

City of Cambridge



2009 Annual Summary Water Report

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Background

The delivery of potable water in Ontario is regulated by the Ministry of Environment (MOE) under the Safe Drinking Water Act (formerly the Ontario Water Resources Act). On June 1, 2003 O. Reg. 170/03 came into effect. This regulation prescribes requirements for owners and operators of municipal drinking water systems.

Among the obligations, O. Reg. 170/03 prescribes the need for all owners of licensed water works to produce a Summary Report as indicated in Schedule 22. The Report is required to contain the following information:

- ✚ List of requirements of the Act, regulations, the system's approval and any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure and describe the measures taken to correct the situation.
- ✚ Summary of quantities of water used for the period covered by the report.
- ✚ The Summary Report must be presented and accepted by Council by March 31st of each year.

This Regulation also requires the owner to produce an Annual Report, as found in Section 11. This report must include the following:

- ✚ Description of the system
- ✚ Summary of any adverse water quality reports and corrective actions
- ✚ Summary of all required testing results
- ✚ Description of any major expenses incurred to install, repair or replace required equipment
- ✚ The Annual Report must be completed by February 28th of each year.

Prior to the amendments made to O.Reg. 170/03 in 2006, the Annual Report had to be submitted to the Ministry of the Environment; this is no longer a requirement. As a result, the Summary and Annual Reports have been combined by City Staff into one document, which is submitted to Council for acceptance.

Drinking Water System Description

The City of Cambridge maintains and operates all 545 kilometers of watermains within the City's boundaries. The City owns 462 km while 56 km are under Region of Waterloo ownership, with 27 km of dual-use watermains. There are 3166 public hydrants providing fire protection and 4421 valves of various sizes for controlling water flow. Within the network, there are nearly 38,500 service connections supplying water to residents and various business and industrial locations.

The distribution system is divided into five individual pressure zones based on the water supply components and the varying elevations throughout the City.






Water is supplied to the City by the Region of Waterloo through a network of wells, treatment plants, pumping stations, control valves, and reservoirs. Treated water from this supply network is monitored on-line, 24 hours per day by operators through the Regional SCADA (System Control and Data Acquisition) system.

Legislation

Since the issuance of the Walkerton Reports I and II in 2002, many legislative and regulatory changes have occurred for those supplying drinking water in Ontario. The following are the primary pieces of legislation that have directly affected the operation of the City of Cambridge's water distribution system.

Safe Drinking Water Act

As recommended by Commissioner O'Connor, the government passed the Safe Drinking Water Act in 2002, which expands on existing policy and practice and introduced new features to protect drinking water in Ontario. The Act's purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act has also provides legislative authority to implement the recommendations made in Commissioner O'Connor's Walkerton Part One and Two Reports. As of August 2007, all 28 recommendations made in Part One, and all 93 in Part Two have been implemented. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water. Parts of the Act address:

-  Accreditation of operating authorities
-  Municipal drinking water systems
-  Drinking water testing
-  Inspections
-  Compliance and Enforcement

Ontario Regulation 170/03: Drinking Water Systems Regulation

The Drinking Water Systems Regulation (O. Reg. 170/03) regulates municipal and private water systems that provide water to year-round residential developments. This regulation stipulates treatment equipment usage, operational checks and sampling, chemical and microbiological testing requirements, corrective actions, and reporting requirements.

Amendments to O. Reg. 170/03 came into effect on June 5, 2006. The amendments are risk-based and are designed to safeguard the quality of Ontario's drinking water, while making the regulation more workable and affordable for residential drinking water systems and systems serving designated facilities. They add clarity and flexibility to the testing and operational regimes set out in Reg. 170 and in some cases, has reduced the cost of regulatory compliance.

On July 26th, 2007, further amendments were made requiring additional lead sampling for water distribution systems. The purpose of the new lead testing requirements is to determine whether communities have a problem with lead in drinking water at the tap. Random testing throughout the City would provide the basis on which to initiate actions to reduce lead levels through control of lead corrosion and would provide evidence of any changes in lead levels over time.

Ontario Regulation 128/04: Certification of Drinking-Water Operators and Water Quality Analysts

The Water Operator Certification Program was initiated for drinking water operators in 1987 as a voluntary program. On May 14, 2004, O. Reg. 128/04 was issued, increasing the requirements for drinking water operators' certification. The regulation also establishes ongoing training requirements for these operators. Details note the different types of licenses, reissuance and transferability, overall and operator in charge responsibilities, record keeping, and operations/maintenance manuals.

Of special note, this regulation stipulates that all new water operators must complete an Entry-Level Course of Study within the first 16 months of obtaining their operator-in-training (OIT) certificate. As of August 1, 2005, these operators must complete a 40 hour at-home study manual and successfully pass a written test based on this manual. After this, they must attend a five day in-class training seminar and examination facilitated by Ridgetown College and the Walkerton Clean Water Centre. Once these requirements have been met, the new operator's license is valid for three years, allowing them time to meet the requirements needed for a Level One License.

Drinking Water Quality Management Standard (DWQMS)

On November 28, 2005, The Ontario Ministry of the Environment posted the Drinking Water Quality Management Standard (DWQMS) on the Environmental Registry for comment until January 27, 2006. On October 30, 2006, the finalized standard was issued on the Environmental Bill of Rights Registry. The purpose of this Standard is to assist owners and operating authorities in the effective management and operation of their municipal residential drinking water systems. This Standard outlines requirements for a Quality Management System (QMS) to ensure high quality drinking water. In the development of a QMS, the Operating Authority must create an Operational Plan; this document will define the QMS and will be subject to external audits for accreditation. As referenced in the Standard, the QMS must be embraced by all those with active rolls in the water system, from front line staff to the highest level of management.

City Staff have developed and implemented a QMS specific to the City of Cambridge. The developed Operational Plan was submitted to the Ministry of the Environment by the imposed deadline of February 1, 2009 with external auditing and final accreditation by the Canadian General Standards Board (CGSB) in December 2009.

Ontario Regulation 435/07: Financial Plans

In 2007, MOE developed the Financial Plans Regulation under the SDWA (O. Reg. 453/07) that prescribes the requirements for Financial Plans. The Financial Plans Regulation requires all owners of municipal residential drinking water systems to prepare Financial Plans that detail the system's financial information projected forward for at least six years. The Financial Plans must include income statements (which set out revenues and expenses), as well as balance sheets (which include financial assets, non-financial assets, total liabilities, cash flow, etc.).

The Financial Plans must then be formally approved by the owner of the municipal system through a resolution of the municipal council. The Financial Plan requires regular updates before every license renewal application (every 5 years). Report TPW81-09 was submitted and approved by Council on December 7, 2010. This report will form the foundation for the Financial Plan that will be submitted for Council's formal approval and then submitted to the Ministry of the Environment prior to the July 2010 deadline.

Non-Compliances with Legislation

Schedule 22 requires that all non-compliance with applicable legislation be discussed in the Summary Report. The Ministry of the Environment carried out their annual system inspection on February 17, 2010 for the period of January 1 2009 to January 31st 2010; during this time period, no issues of non-compliance were noted by staff or the MOE.

Table 1: Non-Compliances

Requirement	Non-Compliance	Required Action
Not applicable: no non-compliance		

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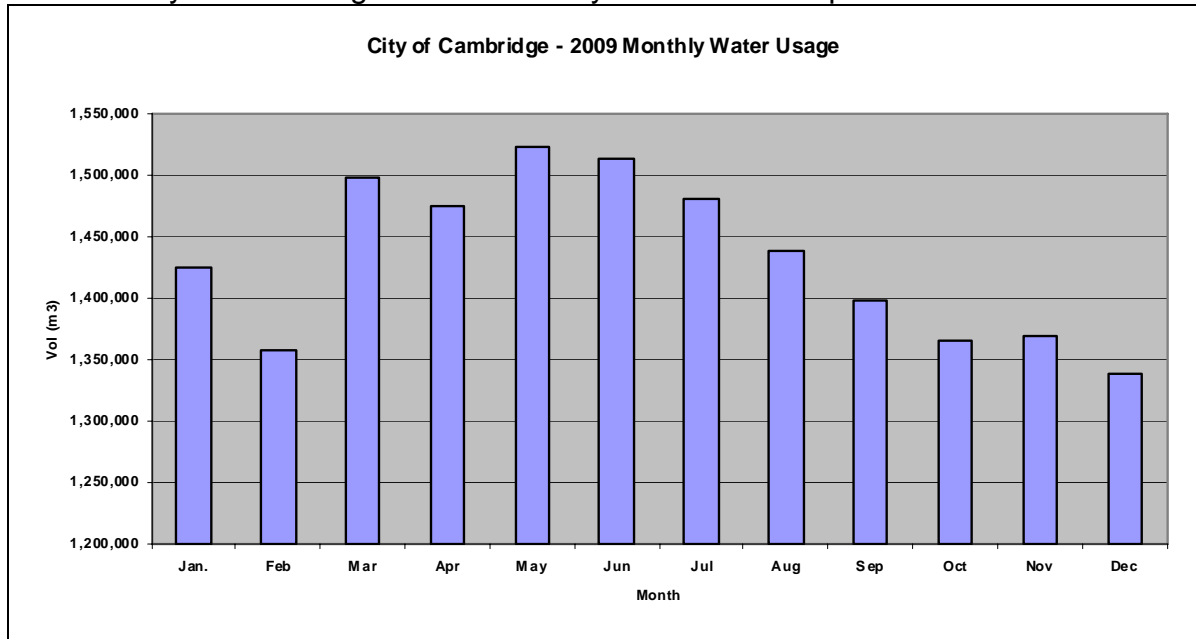
Water Usage

From January 1 to December 31, 2009, the City of Cambridge received a total of 17,185,387 cubic metres of water from the Region of Waterloo (supplier). This compares to 17,334,016 cubic metres from the previous year (a decrease of 0.9%).

Table 2: City of Cambridge – 2009 Monthly Water Consumption

Month	Consumption (m ³)	Ave. Daily Consumption (m ³)
January	1,426,053	46,002
February	1,357,746	48,491
March	1,498,541	48,340
April	1,475,557	49,185
May	1,523,809	49,155
June	1,513,928	50,464
July	1,481,056	47,776
August	1,439,249	46,427
September	1,397,784	46,593
October	1,364,878	44,028
November	1,368,717	45,624
December	1,338,069	43,164
2009 Total	17,185,387	47,083

Chart 1: City of Cambridge - 2009 Monthly Water Consumption



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System Information

Drinking-Water System Number:	260002460
Drinking-Water System Name:	Cambridge Distribution System
Drinking-Water System Owner:	The Corporation of the City of Cambridge
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2009 to December 31, 2009
<p>Does your Drinking-Water System serve more than 10,000 people? Yes [X] No []</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report will be available for inspection: A copy may be obtained from City of Cambridge Clerks' Department (519)-623-1340</p>	

All Drinking-Water Systems, which receive all of their drinking water from the system:

Drinking Water System Name	Drinking Water System Number
Lloyd Brown Subdivision Distribution System	260002759

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [X] No []

How were system users notified that the annual report is available, and that it is free of charge?

- [X] Public access/notice via the web
- [X] Public access/notice via a newspaper
- [X] Public access/notice via public request
- [X] Public access/notice via other method: Report presented to Cambridge City Council

Describe your Drinking-Water System

See "Drinking Water System Description" in attached Summary Report
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List all water treatment chemicals used over this reporting period:

Water treatment is carried out the Region of Waterloo. New installation and repair work is disinfected using NSF 60 rated sodium and calcium hypochlorite.

Brief description and a breakdown of monetary expenses incurred for maintenance and repairs on equipment:

Watermain Swabbing Maintenance Program: \$74,440
 Hydrant Repair/Replacement: \$106,300
 Butterfly-valve Replacement Program: \$143,000
 Watermain and Valve Repair/Replacement: \$647,200
 Water Service Repair/Replacements: \$2,090,600

Testing Results

Summary of reports made to the Ministry under subsection 18(1) of the Safe Drinking-Water Act or Schedule 16-4 of O.Reg.170/03:

Incident Date	Parameter	Test Result	Unit of Measure	Corrective Action	Corrective Action Date
02/09/2009	Observation of Possible Improperly Disinfected Water	No associated test result	N/A	Boil Water Advisory Issued; two rounds of bacteria testing performed before clearance from Health Dept issued	02/09/2009
06/17/2009	Total Coliform	Present	Present / Absent	Flushed system at hydrant and confirmed chlorine residuals; resampled at location, plus additional upstream and downstream samples	06/18/2009* *Date of lab notification of adverse
07/08/2009	Total Coliform	Present	Present / Absent	Flushed system at hydrant and confirmed chlorine residuals; resampled at location, plus additional upstream and downstream samples	07/09/2009* *Date of lab notification of adverse
07/13/2009	Chlorine Residual	Free: 0.03 Combined: 0.03	mg/L	Flushed system at hydrant and resampled chlorine residuals (free 1.42, combined 0.28)	07/13/2009
08/12/2009	Total Coliform	Present	Present / Absent	Flushed system at hydrant and confirmed chlorine residuals; resampled at location, plus additional upstream and downstream samples	08/13/2009* *Date of lab notification of adverse

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Incident Date	Parameter	Test Result	Unit of Measure	Corrective Action	Corrective Action Date
09/28/2009	Total Coliform	Present	Present / Absent	Flushed system at hydrant and confirmed chlorine residuals; resampled at location, plus additional upstream and downstream samples	09/29/2009* *Date of lab notification of adverse

Microbiological testing done under the Schedule 10 of Regulation 170/03, during this reporting period:

Water Type	Number of Samples	Range of E.Coli Results	Range of Total Coliform Results	Number of HPC Samples	Range of HPC Results (min #- max #)
Raw	Not applicable to Distribution System: see Region of Waterloo at www.region.waterloo.on.ca				
Treated					
Distribution	1648	1648 - absent 0 - present	1644 - absent 4 - present	612	0 - >500

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report:

Testing	Number of Grab Samples	Range of Results (min #)-(max #)	Notes
Chlorine (free)	992	0.00 – 2.4 mg/L	With exception of 07/13/2009 low chlorine residual, no operational tests indicated adverse chlorine residuals were present in the distribution system
Chlorine (combined)	992	0.00 – 1.79 mg/L	
Fluoride	Not applicable: fluoride not added to water		

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument:

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
Not applicable; no additional testing/sampling required				

Summary of lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	218	<1 – 63.8 mg/L	16
Distribution	47	<1 – 6 mg/L	0

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Summary of Inorganic/Organic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alkalinity (Distribution System)	47 Samples 01/01/2009 to 12/31/2009	257 – 311	mg/L	No
pH (Distribution System)	47 Samples 01/01/2009 to 12/31/2009	6.89 – 7.47	pH	No
THM (2009 running annual average)	01/10/2009	41.6	ug/L	No
	04/15/2009			
	07/17/2009			
	10/20/2009			

Note: for results on the supply source, see the Region of Waterloo at www.region.waterloo.on.ca.

List of any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:

Parameter	Result Value	Unit of Measure	Date of Sample
Not applicable; no Schedule 2 half standards exceeded			