

DRINKING WATER INITIATIVES

WATER QUALITY MANAGEMENT PLAN

The Region of Peel developed a Total Water Quality Management Plan in March 2002 to guide decision-making in the Region of Peel in regards to quality of drinking water. The plan includes source water protection as well as decisions on how new and upgraded water treatment, transmission and distribution infrastructure will be implemented in the Region of Peel over the next 20 years.

SOURCE WATER PROTECTION PROGRAM

The *Clean Water Act, 2006* came into effect on July 3, 2007 with the promulgation of the initial set of source water protection regulations. The objective of the legislation is to protect existing and future planned municipal sources of drinking water. The source protection process is driven by locally based Source Protection Committees that consist of appointed representatives from municipal, industry, commerce and agricultural sectors and the public at large. On-going Source Protection related initiatives that affect the Region of Peel include:

Technical Studies

In 2006 the Region of Peel initiated technical studies to assess the vulnerability of our municipal wells to contamination and identify threats to our groundwater based drinking water sources. These Ministry of Environment funded technical studies are being conducted with support from our Conservation Authority partners.

Threats to our Lake Ontario drinking water source are being evaluated through the Collaborative Study to Protect Lake Ontario Drinking Water (Collaborative). This Ministry of Environment funded study was initiated in 2006 and is led by the Region of Peel. The study partners include 19 Lake Ontario municipalities and 5 Source Protection Regions with technical support from various government agencies, education institutions and consultants.

These source protection technical studies will be completed in 2010 and will be used by the Source Protection Committees in the preparation of Assessment Reports as required by the *Clean Water Act*.

Assessment Report

The *Clean Water Act* requires that Source Protection Committees prepare Assessment Reports that present the results of source water protection technical studies that have been completed by municipalities and Conservation Authorities. These Assessment Reports provide the science and technical structure to be used for the preparation of Source Protection Plans, which will include Source Water Protection policies designed to address existing and future threats to municipal drinking water sources.

2009 Annual Summary Report
Region of Peel

Region of Peel staff is collaborating with the Source Protection Committees and providing technical support for the preparation of Assessment Reports, which are required to be completed in 2010.

Public consultation on the Assessment Report components is planned to begin in early 2010. The Region will work with the Source Protection Committees through the public consultation process.

Source Protection Plan Regulation

In 2010, the province is mandated to release the Source Protection Policy Regulation, under the *Clean Water Act*. This regulation will guide the preparation of Source Protection Plans and development of source water protection policies necessary to protect municipal drinking water sources. The Region of Peel will co-lead the development of source water protection planning policies and support the Source Protection Committees with preparation of the Source Protection Plans.

Drinking Water Stewardship Program

In 2009, the Region and its Conservation Authority partners, with funding support from the Ministry of the Environment initiated the Ontario Drinking Water Stewardship (ODWSP) Awareness Campaign in Peel. This awareness campaign is designed to enhance resident awareness of the source protection process and initiatives in Peel Region and assist eligible residents in obtaining provincial grant funds to undertake activities at their properties that will enhance the protection of municipal drinking water sources. As part of the campaign, the Region will hold public information sessions and/or workshops in early 2010 to promote the ODWSP program.

Municipal Drinking Water Licensing Program

The Ontario government has developed the Municipal Drinking Water Licensing Program (MDWLP) in support of the *Safe Drinking Water Act 2002*. The MDWL program requires municipalities of drinking water systems to obtain the following to operate the system:

1. Drinking Water Works Permit

- A permit to establish or alter a municipal drinking water system.

2. Permit to Take Water

- A valid permit to take water issued under the *Ontario Water Resources Act*.

3. Accepted Operational Plan

- Operational plan is prepared in accordance with the Drinking Water Quality Management Standard (DWQMS) requirements. The Plan will document the operating authority's Quality Management System (QMS).

4. Accreditation of the Operating Authority

- A comprehensive audit and periodic review of the operating authority's quality management system, including the operational plans, will be conducted by an independent certified accreditation body retained by the Province.

5. Financial Plan

- Financial Plan is prepared in accordance with Ontario Regulation 453/07 to ensure the municipal drinking water system is financially sustainable and the necessary funding is available to cover daily operational costs and the costs associated with repairs and upgrades.

The Ministry of the Environment's (MOE) intent in implementing the Municipal Drinking Water Licensing Program is to ensure a culture of commitment to quality, diligence and dedication to consumers in the provision of drinking water.

Roll-out of the Municipal Drinking Water Licensing Program

Ontario Regulation 188/07 (Licensing of Drinking Water Systems) required the Region of Peel to submit Operational Plans and applications for the Drinking Water Works Permit and License for all drinking water system under its authority by January 1, 2009.

In order to meet the O. Reg. 188/07 requirements, the Region of Peel began working on the Municipal Drinking Water Licensing Project late 2007, at which time a project team was formed for the development (Phase 1) and implementation (Phase 2) of the program. A project schedule was developed and the project was endorsed by Regional Council in May 2008.

Phase 1 - Development Summary (2008)

The Operational Plan requirement of the MDWL program must be prepared in accordance with the Drinking Water Quality Management Standard. The Operational Plan documents the drinking water systems quality management system and is required to be implemented for each drinking water system.

The project team worked continuously throughout 2008 to develop procedures that describe how Peel manages its drinking water systems in accordance with the DWQMS. The team finalized the Operational Plans for all six drinking water systems in Peel and prepared the License and the DWWP applications for submission to the MOE in late 2008.

The Region of Peel received accreditation for Phase 1 of the project in late September 2009 by the Canadian General Standards Board (CGSB). Accreditation was based on a review of the Operational Plans to ensure the plan met the requirements of the DWQMS. The Region of Peel was also issued the Drinking Water Works Permit and License for each of its drinking water systems in late November 2009.

Phase 2 – Implementation Summary (2009 and 2010)

The implementation of the Municipal Drinking Water Licensing program includes:

1) On-site Accreditation Audit

- An on-site accreditation audit for each of Drinking Water systems will be conducted in the fall of 2010 by the Canadian General Standards Board to ensure procedures and policies documented within the Region of Peel's Operational Plan are being practised and followed.

2) Implementation of the Peel's Municipal Drinking Water Licensing Program

- The Region will develop and deliver training/information sessions to all staff whose duties directly affect drinking water quality. In addition, communications with external parties including the essential supplies and service providers and the general public will provide information on the New Peel's Quality Management System under the Municipal Drinking Water Program.

3) Internal Audits

- Staff will develop and conduct internal audits for each municipal drinking water system to ensure effectiveness and conformity of the DWQMS.

4) Management Reviews

Management review meetings will be conducted to evaluate the continuing suitability, adequacy and effectiveness of the Quality Management System.

Infrastructure Stimulus Fund in Ontario

Through Canada's Economic Action Plan, the federal government has established a new \$4-billion Infrastructure Stimulus Fund that provides funding to provincial, territorial, municipal and community construction-ready infrastructure projects. Eligible projects include water, wastewater, transit, roads, culture, parks, trails and community services infrastructure.

Around \$32 million in projects to improve the water quality and water distribution are being managed by the Region of Peel under this funding program.

Water Quality Modelling Program

The Region's hydraulic water model is a mathematical representation of the water distribution system used by staff to analyze and predict the behaviour of the system, including managing the existing infrastructure, analyzing operational changes and proposing new development, and planning and evaluating future infrastructure required to service growth. The model was developed using the INFOWATER software program and supports several existing Peel database systems, including Hansen, GeoMedia and AquaPeel. The model is comprised of water treatment plants, storage facilities, pumping

stations, transmission mains, groundwater wells and all municipal water mains within the Region of Peel

The Division is planning to expand this program to perform water quality simulation. The project involves calibrating the model for water quality parameters, identifying sensitive water quality areas. The project will also permit to identify potential water threats during infrastructure planning processes.

I. NORTH PEEL DRINKING WATER SYSTEMS

NEW MUNICIPAL WATER SUPPLIES FOR THE VILLAGES OF CALEDON/ALTON, CALEDON EAST AND CHELTENHAM.

The construction of three new municipal water supplies is required to ensure the additional capacity is in place to meet the future population growth and potential development. These projects were part of the Region of Peel Water and Wastewater Master Plan Update (June 2007) – North Peel water servicing strategy. Class Environmental Assessments (Class EA) are required as part of the planning phase of these projects. A groundwater supply exploration and development program will be required to confirm the quantity and quality of the groundwater available in the target areas. Hydrogeology information obtained through the monitoring and groundwater exploration works will be used for the completion of the Class Environmental Assessments. The construction of the production well, pump house and treatment facilities will be completed under separate capital projects.

In early 2010 the Caledon Village Well #3B will be tested to determine its capacity and an Environmental Assessment will be prepared and presented to the Ministry of the Environment for approval.

Detailed project design and construction is expected to start by the mid 2011.

PALGRAVE/CALEDON EAST INTERCONNECTION

The project comprises the construction of a 400-mm water main on Old Church Road from Innis Lake Road to approximately 280 metres west of Humber Station Road to interconnect the Palgrave-Cedar Mills and Caledon East groundwater systems. The purpose of the interconnection is to improve security of supply for customers supplied by the Palgrave and Caledon East Systems and to address the water supply demand in Caledon East.

The Palgrave-Caledon East Interconnection project has been developed in two phases:

- **Phase 1:** Construction of the Old Church Road Booster Pumping Station, which began in November of 2009, and substantial completion is scheduled for 2010, with total completion in late 2010. Upon total completion of the booster pumping station, the Palgrave and Caledon East water systems will be a combined system.
- **Phase 2:** Construction of the Old Church Road Watermain: Construction began in February of 2010, and substantial completion is scheduled for November 2010. Total completion of the watermain is anticipated to be in late 2010. It is planned for the project to be completed by March 31, 2011.

NORTH PEEL WATER QUALITY SAMPLING STATIONS

The Region of Peel has installed 27 drinking water Sampling Stations throughout Caledon to enhance the drinking water quality-monitoring program and improve customer service. The sampling stations allow Peel to meet its commitments to water quality with the least amount of impact to customers.

The Sampling Stations are located at selected points within the distribution system in Alton, Caledon Village, Caledon East, Mono Mills, Inglewood, Palgrave, Cheltenham and Terra Cotta. They ensure the collected water samples accurately represent the drinking water supplied to the consumers.

It is planned to continue with the Sampling Station installations in the Caledon distribution systems. The number of Stations added will be determined by the population growth. The areas of new development in each of the individual communities in the Township of Caledon will be carefully reviewed and considered for the installation of the Stations.

II. SOUTH PEEL DRINKING WATER SYSTEMS

LAKEVIEW WATER TREATMENT PLANT (WTP) EXPANSION PROJECT

The introduction of the *Safe Drinking Water Act* and rapid population and economic growth were key factors to the expansion and upgrades to Peel's Lakeview WTP. The plant was upgraded and continues to expand with the world's most advanced treatment technology, offering the best protection against pathogens, addressing the taste and odour concerns and generating higher water treatment capacity to ever changing and continuously developing South Peel communities.

In 2008, the Lakeview expansion and upgrade projects were completed with the plants daily water treatment capacity rising from 820 Million litres per day to 923 Million litres per day. With the objective to produce the highest quality drinking water possible at a reasonable cost, the Region implemented a new, innovative, multi barrier approach using ozonation, biologically active carbon (BAC) contactors, and ultra-filtration (UF) membranes. The Lakeview WTP hollow-fibre membranes treat up to 363 Million litres of water per day.

In 2010, construction began to build a new low lift pumping station and administration building. Future planned initiatives include addition of a new high lift pumping station, demolition of select conventional filters, installation of an Ultraviolet (UV) light disinfection system, construction of a new 400 MLD ozone plant with UV light and installation of additional stand by power. The estimated completion of the Lakeview expansion work is scheduled for 2014.

LORNE PARK WATER TREATMENT PLANT EXPANSION PROJECT

The Lorne Park plant, currently rated at 500 Million litres per day, treats water using a conventional treatment process. The plant delivers water to the western side of the South Peel distribution system. It is planned to expand the existing processes to handle the higher flow rates, and implement membrane filtration technology. In 2009 construction began to retrofit plant filters 1-8 with the membrane technology. This will increase capacity from 225 ML/day to 380 ML/day subsequently making the Lorne Park facility the largest membrane water treatment plant in Canada. The treatment process will also include Ultraviolet (UV) light disinfection and advanced oxidation to ensure inactivation of disease causing organisms and to control any seasonal taste and odour events.

The expansion project also includes construction of new low/high lift pumping stations with wet wells and traveling water screens as well as new surge tanks, mechanical/electrical transform rooms, and an additional standby power generator.

The estimated completion of the Lorne Park plant expansion work is scheduled for 2013.

WEST BRAMPTON PUMPING STATION AND RESERVOIR

Construction of the new West Brampton Reservoir and Pumping station servicing the west side of the South Peel Distribution System was completed late 2009. Additional two new pumping stations were built in Brampton to increase reliability and security for central and North-West Brampton.

The Region of Peel is planning to expand pumping capability to York Region, as well as to expand transmission system from central Mississauga to central Brampton in support of population growth and to support increased water supply reliability and security.

WATER MAIN RENEWAL PROGRAM

The Region of Peel Water main Renewal Program is a planned initiative to replace all aging cast iron water mains and other water mains which exhibit high breakage rates.

The program is coordinated with the Cities of Mississauga and Brampton and Town of Caledon municipal works to fully cover all areas with aging water mains.

In 2009, the federal and provincial governments announced an Economic Plan that included an Infrastructure Stimulus Fund (ISF) to provide funding for construction-ready distribution projects. Approximately 57.4 km of water main were approved by ISF funding. Over 150 million dollars has been allocated to this project since the mid 2009. The water main replacements will be completed by March 31, 2011.

SOUTH PEEL WATER QUALITY SAMPLING STATIONS

In 2009, the Region of Peel initiated installation of drinking water sampling stations in South Peel. The sampling stations allow Peel to meet its commitments to water quality with the least amount of impact to customers.

To date, four sampling stations have been installed in Mississauga. It is planned to continue with the sampling station installations in conjunction with the Water Main Renewal Program, capital projects where a sampling station is identified as required and in areas of new development.

TULLAMORE ELEVATED TANK

In 2009, the Region of Peel approved a project to built an elevated water storage facility in Tullamore. The new reservoir will receive water from the Becket Sproule and Airport Road pumping stations and supply water to the Town of Bolton.

The Tullamore reservoir and pumping station is currently in the design phase, and Construction is proposed to commence in early 2011.

Tullamore elevated tank will also support water pressure zones 5 and 6 in the City of Brampton and Town of Caledon.

MAYFIELD ELEVATED TANK

The Mayfield elevated tank is located on Kennedy Road, South of King Street, in the town of Caledon. The need for this water storage facility was identified in the Region's "Water and Wastewater Servicing Master Plan (1999)" and was required to meet the future system demands based on population growth in the Mayfield West Development Area.

The elevated tank was sized to address water requirements for the Mayfield West Development Area and a portion of the City of Brampton.

The Mayfield West Elevated tank would alleviate fluctuations in flow, supply water for fire fighting, provide emergency storage during potential interruptions of supply, as well as to assist in controlling water pressures in Zone 6.

The construction of the elevated tank and associated feedermain will be completed in early 2010 and the tank is planned to be commissioned in early spring, 2010.