

Port Colborne Distribution System Annual Drinking Water Quality Report

Prepared on February 25, 2022
In Accordance with O.Reg. 170/03
January 1, 2021 to December 31, 2021

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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

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.

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 16,000 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 Drinking Water System 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 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 Barrick Road Water Tower together with the Fielden Avenue Reservoir, which are owned, operated and maintained by RMON.

The Regional Municipality of Niagara prepares an annual report for the Port Colborne Drinking Water System, 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 Public Works	Chris Kalimootoo	905-835-2901 ext. 223
Manager of Water/Wastewater	Darlene Suddard	905-835-2901 ext. 256
Water/Wastewater Supervisor and Overall Responsible Operator	Tommy Peazel	905-835-2900 ext. 255
Environmental Compliance Supervisor	Cassandra Banting	905-835-2901 ext. 250

The City has identified the Public Works Department as the Operating Authority for the Port Colborne Distribution System (PCDS). The Water and Wastewater Division operates under the Public Works Department, and is specifically responsible for the daily operation of the distribution system. The Division 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 4.

The Region operates the Port Colborne Water Treatment Plant, the Fielden Avenue Reservoir and Barrick Road Water Tower, and as such, is required to conduct operational checks, 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 4, the City conducted the following sampling in the period of January 1, 2021 to December 31, 2021:

Microbiological Analysis

In accordance with the requirements of Schedule 10, section 10-2 (1) of O.Reg.170/03, samples are collected and submitted for analysis on a weekly basis. Additionally, samples are collected and submitted for analysis after watermain breaks, during hydrant flushing activities and in response to some water quality complaints etc.

In 2021, a total of 412 samples were collected and analyzed for the presence of *E.coli* and Total Coliforms. Laboratory results indicated that Total Coliforms were detected on one (1) occasion (*Table 5*). Details about the adverse results are discussed below.

To monitor the potential deterioration of the water quality, 412 samples were collected and analyzed for Heterotrophic Plate Count (HPC). Laboratory results indicated that in 2021, HPC was detected at very low levels, between 0-88 colonies/mL. (*Table 5*).

Operational Parameters

The City monitors the operational parameter, free chlorine on a twice weekly basis, and on an as-required basis in response to watermain breaks, hydrant flushing, and complaints etc. Turbidity is measured weekly, and on an as-required basis. In 2021, this resulted in the collection and analysis of 2,244 chlorine samples (806 routine and 1438 non-routine) and 862 turbidity samples (57 routine and 805 non-routine). There was one (1) adverse free chlorine sample in 2021, with overall free chlorine levels ranging between 0.02 to 1.17 mg/L (*Table 5*). Details about the adverse results are discussed below.

Turbidity levels ranged from 0.07 to 0.81 NTU (*Table 5*).

Lead Testing (Schedule 15.1) Results

The City is no longer required to collect samples from plumbing systems and is only required to collect samples from the distribution system. Under O.Reg. 170/03 distribution system samples are required to be collected twice annually, with one set collected during the winter sampling cycle (December 15 to April 15) and another set during the summer sampling cycle (June 15 to October 15). The collected samples are tested for alkalinity and pH in year one and two, with lead sampled in year three. 2021 was year three; therefore, samples were collected from four (4) locations in the distribution system and analyzed for alkalinity, pH and lead. Alkalinity ranged from 81 to 88 mg/L, while pH values ranged from 6.02 to 7.26, and lead ranged from 0.16 to 2.48 ug/L; all values were well within the recommended guidelines (*Table 5*).

The City is not required under the Regulation to collect plumbing samples to be analyzed for lead concentrations, unless requested by a homeowner. In 2021, there were no homeowner requests (*Table 5*).

Organic Parameters

The City is required to sample for trihalomethanes (THMs) and haloacetic acids (HAAs) on a quarterly basis.

THM results from 2021 continue to indicate that THMs are not a concern in the distribution system, as the running annual average concentration was 0.02075 mg/L, much less than the 0.10 mg/L regulated limit (*Table 5*). None of the individual samples exceeded half the standard prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

While the City has been required to sample for HAAs since January 1, 2017, the results were not reportable until January 1, 2020. Results from the four (4) samples collected in 2021 continue to indicate that HAA's are not a concern in the distribution system as the running annual average concentration was 0.00295 mg/L, much less than the 0.08 mg/L regulated limit (*Table 5*). HAAs were below detection limits in two (2) of the samples and the remaining two (2) samples were well below half of the standard prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

In 2021, there were two (2) reportable adverse water quality incidents. One (1) adverse result was due to the presence of total coliforms. The second adverse result was due to a free chlorine level less than 0.05 mg/L. Details about the adverse samples are discussed below.

Regulatory Non-Compliances

There were two (2) reportable adverse water quality incidents in 2021.

Table 2 below summarizes the date the adverse occurred, the adverse parameter, the corrective action taken by the City and the date the corrective action was taken

It is important to note that although one (1) adverse microbiological result, and one (1) adverse free chlorine sample were observed in 2021, (representing less than 0.05% of the total samples collected), the immediate action by the City's certified Operators ensured that the adverse incidents were addressed in a timely manner. This timely response ensured that the safety of the drinking water was maintained, as indicated by the results of special follow up sampling and evaluation, which found the water to be safe.

Table 2: Summary of Adverse Test Results - 2021

Sample Date	Date Adverse Reported to City	Parameter	Result	Corrective Action Date	Corrective Action
August 3, 2021	August 3, 2021	Free Chlorine	0.02 mg/L	August 3, 2021	Immediately flush the water mains and restore secondary disinfection to ensure that a free chlorine residual of 0.05 mg/L or higher was achieved at all points in the affected parts of the distribution system.
December 13, 2021	December 15, 2021	Total Coliforms	Overgrown. Exceeded lab detection limit	December 15, 2021	Immediately flush and resample (two consecutive sets 24 and 48 hours apart). Total coliforms were absent from the resamples and free chlorine residuals >0.20 mg/L were maintained at all points in the affected part of the distribution system.

Our Commitment to Providing Safe Drinking Water

To ensure that residents, businesses and visitors to our community continue to receive the safest 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
- Early adoption of the requirements of the revised Provincial Watermain Disinfection Procedure

In addition, the City has the following plans for 2022:

- Completing the Erie Street watermain replacement project at an estimated cost of \$1,600,000 for design and construction.

Major expenditures for 2021 included the following:

- Decommissioning of Elm Street Bulk water station and construction of a new bulk water station on Stonebridge Drive at a cost of approximately \$90,000.
- The City retained a consultant to complete an Infrastructure Needs Study (INS) for the PCDS, with expected completion in mid-2022. The INS is expected to cost approximately \$200,000, and is anticipated to be completed by the middle of 2022. The information from the INS will feed into the City's Asset Management Plan and into the City's Financial Plan.

What's New?

The City received the Certificate of Accreditation from SAI Global for the City's Drinking Water Quality Management System in January 2020. The City's Operational Plan is available on the City's website at: <https://portcolborne.ca/en/living-here/drinking-water-licensing.aspx>

With the COVID-19 pandemic starting in March 2020 and continuing into 2021, ensuring the safety of staff in the Port Colborne Water Department was a concern. In order to ensure the continued delivery of safe drinking water to the residents and businesses in Port Colborne throughout the COVID-19 pandemic, the City developed contingency plans that adjusted as the pandemic changed. These plans, which included splitting the Department into two crews and having the crews work different shifts, ensured that in the

event of a COVID-19 case in the Department, that certified Operators would be available to conduct the mandatory sampling and testing requirements and to oversee any necessary repairs to the distribution system. The City applied for Regulatory Relief from the Ministry of Environment, Conservation and Parks. This Relief provided the City with the flexibility, in the event of a pandemic-related personnel shortage, to remain in compliance with the regulations and continue to ensure safe drinking water. While these contingency plans were tweaked as the pandemic continued, the core plans have remain unchanged, and the Water Department continues to monitor the COVID-19 situation locally and is developing protocols to eventually return staffing to normal, based on the Province’s COVID-19 response framework.

Where to Obtain Additional Information

Copies of this annual report are available, free of charge, at the Engineering and Operations Centre, 1 Killaly Street West. It can also be downloaded from the internet at <https://portcolborne.ca/en/living-here/drinking-water-quality-reports.aspx> Copies may also be obtained by contacting the City numbers listed below.

Additionally, all laboratory test results are available at the Engineering and Operations Centre, 1 Killaly Street West. 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: <https://www.niagararegion.ca/living/water/water-quality-reports/default.aspx> Copies may also be obtained by contacting any of the numbers listed below:

Table 3: Contact Information for the City and Region

Organization	Department	Phone Number
City of Port Colborne	Public Works	905-835-2900
Regional Municipality of Niagara	Water and Wastewater Division	905-685-1571

Table 4: Distribution System Water Quality Sampling and Testing Requirements

Parameter	Sampling and Analysis	Distribution System Standards	Comments
Microbiological	<p>Required to collect a minimum of 24 samples each month, however, the City collects 32 samples per month and tests for total coliforms and/or <i>E.coli</i>. Required to analyze 25% of all samples collected weekly for heterotrophic plate count, however, the City analyzes all samples</p>	<ul style="list-style-type: none"> • <i>E.coli</i> – NONE detected • Total Coliforms – NONE detected • Heterotrophic plate count - <500 cfu/mL 	<ul style="list-style-type: none"> • 8 samples collected each week • Samples sent to an accredited laboratory for analysis • Adverse results are immediately reported by the lab to the City
Free Chlorine Residual	<p>Required to collect a minimum of 28 samples per month, however the City collects 64 samples per month and tests for free chlorine. Collected twice weekly (at least 48 hours apart) from representative areas of the distribution system</p>	<ul style="list-style-type: none"> • Minimum residual chlorine 0.05 mg/L • City targets 0.20 mg/L • City's acceptable low limit is 0.10 mg/L 	<ul style="list-style-type: none"> • 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
Turbidity	<p>Frequency of sampling not specified, however, City collects a minimum of 1 sample weekly from the bulk water depots, and during non-routine sampling (i.e. flushing, watermain breaks)</p>	<ul style="list-style-type: none"> • 5.0 NTU maximum aesthetic objective 	<ul style="list-style-type: none"> • Turbidity generally not an issue in the distribution system.
Trihalomethanes (THMs)	<p>Required to collect at least one sample quarterly, however the City collects 2 samples quarterly, and submits for analysis</p>	<ul style="list-style-type: none"> • 0.10 mg/L maximum acceptable concentration 	<ul style="list-style-type: none"> • Based on a four-quarter progressive annual average of test results (average of all test results each quarter) at points that are likely to have an elevated potential for the formation of THMs

Table 4: Distribution System Water Quality Sampling and Testing Requirements (*continued*)

Parameter	Sampling and Analysis	Distribution System Standards	Comments
Haloacetic Acids (HAAs)	Sampled quarterly. Required to collect one (1) sample per quarter.	<ul style="list-style-type: none"> • 0.08 mg/L maximum acceptable concentration 	<ul style="list-style-type: none"> • Based on a four-quarter progressive annual average of test results (average of all test results each quarter) at points that are likely to have an elevated potential for the formation of HAAs
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 samples twice annually (between Dec 15 and Apr 15 and between Jun 15 and Oct 15) from four (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 and lead analysis. Eight (8) samples total per year.</p>	<ul style="list-style-type: none"> • No standard for alkalinity or pH, these parameters are monitored so that, should they change, the potential for lead levels to increase is analyzed • Maximum acceptable concentration for lead is 0.010 mg/L 	<ul style="list-style-type: none"> • Distribution system samples are generally collected from water sampling stations and/or fire hydrants • If a lead exceedance occurs in future, the City may be required to resume standard sampling.

Table 5: Distribution System Water Quality Sampling and Testing Results – January 1 to December 31, 2021

Parameter	Requirement	Number of samples		Results			Comments
		Routine	Non-Routine	Range	Unit	# of Adverse	
Microbiological Analysis							
<i>E. coli</i>	ND	412*	0	ND	cfu/ 100 mL	0	Presence of <i>E.coli</i> indicates presence of fecal matter
Total Coliforms	ND	412*	0	ND - Overgrown	cfu/ 100 mL	1	Presence of Total Coliforms indicates possible presence of pathogenic bacteria
Heterotrophic Plate Count (HPC)	<500	412*	0	ND - 88	colonies/mL	N/A	Presence of HPC indicates water quality deterioration
Operational Parameters							
Free Chlorine	Minimum 0.05	806*	1438	0.02 – 1.17	mg/L	1	Level of disinfectant present
Turbidity	5.0	57*	805	0.07 – 0.81	NTU	N/A	Not a reportable parameter; 5.0 NTU is aesthetic guideline
Lead Testing Results							
Alkalinity	30 - 500	8		81 to 88	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		6.02-7.26		N/A	
Lead	Plumbing	0.010 mg/L	N/A		mg/L	N/A	Corrosion of lead or lead soldered plumbing/distribution systems may cause lead to be released into drinking water
	Distribution		8	0.16-2.48			
Organic Parameters							
Trihalomethanes	0.10	8		(Running Annual Avg) 0.02075	mg/L	0	By-product of chlorination; forms when chlorine reacts with suspended organics.
Haloacetic Acids	0.08	4		(Running Annual Avg) 0.00295†	mg/L	0	By-product of chlorination; forms when chlorine reacts with suspended organics.

*Note – operational checks are routine samples. Only routine microbiological samples, collected in accordance with Schedule 10, section 10-2 (1) of O.Reg. 170/03, are analyzed for Heterotrophic Plate Count (HPC) to meet the required 25%. Non-routine sampling includes sampling after watermain breaks, complaints, annual hydrant flushing and dead end flushing.

† Note – samples less than the MDL are entered as “0” to calculate the Running Annual Average.