



PORT COLBORNE

**Port Colborne Distribution System
Summary QMS Report
for the
Management Review**

Report Prepared on:
November 20, 2024

For the period of:
November 1, 2023 - October 31, 2024

Executive Summary

- This management review summary covers the period from November 1, 2023 to October 31, 2024.
- No Ministry Inspections occurred during this period. There were no new incidents of regulatory non-compliance in 2023. The next Ministry Inspection will occur on November 21, 2024.
- There was one adverse sample during this reporting period.
- The 2024 Internal Audit was completed on November 1, 2024.
- The external audit will occur on December 9, 2024.
- There were 5 main breaks reported in 2023 and 18 to date in 2024.
- The City's Municipal Drinking Water License (MDWL) and Drinking Water Works Permit were renewed in September 2024.
- Water quality complaints totaled 13 in 2023 and 4 so far in 2024. Where the source of the complaint could be determined, activities in the distribution system, such as fire flow testing, were the most common sources.

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Introduction

Purpose

The purpose of this report is to summarize the activities of the Port Colborne Distribution System (PCDS) Operating Authority so that Top Management can ensure the continuing effectiveness of the Quality Management System (QMS) at scheduled Management Reviews.

Scope

This Summary Report for the Management Review covers key operational elements of the Drinking Water Quality Management Standard (DWQMS) from November 1, 2023 to October 31, 2024.

Top Management reviews the information specified in Procedure QMS-SOP20-1 Management Review.

This review will include, but is not limited to, the following:

- a. Incidents of regulatory non-compliance
- b. Incidents of adverse drinking water tests
- c. Deviations from critical control point limits and response actions
- d. Effectiveness of the risk assessment process
- e. Results of internal and third-party audits, including best management practices
- f. Results of relevant emergency response testing
- g. Operational performance
- h. Raw water supply and water quality trends
- i. Follow up on action items from previous management reviews
- j. Status of management action items identified between reviews
- k. Changes in resource requirements, infrastructure, process, personnel, the Standard or regulations that could affect the QMS
- l. Consumer feedback
- m. Resources needed to maintain the QMS
- n. Results of infrastructure review
- o. Operational plan currency, content and updates
- p. Staff suggestions

Summary of Items

a. Incidents of Regulatory Non-Compliance

During the Ministry inspection on October 6, 2023, no incidents of regulatory non-compliance were found.

b. Incidents of Adverse Drinking Water Tests

One adverse incident occurred during this reporting period.

One sample containing two (2) total coliforms was collected in Fall 2024 with a free chlorine residual of 0.77mg/L. Public Health and the Spills Action Centre were immediately notified orally. As advised, the following corrective actions were taken immediately: sampled upstream, downstream and at point of sample and re sampled 24 hours later. No total coliforms or E.coli were found during resample. Free chlorine measured at 0.87 mg/L.

c. Deviations from Critical Control Point Limits and Response Actions

Critical Control Limits (CCL) for the PCDS are, where applicable, higher than the regulated limits, which then trigger a response procedure. During this period, staff responded appropriately to low free chlorine levels (<0.20 mg/L but >0.04 mg/L) by flushing the distribution system to bring the chlorine levels up. Routine dead-end flushing aided in ensuring free chlorine levels remained adequate. Minimum regulatory requirements were always being met.

While nearly all free chlorine samples taken during the reporting period were above the required level (0.20 mg/L). Two (2) of these samples fell into the low free chlorine level range (0.20 mg/L and 0.04 mg/L) and were addressed accordingly.

d. Risk Assessment

A full risk assessment must be completed every three (3) years. A full a risk assessment took place in October 2022. All risks were re-evaluated in 2023 and will be re-evaluated in 2024. Meeting outcomes will be reviewed at this meeting.

During warmer months, chlorine levels lower in the distribution system. A flushing procedure has been followed ensure that levels are maintained above the CCL range. This has proven to be a very effective risk mitigation strategy.

e. Results of Internal and Third-Party Audits

Internal Audit

The 2024 Internal Audit was completed on November 1, 2024. The audit was completed by an auditor from Acclaims Environmental. The Operational Plan and supporting documents were reviewed for conformity to the DWQMS 2.0. The auditor identified opportunities for improvement (OFIs), which will be discussed at the Management Meeting.

OFIs:

- Consider labelling the spray bottle with 1% sodium hypochlorite mixed solution (e.g. decanted product) and confirm NSF-approved chemical.
- The Emergency Preparedness Plan s.8 states “Emergency procedures will be tested at least every five (5) years...”. El. 18’s first line requires the OA to maintain a state of emergency preparedness and the sector’s best practice is an emergency training & test exercise every calendar year. Consideration should be given to follow this best practice.
- Consideration should be given to ensuring that all items required by El. 20 Management Review PLAN a)-p) are adequately reviewed and summaries documented for each in the Management Review minutes.
- Consider updating GIS asset information (e.g., missing asset, or in incorrect location). Also, ArcGIS should be referencing drawings.
- Consider reviewing the contents of the O&M manual on an annual basis to ensure currency of information.
- Consider reducing the number of places where information is recorded (e.g., WaterTrax, CityWide, Personal logbook, chains of custody, sample sheets, etc.). Also, consider aligning the information in sample sheets with the order in WaterTrax.

External Audits/Accreditation Status

The City’s auditor from SAI Global completed the last external full re-accreditation audit on December 12, 2022. An external surveillance audit took place on December 11, 2023. The next external surveillance audit is scheduled for December 9, 2024.

The auditor identified one (1) OFI during the 2023 audit and zero (0) non-conformances.

OFIs:

- Ensure all required fields (i.e. due dates) are filled in completely for each action item on the NCAR log.

Non-Conformances:

- N/A

Ministry Inspections

The Ministry of the Environment, Conservation and Parks (Ministry) will perform a document review inspection of the PCDS on November 21, 2024. The inspection period

covers October 7, 2023 – October 31, 2024. The results of the inspection will be circulated and shared at the next Management meeting.

f. Results of Relevant Emergency Response Testing

The last Emergency Response training and debrief was for the January 24, 2022 watermain break event, which occurred in February 2022.

Staff are currently scheduling emergency response training for the new year and will explore the opportunity to schedule such training annually, as suggested by the internal auditor.

g. Operational Performance

Table 1 summarizes Operational statistics for the PCDS 2023 and 2024.

Table 1: PCDS Activity Report

ITEM	AMOUNT	
	2023	2024 (to date)
Distribution Samples		
Bacteriological (approx.)	416	368
Operational (free chlorine)	839	749
Adverse Samples	0	1
Lead Samples		
Distribution – Alkalinity and pH	4	4
Distribution – Lead (Exempt from plumbing sampling as of Dec/09)	0	0
Sample results > 10 ppb	0	0
Watermain breaks	5	18

A summary of the 2023 and 2024 (end of October) operational performance indicators (OPI) are provided in Table 2 below. Targets and OPIs are periodically reviewed to make sure they reflect all the efforts made by staff.

Table 2: PCDS Maintenance and Operational Performance Indicators (OPI)

Maintenance Activity	Target/OPI	Status 2023	Status 2024 (to end of October)
Watermain Breaks	Meet response times in SOP	5	18
Valve Exercising, Inspections	25% annually/< 5 inoperable	676 valves of 1193 = 57%	368 valves of 1193 = 32%
Hydrant Inspections	100% annually/< 5 inoperable	587 (100% more than once)	673 (100% more than once)
Winter Hydrant Inspection	2 inspections (Nov 1-Dec 31 and Jan 1-Apr 1)/0 frozen	1,285	1,353
Fire flow testing	100% Completed over ten (10) yrs/<2 out of service, marked within 60 days	230	205
Curb stop/curb box repairs	Repair < 2 weeks	34	31
Emergency service repairs	Meet response times in Watermain Break SOP	Target met	Target met
Inspect bulk water stations	Annual/< 2 service disruptions	Part of routine sampling as required	Part of routine sampling as required
Dead end flushing	Weekly, May-Oct, autoflush stations/0 AWQIs, <10 complaints	527	616
Backflow inspections	Annually or as required/<40% failure	6	4

Total water purchased from the Region over the past 10 years is included in Figure 1 below. Annual water sales for the past 10 years are included in Figure 2. Figure 3a and 3b compares both trends.

Figure 1: Annual Water Purchases since 2014 (2024 to end of October)

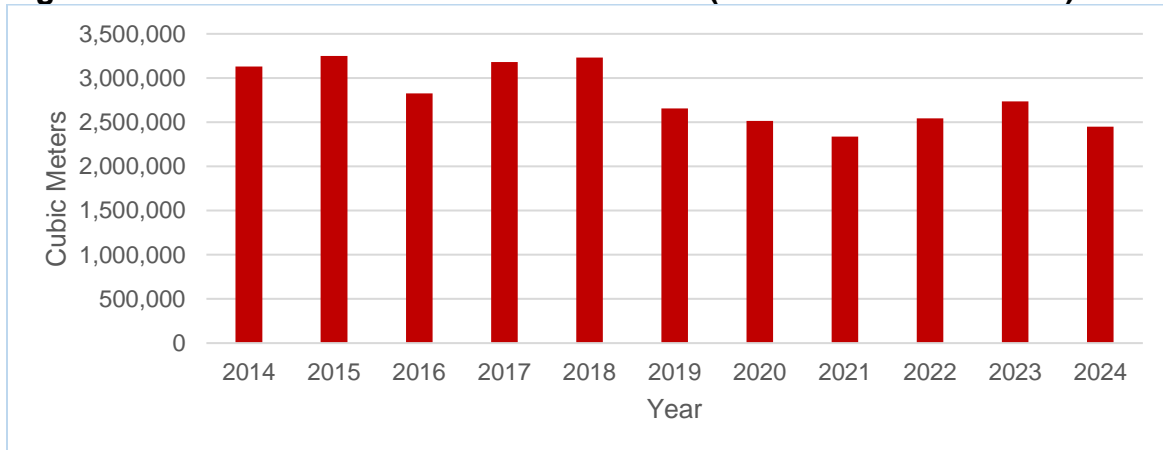


Figure 2: Annual Water Sales since 2014 (2024 to end October)

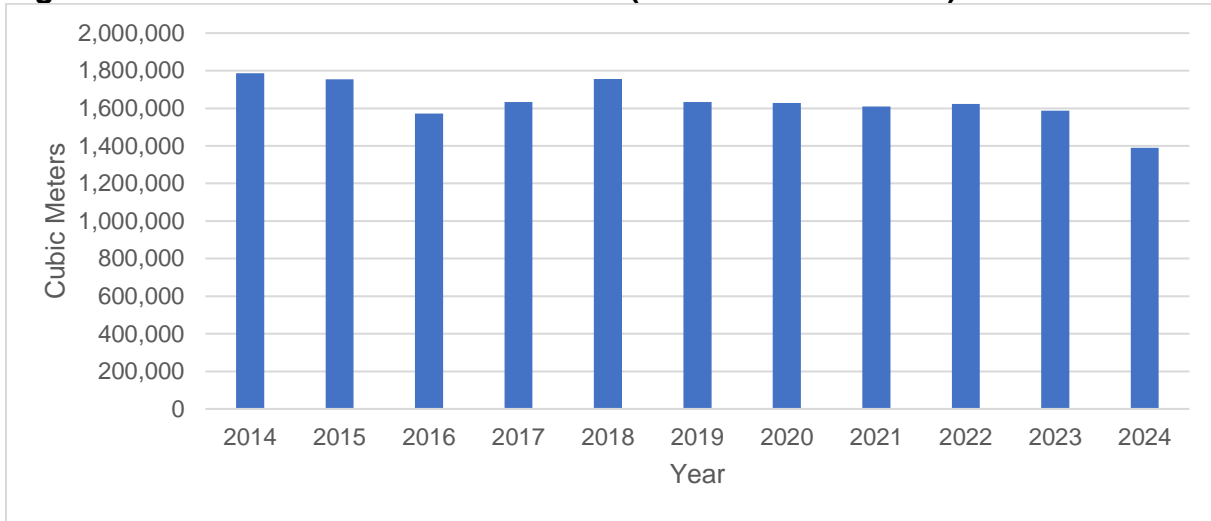


Figure 3a: Monthly Purchased Volume vs. Monthly Metered Consumption

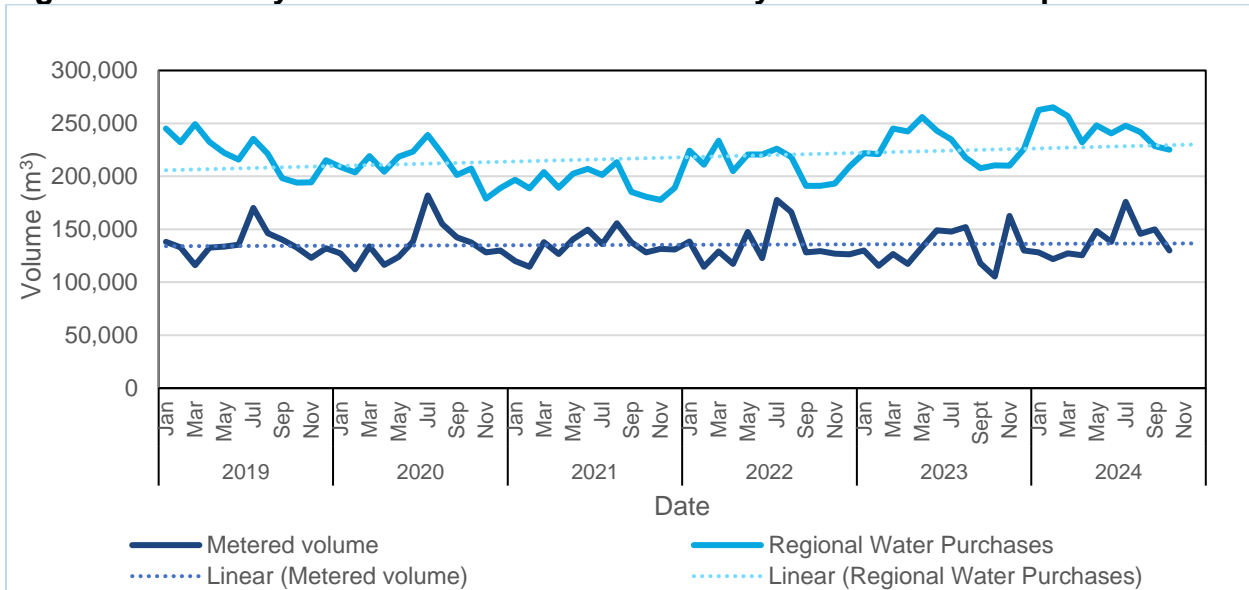


Figure 3b: 2024 Monthly Purchased Volume vs. Monthly Metered Consumption

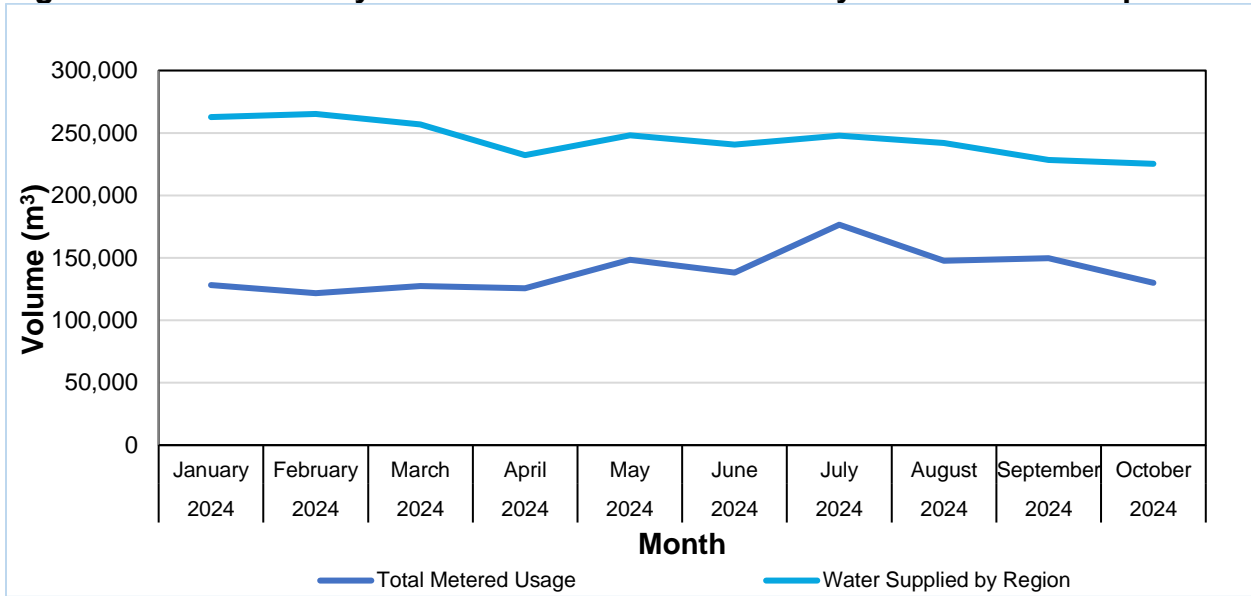


Figure 4: Difference Between Purchased Water and Metered Consumption

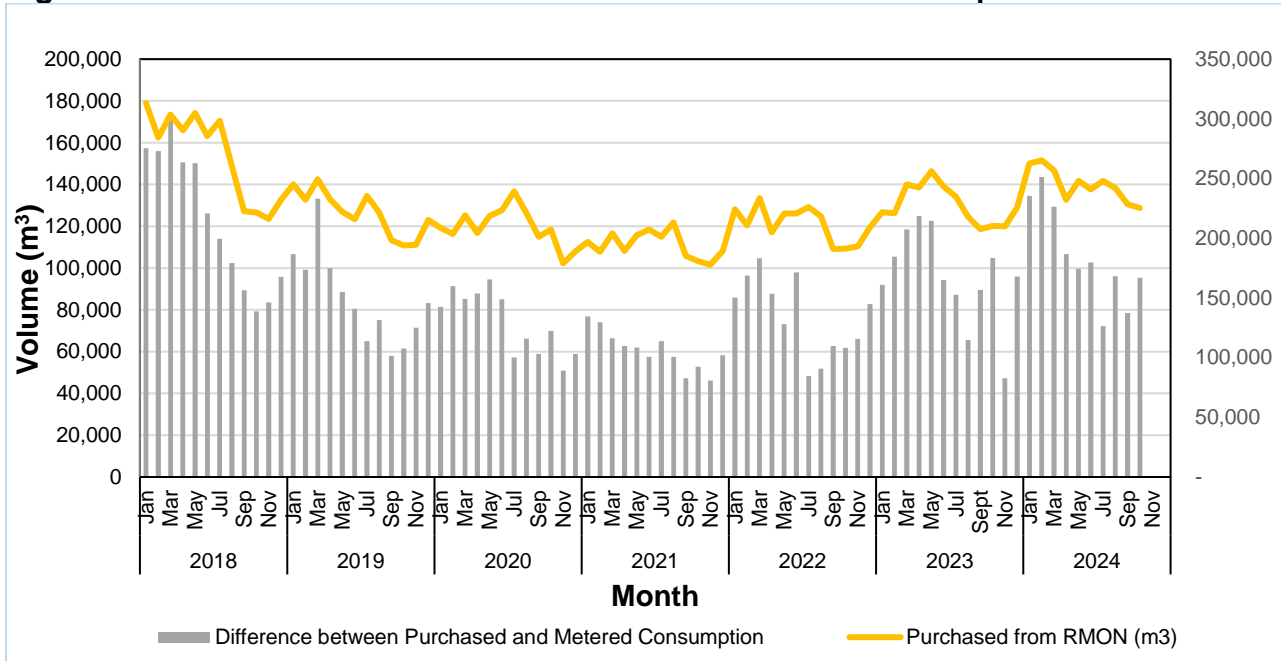
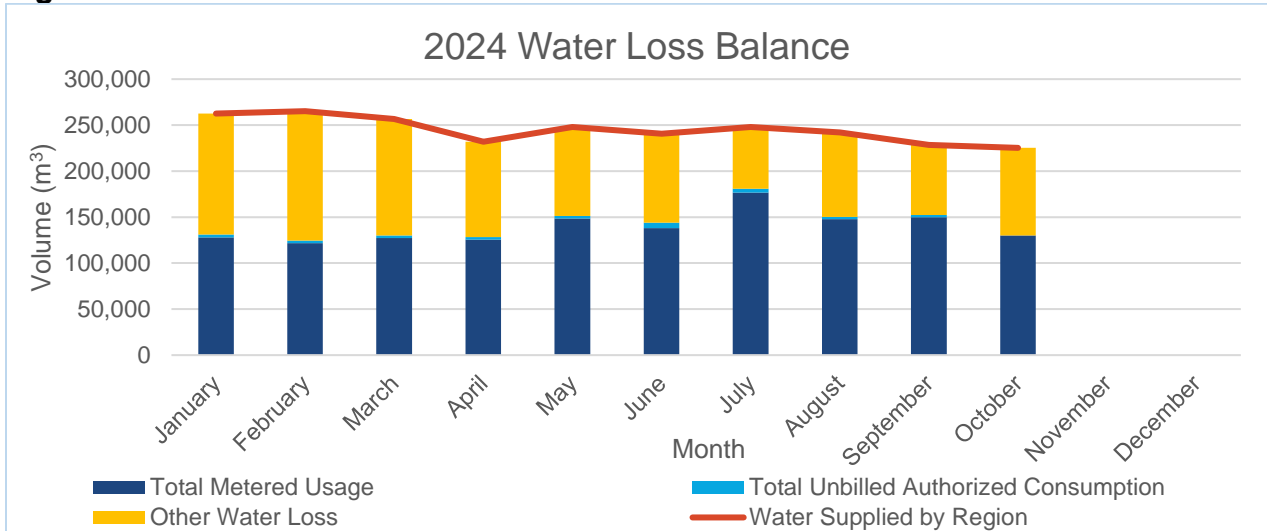


Table 3: Total water purchased from the Region and metered consumption from 2018 to 2024 (end of October).

	2018	2019	2020	2021	2022	2023	2024*
Purchased from Region	3,233,180	2,656,040	2,515,060	2,335,980	2,543,630	2,735,980	2,449,111
Metered Consumption	1,754,042	1,632,548	1,625,882	1,607,686	1,622,345	1,587,388	1,388,955

Figure 5: Water Loss Balance



Port Colborne is actively addressing water loss issues in the water distribution system through a combination of strategic initiatives and operational improvements. The City has prioritized the development and ongoing implementation of a comprehensive Water Loss Strategy, which involves detailed monitoring and reporting of water loss metrics, including monthly percent water loss. Key actions include targeted infrastructure upgrades, proactive leak detection programs, and robust data analysis to identify and prioritize areas of concern, specifically related to water meters.

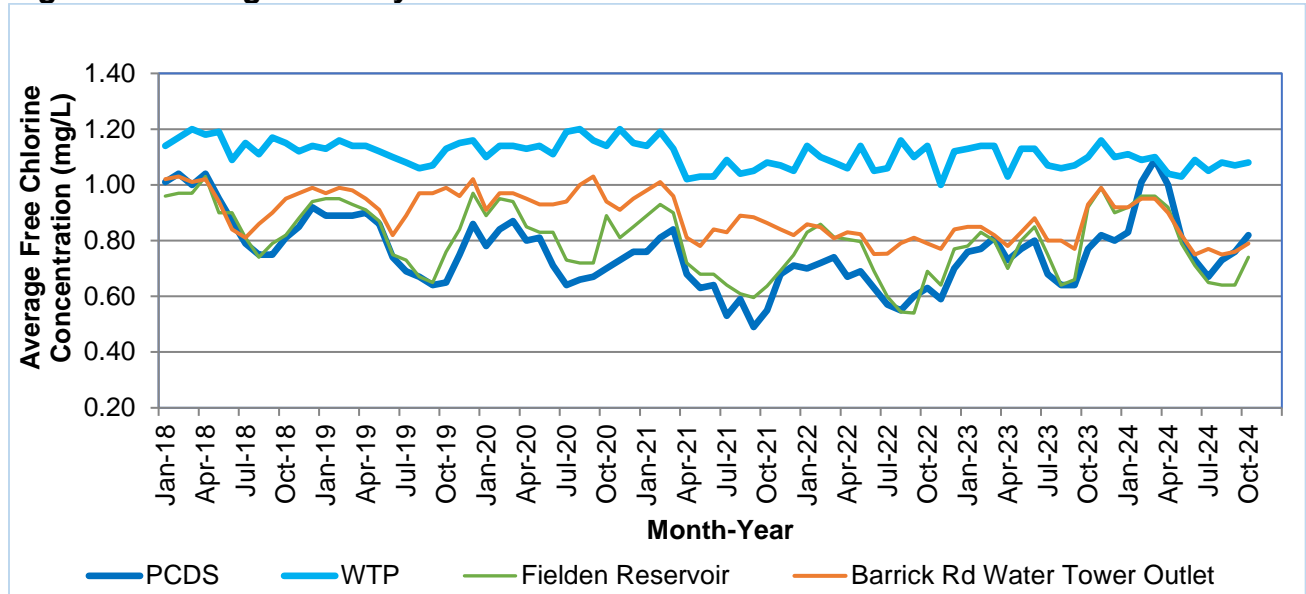
h. Raw Water Supply and Water Quality Trends

The Niagara Region (Region) supplies all drinking water to the PCDS, and as such, is responsible for all testing of the raw water supply (Welland Canal). Results of the testing are provided annually to the City in the Region’s annual report.

Within the PCDS, the City is required to collect samples on a routine basis and evaluate them for several parameters. Microbiological samples, in addition to free chlorine samples are the best indicators of water quality trends within the PCDS.

Figure 6 shows the average monthly free chlorine measured in the PCDS and from the Region locations. Chlorine trends in the PCDS follow the concentrations in the Fielden reservoir closely. Seasonal variation is apparent. In 2021, there were some concerns about decreasing trends in chlorine from the plant. In 2022, due to quality concerns, staff approached Niagara Region and requested an increase in chlorine at the water tower. City staff will continue to work with the Region to ensure that the Region continues to target chlorination at the tower and optimizing chemical dosing for seasonal fluctuations.

Figure 6: Average Monthly Free Chlorine Concentration in the PCDS



Quarterly trihalomethanes (THM) have remained relatively stable since 2013 (Table 4).

Table 4: Average Annual Trihalomethanes Concentrations – 2009-2024

Year	Average Trihalomethanes (µg/L)
2009	31.00
2010	25.25
2011	7.50
2012	16.75
2013	26.00
2014	25.50
2015	19.12
2016	26.08
2017	22.30
2018	29.04
2019	26.88
2020	31.50
2021	20.75
2022	21.00
2023	16.78
2024	19.2

The City began sampling for Haloacetic Acids (HAAs), as required by the regulation, on a quarterly basis in 2017. HAAs have remained far below the Ministry’s maximum acceptable concentration of 0.08 mg/L. In 2023, the average was 0.008 mg/L and in 2024 the average was 0.006 mg/L. These results indicate that HAAs are not a water quality issue in the distribution system.

i. Follow up on Action Items from Previous Management Reviews

Action Items:

1. Leak detection on Region's trunk watermain – the Region does not do active leak detection on their trunk watermain, however, it has been indicated that there is an appetite to pursue program(s).
 - **STATUS:** Region WTP Staff indicated in November 2024 they have procured a company to complete pipe condition assessments on their transition mains. Will follow up with timeline.
2. Asset Management Planning Regulation – O. Reg. 588/17 came into force on January 1, 2018.
 - **STATUS:** INS presented to Council in Spring 2024 and set work plan for capital replacement program.
3. It was discussed that when buildings are demolished, that the Utilities group needs to be kept in the loop to ensure that the water service and sewer lateral are correctly decommissioned to ensure the service is not leaking and that the sewer lateral is not allowing infiltration into the wastewater collection system.
 - **STATUS:** Utilizing CityWide to track.
4. Find out the status of decommissioning the Fielden reservoir to the Region and acquire relevant information.
 - **STATUS:** Region staff have indicated there is no immediate plan to decommission the Fielden Reservoir.
5. Change the record keeping process for operators to avoid expired product – each individual operator will be responsible for their own materials and equipment.
 - **STATUS:** Water Operators are now responsible for their own equipment – each operator has a testing kit for sampling and this helps with ownership and expiry checks.
6. Adopt AWWA processes for calculating and identifying water loss.
 - **STATUS:** Training for staff scheduled in January 2025, alongside other Regional and area municipal staff.
7. Explore the option of having an operator do nighttime assessment of leaks.
 - **STATUS:** Staff determined that this was not necessary at this time, as we are in the process of installing hydrant AI technology and data loggers.
8. Set KPIs in the new year to maintain the focus on water.
 - **STATUS:** Track a variety of metrics for the W/WW Rates Budget and new dashboard for water loss.
9. Research smart hydrants (AI) that can detect weak pressure points.
 - **STATUS:** RFP for AI hydrants was accepted in Fall 2024. Mobilization is starting in December 2024.
10. Review process with Building for laterals to be upgraded along with public side.
 - **STATUS:** Grant website has been launched to promote private side grant.
11. Explore the feasibility of updating the water use bylaw to require new builds to replace services.

- STATUS: An updated water use bylaw has been drafted and is currently being reviewed. Will go to the public for feedback before submitting to Council.
12. Look into metering water for development.
- STATUS: Discussing concurrently with the new water use bylaw and proposing new water for construction fees in early 2025.

j. Status of Management Action Items Identified Between Reviews

There were no Management Action Items identified between management reviews.

k. Changes that Could Affect the QMS or the PCDS

As a result of a reorganization of staff in June 2024, the PCDS is now managed by the Environmental Services Division, which includes the ORO and Water Operators. The Manager of Environmental Services is now classified as “Top Management”, the Supervisor of Water/Wastewater as ORO, the Environmental Compliance Supervisor as backup QMS Representative, and the Environmental Analyst as the QMS Representative. The two supervisors began in their roles in November 2024 and the analyst role is currently being filled. The Operational Plan has been updated to reflect these changes.

Staff are not expecting any major changes to impact the QMS or PCDS at this time. However, staff are monitoring developments surrounding the new battery separator plant. Water infrastructure required for the plant may require the PCDS to move from a Class 1 to a Class 2 distribution system. Staff will continue to monitor progress and report any developments to the PCDS management team and Owner when available.

l. Consumer Feedback

There were 13 water quality complaints 2023 and 4 so far in 2024. Where the source of the complaint could be determined, fire flow testing was the most common source. Other distribution activities that may result in complaints are valve turning activities and hydrant flushing.

m. Resources Needed to Maintain the QMS

There are currently adequate resources to maintain the QMS. The Environmental Analyst will act as the QMS Representative and the Environmental Compliance Supervisor will act as the backup QMS Representative.

n. Results of Infrastructure Review

The Infrastructure Review must be completed once every calendar year. Staff undertook a comprehensive Infrastructure Needs Study (INS) during the reporting period. The results were brought to Council in spring 2024 alongside the Water Financial Plan.

The next Infrastructure Review will occur in December 2024. The Infrastructure Needs Study and Asset Management Plan will assist staff with capital planning.

At the time of writing this report, four watermain are under construction. The 2025-26 construction program is being finalized and staff are evaluating the possibility of using trenchless technologies (i.e., watermain lining) for future watermain projects.

o. Operational Plan Currency, Content and Updates

The Operational Plan was endorsed by the new City Council in 2023. Other than administrative changes and staffing updates, no major updates were completed.

p. Staff Suggestions

Staff suggestions, where applicable, are captured under the QMS Change Management Log.

In Fall 2024, staff consolidated several tracking records to develop a new QMS Change Management Log. This log will act as a central database for all changes to QMS documents and records, staff suggestions/preventative actions, and Nonconformance and Corrective Action (from audits and inspections). Staff are optimistic that this improvement will increase efficiencies and allow the team to address and track concerns more effectively.

In September, the Analyst met with Water Operators to obtain their feedback on processes, policies, and programs. This feedback was recorded in the QMS Change Management Log and will be discussed with the appropriate staff.