

**Ontario Minister of the Environment
Annual Report on Drinking Water
June 2007**



Protecting our environment.



Minister's Acknowledgements

Ontario's government has a central role to play in caring for and guarding Ontario's drinking water and its sources. In carrying out this role, we are committed to building collaborative relationships, partnerships, consultation and local community involvement.

I want to thank the many individuals and organizations in communities all across the province whose time and talents have helped us to achieve the results that are in this report. I especially appreciate the support of Ontario's conservation authorities, the many associations that help provide access to safe drinking water, the Environmental Commissioner's office, and my ministry's advisory councils. As our stakeholders and partners, you help us find practical and workable ways to protect Ontario's drinking water. You are an indispensable part of the drinking water safety net.

Thank you

Let us know what you think

I believe that the people of Ontario share a respect and commitment to clean, safe water. I am interested in hearing your thoughts and ideas about the topics discussed in my first annual report on drinking water.

Please contact us at: drinking.water@ontario.ca



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For more information on any of the topics in this report, please visit the Ministry of the Environment's website, www.ontario.ca/drinkingwater, or contact the ministry's Public Information Centre at 1.800.565.4923 or picemail.moe@ontario.ca. This report can be downloaded from the website.

Introduction

Protecting Our Environment



Ontario has the best-protected drinking water in North America.

This annual report has been prepared by Ontario's Minister of the Environment, the Honourable Laurel Broten, in accordance with the *Safe Drinking Water Act, 2002*. In it you will find information on Ontario's initiatives to protect source water, raw water and drinking water quality, inspections and enforcement activities, as well as emerging issues.

In addition, there is information on the new *Clean Water Act, 2006*, the Ontario Water Plan and updates on the Ontario government's key initiatives in protecting and preserving Ontario's drinking water.

You will also find stories that tell how the ministry and many individuals and organizations are safeguarding the province's water resources, and tips on how you can play a role. There are also links to resources for learning more about the laws, programs and activities that this report describes.

There are four sections in the report.

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Safeguarding Ontario's Water

A Message from Ontario's Minister of the Environment

It is both a pleasure and a privilege for me to present this annual drinking water report. It is the first such report by an Ontario Minister of the Environment.

I am proud to be part of a government that is passionate about clean, safe drinking water and protecting the health of the people of Ontario. My report is one of the many ways that the McGuinty government is fulfilling its commitment to the people of Ontario to have an open and accountable approach to managing the province's drinking water.

Our government's approach to safeguarding our drinking water is based on Commissioner Dennis O'Connor's recommendations, following the tragic events at Walkerton, Ontario in 2000. Our government is committed to the protection of Ontario's drinking water, and we have demonstrated this commitment through the development of a source to tap safety net.

Commissioner O'Connor's 121 recommendations deal with source protection, standards, treatment and distribution, information technology and business processes and First Nations. I am pleased to report that, as of May 2007, 102 of Commissioner O'Connor's recommendations have been implemented. With the tabling of this report, I will be able to declare an additional O'Connor recommendation (Part 2 report, Recommendation 80) as implemented. Work is progressing to complete the implementation of the remaining 18. I also want to assure you that in implementing Commissioner O'Connor's recommendations, our government's goal has been, and will continue to be, not only to fulfill a recommendation, but to go beyond it, wherever possible.



Minister Broten speaking at Toronto Harbour.

In Ontario, we have the legislation, standards, training and inspection programs in place to achieve the goal of protecting our drinking water from source to tap. Together, they form Ontario's drinking water safety net. It is a safety net that is working.

In the recently released 2005-06 annual report, Ontario's Chief Drinking Water Inspector said that our drinking water is safe and of high quality. Municipal residential drinking water systems serve over 80 per cent of Ontario residents. Their reported water quality tests indicate 99.84 per cent met Ontario's high drinking water standards. In October 2006, the Sierra Legal Defence Fund issued *Waterproof 2: Canada's Drinking Water Report Card*. It gave Ontario the highest ranking of any jurisdiction in Canada for drinking water protection.

Our government is continuing to strengthen the drinking water safety net. The new *Clean Water Act, 2006* sets in law what we all believe: that it's smarter to prevent pollution of drinking water supplies than to treat problems later. We are working closely with our Quebec and Great Lakes States neighbours to strengthen protection of the Great Lakes waters. In 2005, we signed a historic agreement that includes a ban on water diversions from the Great Lakes basin and have recently passed legislation to provide stronger protection for the Great Lakes and Ontario's water resources through the *Safeguarding and Sustaining Ontario's Water Act, 2007*. We have put in place tough rules for managing nutrients and water takings, invested in scientific studies to support local source protection efforts, improved drinking water system regulation, set strong standards for drinking water quality and testing, and improved municipal drinking water system operations.

Our top priority is the health and safety of the people of Ontario. Together with the Ministry of Health and Long-Term Care, we've taken action to expand drinking water safety protection and reduce potential levels of lead intake for our most vulnerable populations — children under six and pregnant women.



The Ministry of the Environment's Great Lakes Guardian.

In Ontario, we are blessed with abundant fresh water resources. All of us share a responsibility to protect and preserve them. We are succeeding. Ontario is a leader in protecting its drinking water — not only in Canada but also in North America and internationally.

All of us can take pride in the results that you will read about in this report. I hope that you will find it interesting and informative.

A handwritten signature in black ink that reads 'Laurel Broten'.

The Honourable Laurel Broten

Minister of the Environment
Queen's Park, Toronto, Ontario
Canada

June 2007

KEY ACHIEVEMENTS

2004

Protecting the Great Lakes

Under the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA), the Ontario government has allocated \$50 million over five years (2002-03 to 2006-07) to help achieve the province's COA commitments. This is helping to restore drinking water quality, swimming, fishing, ecological health, and fish and wildlife habitats in the Great Lakes.

Source Protection

Our \$120 million commitment to partner funding to support source protection planning from 2004-05 to 2007-08 provides:

- \$32 million in funding to conservation authorities and municipalities for technical studies to support the development of watershed assessment reports; and
- \$88 million for conservation authorities to undertake capacity building, prepare watershed characterization reports, develop conceptual water budgets and move forward with the development of assessment reports.

More Inspectors

Since 2004, the number of Ministry of the Environment drinking water inspectors has increased by 25 per cent.

Improved, Accessible Drinking Water Operator Training

The Walkerton Clean Water Centre is established to provide accessible, improved training for water systems operators in small and rural communities

as well as First Nations operators. It is one of the few hands-on training centres in the sector.

Integrated Drinking Water Information Management Systems

The new Laboratory and Waterworks Inspection System (LWIS) makes it easier for ministry inspectors to plan, track and report their inspection activities. This provides information used to assess compliance requirements across inspection years, and gives decision makers accurate timely information.

Rigorous, Science-Based Drinking Water Standards

The Minister of the Environment establishes the Advisory Council on Drinking Water Quality and Testing Standards. Its members, who work in the academic world, industry and in municipalities, help us to have standards that are consistent with the most up-to-date information and practices.

Renewing Drinking Water Plants and Pipes

Appointed by the McGuinty government in 2003, the Water Strategy Expert Panel issues its report, *Watertight: The Case for Change in Ontario's Water and Wastewater Sector*, which provides advice on renewing Ontario's drinking water infrastructure. Ontario begins to look at a long-term strategy for financial sustainability of municipal drinking water systems through activities such as providing guidance to municipalities on developing financial plans.

2005

Reporting on Safe and High Quality Drinking Water

Ontario's Chief Drinking Water Inspector released a progress report on Ontario's Municipal Residential Drinking Water Systems in May, 2005. The report showed that municipal residential drinking water systems are improving their operational performance and are providing safe water. The following year, in April, 2006, the Chief Drinking Water Inspector released his first full Annual Report for the 2004-05 inspection period. The report concluded that Ontario's drinking water is safe and of a very high quality. Ontarians can continue to have confidence in their drinking water.

Strong Conservation

An overhaul of the province's water taking rules provides for extensive reviews of requests for Permits to Take Water and stronger conservation measures. New or expanded taking of water, that removes water from watersheds with current high levels of usage, are strictly controlled.

Tough Penalties for Endangering Ontario's Water

Bill 133 is introduced, providing tough financial penalties for industrial polluters. In Ontario, if you spill, you pay. Ontario has strong laws to protect our drinking water and enforces them.

Protecting the Great Lakes

Ontario's Premier signs the *Great Lakes – St. Lawrence River Sustainable Water Resources Agreement* with Quebec and the eight Great Lakes states. This historic agreement virtually ends the diversion of water from the Great Lakes. It also provides for better conservation and a strong environmental standard to manage water use on both sides of the international border.

Consistent Inspection Standards

The Drinking Water Compliance and Enforcement Regulation (O.Reg. 242/05) requires the use of consistent standards to inspect all water systems. It sets out requirements for inspections of municipal residential drinking water systems and laboratories that test drinking water, and for following up on any significant findings. The regulation also gives members of the public the authority to ask for an investigation of an alleged offence by a municipal drinking water system under the *Safe Drinking Water Act, 2002*.

KEY ACHIEVEMENTS

2006

Clean Water Act

The *Clean Water Act, 2006* will give Ontario some of the best-protected sources of drinking water in the world. Its purpose is to prevent contamination of our existing and future drinking water sources.

Local and Effective Inspections

Amendments found in the *Health System Improvements Act, 2007*, will pave the way for the inspection of smaller water systems by local public health units to give the system owners a more workable, cost effective approach — one that is locally based, clear, flexible and maintains a high level of health protection in Ontario's communities.

A First for Canada

The finalization of a Drinking Water Quality Management Standard, which will support the integration of quality management into the operation of municipal residential drinking water systems, is a first, not only for Ontario, but for Canada.

New Municipal Drinking Water Licensing Program

Work begins to introduce a new Municipal Drinking Water Licence program during 2007. The new "made in Ontario" program will change the licensing, management and operation of municipal residential drinking water systems, replacing the existing Certificate of Approval Process for municipal residential drinking water systems. It reflects research, advice and suggestions from many stakeholders.

Recertification of Grandparented Operators

By May 14, 2006, all grandparented drinking water operators were required to be recertified by examination. Currently, all certified operators working at municipal residential drinking water systems have completed the necessary education/training, passed the appropriate examinations and have met the experience requirements for their operator's certificate.

Recognition of Ontario's Management of Drinking Water

In October 2006, the Sierra Legal Defence Fund issues *Waterproof 2: Canada's Drinking Water Report Card* — its second report card on the state of Canada's drinking water. The report gives Ontario the highest ranking of any jurisdiction in Canada for drinking water protection. It commends Ontario for being good at treatment standards, contaminant standards, testing, having accredited laboratories for water quality testing, operator certification and public reporting.

2007

Enhancing Well Management

In March 2007, the Ontario government posts proposed amendments to Wells Regulation 903 under the *Ontario Water Resources Act, 1990* on the *Environmental Bill of Rights (EBR) Environmental Registry* for public comment. Regulation 903 currently sets out minimum standards for all wells. The proposed amendments are intended to improve the clarity and enforceability of the regulation including provisions such as disinfection, licensing and abandonment. Protecting a well against contamination reduces the risk for all users that share our ground water resources.

Stronger Protection for the Great Lakes and All Ontario Water Resources

In April 2007, the McGuinty government introduces the ground-breaking *Safeguarding and Sustaining Ontario's Water Act, 2007*. It further strengthens the management, protection and conservation of the Great Lakes and Ontario's other water resources. The Act implements, into law, the historic Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement that Ontario, Quebec and the eight Great Lakes U.S. states signed in December 2005. It also gives Ontario the authority to charge commercial and industrial consumers for

the water that they take or use, helping to cover some of the province's cost of managing water resources and encouraging companies to conserve water.

Communities Have a Say in Protecting their Drinking Water Supply and the Environment

In April 2007, the Ministry of Environment invites public feedback, through the EBR Environmental Registry, on proposed rules to start local source water protection planning under the Clean Water Act, 2006. Collaborative, locally driven, science-based protection plans will protect Ontario's drinking water, safeguarding health and the environment.

Continued Transparency and Accountability

In May 2007, Ontario proclaims subsection 3(4) of the *Safe Drinking Water Act, 2002*. This provision requires the Minister of the Environment to table this report, the first Annual Report on Drinking Water, in the Ontario Legislature.



ONTARIO'S SOURCE TO TAP DRINKING WATER SAFETY NET



A stream entering Georgian Bay at Meaford, Ontario.

Ontario has passed the Clean Water Act, 2006 to protect sources of municipal drinking water, brought in tough penalties for industrial polluters, set strong standards for drinking water quality and testing, established high training standards for drinking water system operators and conducts rigorous drinking water system inspections.

Guarding Ontario's Drinking Water

Ontario's Source to Tap Drinking Water Safety Net

Protecting Our Environment

A clean, safe, plentiful, protected and sustainable water supply is fundamental for everyone in Ontario. We are committed to guarding Ontario's drinking water with a system of checks and balances.

We call it our drinking water safety net. It has eight essentials to safeguard our drinking water from source to tap. They are:

- Strong legislation – the *Clean Water Act, 2006* and the *Safe Drinking Water Act, 2002*
- Timely, reliable testing
- Immediate notification and corrective action on adverse water quality incidents
- Licensing, training and certification
- Comprehensive inspection programs
- Investigation and enforcement of legislation and regulations
- Integrated data acquisition and information management
- Education and outreach.

Water is enjoyed year round.

All are equally important. They give us a multi-barrier approach to keep our drinking water safe and clean. Each part of our system to manage drinking water is transparent and accountable. In reporting to you on Ontario's drinking water safety net, I want to profile our government's initiatives in five areas: strong legislation; licensing, training and certification; comprehensive inspection programs; investigation and enforcement of legislation and regulations; and education and outreach.

For a full report on all elements of the drinking water safety net, please see the *Chief Drinking Water Inspector's Annual Report 2005-2006* on the Drinking Water Ontario website, www.ontario.ca/drinkingwater.



"Our drinking water safety net is working. Ontarians can be confident that the water that comes from their taps continues to be safe and of very high quality."

— Chief Drinking Water Inspector

Strong Legislation

The *Clean Water Act, 2006* reflects three years of consultations and 600 written submissions on the kind of law we need to protect Ontario's source water.

The *Clean Water Act, 2006* and Source Water Protection

Ontario has a plentiful supply of water resources but our water supply is fragile. There are pressures on the quality and quantity of our water resources. As our population grows, our demands on water resources grow too – that's why our government has invested so much to safeguard our water.

The *Clean Water Act, 2006*

Our new *Clean Water Act, 2006* became law in October 2006. I believe that this law is essential to Ontario's environmental future. The Act puts in place a process for guarding Ontario's important source water. This process is based on watershed-based planning practices and principles. It gives local people in the community a stronger voice and greater accountability in conserving, preserving and protecting the water that they depend on. The Act reflects three years of consultations. We received 600 written submissions from individuals and organi-

zations. From community halls and conference centres all over the province, to the chambers at Queen's Park, people gave us their comments and suggestions about the kind of law we need to protect Ontario's source water. People everywhere agreed that water protection must be seen as a shared responsibility. They said local involvement is the best way to protect local water.

In addition to being locally driven, the watershed-based planning process is based on:

- good science
- the active participation of many stakeholders and public transparency
- the principle that all of us share the responsibility to protect the local sources of our drinking water
- recognizing and building on the work that municipalities, conservation authorities and local stakeholders have already done to protect their drinking water sources.

Under the Act, there will be a watershed-based source protection plan for each source protection area in the province. To begin, the source protection areas will be in line with the boundaries of existing conservation authorities. Under this Act, it is anticipated that Source Protection Committees, made up of local stakeholders, including municipalities and conservation authorities, will set up committees and consult with their communities about how best to protect their source water. Together, they will identify and assess threats to their local municipal and designated drinking water system and create an action plan to address the significant threats. The Act provides the tools needed to deal with situations that put drinking water at risk before they cause any harm.



Clean, safe water is an important resource and everyone has a responsibility to protect it.

The watershed-based planning process continues to promote the principle of public consultation that helped create the *Clean Water Act, 2006*. This will give source water protection the same transparency and public accountability as other parts of our drinking water safety net.

Financial Support

When we protect source water, we are investing in the legacy of clean drinking water that we want our children to inherit. Our government has made a \$120 million commitment to partner funding to support source protection planning from 2004-05 to 2007-08. We are providing \$32 million to conservation authorities and municipalities for technical studies to support the development of assessment reports. The Ministry of Natural Resources has allocated a further \$88 million for conservation authorities. This makes it possible for them to do the necessary scientific and technical work that will support the local committees in their discussions.

Supporting Farmers and Small Businesses in Rural Communities

The *Clean Water Act, 2006* includes a Drinking Water Stewardship Program. It will give financial help to farmers and small businesses in rural communities. We created this program in response to requests for this kind of program during our consultations with these communities on the draft Act. Its purpose is to make it easier for them to be partners in protecting their communities' environment and public health. We will also provide financial help for local incentives and education and outreach programs. These are an important part of source water protection plans.

An initial \$7 million will be available in 2007-08 for early action to protect drinking water. It includes \$5 million to support action to protect land and water



The Ontario government is committed to investing in keeping Ontario's drinking water clean, safe, protected and sustainable.

surrounding municipal water wells and surface water intakes and \$2 million to support local education and outreach related to source protection planning.

As local communities complete their source protection plans, we will have a better understanding of the kinds of funding that will work best. To give our government advice on local administration of the funding program and to provide for rural Ontario's voice in the decision-making process, we have set up an expert Advisory Panel for the Drinking Water Stewardship Program. The members are 11 highly experienced and knowledgeable people. They represent the agricultural, municipal, small business, non-governmental environmental groups and conservation authority sectors. The panel gives us advice to help make sure that the financial help from our government reaches those who need it the most.

"This financial assistance (under the Drinking Water Stewardship Program) goes a long way toward addressing the concerns of the farming community. The government is clearly listening to the concerns of rural Ontario."

— Ron Bonnett, Past President, Ontario Federation of Agriculture

The Regional Municipality of Waterloo Rural Water Quality Program: A Model for Source Water Stewardship

A Partnership of the Grand River Conservation Authority, the Region of Waterloo and Local Agricultural Commodity Groups

In 1998, the Regional Municipality of Waterloo (RMOW) started a Rural Water Quality Program (RWQP). It is a source water protection program that provides financial assistance and technical advice to landowners. Its goal is to help property owners implement best management practices that will protect surface and groundwater quality in the region. This was the first time in Ontario, if not Canada, that a municipality started working directly with the agricultural community to share the cost of protecting and improving water quality.

Several sources have provided financial support for the RWQP. They include the RMOW, the Ontario government and the Grand River Conservation Authority (GRCA). The GRCA also provides technical support and program delivery. As of December 2005, the RWQP has provided more than \$5 million in financial assistance to over 1,450 projects worth over \$13 million.

The RWQP has two multi-stakeholder committees: a steering committee and an application review committee. The application review committee evaluates applications that landowners submit to it on a confidential basis.



Its membership includes people from the steering committee, agricultural producers and municipal representatives. Initially, the application review committee met monthly for almost a year. This helped build a common framework and developed the necessary trust to move the process forward. There was some training for the application review committee members (e.g. a “mock” review meeting). However, for the most part, the committee members learned by doing. They also created formal terms of reference for the committee’s operations. This has proved to be very useful for keeping to a consistent process over time and helping the program to continue functioning as well as it has.

More information is available at
www.conservation-ontario.on.ca.

Monitoring the Quality of Ontario's Source Water

My ministry collects water quality information from Ontario's rivers, lakes, streams and groundwater sources (raw water). This gives us information on trends in the quality and sustainability of our water sources. It includes data on baseline chemical quality and groundwater levels. This makes it possible to find the links between land use activities and water quality. We have several monitoring and surveillance programs to track changes and trends. I am pleased to tell you these show some positive trends and real progress in protecting raw water quality. Levels of many contaminants in fish are declining. Ecological health, fish and wildlife habitats are being restored. Recreation and tourism are returning in many places.

We will continue to use the information we collect on raw water supplies to improve the protection of Ontario's water resources. There is more information on emerging contaminants in the *Emerging Issues* section of this report.

We also share the information with our stakeholders and partners for them to use in their research and decision-making. Often, we form partnerships to monitor water quality, for example:

- The Provincial Water Quality Monitoring Network program is a partnership that measures water quality in rivers and streams. It tracks water quality indicators such as nutrients, trace metals and other indicators of ecosystem health. As of March 31, 2006, there were over 400 monitoring locations developed in partnership between my ministry, Ontario's conservation authorities, several municipalities and the Kawartha Highlands. More information is available at www.ene.gov.on.ca/programs/5310e.htm.

- The Provincial Groundwater Monitoring Network collects, analyzes and reports on ambient groundwater level and chemical conditions around the province. The program supports source protection planning activities, low water situation response decisions, water allocation concerns and provides a mechanism for recognizing emerging issues. The program, implemented in partnership with all of the Conservation Authorities and some municipalities, is an early warning system for groundwater quality and quantity issues. As of March 31, 2006, there were 435 monitoring wells. More information is available at

www.ene.gov.on.ca/programs/5311e.htm.

- Under the Drinking Water Surveillance Program (DWSP), my ministry partners with 125 municipalities to collect water samples. The samples are source water, treated water and water from at least one location within the distribution system that represents the water a consumer gets from the tap. The information is used in developing water quality standards and policies. The DWSP also does special surveys on drinking water contaminants and issues. More information is available at

www.ene.gov.on.ca/envision/water/dwsp/0002/index.htm.

The Safe Drinking Water Act, 2002

Ontario's *Safe Drinking Water Act, 2002* and its regulations protect human health by controlling and regulating drinking water systems, water treatment and drinking water testing. Its regulations provide for the strict accreditation and licensing of the laboratories that test drinking water samples, stringent certification of drinking water operators and comprehensive inspection programs.

Our government is continuing to strengthen and improve drinking water regulations. This includes giving owners and operators of small drinking water systems greater flexibility while still safeguarding public health.

For more information on fishing in Ontario, please see the *2007-2008 Guide to Eating Ontario Sport Fish* at

www.ene.gov.on.ca/envision/guide/index.htm.

Progress Report: Implementing Commissioner Dennis O'Connor's Recommendations

Our government is implementing Commissioner O'Connor's recommendations to better protect Ontarians' drinking water from source to tap.

Significant progress has taken place, and as of May 2007, 102 of Commissioner O'Connor's recommendations have been implemented. With the tabling of this report, an additional O'Connor recommendation (Part 2 report, Recommendation 80) will be implemented. Implementation of the remaining 18 recommendations is well underway. Our government's key initiatives in implementing the recommendations include:

Source Protection:

- New legislation, the *Clean Water Act, 2006*, will better protect Ontario's drinking water sources, a critical component of the Walkerton recommendations.
- This Act ensures communities are better able to protect their drinking water supplies through the development of collaborative, locally driven, scientific and watershed-based source protection plans.

Standards:

- An ongoing commitment to strengthen standards, licensing and inspections under the *Safe Drinking Water Act, 2002* through the following measures:
 - Implementation of courses, certificates and training for water operators.

- Requirements that drinking water labs be accredited and licensed.
- Hiring 25 per cent more drinking water inspections staff and implementing annual inspections of municipal residential drinking water treatment plants.
- A new municipal licensing program and new drinking water quality management standards will further safeguard drinking water.

Treatment and Distribution:

- The results in the *Chief Drinking Water Inspector's 2005-06* report confirm that the overall quality of Ontario's drinking water is both safe and of a very high quality (see the *Providing High Quality Drinking Water* section of this report).
- The Advisory Council on Drinking Water Standards, established by the government, continues to provide key advice on new testing and treatment standards – as recommended by Commissioner O'Connor.

Information Technology and Business Processes:

- New technology and business processes in the Ministry of the Environment give timely,

accurate information on systems and processes to Ontario government employees who are accountable for delivering safe, clean water to our communities.

- A new ministry information management system – 'Drinking Water Ontario' – gives us better data and makes it easier to share information and link with our partners.
- Changes to ministry business processes make them more transparent and clearly set out decision making responsibilities.

First Nations:

- First Nations' water system operators have access to training at the Walkerton Clean Water Centre on a cost-recovery basis.
- New provisions in the *Clean Water Act, 2006* allow First Nations to better protect their systems by participating in source water protection planning on a voluntary basis.

More information on the status of the implementation of Commissioner O'Connor's recommendations is available at

www.ontario.ca/drinkingwater

The Municipal Drinking Water Licence Program and Drinking Water Quality Management Standards will change the licensing management and operation of municipal drinking water systems reflecting a “made in Ontario” approach.

Strict Laboratory Accreditation, Licensing Systems and Certification of Drinking Water Operators

Rigorous water testing is essential to drinking water safety. With certain exceptions, regulated drinking water system owners and operating authorities must send their drinking water samples to ministry-licensed laboratories for testing.

Since 2003, the ministry has issued licences to all Ontario drinking water testing laboratories. Licensed laboratories must meet the high standards that our government has set to protect Ontario’s drinking water. Their testing must meet Ontario’s requirements and test results must be consistently reported and comply with the *Safe Drinking Water Act, 2002*. As of April 1, 2006, there were 57 licensed laboratories operating in Ontario. My ministry inspects them at least twice a year for compliance with the *Safe Drinking Water Act, 2002*.

“Ontario is the first jurisdiction in North America to require that almost all health-related drinking water analysis be done by laboratories licensed to perform specific tests. The capabilities of licensed testing laboratories, drinking water systems and the people who run them are fundamental to the delivery of safe water and the protection of human health.”

— Ontario’s Chief Drinking Water Inspector Annual Report 2005-06



Inspectors and operators undergo continuous training.

At the Ministry of the Environment, we have our own laboratory. The laboratory provides drinking water testing services. It operates under a licence that the Chief Drinking Water Inspector (CDWI) issued in October 2003. The CDWI provides direct oversight for it. It is not licensed like other laboratories to avoid any possible or perceived conflict of interest. The ministry’s inspectors inspect the laboratory and their inspection results go to the CDWI. The CDWI also handles accreditation changes, performance evaluation sample results and any complaints. The ministry’s licensed laboratory operates according to ISO (International Organization for Standardization) standards for laboratories. Auditors, external to the Ontario government, audit the ministry’s laboratory every two years.

Improved Drinking Water Operator Training and Certification

Our government continues to improve the training of drinking water system operators. We have put stronger rules in place to certify and train operators and water quality analysts. In 2004, we established the Walkerton Clean Water Centre (WCWC) (www.wcwc.ca). This new agency opened in May 2005. It focuses on improving training for water systems operators and is one of Canada's few hands-on training centres for water operators. The WCWC makes training accessible and available to operators in small and rural communities as well as to First Nation operators on a cost recovery basis. WCWC delivers Ontario's two mandatory courses — Entry-Level Drinking Water Operator and Preventing Waterborne Illnesses. It also has a technology demonstration centre that provides a unique opportunity for operators to get hands-on training.

The WCWC also delivers specialized water treatment courses on topics such as advanced water treatment, ozone, ultraviolet radiation and membranes.

"Ontario has established the toughest requirements for operator training and certification in North America."

— Ontario's Chief Drinking Water Inspector Annual Report 2005-06

Highlights from the Chief Drinking Water Inspector Annual Report 2005-06:

- 134 inspections were completed, including 113 unannounced inspections, at the 57 licensed laboratories
- 15 inspections were in response to public complaints or ministry staff concerns.

Entry-level operators must take a ministry-approved course within 16 months of securing their operator-in-training (OIT) certificate. The two-week course complements the on-the-job training that OITs get from their employers.

Operators of municipal residential drinking water systems, non-municipal year-round residential systems, and non-residential and seasonal residential systems that serve designated facilities (like schools, day cares and long-term care facilities) and operators of certain large municipal and non-municipal, non-residential systems must be certified by my ministry. As of March 31, 2006, 7,444 drinking water operators were certified.

May 14, 2006 was the deadline for grandparented drinking water operators to be recertified by examination. Currently, all certified operators working at municipal residential drinking water systems are required to have completed the necessary education/training, passed the appropriate examinations and have met the experience requirements for their operator's certificate.

Operators have to renew their certificates every three years. To do so, they must complete a set number of hours (based on the complexity of the system they operate) of training over a three-year period related to their work as water system operators.

The Municipal Drinking Water Licence Program and the Drinking Water Quality Management Standard

My ministry is introducing a new Municipal Drinking Water Licence program and Drinking Water Quality Management Standard. This new program and standard will change the licensing, management and operation of municipal residential drinking water systems. Both are “made in Ontario” and reflect research, advice and suggestions from many stakeholders.

In order to receive a Municipal Drinking Water License, a municipal drinking water system will need to have:

- A drinking water works permit
- An operational plan
- An accredited operating authority
- A permit to take water (if required), and
- A financial plan (if required).



Two elements of the new licensing program relate directly to the Drinking Water Quality Management Standard: the accreditation of operating authorities and the preparation of operational plans. Municipal residential drinking water systems will have to be accredited by a third-party organization. The accreditation will certify that the facility meets the requirements of the Drinking Water Quality Management Standard. An operational plan must be developed and implemented to meet the requirements of the standard.

Requiring quality management systems at municipal residential drinking water systems is another way that we are working to keep Ontario’s drinking water safety net strong. Quality management systems will help facilities to operate more flexibly and efficiently. They will also support better communications with employees and the public and greater employee accountability.

Education and Outreach

The Compliance Registration Orientation Program (CROP): Working in Partnership with Non-Municipal Drinking Water System Operators to Provide Clean, Safe Drinking Water

New rules under O.Reg. 170/03 Drinking Water Systems made under the *Safe Drinking Water Act, 2002* came into effect in June 2006. The new rules cover the operation of non-municipal year-round drinking water systems and non-residential and seasonal residential systems that serve designated facilities. Owners and operators must register their drinking water system and comply with the act. Many owners and operators of these small drinking water systems have other responsibilities (e.g., managing a daycare centre or an eldercare facility). The Ministry of the Environment identified a need to work collaboratively with these owners and operators to increase their knowledge of their roles and responsibilities in providing clean, safe drinking water to consumers.

The ministry created a special team of Compliance Registration Orientation Officers. Their job was



The Ministry of the Environment works collaboratively with owners and operators of drinking water systems.

to help these owners and operators to comply. Helping meant being a partner in compliance, not an enforcement officer. The CROP officers gave owners and operators clear, easy-to-understand information about their legal obligations and responsibilities. They worked in partnership with them in practical ways.

Key features of this approach were:

- a “pre-inspection” review of the regulatory requirements. CROP customized information to the specific needs of individual operators. The officers helped the owners and operators to complete the registration forms.

- distribution of plain-language information. This included guides and fact sheets on the legislation, options for sampling and treatment through pre-arranged site visits, direct mail, education and information sessions in eight locations across the province and materials on the ministry’s website.

As of January 31, 2007:

- 272 new systems were registered
- 234 owners/operators have attended the information sessions.

Owners and operators gave positive feedback about CROP. The regional education and information sessions were well attended. Many people asked for more sessions in the future on similar and related topics.

Comprehensive Inspection Programs

If testing or inspection identifies that a community's drinking water does not meet Ontario's stringent drinking water quality standards, my ministry takes immediate action.

Rigorous Inspections

My ministry inspects all municipal residential drinking water systems annually, against rigorous criteria. Since December 2003, we have increased the number of drinking water inspectors by 25 per cent to enhance our inspection abilities. There are 101 inspectors including 95 drinking water inspectors and 6 lab inspectors. More inspections mean faster identification of potential problems and quicker action to fix them. That means better protection of our drinking water. If testing or inspection identifies that a community's drinking water does not meet Ontario's stringent drinking water quality standards, my ministry takes immediate action. There are a variety of possible actions that can be taken depending on the severity of the problem. If it is a minor problem that does not affect the safety of the water, the inspectors work with the system operator on how to fix it. For more severe problems, the inspector has the authority to issue a Provincial Officer Order. This order formally directs what action has to be taken and by when. If necessary, incidents are referred to the Investigations and Enforcement Branch for investigation.

Highlights of the Ministry's Inspection Program in 2005-06:

- All 706 municipal residential drinking water systems were inspected
- 233 municipal systems received an inspection rating of 100 per cent for meeting all regulatory requirements
- Orders were issued to 43 municipal residential drinking water systems to correct non-compliance or prevent a potential health hazard
- Orders were issued to 40 non-municipal year-round residential systems and systems serving designated facilities.
- Four Local Services Boards received orders.



All Ministry of the Environment inspectors are provincial officers.

To make the best use of our inspectors' time and expertise, we focus most inspection resources on the systems that our inspections tell us most need to improve.

During 2005-06, the ministry continued to inspect all municipal residential drinking water systems for compliance with Ontario's regulatory framework. A third of the municipal systems received a perfect inspection rating of 100 per cent in terms of their compliance with Ontario's requirements for plant and facility operations. Ninety-one per cent of these systems received a rating over ninety per cent. These results show that, overall, municipal residential drinking water systems operations are very good. Opportunities still exist to improve performance even more. My ministry is continuing to work with municipalities towards the goal of achieving 100 per cent compliance.

Regulating Non-Residential and Seasonal Residential Drinking Water Systems

During 2004, Ontario's Advisory Council on Drinking Water Quality and Testing Standards held public consultations on how best to handle the regulation of non-residential and seasonal residential drinking water systems (e.g., like those at campsites, small community centres and restaurants). As a result of the consultations, the council recommended that local public health units should oversee these systems because of their local support, knowledge and, in some cases, their existing relationships with many of the system owners. The *Health System Improvements Act, 2007* includes, among other things, amendments to the *Health Protection and Promotion Act*, the *Safe Drinking Water Act, 2002* and

Inspecting Non-Residential and Seasonal Residential Drinking Water Systems

The *Health System Improvements Act, 2007* paves the way for transferring responsibility for these systems from the Ministry of the Environment to the Ministry of Health and Long-Term Care. Once the systems are transferred, a number of guiding principles would apply to the inspections of non-residential and seasonal residential drinking water systems. Some key activities and standards under this inspection approach would include a five-step program for:

- due diligence
- scheduled audits and risk assessments
- operator training
- regular reviews of operator responsibilities and obligations
- monitoring operators' compliance in completing the required drinking water sampling.



We must be ever vigilant in protecting Ontario's source water.

the *Ontario Water Resources Act*. These permit the transfer of legislative oversight for these systems from my ministry to the Ministry of Health and Long-Term Care.

When this transfer occurs, my ministry would continue to be responsible for licensing and inspecting laboratories that test drinking water samples, regulating certified drinking water operators, where they are required to operate these systems, and for overall drinking water policy and standards.

This is an example of how experts, like the Advisory Council members, give our government practical advice to make Ontario's drinking water rules and regulations easier and more flexible to better protect public health. Please see the section on Standards for more information on the council and its role.

We have strong laws in place to protect Ontario's drinking water and we enforce them.

Enforcing Ontario's Water Laws

Our government's first priority is protecting the health of the people of Ontario. A cleaner environment leads to healthier families, safer communities and greater prosperity. We are committed to continuing to:

- take strong action on the regulated community's compliance with all our environmental laws
- keep the public up-to-date about environmental activities in their communities
- continually improve how we share complex information with the public.

We have strong laws in place to protect Ontario's drinking water and we enforce them.

Industrial and municipal facilities that my ministry regulates must accurately report any contaminated discharges into the environment. Information on discharges that my ministry identifies is published each year in our

Environmental Compliance Reports. More information is available at www.ene.gov.on.ca/envision/compliance/compliance.htm.

Spills and other events that affect or may affect the environment must also be reported to my ministry. The Spills Action Centre (SAC) operates 24/7 on a province-wide basis to receive and document these reports, to assess the information and to follow up with the responsible parties concerning their responsibilities under Ontario law. If necessary, SAC will send ministry field staff out to deal with reported spills. The 2005 Spills Report provides a summary of spills information in Ontario. It is available at www.ene.gov.on.ca/programs/6039e.pdf.

Tough Penalties for Endangering Ontario's Water in 2005-06:

- There were 21 convictions involving 25 municipal residential drinking water systems, including two convictions against individual operators. The prosecutions resulted in fines of \$190,000 being levied against system owners and \$11,000 against the two individual operators.
- There were 12 convictions against owners and operators of non-municipal year-round residential systems non-residential and seasonal residential and systems serving designated facilities, resulting in \$68,900 in fines.
- In Ontario, two licensed laboratories received convictions and \$26,500 in fines.
- These conviction numbers do not include drinking water systems that are proposed to be transferred to the Ministry of Health and Long-Term Care.



Our government's first priority is protecting the health of the people of Ontario. A cleaner environment leads to healthier families, safer communities and greater prosperity.

Public participation is a very important part of our drinking water system's transparency and accountability.

Transparency and Accountability

Our government is committed to transparency and accountability. Ontario's drinking water laws, regulations, standards, policies, manuals, guides and forms are posted on our website and can be downloaded. Through our outreach and education programs, my ministry produces a wide range of plain language information and educational materials. Their purpose is to help organizations and individuals to get the facts they need to understand and comply with Ontario's drinking water laws.

Public participation is a very important part of our drinking water safety net's transparency and accountability. Any member of the public can participate in the process to address drinking water quality issues. This includes commenting on the standard-setting process or requesting an investigation of alleged contraventions of the *Safe Drinking Water Act, 2002*, its regulations, or an instrument under the Act that could affect their local drinking water quality.

Drinking Water Ontario:

Information that Matches Your Needs

In 2007, my ministry launched *Drinking Water Ontario* www.ontario.ca/drinkingwater. *Drinking Water Ontario* gives the public one-window access to drinking water information. Everyone who visits the website can customize and personalize the information that they want to see.

One of *Drinking Water Ontario's* innovative features is the drinking water quality map. Visitors can look up information on their municipal residential drinking water systems and find out more about them, including linking directly to drinking water quality reports that municipalities post online. Students and young people can get information about some of the challenging and fulfilling careers in the field of drinking water. This is one more way the Ontario government is communicating with the public about the quality of their drinking water.

Information on how to get copies of any Ministry of the Environment drinking water document or how to participate in the development of Ontario's drinking water legislation, policies and programs is available at www.ene.gov.on.ca or by calling our Public Information Centre at 1.800.565.4923.



Minister Broten stops by the Franklin Horner Community Centre in Etobicoke on Literacy Day in 2006.

Partnering to Protect Well Water: The Well Aware Program

Approximately three million people in Ontario depend on wells for their drinking water. Well owners are legally responsible for wells on their property. Everyone who owns, constructs or uses a well can play a part to help protect groundwater quality and the health of the people who drink well water every day.

The Well Aware program encourages Ontario's residential well owners to protect their wells and our common groundwater supplies. Well Aware is an education and outreach program run by Green Communities Canada, a national association of non-profit organizations that deliver practical and innovative solutions for Canadian households and communities.

More information on the Well Aware Program is available at www.wellaware.ca

Ontario has safe, high quality drinking water. Strict standards and rigorous inspections helped achieve this.

The 2005-06 Annual Report of Ontario's Chief Drinking Water Inspector says a high number (99.84 per cent in 2005-06) of water quality test samples from municipal residential drinking water systems met Ontario Drinking Water Quality Standards. This tells us that Ontario has safe, high quality drinking water. Strict standards and rigorous inspections helped achieve this.

Standards

Drinking water standards are an objective way to find out if water is clean and safe. To protect health, water has to be free of pathogens and chemical pollutants. Ontario has standards for three different kinds of contaminants: microbiological, chemical/physical and radiological. My ministry keeps track of research, water quality standards and treatment in Ontario, and in other Canadian and international jurisdictions. We use what we learn to update our standards on a regular basis.

Aesthetic drinking water objectives deal with taste, odour, and colour of the water. Operational drinking water guidelines focus on promotion of efficient and effective water treatment. The standards, aesthetic objectives and guidelines reflect the most up-to-date science and practices.

The Advisory Council on Drinking Water Quality and Testing Standards helps us to maintain standards that are consistent with the most up-to-date information and practices. Its members work in the academic world, industry and in municipalities. They are experts in microbiology, engineering, utility operations and public health. The council members evaluate drinking water quality, testing and proposed standards. They also help us to have an open, accountable process for setting standards. That includes taking time for public participation. We post proposals to establish new standards or to change a current standard on my ministry's Environmental Bill of Rights (EBR) Environmental Registry. This gives everyone an opportunity to make comments. There is more information on the EBR at www.ebr.gov.on.ca.



Everyone has a right to safe, high quality drinking water. Our health depends on it.



Ontario's drinking water systems are delivering high quality drinking water.

Making the Choice for Tap Water

- Based on the Ministry of the Environment's rigorous testing, Ontario's tap water is exceptionally clean and safe.
- Tap water costs a lot less than bottled water.
- Carry water with you in a reusable bottle. Fewer disposed plastic drinking bottles means less waste in our environment.

Ontario is a member of the Federal/Provincial/Territorial Committee on Drinking Water. This committee develops the Canadian Drinking Water Quality Guidelines. In Ontario, we usually adopt or adapt these national guidelines in setting Ontario's drinking water standards.

Drinking Water Quality

My ministry oversees drinking water quality. Everyone in Ontario is entitled to expect safe, high quality drinking water. Our health depends on it. We regulate municipal residential drinking water systems, non-municipal year-round residential drinking water systems, non-residential systems and seasonal residential systems serving designated facilities. These systems serve over 80 per cent of Ontario residents.

Ontario's drinking water systems are delivering high quality drinking water. The Chief Drinking Water Inspector reports in the 2005-06 annual report that:

- 99.84 per cent of water quality tests that municipal residential drinking water systems reported met Ontario drinking water standards.
- 99.42 per cent of water quality tests by systems serving designated facilities with vulnerable consumers (like children or the elderly) met provincial standards.
- 99.45 per cent of water quality tests that non-municipal year-round residential drinking water systems reported met provincial standards.

Ontario's Water Plan

Compared to many parts of the world, Ontario's water quality is very good and we have an abundant supply. However, there are pressures on the quality and quantity of our water resources due to issues such as population growth and changes associated with climate change. Our government recognizes that we have to be ever vigilant.

That's why our government has put the Ontario Water Plan in place. It's a framework of tools and investments to address the many issues that affect water supplies. The plan is based on the belief that we must protect our water resources now to safeguard them for the future.

We have strong standards for water quality, training and inspections, backed up with significant financial investment. This helps ensure that, every day, communities all over Ontario can expect to have safe, clean, affordable drinking water. We have the results that show our drinking water safety net is working.

Our success as a province, now and in the future, depends on having a ready supply of clean, safe water in every home, business and community. Ontario's Water Plan will safeguard Ontario's rich water resources and provide for the delivery of safe, clean affordable water to people in every community.



Ontario's Water Plan:

Three Strong Actions to Safeguard Ontario's Water

Ontario's Water Plan has three key parts:

- 1. Protecting Source Water from Contamination.** The new Clean Water Plan focuses on protecting our sources of drinking water from contamination. The new *Clean Water Act, 2006* is the cornerstone activity for this work. Under this Act, source protection plans to reduce or eliminate threats to drinking water sources will be developed.
- 2. Preventing the Depletion of Our Water Resources.** The renewal of the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) for 2007–2010 seeks to improve and protect the Great Lakes, their waters and their ecosystems. It is a positive step toward the protection of this vital source of water for future generations.
- 3. Investing in Infrastructure.** Upgrading and replacing drinking water treatment plants and pipes will support continued delivery of safe drinking water to our taps.

Protecting Drinking Water Initiatives

Clean Water Act — The *Clean Water Act, 2006* is new legislation that will help protect drinking water sources. The act puts procedures in place so that communities are able to protect their drinking water supplies through the development of collaborative, locally driven, science-based source protection plans for watersheds across the province.

Changes to Nutrient Management Act, 2002 — In 2005, changes to O.Reg. 267/03 under the Act simplified the rules for large livestock farms while encouraging farmers to continue best practices on their properties. Ontario made a \$23.7 million commitment to help the province's agricultural sector protect provincial water supplies and assist with the cost for environmental improvements on their operations.

The Agricultural Policy Framework Agreement — In 2003, Ontario and the federal government agreed to invest \$1.9 billion over five years in Ontario's agri-food sector. Nearly \$78 million is targeted for environmental stewardship. This includes reducing the risk of future water shortages, and planning and development efforts around secure and healthy water resources.

Water Takings — In 2005, a regulation was made under the *Ontario Water Resources Act* to stop water withdrawals that remove water from high use watersheds and introduce stricter reviews of requests for Permits to Take Water and stronger conservation measures. Administrative fees for issuing permits were also introduced.

Protecting Water Resources Initiatives

Great Lakes — In 2007, the Ontario government passed new legislation to protect the Great Lakes. The *Safeguarding and Sustaining Ontario's Water Act, 2007* is focused on implementation of the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement and seeks to enable the province to implement conservation charges.

The Canada-Ontario Agreement (COA) Respecting the Great Lakes Basin Ecosystem — Under a proposal to renew the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem, the Ontario government plans to allocate \$32 million over the next three years to help restore and sustain the Great Lakes.

Protecting Water Resources Initiatives (continued)

Ontario's Greenbelt Plan — Released in 2005, Ontario's Greenbelt Plan gives permanent protection to nearly 2 million acres of environmentally sensitive and agricultural land in the Greater Golden Horseshoe, while supporting recreational and tourism activities.

Places to Grow Act, 2005 — In 2006, a wide-ranging, 25-year strategy for the Toronto and the Greater Golden Horseshoe area, prepared under the Act, was released. It directs growth and development in the area to avoid any potential negative effects and ensures that the necessary water and sewage systems will be in place to support homes, businesses, tourism and recreation.

The Provincial Policy Statement (PPS) — In 2005, the PPS was revised to give stronger direction for efficient land use and protecting Ontario's water resources, prime farming areas and significant natural features.

The Oak Ridges Moraine Conservation Plan — Established under the *Oak Ridges Moraine Protection Act, 2001*, the plan protects the Moraine's 190,000 hectares and its vital ecosystem. A key objective is maintaining, improving and restoring ecological and hydrological functions of the area, including its water quality and quantity.

Investing in Infrastructure Initiatives

The Water Strategy Expert Panel Report — Appointed by the McGuinty government, the panel issued its report in 2005, *Watertight: The Case for Change in Ontario's Water and Wastewater Sector*. Our government is using the report and consulting our partners and stakeholders to find practical, moderate and flexible solutions to renew Ontario's drinking water infrastructure (the plants and the pipes that carry our drinking water from source to tap). Through a proposed new regulation and guideline under the *Safe Drinking Water Act, 2002* the Ontario government is working towards assisting municipalities in planning for the long-term financial sustainability of their water and wastewater systems.

My ministry's laboratory is one of many laboratories all over the world that is working to find new tools and ways to detect and deal with emerging pathogens.

In Ontario, we have comprehensive laws, standards, training and inspection programs that protect our drinking water. Part of my ministry's ongoing work in maintaining the safety and quality of our drinking water is to continually monitor emerging issues related to drinking water. My ministry researches emerging pathogens and chemical pollutants. We look at new technologies to treat water and deal with emerging issues. We also consider large-scale environmental trends like climate change and its effects on drinking water. These efforts allow us to continually improve how we manage drinking water in Ontario.

Emerging Pathogens

Pathogens are cause for concern because they are a threat to human health. Effects to human health can range from stomach upsets to serious illnesses. Pathogens can get into water systems by not treating waste matter properly, from wildlife or from agricultural practices. Many pathogens are well known and our drinking water safety net deals with them through treatment processes. However, new pathogens do emerge. Sometimes, a pathogen has appeared for the first time. At other times, pathogens that haven't been seen in a long time re-appear. When this happens, we find new ways to detect and deal with them.

Two pathogens that my ministry is researching are *Cryptosporidium* and *Mycobacterium avium complex* (MAC).

Cryptosporidium is considered an emerging pathogen because, although it has been around for many years, it can appear in water sources where it has not been seen before. It can also be a threat to human health. This pathogen is challenging to treat, since it can live in source water for a long time, and traditional chemical disinfectants cannot always remove it from drinking water. It is important that my ministry continues to develop ways to detect and treat this pathogen. We have invested in research to find new tools to detect *Cryptosporidium* in surface water. Our scientists have also developed tests to identify the pathogen in some kinds of waste water.

Mycobacterium avium complex (MAC) is another pathogen that isn't easy to kill with chemical disinfection. Once it gets into water treatment pipes, MAC may live for a long time in biofilms and sometimes grows. In order to learn more about MAC and what impact it may have on water systems, my ministry continues to research this pathogen. We have been studying the relationship of MAC with its surroundings in order to provide guidance on how to manage the pathogen from a source protection point of view.

Through our laboratory and by working closely with other laboratories worldwide, my ministry is keeping up to date on scientific advances related to a range of emerging pathogens that we can use here in Ontario.

Current Ministry of Environment Research Initiatives

Safeguarding Source Water and Treatment Systems

Microbiological contamination

Eliminating or reducing the major sources of human and animal waste is important for protecting source water. The Ministry of the Environment is investing in research that tests ways to get a better understanding of microbiological contamination in watersheds and how they enter the water system.

Viruses

When human and animal waste gets into groundwater sources, the water can carry viruses. These viruses mostly infect the gastrointestinal tract. The ministry is investing in research to get a better understanding of viruses in groundwater sources.

Perfluorinates

Perfluorinated compounds have many household applications. Most often, they are used in textiles and carpeting; for example, for water and stain resistance. With our research partners, we are monitoring to what extent perfluorinated and related compounds are in the surface waters of the Great Lakes, in sedi-

ments and fish, in municipal treatment effluents and in drinking water. This includes learning how they are getting into the water, how they move in the water, whether or not they change in the water and what impact they have on the environment.

Pharmaceuticals

The ministry is studying emerging contaminants like Endocrine Disrupting Compounds (EDCs) and Pharmaceuticals and Personal Care Products (PPCPs). The purpose of the research is to find out how to keep them from getting into the water and eliminate or reduce their effect. This includes a project with the Ontario College of Pharmacists to look at putting a provincial “take-back” program in place for safe disposal of unused pharmaceuticals.

Treatment by-products

Thoroughly disinfecting drinking water with chlorine, ozone, or chlorine dioxide is very important for getting rid of potentially harmful microorganisms. This process protects us from pathogenic threats. At the same time,

the by-products from the disinfecting process could be hazardous for human health. The ministry is investing in research that will test ways to decrease the creation of some disinfection by-products and identify new disinfection by-products.

Cyanotoxins

Lakes and streams usually have many organisms that grow naturally, such as blue-green algae. Many types of blue-green algae are fairly harmless. However, some manufacture toxins (called cyanotoxins). They can harm humans and animals. The ministry has developed successful ways to find out when some cyanotoxins are in the water. It will continue to work on finding ways to detect other kinds of cyanotoxins. The ministry is also investing in primary research to get a better understanding of what causes blue-green algae blooms to occur.

Emerging Chemical Pollutants

My ministry, with many other Canadian and international jurisdictions and organizations, regularly identifies emerging chemical pollutants. Chemical pollutants are produced by a range of sources such as human activities and through natural occurrences. Once released into the environment they can be transported by air and water and affect human health.

In relation to drinking water, my ministry is investigating a group of chemical pollutants called pharmaceuticals and personal care products (PPCPs). These are a diverse group of biologically active chemical compounds. They include antibiotics, steroids, synthetic hormones and household cleaning and laundry products. PPCPs can make their way into the environment from human use through septic systems and sewage treatment plants. They can also make their way into the environment from animals through agricultural practices where animal wastes go directly into surface water like rivers or lakes.



A laboratory technician testing drinking water.

New Water Treatment Technologies

The Ontario government contributed \$100,000 to a project to study two membranes that have the ability to screen out very small chemical pollutants at a much faster rate than the membranes that water treatment plants are currently using. The project brings together international scientists; collaborators include the Walkerton Clean Water Centre, the University of Ottawa and the University of Singapore.

Right now, sewage treatment plants cannot get rid of most PPCPs. This means that they could get into our rivers and lakes when the treatment plants discharge the treated water back into the environment. We are currently doing a survey to find out the extent to which there are PPCPs in source water and tap water. This is the first step in having a firm scientific foundation for deciding how to deal with PPCPs.

In addition to identifying and dealing with new threats to our source and drinking water, we keep up to date on existing chemical pollutants and their impact on our water resources.

Emerging Technologies

I am pleased to report that we are seeing increasing progress in developing new technologies to deal with emerging pathogens and chemical pollutants.

My ministry recently installed a new “chemical fingerprinting tool” at our Laboratory Services Branch in Toronto. It is called a Fourier Transform (Ion Cyclotron Resonance) Mass Spectrometer (FTMS). The FTMS uses technology that is similar to the magnetic resonance imaging (MRI) equipment used in health care. It will help us to identify new and emerging environmental contaminants.

We are also investing in research into new membrane technology for water treatment plants. This technology has real potential for removing pollutants like PPCPs and chemical disinfection by-products that some existing water treatment technologies cannot block.

My ministry has to be ready to deal with new pollutants and preserve our drinking water safety net. You can be confident that we are doing the research and applying practical, new technologies for making tomorrow’s safety net as strong as today’s.

You can be confident that we are doing research and applying practical, new technologies for making tomorrow’s safety net as strong as today’s.

Climate Change and Drinking Water

The impact of climate change on Ontario's drinking water is an area of growing concern. Ontario has worked with the Federal Government to renew the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) for 2007–2010. A top priority for our government is to understand the impact of climate change on water quality and quantity, so that we can develop strategies to deal with this critical issue. For example, climate change can lead to a lowering of the water table. Also, an increase in water temperature due to climate change can lead to decreased water quality and increased risk of potential water disease outbreaks.



Presqu'île lighthouse on Lake Ontario.

"The Canada-Ontario Agreement will allow us to continue to deal with the issue facing the Great Lakes, including protecting the aquatic ecosystems and to help us deal with the challenges ranging from threats to our drinking water to the impacts of climate change."

LOOKING AHEAD: CONTINUING COMMITMENT TO SAFEGUARDING AND RESTORING CLEAN WATER



Galt, Ontario on the Grand River.

Ontario's success depends on putting safeguards in place so that every home, business and community has a ready supply of clean, safe drinking water.

Looking Ahead

Continuing commitment to safeguarding and restoring clean water

Protecting Our Environment

I am sure that all of us share a vision of a clean, green and healthy Ontario. Achieving this starts with providing plentiful, protected water for everyone. Looking ahead, here are some of our government's major drinking water initiatives for the coming months.

The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

My ministry is working with the Ministry of Natural Resources, the Ministry of Agriculture, Food and Rural Affairs and other Ontario government ministries to renegotiate the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) with the Government of Canada and is leading the development of a renewed COA. Consistent with our commitment to public participation in developing environmental legislation and policies, we asked for public input on the next steps in restoring and protecting the health of the Great Lakes. The proposal was posted for comment on the Environmental Bill of Rights Registry in January 2007. The draft includes:

- Reduction of harmful pollutants
- Conservation of biological diversity
- Promotion of sustainable Great Lakes communities
- Climate change understanding and adaptation
- Protection of Great Lakes sources of drinking water.

Implementing the *Clean Water Act, 2006*

Consistent with our government's commitment to public participation, following the completion of consultations on implementation of the *Clean Water Act, 2006*, we will move forward to proclaim the Act and put regulations in place under the act to:

- Require local communities to look at the existing and potential threats to their sources of drinking water and set out and implement the actions necessary to reduce or eliminate significant threats
- Empower communities to take action to prevent threats from becoming significant.

The people of Ontario deserve the best water that the world has to offer. Let's all work together as stewards of our environment and guardians of our essential water resources.

Looking Ahead

This new regulation will make it compulsory for municipalities to have a financial plan to get, and keep, a municipal drinking water licence.

- Provide the opportunity for public participation in the development of every local source protection plan, giving everyone in the community the chance to contribute to the planning process; and
- Require that all plans and actions are based on sound science.

As we implement the Act, we will be reporting on our progress.

Continued Implementation of Commissioner Dennis O'Connor's Recommendations

We will continue our commitment to complete the implementation of the remaining 18 recommendations from Commissioner O'Connor's report.

Safe Drinking Water Act, 2002, Reporting Obligations

My ministry will continue to meet our reporting obligations under the Act.

This includes:

- the 2006-07 Report of the Chief Drinking Water Inspector
- the 2008 Minister's Annual Report.

We will continue our commitment to complete the implementation of the remaining 18 recommendations from Commissioner O'Connor's report.



Promoting Financial Sustainability of Drinking Water Systems

In his *Report of the Walkerton Inquiry*, Commissioner O'Connor highlighted the importance of ensuring that municipalities plan for the long-term financial sustainability of their drinking water systems to guarantee the safety of their drinking water into the future.

As part of the province's commitment to implement all of Commissioner O'Connor's recommendations, my ministry is developing a financial plan regulation under the *Safe Drinking Water Act, 2002*. This regulation outlines general requirements for municipal drinking water system financial planning and is part of the Municipal Drinking Water Licensing Program.

Working with our partners and stakeholders, a Guideline is also being developed to assist municipalities to undertake financial planning for their water as well as their wastewater systems and to help build capacity in the transition to financial sustainability.

Taken together, the regulation and Guideline are a key step in the province's long-term strategy to ensure the financial sustainability of municipal drinking water and wastewater systems.

Financial sustainability is fundamental to safeguarding municipal drinking water and in the coming months we will be laying the groundwork to achieve that.

Implementing the Municipal Licensing Program

My ministry will be introducing an owner's licence for municipal residential drinking water systems. It will incorporate the concepts of quality management into system operations and management. We will continue to work to develop and implement this program together in partnership with municipal owners and operating authorities.

Improving the Regulation of Non-Residential and Seasonal Residential Drinking Water Systems

With the passage of the *Health System Improvements Act, 2007*, we will continue to work closely with the Ministry of Health and Long-Term Care, and support a seamless transition to local health units to inspect non-residential and seasonal residential drinking water systems. Our support will include working with the health ministry to develop training for and to provide technical support to public health staff and education and information for owners and operators of these systems.

Enhancing Well Management

Over three million people in Ontario rely on groundwater for their drinking water and my ministry will continue to work with the well construction industry to enhance the management of wells in Ontario. Proposed amendments to Wells



Regulation 903 have been posted on the Environmental Bill of Rights Registry for public comment. The amendments seek to enhance regulatory activities in the areas of disinfection, licensing and abandonment.

Implementing Charges for Water Taking

We are consulting with our stakeholders on a proposal for water-taking charges for companies that use Ontario water for commercial consumptive purposes, such as bottled water. The feedback will be taken into account as we proceed with regulations under the *Ontario Water Resources Act, 1990* that achieve this.

Closing Message from Ontario's Minister of the Environment

Everyone in Ontario has a right to clean, safe drinking water. Our health depends on it. Our government takes its stewardship role in water seriously. Let's all work together and share responsibility to protect and preserve our water resources.

I am interested in receiving your thoughts on topics discussed in my first annual drinking water report and can be reached by completing the attached reply card or by e-mail at drinking.water@ontario.ca.

Adverse Water Quality Incident (AWQI): an event in which a municipal or private drinking water system receives an adverse test result. This can trigger a process of notification and corrective measures.

Advisory Council on Drinking Water Quality and Testing Standards: recommended by Commissioner Dennis O'Connor in Part Two Report of the Walkerton Inquiry, and created under section 4 of the *Safe Drinking Water Act, 2002*: The Council's mandate is to advise the Minister of the Environment on drinking water standards, legislation, regulations and issues related to drinking water. (www.odwac.gov.on.ca)

Assessment Report: reports prepared by municipalities and conservation authorities with locally based committees under the *Clean Water Act, 2006*. These reports allow for the identification and assessment of threats to local drinking water system sources

Biofilms: bacterial slimy layer that can form inside water pipes. Biofilms cause problems by wearing away pipes or giving other microorganisms that can cause health hazards a breeding ground that could contaminate drinking water. See *Mycobacterium Avium Complex*.

Conceptual Water Budget: a budget that quantifies the inputs, outputs and flows of water through a watershed region.

Conservation Authorities: local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations. (www.conservation-ontario.on.ca)

Contaminant: any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of these resulting directly or indirectly from human activities that cause or may cause an adverse effect.

Corrective Action: steps that must be taken following an adverse water quality incident as specified by O.Reg. 170/03, Schedules 17 & 18, or O.Reg. 252/05, Schedule 5 and/or as directed by the local medical officer of health or drinking water inspector, that are necessary to protect human health.

Cryptosporidium: a single-celled protozoan parasite found in the intestinal tract of many animals, where it sometimes causes disease.

Environmental Bill of Rights, 1993: an Act that provides the legal rights and formal procedures for participating in environmental matters.

Environmental Commissioner of Ontario: an Officer of the Ontario Legislature with responsibility for monitoring government compliance with the *Environmental Bill of Rights, 1993 (EBR)*.

Groundwater: the supply of fresh water found beneath the Earth's surface, usually in aquifers that supply wells and springs.

Membranes: sheet-like structures installed in treatment plants that allow water to flow through them but stop undesirable substances.

Microbiology: a branch of biology that deals with microorganisms and their effects on other living organisms.

Microorganism: an organism so small that it cannot be seen without a microscope, including bacteria, protozoa, fungi, viruses and algae.

Ministry: in this report, refers to the Ontario Ministry of the Environment.

Minister: in this report, the Ontario Minister of the Environment.

Mycobacterium Avium Complex (MAC): caused by two similar, slow-growing bacteria called *Mycobacterium avium* and *Mycobacterium intercellulare* that are found in the soil and in dust particles. MAC can live for a long time in biofilms. If MAC gets into the drinking water system, it can cause an infection in people who have an impaired immune system or who are unable to fight off an infection for some other reason.

Nutrients: chemical elements and compounds found in the environment that plants and animals need to grow and survive. Nitrogen and phosphorus are nutrients that, if they get into source water, can result in the growth of algae and other aquatic plants that shade or clog streams and affect water quality.

Ontario Drinking Water Quality Standards: regulated standards (O.Reg. 169/03, Ontario Drinking Water Quality Standards made under the *Safe Drinking Water Act, 2002*) for microbiological, chemical and radiological parameters that, when present above certain concentrations, have known or suspected adverse health effects and require corrective action.

Organism: an individual form of life that includes bacteria, protozoa, fungi, viruses and algae.

Pathogen: an organism that causes disease in another organism.

Permit to Take Water (PTTW): any person that takes more than 50,000 litres of water per day from any source requires a permit issued by the Ministry of the Environment Director under the *Ontario Water Resources Act*.

Protozoa: a very diverse group comprising some 50,000 species that consist of one cell. Most of them are able to move on their own. Some are a health concern in drinking water. See *Cryptosporidium*.

Provincial Officer Order: an order issued by a Ministry of the Environment Provincial Officer to any person that contravenes any Act administered by the Ministry of the Environment.

Raw Water: surface or groundwater that is available as a source of drinking water but has not received any treatment.

Source Water: untreated water in streams, rivers, lakes or underground aquifers which is used for the supply of raw water for drinking water systems.

Source Water Protection: action taken to prevent the pollution of drinking water sources, including groundwater, lakes, rivers and streams. Source water protection involves developing and implementing a plan to manage land uses and potential contaminants.

Surface Water: waters (except groundwater) that are on the land surface, such as lakes, ponds, rivers, streams, creeks and marshes.

Trace Metals: metals that may occur naturally in drinking water in very small amounts.

Water Budget: a summation of inputs, outputs and net changes to a particular water resource system over a fixed period.

Water Diversion: redirecting part of a stream flow to a location where the water will be used (e.g. to a site where it is convenient to build a water treatment plant).

Water Quality: a term used to describe the chemical, physical and biological characteristics of water, usually in respect to its suitability for a particular purpose, such as drinking.

Waterborne Illness: a disease transmitted through the ingestion of contaminated water. Water acts as a passive carrier of the infectious agent, chemical or waterborne pathogen.

Watershed: a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.

Notes:

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For More Information:

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