

# Port Colborne Distribution System Annual Drinking Water Quality Report


Prepared on February 25, 2011  
in accordance with O.Reg. 170/03  
January 1, 2010 to December 31, 2010

Prepared by:



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Drinking Water System number: 260001643  
Drinking Water System category: Large Municipal Residential  
Owned and operated by: The Corporation of the City of Port Colborne

# Port Colborne Distribution System Annual Drinking Water Quality Report

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## Introduction

The City of Port Colborne is required, under O.Reg.170/03 - *Drinking Water Systems*, to prepare an annual report detailing the operation of the Port Colborne Distribution System. The regulation specifies in Section 11 what the report must contain, and sets a February 28 deadline for having the report prepared and made available to the public.

Therefore, to ensure compliance with the regulation, this report is prepared in accordance with Section 11, and is available to the public on the City's website at [www.portcolborne.ca](http://www.portcolborne.ca), under the Water Quality link

## Water Supply and Distribution

The Corporation of the City of Port Colborne (City) is the Owner and Operating Authority of the Port Colborne Distribution System (PCDS), which serves approximately 19,000 residents. The PCDS is a stand alone, Class 1, distribution system, with no downstream connections, and obtains water from the Regional Municipality of Niagara's (RMON) Port Colborne Water Treatment Plant (WTP). Treated water is purchased from RMON on a volume basis and distributed through the City owned distribution system via Region owned trunk mains. The WTP draws water from the Welland Canal, treats it at the WTP, and RMON is responsible for sampling, testing and monitoring water at and leaving the WTP.

The City of Port Colborne does not perform any secondary disinfection, as the WTP sufficiently chlorinates the water to meet the minimum requirement of >0.05 mg/L free chlorine residual. The only water treatment chemical used by the City is 12% sodium hypochlorite, and this is used solely when making repairs to or performing maintenance on the distribution system to perform the required disinfection to protect the drinking water. The distribution system has an average pressure of 58 psi, with pressure maintained by the King Street Water Tower and the Fielden Avenue Reservoir; both of which are owned, operated and maintained by RMON.

The Regional Municipality of Niagara prepares an annual report for the Port Colborne Water Treatment Plant, providing information on the treatment methodology, the type of chemicals used, water quality reports and any significant maintenance, repair or upgrades to the WTP. RMON is also required to make their reports available on the

internet. Contact information is provided under the section entitled “Where to Obtain Additional Information”.

## Water Quality Monitoring

The City of Port Colborne is required to supply safe drinking water that meets the requirements of the Safe Drinking Water Act and associated regulations. To ensure the City meet these requirements, the City has assigned the following individuals as responsible persons for the distribution system:

Table 1: Port Colborne Distribution System Responsible Persons

Position	Name	Phone number
Director of Engineering and Operations	Ron Hanson	905-835-2901 ext. 222
Utilities Supervisor	Doug Cressey	905-835-5079
Water/Wastewater Compliance Coordinator	Darlene Suddard	905-835-2901 ext. 212

The City has identified the Engineering and Operations Department as the Operating Authority for the Port Colborne Distribution System (PCDS). The Public Works, Water Department operates under the Engineering and Operations Department, and is specifically responsible for the daily operation of the distribution system. As such, the Water Department is responsible for assigning Certified Water Operators to conduct both the routine, weekly water quality sampling and testing and to conduct non-routine sampling (i.e., during and after watermain breaks). These activities ensure the water quality meets the Ontario Drinking Water Quality Standards (O.Reg. 169/03) at all times and under all conditions. The Water Department also ensures that the Operational Checks, Sampling and Testing requirements specified in the Drinking Water Systems Regulation (O.Reg. 170/03) are conducted and recorded. If it is determined that the water quality or an operational parameter does not meet the regulated requirements or exceeds the regulated limits, Certified Operators immediately implement corrective action to ensure the continued supply of safe drinking water. The operational checks, sampling and testing requirements which the City must conduct are outlined in Table 3.

The Region operates the Port Colborne Water Treatment Plant, the Fielden Avenue Reservoir and the King Street Water Tower, and as such, is also required to conduct operational checks and sampling and testing activities. Details regarding the Region’s requirements are summarized in their Annual Report; information on how to obtain a copy of their report is provided under the section entitled “Where to Obtain Additional Information”.

## Water Quality Test Results

As per the sampling and testing requirements detailed in Table 3, the City conducted the following sampling in the period of January 1, 2010 to December 31, 2010:

### Microbiological Analysis

A total of 624 samples were collected and analyzed for the presence of *E.coli* and Total Coliforms. Laboratory results indicated that *E.coli* and Total Coliforms were non-detectable throughout the entire year (*Table 4*).

To monitor the potential deterioration of the water quality, 157 samples were collected and analyzed for Heterotrophic Plate Count (HPC). While there is no regulated limit for HPC, the general acceptable standard is <500 colonies/mL. Laboratory results indicated that HPC was detected at very low levels, between 0-63 colonies/mL in 2010 (*Table 4*).

### Operational Parameters

The City monitors the operational parameters, chlorine and turbidity, on a twice weekly basis, and on an as-required basis in response to watermain breaks, complaints etc. In 2010, this resulted in the collection and analysis of 844 samples. Turbidity levels ranged from 0.07 to 0.92 NTU, while free chlorine levels ranged from 0.08 to 1.38 mg/L, well above the minimum level of 0.05 mg/L required under O.Reg. 170/03 (*Table 4*).

### Lead Testing (Schedule 15.1) Results

Beginning with the winter sampling cycle (Dec 15, 2009 to April 15, 2010), the City was exempted from collecting samples from plumbing systems, and was only required to collect 4 samples from the distribution system twice annually (winter sampling cycle and summer sampling cycle – June 15, 2010 to October 15, 2010). Additionally, the City was no longer required to test for lead every year; the distribution system samples were required to be tested for alkalinity and pH during the first two years, with lead sampled in year three.

2010 was the first year of the exemption; therefore, 8 samples were collected in total and analyzed for alkalinity and pH. Alkalinity values ranged from 87 to 95 mg/L, while pH values ranged from 7.46 to 7.81. Both parameters were well within the recommended guidelines (*Table 4*).

### Organic Parameters

The only organic parameter the City is required to monitor in the distribution system is trihalomethanes, or THMs. Results from 2010 continue to indicate that

THMs are not a concern in the distribution system, as the average concentration was 0.025 mg/L, much less than the 0.10 mg/L regulated limit (*Table 4*).

In 2010, the City is pleased to report that there were no reportable adverse water quality incidents. All samples collected and analyzed in 2010 were in compliance with the regulated requirements, as illustrated in Table 4.

## **Regulatory Non-Compliances**

There were three reportable regulatory non-compliances in 2010.

The first occurred on September 9, 2010, when contractor personnel closed a valve on a new section of watermain that was connected to the distribution system without the City's licensed Operators present, and without the City's knowledge. Because the watermain was connected to the distribution system, it was considered part of the distribution system. Under section 12(1) of the Safe Drinking Water Act, 2002, only licensed Operators are permitted to operate a drinking water system – opening or closing a valve is considered an operating function. Upon discovering the contractor's actions, the City was required to report the violation to the local Ministry of the Environment. An Investigator from the Ministry of the Environment Investigations and Enforcement Branch interviewed all City staff involved in the incident early in November 2010, and as of the beginning of February 2011, was in the process of interviewing the contractor personnel that were involved.

The Investigator indicated to City Staff that the City was not being investigated for this incident, as Staff had performed due diligence by providing contractor awareness training to contractor personnel prior to construction. The training specified that contractor personnel could not operate the system, and Staff were able to produce records proving that the training took place and records of the contractor personnel that were present at the training sessions. A "lesson learned" from this incident, was that "refresher training" should be provided, particularly if a watermain replacement contract extends over a longer time period. Therefore, Staff will determine the frequency of refresher training and incorporate it into the relevant procedures.

If the MOE decides to pursue legal action against the contractor for this incident, Staff involved will likely be required to testify in court.

The second reportable non-compliance occurred in October 2010. During the internal investigation into the September 10, 2010 valve turning incident, it was determined that Staff who were not licensed Operators were supervising contractor personnel who were

connecting to and operating main stops. The operation of a main stop is considered an operating activity under the regulations, and as such, the supervision of a licensed Operator is required. Further investigation revealed that Staff had been misinterpreting the definition of “service connection” and “service pipe”, in section 1 of Ontario Regulation 170/03 (O.Reg. 170/03). The entire “service” from the main stop (on the watermain) to the plumbing (where it enters the building) was incorrectly considered to be a “service connection” and therefore it was incorrectly determined that an Operator was not required to supervise or conduct swabbing and flushing activities nor connections or energizing of the “service”.

On October 5, Staff reported the misinterpretation and subsequent violation of Section 11(1)3. of the Safe Drinking Water Act to the local Ministry of the Environment (MOE), and indicated the immediate corrective action was to ensure that any future connections to and/or manipulations of main stops were conducted and/or supervised by one of the City’s licensed Operators. Long term, the City’s Construction Inspector and backup will work towards becoming licensed Operators. The MOE accepted the City’s corrective action, and has requested that Staff keep them apprised of the status of the Construction Inspector and their backup obtaining their Operator certificate.

The third non-compliance in 2010 occurred in November; when it was discovered that the Schedule 15.1 samples (alkalinity and pH) had been overlooked for the summer sampling period (June 15 to October 15). Upon realizing that the samples had been missed, Staff immediately notified the local MOE and immediately collected the outstanding samples. The late sampling for pH and alkalinity was considered to be a non-compliance with paragraph 15.1-5 (10)(a) of Schedule 15.1 of O.Reg/ 170/03. To ensure samples are not missed in future, the corrective action was to schedule the Schedule 15.1 sampling requirements on the annual Water Sample Schedule, with e-mail reminders, scheduled through the WaterTrax program, sent to the licensed Operators specifying the samples to be collected. The MOE accepted this corrective action and has verified that the samples have been scheduled for 2011.

## **Our Commitment to Providing Safe Drinking Water**

To ensure that residents, businesses and visitors to our community continue to receive safe drinking water, the City has incorporated the following practices into the routine operations of the Distribution System:

- Exceed the minimum regulatory sampling requirements, by sampling additional sites for both operational and microbiological parameters
- Comprehensive flushing program targeting “dead ends” where water use is not very high to ensure chlorine levels are at least 0.10 mg/L
- Prompt response to watermain breaks and customer complaints

In addition, the City has the following plans for 2011:

- Subject to budget approval, the City intends to conduct an Infrastructure Needs Study (INS) for the distribution system. The current INS, which is the foundation for distribution system capital projects, was prepared in 1996. Recognizing that this information is dated and likely not a good reflection of the current status of the distribution system infrastructure, an INS has been budgeted for completion in 2011, and every 5-6 years in future.
- Enhancement of current flow monitoring activities to allow real-time monitoring of flows within the distribution system and aid City staff in locating leaks and episodes of “unauthorized” water use.

In 2010, the City of Port Colborne, together with the Regional Municipality of Niagara (Region), completed the large diameter Catharine Street watermain replacement project, which involved replacing 775m of 300 mm watermain with 775 m of 500 mm watermain at a total project expense of \$1,963,777.86; \$572,770.75 was funded by the City and \$1,391,009.11 was funded by the Region. Concurrently with the Catharine Street project, the City replaced 200m of 200mm watermain along King Street, at a total cost of \$107,550.68.

The only major equipment expenditure for 2010 was the lease for the water department backhoe, totalling \$26,400.

## **What's New?**

The City prepared and submitted the City of Port Colborne Distribution System Financial Plan, in accordance with O.Reg. 453/07 – Financial Plans. Council adopted the Financial Plan through a resolution on June 28, 2010, and the Plan was submitted to the Ministry of Municipal Affairs and Housing by July 1<sup>st</sup>, the regulated submission deadline. The Financial Plan is a “living document” and will be examined on a regular basis to ensure it remains current. The Financial Plan is available on the City’s website at [www.portcolborne.ca/page/financial\\_reporting](http://www.portcolborne.ca/page/financial_reporting)

## **Where to Obtain Additional Information**

Copies of this annual report are available, free of charge, at the Engineering and Operations Department, 2<sup>nd</sup> Floor, City Hall - 66 Charlotte Street. It can also be downloaded from the internet at [www.portcolborne.ca](http://www.portcolborne.ca), under the “Water Quality” link. Copies may also be obtained by contacting the City numbers listed below.

Additionally, all laboratory test results are available either at the Engineering and Operations Department or at the Public Works office at 11 King Street. Copies may also be obtained by contacting the City numbers listed below.

The Regional Municipality of Niagara provides an annual report for the Port Colborne Water Treatment Plant, and it can be downloaded from the Region's website: <http://www.niagararegion.ca/living/water/ptcolborne.aspx>. Copies may also be obtained by contacting any of the numbers listed below:

Table 2: Contact Information for the City and Region

Organization	Department	Phone Number
City of Port Colborne	Engineering and Operations Department	905-835-2901
	Public Works	905-835-5079
Regional Municipality of Niagara	Water and Wastewater Division	905-685-1571



Table 3: Distribution System Water Quality Sampling and Testing Requirements

Parameter	Sampling and Analysis	Distribution System Standards	Comments
Microbiological	Minimum of 48 samples per month collected and tested for total coliforms and/or <i>E.coli</i> . Minimum 25% of all samples collected weekly analyzed for heterotrophic plate count	<ul style="list-style-type: none"> <li>• <i>E.coli</i> – NONE detected</li> <li>• Total Coliforms – NONE detected</li> <li>• Heterotrophic plate count - &lt;500 colonies per mL sample</li> </ul>	<ul style="list-style-type: none"> <li>• 12 samples collected each week</li> <li>• Samples sent to an accredited laboratory for analysis</li> <li>• Adverse results are immediately reported by the lab to the City</li> </ul>
Free Chlorine Residual	Minimum of 64 samples per month collected and tested for free chlorine. Collected twice weekly (at least 48 hours apart) from representative areas of the distribution system	<ul style="list-style-type: none"> <li>• Minimum residual chlorine 0.05 mg/L</li> <li>• City targets 0.20 mg/L</li> <li>• City's acceptable low limit is 0.10 mg/L</li> </ul>	<ul style="list-style-type: none"> <li>• City flushes known dead ends on a regular basis to ensure at least 0.10 mg/L is maintained at all areas of the distribution system</li> </ul>
Turbidity	Frequency of sampling not specified, however, City collects minimum of 64 samples per month and tests for turbidity. Collected twice weekly from representative areas of the distribution system	<ul style="list-style-type: none"> <li>• 5.0 NTU maximum aesthetic objective</li> </ul>	<ul style="list-style-type: none"> <li>• Turbidity generally not an issue in the distribution system, however City flushes on a regular basis to ensure turbidity levels remain low.</li> </ul>
Trihalomethanes (THMs)	Sampled quarterly. Quantity of samples not specified in regulations. City collects 2 samples per quarter and submits for analysis	<ul style="list-style-type: none"> <li>• 0.10 mg/L maximum acceptable concentration</li> </ul>	<ul style="list-style-type: none"> <li>• Based on a four-quarter progressive annual average of test results (highest value per sampling event) at points that are likely to have an elevated potential for the formation of THMs</li> </ul>

Table 3: Distribution System Water Quality Sampling and Testing Requirements (continued)

Parameter	Sampling and Analysis	Distribution System Standards	Comments
Lead	<p>Regulatory amendments late in 2009 and the City's historical results from 2008/09 resulted in the City qualifying for exemption from having to collect samples from plumbing.</p> <p>Required to collect 4 samples twice annually (between Dec 15 and Apr 15 and between Jun 15 and Oct 15) from 4 locations in the distribution system and analyze the samples for pH and alkalinity for two years, and then in the third year, perform the pH and alkalinity analysis plus lead analysis.</p> <p>2010 was the first year in the three year cycle, therefore lead analysis was not performed in 2010</p>	<ul style="list-style-type: none"> <li>• No standard for alkalinity or pH, these parameters are monitored so that, should they change, the potential for lead levels to increase is analyzed</li> <li>• Maximum acceptable concentration for lead is 0.010 mg/L</li> </ul>	<ul style="list-style-type: none"> <li>• Distribution system samples are generally collected from water sampling stations and/or fire hydrants</li> <li>• If a lead exceedance occurs in future the City would be required to resume standard sampling.</li> </ul>

Table 4: Distribution System Water Quality Sampling and Testing Results – January 1 to December 31, 2010

Parameter	Requirement	Number of samples	Results			Comments
			Range	Unit	Exceedances	
<b>Microbiological Analysis</b>						
<i>E. coli</i>	ND	624	ND	cfu/ 100 mL	0	Presence of <i>E.coli</i> indicates presence of fecal matter
Total Coliforms	ND	624	ND	cfu/ 100 mL	0	Presence of Total Coliforms indicates possible presence of pathogenic bacteria
Heterotrophic Plate Count	<500	157	0-63	colonies/ mL	0	Presence of HPC indicates water quality deterioration
<b>Operational Parameters</b>						
Free Chlorine	Minimum 0.05	844	0.08 – 1.38	mg/L	0	Level of disinfectant present
Turbidity	5.0	844	0.07 – 0.92	NTU	N/A	Not a reportable parameter; 5.0 NTU is aesthetic guideline
<b>Lead Testing Results</b>						
Alkalinity	30 - 500	8	87 - 95	mg/L	N/A	Neither are reportable parameters; guidelines are the recommended operational level. Low alkalinity and/or low pH may accelerate corrosion, which may cause lead from soldering or lead lines to be released into drinking water.
pH	6.5 – 8.5	8	7.46 – 7.81		N/A	
<b>Organic Parameters</b>						
Trihalomethanes	0.10	8	(Annual Average) 0.025	mg/L	0	By-product of chlorination; forms when chlorine reacts with suspended organics.

ND = non-detectable

NTU = nephelometric turbidity unit