, when ice two kilometres thick covered Southern Ontario.

When the Wisconsin Glacier retreated 10,000 years ago, it helped shaped the land we know today.

The rushing meltwaters carved out the Grand River valley and pooled in lowlands which helped to create the Great Lakes. The ice pushed forward and retreated in cycles that lasted centuries. In their wake they left behind great hills of sand, gravel and soil that we call moraines.

The Grand River watershed has three major moraine systems that are proof of the power of the ancient ice and water: the Waterloo Moraine, the Galt-Paris Moraine and the Orangeville Moraine.



Natural filter

Moraines play a critical role in the water system. Water that enters the ground in a moraine area is filtered and cooled as it moves through the sand and gravel of the moraine to recharge aquifers. Some of that water makes its way to the surface again in springs, which feed streams and rivers. Moraines are also a rich source of groundwater for private and municipal wells.

(Graphic from Pollution Probe, adapted from Oregon State University)

The Waterloo and Galt-Paris moraines play a major role in providing fresh water to the Grand River cities and are also most affected by the growth of those cities:

- The Waterloo Moraine covers much of Kitchener, Waterloo, Wilmot and parts of Wellesley and North Dumfries. It has an area of 400 square kilometres. In some places, the overburden – the sand, gravel and soil deposits left behind by the glacier – are 120 metres thick.
- The Galt and Paris Moraines run parallel to each other along the east side of the watershed through Wellington County, Waterloo Region and Brant County. The two moraines form a belt more than 70 kilometres long and six to eight kilometres wide, with overburden deposits as thick as 30 metres.

Key areas

The moraines are much more than just souvenirs of an ancient age. They are the backbone of the watershed and are critical to the health of the Grand River environment and, significantly, its cities, towns and farms. It is no great stretch to say that, after the river itself, these moraines were the key to the development of the watershed as one of the richest regions in Canada.

Moraines have been described as natural "rain barrels."

Wells drilled into the moraines provide clean drinking water to hundreds of thousands of rural and urban residents. The moraines are also the source of much of the water that fills streams and rivers in the central part of the watershed. That means they are an indirect source of drinking water to those communities that draw some or all of their drinking water directly from the Grand River system.

When rain falls or snow melts on the porous ground of a moraine, it soaks down into the ground, where it is naturally filtered and cooled.

This "recharges" the aquifers, which are underground beds or layers of earth, gravel, or porous stone that yields water.

Some of the water recharges aquifers in the overburden area, while some of the water makes its way lower into the ground, where

The river runs through it

Thousands of years ago, the Grand River carved a path through the Galt-Paris Moraine. Today, groundwater from the moraine seeps into the river, helping to raise water quality between Cambridge and Brantford. GRCA *photo by David Schultz*

Reservoirs

Continued from Page 7

munities that draw their drinking water from the river.

When a wastewater treatment plant is built, enlarged or expanded, an essential part of the planning process is calculating the assimilative capacity of the receiving stream.

The GRCA has a computer model of the watershed that it uses to take a larger look at the issue. Called the Grand River Simulation Model, it was first developed 25 years ago and has been constantly improved since then.

The model is built on data from all of the wastewater plants, information about pollution from other sources and records for river flows, temperatures and dissolved oxygen. Dissolved oxygen and temperatures are monitored continuously at seven water quality monitoring stations in the watershed. (Real-time data from the stations is available in the River Data section of the GRCA website.)

The model calculates the effects of the effluent coming from all of the waste treatment plants, plus other sources of pollution. It can predict the outcome of a variety of scenarios and conditions, providing a dynamic model of the river and its capacity to handle pollutants.

Municipalities planning a wastewater plant improvement or expansion can use the model to calculate the probable impact on the river. For example, the Region of Waterloo, which is conducting a study of its system of wastewater plants, can use the model to analyze a variety of scenarios. That helps the region decide which set of improvements will have the greatest impact on water quality at the most reasonable cost.

The water provided by the GRCA's reservoirs is a critical part of the analysis.

The GRCA operates seven reservoirs, with the four largest – Luther Lake, Belwood Lake, Guelph Lake and Conestogo Lake – playing a big role in keeping the water flowing in the Grand, Conestogo and Speed rivers.

Water from melting snow and spring rain is stored in the reservoirs. It is released gradually throughout the summer to maintain minimum flows at target locations.

There are flow targets at Doon for the outlet of the Kitchener wastewater treatment plant; at Guelph for the outlet of the Guelph plant; and at Brantford for the intake of the city's drinking water treatment plant.

The reservoirs are, in essence, an extension of the municipal treatment plants, since the water they put in the river helps the treatment plants meet the targets set by the province.

The GRCA has said to the provincial government that just as it shares in the cost of wastewater treatment plants, it should also share in the operating and maintenance costs of the reservoirs because they are vital to the proper operation of the municipal wastewater treatment plants.

it replenishes deep, bedrock aquifers.

Finally, some of the water leaves the ground through springs, or seeps directly into rivers and streams, replenishing their flows with cool, clear water.

The moraines of the Grand River watershed represent about 30 per cent of the surface area, yet they account for 80 per cent of the groundwater recharge.

The Waterloo Moraine is a primary source of water for Waterloo Region. The aquifers of the Waterloo Moraine provide about 50 per cent of all of the groundwater used in the municipal water supply system.

The Galt-Paris Moraines filter water that recharges aquifers serving municipal water systems in Wellington County, Guelph, Waterloo Region and Brant County.

Moraines are important sources of water for creeks and rivers, as well.

Water from the moraines makes its way into rivers and streams, even during dry weather. The Eramosa River (near Guelph) and Mill Creek (Puslinch Township and Cambridge) are fed by water from the Galt-Paris Moraine. The Nith River and the creeks of the western part of Waterloo Region, such as Cedar Creek, are fed by the Waterloo Moraine.

Enters river

A lot of groundwater enters the Grand River itself, between Cambridge and Brantford – as much as one-sixth of the flow in the river during the summer months. The introduction of this cool, clean water into the river benefits Brantford and Ohsweken, which draw their drinking water directly from the river.

Beyond their value as sources of drinking water, the moraines are important natural areas and rich habitats. Because of their rolling and sometimes rocky surfaces, parts of them were left relatively untouched when forest clearing took place in the Grand River watershed during the 19th and early 20th centuries. Some of the mostly heavily forested areas of the Grand River watershed are in the Galt-Paris Moraine region in Wellington County.

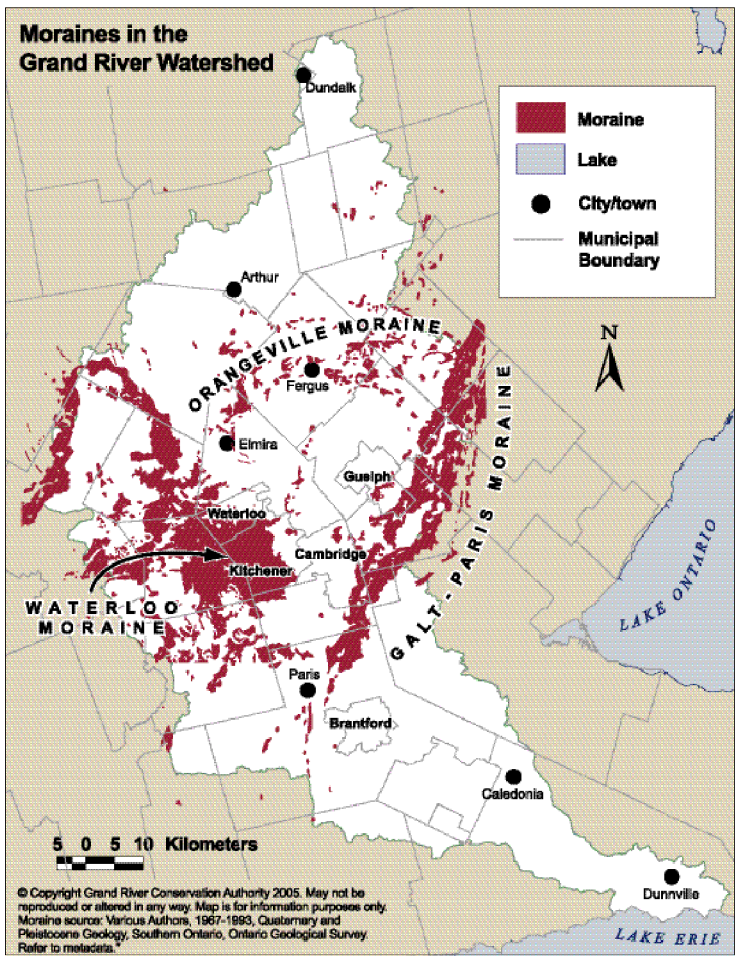
The surfaces of the moraines are also dotted by kettle lakes and wetlands, which provide a rich habitat for a wide variety of plants, fish, birds and animals.

But the very things that make the moraines important are also some of the reasons that the moraine areas are at risk today.

The Grand River cities are spreading out into the moraine regions. The fact that some of the moraine regions were less suited for agriculture in pioneer days means they are available today for residential and industrial development.

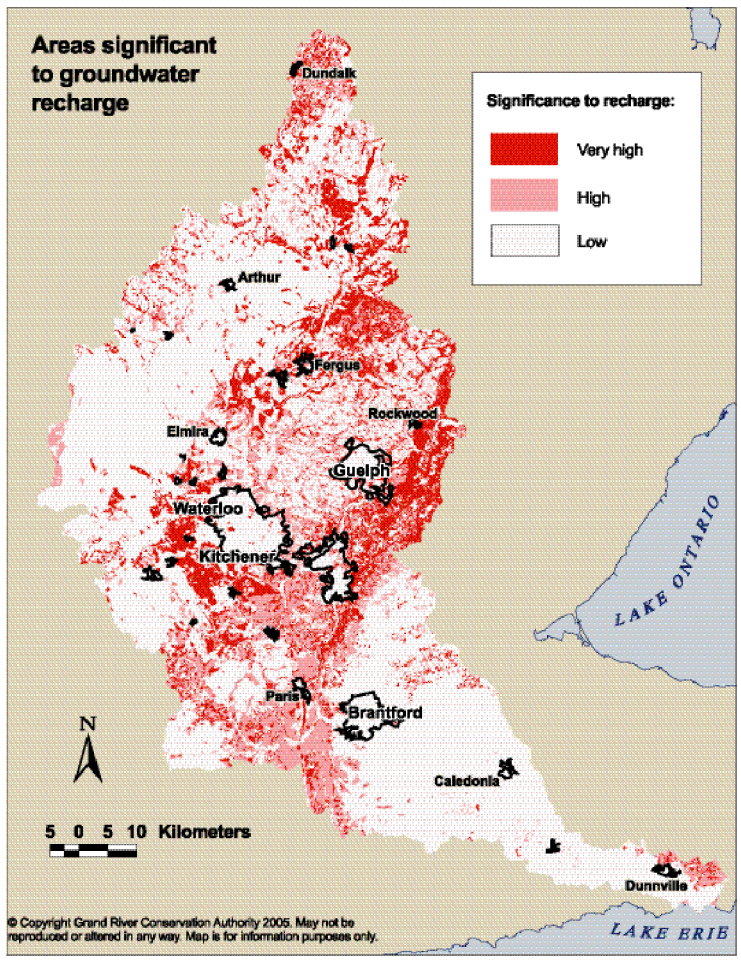
Kitchener and Waterloo have been growing west into the Waterloo Moraine. The Galt-Paris Moraines pass through the high-growth cities of Guelph and Cambridge. In Brant and Brantford, new growth is taking place in moraine areas, as well.

The composition of moraines and the nearby gravel terraces makes them attractive regions to aggregate businesses. Sand and gravel operations are common in the Waterloo Moraine area and in the gravel terraces near the Galt-Paris Moraines in Wellington and Brant.



Moraine areas

Moraines are major features of the Grand River watershed. Many of the cities and towns of the watershed are close to the moraines, which are a significant source of water for private and municipal water systems. Moraines are also the site of many important natural areas, such as wetlands and forests.



Recharge areas

Water from rain and melting show will filter down through the ground into an underground water source called an aquifer. This process "recharges" the aquifer. In the Grand River watershed, the most significant recharge areas are the moraine areas. About 80 per cent of the recharge takes place in just 30 per cent of the land of the watershed.

Concern growing about protecting moraines

Moraines are an important natural feature of the Southern Ontario landscape, but there are no provincial policies that specifically protect moraines.

The notable exception is provincial legislation that covers just one moraine – the Oak Ridges Moraine, which stretches from Orangeville to Peterborough, parallel to the north shore of Lake Ontario. Large parts of the moraine are protected from development.

In the Grand River watershed, along with other parts of the Greater Golden Horseshoe, the province plans to work with municipalities to develop new growth plans that will protect natural features that "are necessary for the ecological and hydrological integrity of watersheds within the natural system."

However, the details of what that means, and how it might be implemented in local planning documents such as zoning bylaws and official plans, have yet to be worked out.

Urges protection

The Grand River Conservation Authority has suggested to the province that protecting moraines has to be an important part of a growth plan for this area. In its response to the Places To Grow proposals, the GRCA said "the province must evaluate and protect moraines and recharge areas in the Grand River watershed for their critical function in water supply, waste water assimilation and natural heritage systems."

In the absence of a provincial policy, some municipalities in the Grand River watershed have taken steps to protect moraines and their functions.

The Region of Waterloo has developed its own growth strategy that will reduce urban sprawl in moraine areas and has proposed designating some moraine areas for protection as Environmentally Sensitive Landscapes.

A recent groundwater study conducted for Guelph and Puslinch Township recommends local policies to protect "primary recharge areas" in order to "maintain the quantity and quality of groundwater available to meet future needs."

Another study done for Guelph-Eramosa Township also proposes that recharge areas be identified and factored into planning policies.

Agriculture is a big part of the Grand

Farming is the major land use in watershed

Take a bird's-eye view of the Grand River watershed, and you will be struck by the rich and colorful mosaic of the land.

Spread across the entire watershed are vast gold and emerald blocks of farm fields and pastures, broken up by the dark green fragments of woodlots, river valleys and wetlands.

They surround the grey blocks of the watershed's cities and towns that are home to a high proportion of the watershed's population of 875,000.

But despite the heavy concentration of people in the urban areas, the land of the watershed remains strongly rural and agricultural. The Grand River watershed is more than 6,800 square kilometers in size. According to the 2001 census, about 67 per cent of the total land area of the watershed is actively farmed on about 6,400 farms.

In some parts of the watershed, the proportion of farmland is even higher, especially in the western regions where soils are rich and the land is relatively flat.

In the Conestogo River basin in Wellington and Waterloo, 86 per cent of the land is farmed. In the Nith River region (Wellington, Waterloo, Perth, Oxford and Brant) farms occupy 83 per cent of the land.

Big variety

However, it's not just the size of the farming community that is impressive. It is the variety, as well. Crops range from the staples of corn, soybeans and hay to specialty products such as fruits, tobacco and ginseng. Some farmers are on the cutting edge of 21st century technology, while others employ traditional methods dating back hundreds of years.

A lot of land is dedicated to raising and growing feed for livestock. There are about 290,000 head of cattle (including dairy and beef cattle), about 500,000 pigs and about 8.8 million chickens and turkeys.

Given the size of the agriculture industry in the Grand River watershed, it's no surprise that farm practices can have a big impact on the environment in general, and water quality in particular.

For example:

- ❑ chemicals, such as fertilizers, pesticides and fuels have to be stored and used carefully to avoid spills;
- ❑ manure has to be properly collected, stored and applied to make sure it doesn't get into water courses;
- ❑ the right plowing methods can reduce soil erosion;
- ❑ good irrigation practices can reduce the amount of water required to grow a crop.

When farmers adopt best management practices it is, in many cases, helpful to both the environment and the farm bottom line. For example, farmers who apply just the right amount of fertilizer or cut their pesticide use, will save money and reduce – or eliminate – the chance that excess amounts will make their way into surface water or groundwater.

Farmers also live with a host of laws and regulations governing their actions, many of them designed to protect or improve the environment.

In recent years a lot of attention has been focused on manure storage and use.

Manure is a rich source of nutrients such as phosphorus and nitrogen. For that reason, it is a traditional and valuable fertilizer for farm fields.

Fertilizer for aquatic plants

But when the same nutrients are washed into a river or stream, they act as fertilizer for algae and aquatic plants. Excessive nutrient loads can turn a stream or river into an algae-rich, oxygen-poor environment where fish, insects and other creatures can literally suffocate.

The Region of Waterloo has estimated that 70 per cent of the total phosphorus in the Grand River, measured at Waterloo, comes from rural sources, mainly runoff from agricultural land. (It estimates another 17 per cent of the phosphorus load comes from municipal sewage treatment plants.)

Along the Nith River, according to the region, anywhere from 40 to

In the tank

Farmers collect and store manure to use it as fertilizer on their fields. By storing it in a concrete tank such as this circular one, they can ensure that it doesn't wash into nearby streams during rainfalls. The Rural Water Quality Program provides farmers with financial assistance to build storage tanks as well as adopt other best management practices that keep water clean on the farm. *GRCA photo by Carl Hiebert*

Agriculture becoming more intensive

A favorable climate, good soil and access to markets have made the Grand River watershed one of the richest agricultural regions in the country.

Despite the rapid growth of the urban areas of the watershed, the importance of agriculture is as strong as ever and looks to continue that way.

About 67 per cent of the land of the watershed is farmed, a proportion that has remained fairly constant since 1991. There are about 6,400 farms in the watershed, according to census reports from Statistics Canada.

There has been a trend toward fewer, but larger farms. The number of farms dropped to 6,400 in 2001 from 7,100 ten years earlier. During the same period the size of the average farm rose to 74 hectares from 67 hectares.

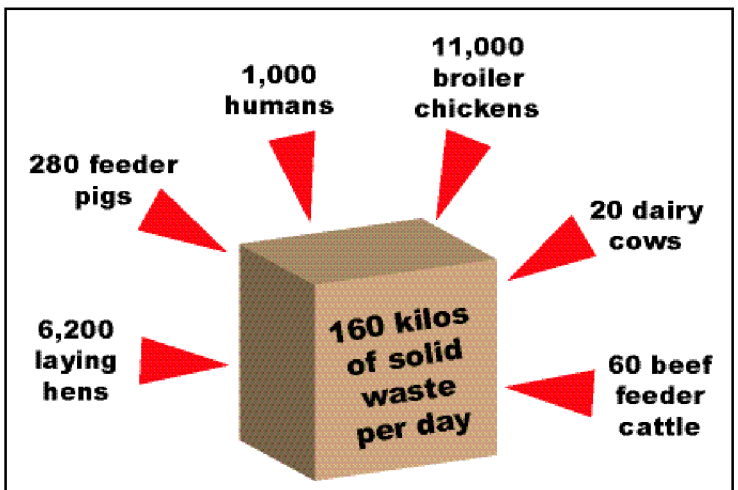
Livestock operations have become more intensive, too.

The total number of cattle in the watershed has remained consistent during his period – about 290,000 head – but the average herd size rose to about 81 from 72.

The number
watershed dro
during this
period – to
500,000 in
2001 from
613,000 in
1991 – but
the average
number of
pigs per farm
rose to 560
from 320.

For poultry, both the total number and average per farm have climbed since 1991. In 2001 there were about 8.7 million chickens and turkeys in the watershed, up about 35 per cent since 1991. The average flock grew to 5,600 birds from 3,600 in 1991.

	Year	
	1991	2001
# of cattle	291,000	290,000
Avg. # per farm	72	82
# of pigs	613,000	500,000
Avg. # per farm	317	556
# of poultry	6,476,000	8,794,000
Avg. # per farm	3,600	5,600



A thousand people will generate about 160 kilograms of solid waste in a day. Two agriculture researchers calculated that it takes only 20 dairy cows to generate the same amount of waste in a day. They also figured out the equivalent numbers for other farm animals.

(Ron Fleming and Marcy Ford, Ridgetown College of Agriculture)

99 per cent of the phosphorus comes from rural non-point sources, depending on the time of year and flow conditions. Nitrates from non-point sources, including farms, can build up in groundwater, making it unsuitable for drinking.

Manure handling issues are being addressed in several ways:

❑ **The Rural Water Quality Program** offers farmers financial incentives to adopt best management practices to protect water on their farm.

❑ **The Nutrient Management Act** and its regulations govern the way farmers handle nutrients.

Rural Water Quality Program

The first approach is the Rural Water Quality Program. The Region of Waterloo initiated the program in 1998 to promote best management practices to protect water on farmland. Since then Guelph, Wellington County, Brantford and Brant County have also developed their own programs. They are managed by the GRCA and overseen by local committees made up of municipal, farm and rural representatives.

All together, these five municipalities are investing about $700,000 each year in rural water quality. The total investment has been about $4.5 million since the program began.

The theory behind the program is that all residents of the municipality benefit – as does the environment in general – when rural landowners implement water-protecting practices. Therefore, it's in everyone's best interest to provide financial support to farmers for projects that reduce pollution on farmland.

The municipal money is given in grants to farmers to undertake a variety of water-protecting projects. The types of projects vary slightly in different parts of the watershed.

The grants range from 50 per cent to 75 per cent, depending on the type of the project; however, landowners generally go further and contribute about $2 for every $1 received from the program. They also supply a great deal of labour and materials, in addition to committing to the long-term maintenance of the project.

By the end of 2004 approximately $12 million had been spent across the watershed to implement about 1,300 projects. The landowner contribution was about $7.4 million.

One popular project is construction of manure storage tanks. Traditionally, most farmers stored their manure in an exposed area; rain and melting snow would wash some of the manure into streams or carry it into the groundwater system.

However, manure kept in a storage tank is much less likely to escape into the environment.

Clean water diversions are another type of project. Rainwater coming from downspouts and eaves is directed to a tile drain or watercourse, rather than allowed to run across a farmyard. This also cuts down on the amount of manure washed into a stream.

Trees and bushes planted along a stream's banks will take up nutrients, reducing the amount of phosphorus and nitrates getting into the water.

It can be hard to attach a specific figure to the volume of nutrients kept out of streams and rivers but rough estimates are that these practices keep more than 20,000 kilograms of phosphorus from moving off the land.

In the parts of the watershed where the program has been in place the longest, there has been a measurable reduction in phosphorus levels.

At the very least, the program has helped to keep phosphorus levels constant, even at a time when some farming operations are becoming more intensive.

Nutrient Management Act

Another approach to reducing the impact of manure on the environment is through laws and regulations, such as the new Nutrient Management Act.

The Act and its regulations establish rules for the handling, storage and use of nutrients on Ontario farms.

The goal is to protect water from excessive nutrient loads and also to keep potentially dangerous bacteria out of water sources.

The provincial government was developing the law in the late 1990s but the Walkerton tragedy in 2000 raised the profile of nutrient management across Ontario.

The Walkerton water tragedy began when bacteria-laden water washed off a farm field into one of the community's wells. A series of equipment and human failures followed, which allowed the deadly E. coli bacteria to travel through the water system to household taps.

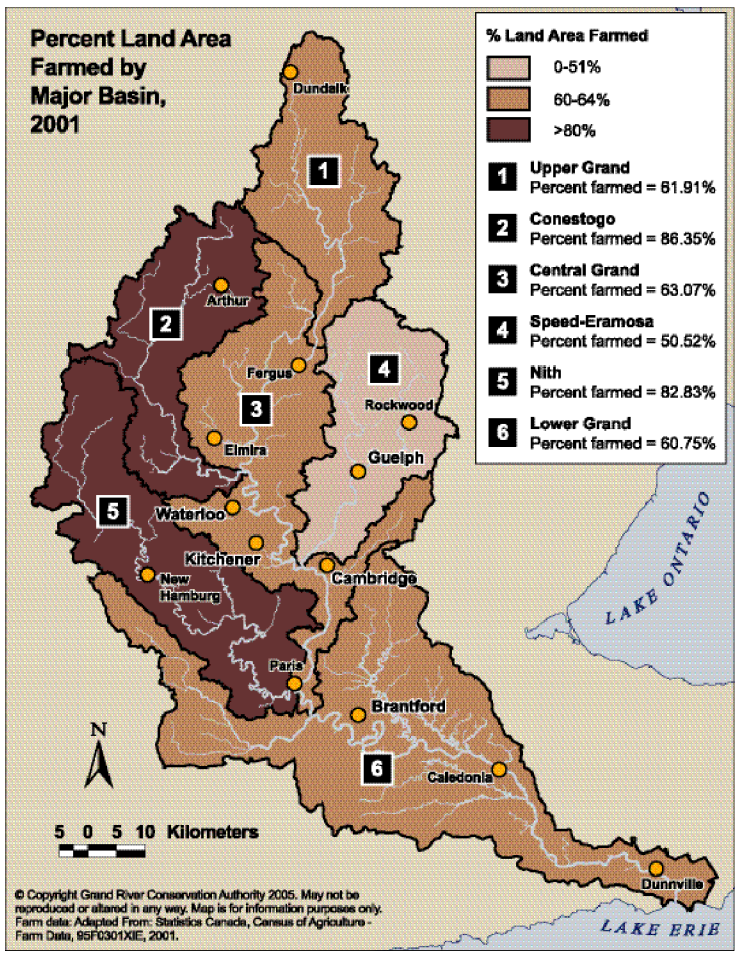
In his report on the tragedy, Justice Dennis O'Connor reinforced the need for minimum standards for manure storage and handling.

The Nutrient Management Act was passed in 2002 to establish those standards.

Under the act, farmers have to develop Nutrient Management Plans that describe their operation, the volume of nutrients generated on the farm, how they are stored, disposed of, or applied to the land.

The regulations are being rolled out in stages, applying first to new farms and large farms and eventually to others.

The provincial government is also providing financial incentives to assist some farmers with implementing Nutrient Management Plans. For example, grants are available to some large farms to build manure storage tanks.



Rural roots

The Grand River watershed is still primarily a rural, agricultural region. About 70 per cent of the land is designated as farmland. In some parts of the watershed, farmland makes up more than 80 per cent of the land use.

Agricultural statistics are from Statistics Canada, Census of Agriculture - Farm Data, 95F0301XIE, 2001

Farmland under pressure

Agricultural land is under pressure in many places, and no more so than in the Greater Golden Horseshoe Region of southern Ontario which includes the Grand River watershed.

"Places To Grow," the provincial draft growth plan for the Greater Golden Horseshoe Region notes that prime agricultural land makes up close to 50 per cent of the land in the region and that "much prime agricultural land is located where development pressures are greatest."

"Protecting these agricultural lands is an important part of sustaining Ontario's agriculture and agri-food industry and ensuring the vitality of the agricultural sector of the region's economy."

Places To Grow recommends several policies to protect agricultural lands and farm practices. It also says municipal planning policies should include protection for the agricultural system.

These new proposals would enhance current provincial and municipal rules governing agricultural lands.

Many official plans and growth management plans in Grand River watershed municipalities also contain policies protecting prime agricultural lands from urban development.

The Grand River Conservation Foundation

The Ancient Mariners Canoe Club used the Community Conservation Grant awarded last year to help fund a new Eric Thomlinson Canoe Launch in Glen Morris, just upstream of Paris. Other contributors included the Brant Waterways Foundation and TD Friends of the Environment Foundation, in cooperation with the GRCA and County of Brant.

Grants help community groups make a difference

It's important for each of us to play a role in conserving the environment of the Grand River watershed. The Grand River Conservation Foundation aims to support private action by our community through the annual Community Conservation Grants.

These grants are made to qualified groups, to assist with projects such as river and trail access improvement, native tree planting, and schoolyard naturalization.

Funds for the grants come from two sources: the Foundation's Grand Champions Endowment Fund, which was established through private donations, and through the Thiess Riverprize Endowment Fund, won by the GRCA in 2000 for international excellence in watershed management.

To apply, your group must be a registered charity, or partnered with one. Community groups are eligible for grants of up to $2,000, and elementary schools up to $500.

The deadline to apply is October 31, 2005, and grants will be awarded in February 2006. For more details and an application form, please visit our website at www.grandriver.ca and click on the Grand River Conservation Foundation.

About the Foundation

❑ To learn more about the Foundation, to see its latest projects through its 2004 Annual Report, or to make an on-line donation check the Foundation website at *www.grandriver.ca*

❑ To discuss the role of the foundation or to volunteer contact:

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Biothon raising funds for kids

Saturday, October 1 marks the GRCA's Second Annual Biothon, in support of the Living Classroom – Campaign for Outdoor Education.

Over a 24 hour period, teams of nature-lovers will search out as many bugs, birds, plants, and other species as they can find at the Laurel Creek Nature Centre in Waterloo.

It's a great way to enjoy nature in a hands-on way, and to raise money for outdoor education in our watershed.

To find out more, make a pledge, or join a team, contact us at *foundation@grandriver.ca.*

The Grand Biothon
Saturday, October 1, 2005

Peter Pautler, a nature centre interpreter, shows one of his discoveries during the first GRCA Biothon

Grand River Conservancy Forest is a way to provide a living tribute

Planting a tree is a wonderful way to commemorate the birth of a child, to celebrate an important anniversary, or to remember the life of someone who had a passion for nature.

Since 1971, more than 2,000 trees have been planted through the Grand River Conservancy Forest program.

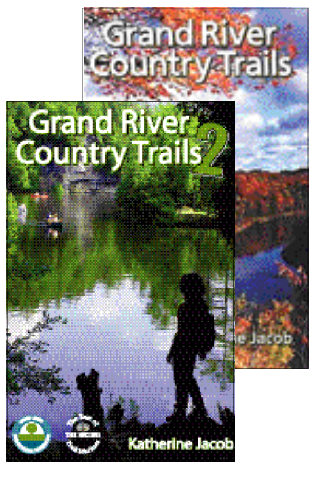
With a minimum contribution of $30, donors who wish to mark a special milestone in their lives will have a tree planted in the Grand River watershed.

The gift will be noted – along with the name of their loved one – in a Memory Book, as a permanent record of their contribution.

Grand River trail guides

Enjoy the Grand River watershed in any season with these two guides to more than 80 trails by author Katherine Jacob.

The books are $14.95 each and are available in many bookstores or directly from the GRCA Store on our website at *www.grandriver.ca.*



Learn more about the Grand River Conservation Foundation at www.grandriver.ca