Port Colborne Distribution System Annual Drinking Water Quality Report

January 1, 2024 to December 31, 2024

Prepared on February 28, 2025

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. The report must be made available to the Public and can be found on the City's website and by request.

Information regarding the City of Port Colborne's drinking water system is included below. This report is prepared in accordance with *O.Reg. 170/03*.

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

Water Supply and Distribution

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. It obtains water from the Niagara Region's Port Colborne Drinking Water System water treatment plant (WTP). Treated water is purchased from the Niagara Region on a volume basis and distributed through the City-owned distribution system via Niagara Region owned trunk mains. The Niagara Region's WTP draws water from the Welland Canal, treats it, and 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 which is used when making repairs or performing maintenance on the distribution system to meet

disinfection requirements. 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 the Niagara Region.

The Niagara Region 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. The Niagara Region is also required to make their reports available online. Contact information is provided under the section entitled “Where to Obtain Additional Information” below.

Water Quality Monitoring

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

Table 1: Port Colborne Distribution System Responsible Persons

Position	Name	Phone number
Director of Public Works	Steve Shypowskyj	905-228-8133
Environmental Services Manager	Cassandra Banting	905-228-8137
Water/Wastewater Supervisor and Overall Responsible Operator	Shaun Emery	905-228-8139
Environmental Compliance Supervisor	Samantha Morris	905-228-8030
Environmental Analyst and Quality Management System Representative	Alicia Riolino	905-228-8053

The City has identified the Public Works Department as the Operating Authority for the PCDS. The Water and Wastewater group operates in the Environmental Services Division in the Public Works Department and is specifically responsible for the daily operation of the distribution system. Certified Water Operators are assigned to conduct both the routine weekly water quality sampling and testing, and non-routine sampling (e.g., 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 and Wastewater group 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 Water 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 Niagara Region operates the WTP, 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 Niagara 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" below.

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, 2024 to December 31, 2024.

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, in response to some water quality complaints, etc.

In 2024, a total of 424 samples were collected and analyzed for the presence of E.coli and Total Coliforms (Table 5). Laboratory results indicated that Total Coliforms were detected on one (1) occasion. Details about the adverse results are discussed below and in Table 2.

To monitor the potential deterioration of the water quality, 424 samples were collected and analyzed for Heterotrophic Plate Count (HPC). Laboratory results indicated that in 2024, HPC was detected at very low levels, between 0-4 CFU/mL (Table 5).

Operational Parameters

The City monitors the operational parameter, free chlorine, twice weekly, and on an as-required basis in response to watermain breaks, hydrant flushing, and complaints. Turbidity is measured weekly, and on an as-required basis.

In 2024, this resulted in the collection and analysis of 4,509 chlorine samples (840 routine and 3,669 non-routine) and 3,728 turbidity samples (59 routine and 3,669 non-routine). Free chlorine levels ranged between 0.12 - 1.83 mg/L and turbidity levels ranged from 0.04 to 0.80 NTU (Table 5).

Lead Testing (Schedule 15.1) Results

The City is no longer required to collect lead 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 years one and two, with lead sampled in year three.

In this reporting year, samples were collected from four (4) locations in the distribution system and analyzed for lead, alkalinity, and pH. The lead values ranged from 0.00004 to 0.00068 mg/L, alkalinity values ranged from 87 to 103 mg/L, and pH values ranged from 7.05 to 7.55. All values were well within the recommended guidelines (Table 5).

Organic Parameters

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

THM results from 2024 continue to indicate that THMs are not a concern in the distribution system, as the running annual average concentration was 0.0233 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.

Results from the four (4) HAA samples collected in 2024 continue to indicate that HAAs are not a concern in the distribution system as the running annual average concentration was 0.0058mg/L. The regulated limit is 0.08 mg/L (Table 5). The samples were well below half of the standard prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

Regulatory Non-Compliances

There was one reportable adverse water quality incident in 2024. The adverse result was due to the presence of total coliforms. Table 2 below summarizes the date the adverse occurred, the adverse parameter, and describes the corrective action taken by the City.

When an adverse water incident occurs, immediate action by the City's Certified Water Operators ensures that the adverse incidents are addressed in a timely manner. In this instance, 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 - 2024

Sample Date	Date Adverse Reported to City	Parameter	Result	Corrective Action Date	Corrective Action
September 4, 2024	September 4, 2024	Total Coliform	TC-2	September 4, 2024	Sample had indicated overgrowth of TC, likely due to a contaminated sample. Chlorine at the time of sample was well above the standard. Staff still immediately flushed upstream and downstream and resampled. 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.
- Implement a comprehensive flushing program targeting “dead ends”, where water use is not very high, to ensure chlorine levels are at least 0.10 mg/L.
- Respond promptly to watermain breaks and customer complaints.

Major expenditures for 2024 included the following:

- Started design and construction of four (4) replacement watermain projects on Davis St., West St., Homewood Ave., and Berkley Ave. Approved budget of $9,428,000. The City received $1,999,200 in federal and $1,665,883 in provincial funding for these projects.

Additionally, the City has the following plans for 2025:

- Utilize data from the Water Financial Plan, Water Master Plan, Asset Management Plan, and Infrastructure Needs Study to guide future planning of operational and capital investments. This includes investing in ongoing capital replacement projects and exploring more cost-effective approaches to addressing the City’s

rapidly aging water infrastructure (just over 40% of the current infrastructure was found to be in very poor or poor condition in a 2024 study).
- Staff are utilizing innovative technology for water loss, such as satellite imagery, smart hydrants using AI technology to track system metrics and find leaks, and acoustic data loggers for more precise leak detection.
- Watermain lining will take place on North and South Crescent, Ash Street, Jefferson Street and Clarence Street.

What's New?

The City applied for a renewal of its Municipal Drinking Water Licence in April 2024 and completed a Water Financial Plan in advance of the submission. The City had it's re-accreditation audit in December 2022 and received it's Certificate of Accreditation from SAI Global for the City's Drinking Water Quality Management System. The City's Operational Plan is available on the City's website at: https://portcolborne.ca/en/living-here/drinking-water-licensing.aspx

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 number listed below.

Additionally, all laboratory test results are available at the Engineering and Operations Centre, 1 Killaly Street West. Copies may be obtained by contacting the City number listed below.

The Niagara Region provides an annual report for the Port Colborne Water Treatment Plant, and it can be downloaded from the Niagara Region's website: https://www.niagararegion.ca/living/water/water-quality-reports/default.aspx Copies may also be obtained by contacting the numbers listed below.

Table 3: Contact Information for the City and Niagara Region

Organization	Department	Phone Number
City of Port Colborne	Public Works	905-835-2900
Niagara Region	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	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 *E.coli.* Required to analyze 25% of all samples collected weekly for heterotrophic plate count. However, the City analyzes all samples.	• *E.coli* – NONE detected • Total Coliforms – 1 detected • Heterotrophic plate count - <500 cfu/mL	• 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	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.	• Minimum residual chlorine 0.05 mg/L • City targets 0.20 mg/L • City's acceptable low limit is 0.10 mg/L	• 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	Frequency of sampling not specified. However, the City collects a minimum of one (1) sample weekly from the bulk water depots, and during non-routine sampling (i.e., flushing, watermain breaks).	• 5.0 NTU maximum aesthetic objective	• Turbidity is generally not an issue in the distribution system.
Trihalomethanes (THMs)	Required to collect at least one sample quarterly. However, the City collects two (2) samples quarterly, and submits for analysis.	• 0.10 mg/L maximum acceptable concentration	• 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.
Haloacetic Acids (HAAs)	Sampled quarterly. Required to collect one (1) sample per quarter.	• 0.08 mg/L maximum acceptable concentration	• 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	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. Required to collect samples twice annually (between December 15 and April 15 and between June 15 and October 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.	• 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	• 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, 2024

Parameter		Requirement	Number of samples		Results			Comments
			Routine	Non-Routine	Range	Unit	# of Adverse	
Microbiological Analysis								
E. coli		ND	424*	0	0	counts 100 mL	0	Presence of *E.coli* indicates presence of fecal matter.
Total Coliforms		ND	424*	0	0 - 2 count	counts/ 100 mL	1	Presence of Total Coliforms indicates possible presence of pathogenic bacteria.
Heterotrophic Plate Count (HPC)		<500	424*	0	0 - 4	cfu/mL	N/A	Presence of HPC indicates water quality deterioration.
Operational Parameters								
Free Chlorine		Minimum 0.05	840*	3669	0.12 - 1.83	mg/L	0	Level of disinfectant present.
Turbidity		5.0	59*	3669	0.04 - 0.80	NTU	N/A	Not a reportable parameter; 5.0 NTU is aesthetic guideline.
Lead Testing Results								
Alkalinity		30 - 500	8		87 - 103	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		7.05 – 7.55		N/A	
Lead	Plumbing	0.010 mg/L	N/A	N/A	0.00004 - 0.00068	mg/L	N/A	Corrosion of lead or lead soldered plumbing/distribution systems may cause lead to be released into drinking water.
	Distribution		4					
Organic Parameters								
Trihalomethanes		0.10	8		(Running Annual Avg) 0.0.233	mg/L	0	By-product of chlorination; forms when chlorine reacts with suspended organics.
Haloacetic Acids		0.08	4		(Running Annual Avg) 0.0058	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. Range results for these parameters only include results from routine samples.*