



Department/Division:	Public Works / Pelham Distribution System
Report:	Municipal Summary Report
Covering:	January 1, 2023 to December 31, 2023

## 1. Purpose

This report was prepared by the Director of Public Works and Manager of Public Works for the Owner of the Pelham Distribution System, the Corporation of the Town of Pelham, to be presented to Council.

As required by QMS-PROC-021 in the Town of Pelham’s Quality Management System, results of the annual management and infrastructure review shall be presented to the Owner through the Annual Municipal Summary Report.

As legislated, Council is responsible as the Owner of the water system for ensuring these reports are prepared and available to the public each year.

To enhance the communication and understanding of these reports, this Municipal Summary Report contains additional non-legislated information on the drinking water system operations and water quality.

## 2. Definitions

“*DWQMS*” means Drinking Water Quality Management Standard.

“*MECP*” means Ontario Ministry of the Environment, Conservation, and Parks.

“*WTP*” means Water Treatment Plant.

“*QMS*” means Quality Management System.

“*OIC*” means Operator in Charge of the distribution system, as per O.Reg 128/04

“*ORO*” means Overall Responsible Operator of the distribution system, as per O.Reg 128/04

“*HAA*” means Haloacetic Acid. Haloacetic Acids in drinking water are a by-product of Chlorine disinfection.

“*THM*” means Trihalomethanes. Trihalomethanes in drinking water are a by-product of Chlorine disinfection.

“*CFU*” means Colony Forming Units. It is a unit of measure for bacteriological contaminants in drinking water.

“*HPC*” means Heterotrophic Plate Count. It is a method that measures colony formation on culture media of heterotrophic bacteria in drinking water.

### 3. System Overview

The provision of drinking water for residents in the Niagara Region is a responsibility shared between two tiers of municipal government. The Niagara Region is responsible for treatment and supply of the water to the Town of Pelham via transmission mains. The Town of Pelham is responsible for distributing water to local consumers via its own network of distribution pipes.

The Pelham Distribution System is a Class 2 water distribution subsystem. The system consists of approximately 86 km of watermains varying in size from 50mm to 400mm diameter providing water to approximately 14025 residents through 5399 accounts within the general urban area.

The service area is approximately 14 km<sup>2</sup> and includes the Villages of Fonthill, Ridgeville and Fenwick. The system receives treated drinking water from the Welland Water Treatment Plant located on Cross Street in the City of Welland. The treatment plant is owned and operated by the Regional Municipality of Niagara. The plant receives its raw water from the Welland Recreational Canal. Treated water is transmitted to the Town by way of a 750mm diameter watermain to the Shoalts Drive Reservoir. The reservoir, which includes chlorination, is also Regionally owned and operated. Water enters the Pelham Distribution System at the reservoir outlet.

The Town of Pelham owns and operates a water filling station with side-fill and a backflow prevention device to serve consumers outside of the urban boundary who do not have direct access to the distribution system. Water haulers must obtain approval from the Niagara Region before being permitted to use the station.

The Town of Pelham owns a small pressure booster pump station which is located on the Niagara Region’s Elevated Tank Property. This pump is used to improve water pressure in the Chestnut Ridge development area. The normal operating pressure in the area is low due to its geographic location in relation to the elevated tank that supplies distribution supply and pressure by way of gravity.

The Town of Pelham Distribution System consists of 5 pressure zones separated by Pressure Reducing Valves (PRV). In Pelham, because of our unique topography, maintaining safe operating pressure within the system is a delicate balance. Increasing pressure in one area can cause damage to municipal infrastructure and private plumbing downstream.

### 4. Water Quality Testing

Ontario Regulation 170/03 prescribes water quality testing requirements for municipal drinking water systems.

The requirements prescribed by the MECP include: test parameters, number of test samples, frequency of testing, location of testing, reporting of test results, and reporting and corrective action of adverse test results, amongst other items. Operational guidelines are parameters used to monitor the general quality of water and the performance of the system.

In 2012, the Town of Pelham qualified for an exemption from collecting lead samples from residential or non-residential plumbing under the community lead testing program; however, reduced sampling must still take place in four locations within the distribution system. As such, the Town has continued with its lead testing program in the distribution system, with no concerns.

The Town carried out testing in 2023 as prescribed by legislation.

In addition to the prescribed sampling, the Town tested for water quality in response to complaints from consumers. Complaints generally refer to colour, odour, pressure, particulate, supply and/or taste.

The Town responded to nine water quality/supply complaints in 2023. Four were related to low pressure concerns, four to water colour, and one to odour concerns. All were resolved promptly.

Taste and odour episodes are often related to a natural phenomenon caused by seasonal biological changes in the source water. These changes may produce odour-causing chemical compounds that can be detected by humans at very low levels. Most municipalities in Ontario which obtain their water supply from surface water sources experience this problem periodically in the summer or early fall. Private plumbing fixtures including small water filtration systems and drain traps can also contribute to concerns regarding taste and odour of municipally supplied water. Once identified, most of these can be resolved quickly and easily through regular maintenance completed by the property owner.

Water Treatment Plants are equipped with various filtration systems designed to reduce the effects of taste and odour but may not eliminate it entirely.

**Table 1- Testing requirements and results.**

<b>Table 1 – 2023 Testing Summary</b>					
<b>Parameter</b>	<b># Samples Required</b>	<b># of Samples Taken</b>	<b>Legislated Requirement</b>	<b>Guideline</b>	<b># of Samples Exceeding Limit</b>
Esherichia Coli (bacteriological)	22 per month	~ 44 per month	0 CFU/100mL Not detected	--	0
Total Coliform (bacteriological)	22 per month	~ 44 per month	0 CFU/100ml Not detected	--	<b>1</b>
HPC (heterotrophic plate count)	6 per month	~ 44 per month	--	< 500 CFU/100mL (AWWA c651-14)	0
Trihalomethanes	1 per quarter	3 per quarter	100 ug/L (annual running average)	--	0

Haloacetic Acids	1 per quarter	3 per quarter	80 ug/L (annual running average)	--	0
Free Chlorine	7 per week	13 per week	>=0.05 mg/L <=4.0 mg/L	--	0
pH	8 per year	8 per year	--	6.5 – 8.5 Operational guideline	0
Alkalinity	8 per year	8 per year	--	30 – 500 Operational guideline	0
Lead	8 per year	8 per year	0.01 mg/L	--	0
Pressure	None	5 per month (taken from each pressure zone)	--	>=28psi	0

## 5. Adverse Water Quality Incidents

An “adverse water quality incident” refers to a water quality test result exceeding the legislated requirements shown in **Table 1**.

A total of **one** incident of adverse water quality conditions was detected in the system in 2023. These incidents were resolved promptly through resampling and testing as per QMS FORM 017 Response to Adverse Water Quality Incident.

## 6. MECP Drinking Water System Inspection Report

In October 2023, the Town’s distribution system underwent an inspection by a MECP Drinking Water Inspector. The inspection included a review of operational records from 2023.

The Town received a final inspection rating of 100%.

The Pelham Distribution System Inspection Report is included in the 2023 Pelham Distribution System Summary Report.

## 7. Regulatory Updates

There are no new regulatory updates to report on at this time.

## 8. Competency, Licensing and Training

Operator training is required by law to maintain drinking water licenses and ensure competency. Operators and key water staff participate in a number of diverse course offerings aimed at broadening their knowledge.

The Town of Pelham owns and operates a Class 2 Water Distribution System and a Class 2 Wastewater Collection System. The Town of Pelham Water Division currently has a compliment of a Manager of Public Works, Supervisor of Water and Wastewater, and three Water Operators. All water and wastewater operators must maintain a Water Distribution License and Waste Water Collection Facility License to operate the Town’s systems.

## 9. Flow Data

Water consumed by the Town of Pelham is measured by the Niagara Region and provided monthly to the Town. In 2023, a total of 1,494,110 cubic meters (m<sup>3</sup>) of water flowed to the Town of Pelham in total. (1 cubic meter of water = 1,000 litres).

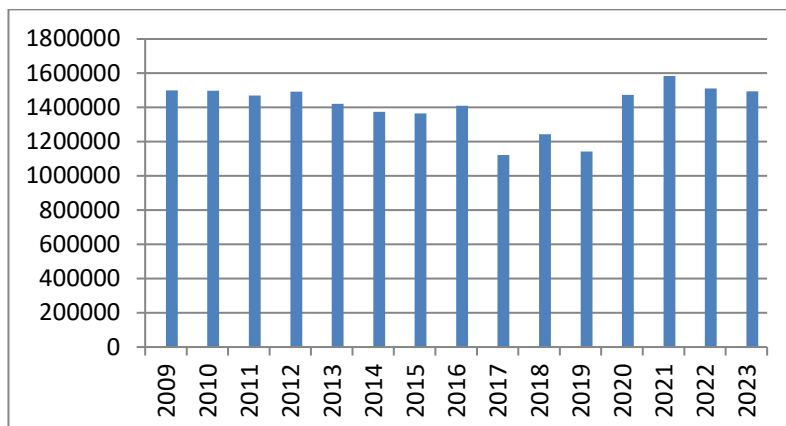
The Town of Pelham’s accounted water use which includes revenue and accounted non-revenue water use totaled 1,293,253m<sup>3</sup>. The total volume of unaccounted for water in 2023 was 200,857m<sup>2</sup>. Water loss is the difference between the total flow input and the accounted for water volume shown as a percentage. In 2023 the Town of Pelham’s water loss was 13%.

**Table 2 – Annual Totals**

Year	Supply (m <sup>3</sup> )
2012	1,491,850
2013	1,420,220
2014	1,374,130
2015	1,364,450
2016	1,410,410
2017	1,122,740
2018	1,243,900
2019	1,150,570
2020	1,473,630
2021	1,584,270
2022	1,509,890
2023	<b>1,494,110</b>

The totals in this table are also reflected in the graph below, **Figure 1**

**Figure 1 – 2023 Total Water Supplied by the Region of Niagara**



All water demands were met in the system; thus the Town was not required to implement the additional use restrictions under section 4(p) of the Water Supply By-law No. 3198-2011.

The Town’s Drinking Water License does not limit demand of flows to the Town, so a comparison to license limits is not required. The 2023 average daily consumptions are shown in **Table 3**, along with the maximum daily flows for each month.

**Table 3 – 2023 Daily Water Usage**

Month	Average Daily Flow (m <sup>3</sup> )	Maximum Flow in One Day (m <sup>3</sup> )
January	3395	4120
February	3354	4260
March	3358	3900
April	3437	4410
May	4732	8330
June	6054	<b>8830</b>
July	5060	6290
August	4551	5600
September	4667	6090
October	3788	5210
November	3354	3910
December	3432	4860

The 2023 highest demand day occurred in June, which aligns with the typical high monthly demands in the summer, as well as pool opening season.

No servicing concerns are noted. The Niagara Regional Master Servicing Plan (MSP) lists the firm capacity of the Shoalts Drive Reservoir to be 19,400 m<sup>3</sup> / day. The MSP has identified future projects including the replacement of the Pelham Elevated Water Tank and increased pumping capacity at the Shoalts Drive Reservoir to accommodate projected 2041 servicing needs.

## 10. Capital Projects and Purchases

The Town updated the 20-year capital plan. Although efforts to ensure it represents the most current water distribution system improvement needs were made, many allowances were necessary based on competing capital infrastructure needs.

Two watermain replacement projects were completed in 2023 including the replacement of cast iron watermain on Pelham Street from Spruceside south to the Pelham/Welland limit. And Station Street from Lyndhurst to Hurricane Road.

## 11. Rehabilitation and Repairs

A Total of **0** watermain breaks occurred in 2023.

In 2023 Town of Pelham Staff replaced 4 leaking water services.

Regular maintenance and repairs are required at our Chestnut Ridge Booster Pump Station. Since installation these have been completed by the Niagara Regional Staff through a Maintenance Agreement. The Town continues to work closely with the Region of Niagara to maintain close communication about pressure or supply interruptions related to this pumping station.

The Town of Pelham owns and operates a Water Loading Station at 294 Canboro Road. Minor maintenance tasks are performed throughout the year including backflow prevention device testing and sampling programs.

## 12. Backflow Prevention

The Ontario Building Code requires backflow prevention devices are to be installed at each connection to new buildings where a potentially severe health hazard may be caused by backflow. The Town relies on the Building Code to ensure that backflow preventers are installed in new buildings.

In 2023 Staff will begin surveying ICI locations to create a backflow preventor contact and mailing list. Letters will be sent in 2024 reminding owners of backflow prevention devices that maintenance and testing of backflow prevention devices should be undertaken by the owner annually.

## 13. Leak Detection

The Town of Pelham facilitated a leak detection program in 2023. 6km of cast iron watermain were tested acoustically for leaks. No leaks were evident at the time of testing.

## 14. Municipal Drinking Water Licensing Program

The Municipal Drinking Water Licensing Program is a five-stage initiative by the MECP under the Safe Drinking Water Act, 2002. The Town of Pelham maintains its Certificate of Accreditation as an Operating Authority for its water distribution system, and the system license and permit(s) are in place. **Table 6** lists the status of the key elements for water licensing.

**Table 6 – Municipal Drinking Water Licensing Program Status**

Stage	Status
License #072-101	Expires July 22, 2024 – Receipt of Renewal Application by MECP January 8 <sup>th</sup> , 2024
Permit #072-201	Active and current – No expiry
Operational Plan	Endorsed by Council March 21, 2021
Accreditation	Maintains full accreditation. Expires April 29, 2024
Financial Plan	Updated in 2023, covering 2024 – 2029 inclusive

## 15. Quality Management System

The Quality Management System (QMS) is fully integrated into Water operations and maturing and improving with time. Council should remain aware of its commitments in the QMS Policy, which is the framework upon which to set the QMS.

The current Operational Plan is available through the network or in printed copies at select locations.

## 16. Infrastructure Review

The Infrastructure Review is a required component of the DWQMS, where infrastructure includes piping and related infrastructure, but also buildings, workspace, process equipment, hardware, software, and supporting services such as transport or communication. The purpose of the review was to assess the adequacy of the infrastructure necessary to operate and maintain the water system.

Recommendations from the annual 2023 review were translated accordingly into the 2024 water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

The Infrastructure Review has been included in **Appendix A** of this report.

## 17. Management Review

Management review is a required component of the DWQMS. In November 2023, the Director of Public Works and Manager of Public Works completed a management review of the QMS in alignment with the budget and capital planning process, in accordance with the Town's Operational Plan. Recommendations will be translated accordingly into future water operational and capital budget requests, and into the 20-year Capital Plan updates, and are communicated in this report below.

The Management Review has been included in **Appendix B** of this report.

## 18. Internal Audit Results

Results from the QMS internal audit performed in November 2023 are summarized. The internal audit must be performed once per year.

The Internal Audit found Five (5) opportunities for improvement. All opportunities for improvement were discussed during management review as action items.

The Internal Audit Results have been included in **Appendix C** of this report.



## 19. External Audit Results

In April 2023, the Town engaged NSF as a third party auditor to the QMS, in accordance with the Town's drinking water license requirements.

No non-conformances or corrective action requests were identified. One opportunity for improvement was identified.

The External Audit Results have been included in **Appendix D** of this report.

## Appendix A - Infrastructure Review

### Infrastructure Review Summary

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The Corporation of the Town of Pelham Drinking Water Distribution System	
<b>Meeting Location:</b>	Tice Road Operations Centre
<b>Date / Time:</b>	16 May 2023, 9:30 – 11:00am
<b>Attendees:</b>	Jason Marr (DPW), Ryan Cook (MPW), Dave Vaccaro (SWW)
<b>Minutes Recorded by:</b>	Sandra Tavares (Facilitator, <i>Tavares Group Consulting Inc.</i> )
<b>Minutes to be distributed to:</b>	DPW, MPW, SWW

Infrastructure Review Meeting Minutes	
Details / Discussion Points / Issues Identified	Recommendation (for budget ask) / Action Items (tracked via QMS LIST 006)
Outcomes of the <b>Risk Assessment</b> (check what applies): <input type="checkbox"/> 12-month annual <input type="checkbox"/> 24-month annual <input checked="" type="checkbox"/> <b>36-month reassess</b>	<p>No additional recommendations or action items.</p>
<ul style="list-style-type: none"> <li>Reviewed, discussed and confirmed the 19-Apr-2023 Risk Assessment Meeting results including Town of Pelham's <b>Critical Control Point (CCP), loss of chlorine residual</b>, and associated Critical Control Limit (CCL = 0.20 mg/L after routine flush) including processes in place to maintain (i.e., Spring/Fall and watermain flushing confirmed by SWW) and monitoring through weekly distribution system Cl<sub>2</sub> sampling with additional discussion added to QMS LIST 001 'Risk Assessment History' tab to finalise the 36-month Risk ReAssessment.</li> <li>No other risks / hazards to be addressed aside from backflow <b>linked to risk assessment outcome #11</b>) with the MECP recommendation which is re-opened from 17-Nov-2022 Management Review closure as per QMS LIST 006 Corrective and Preventive Action List and progress details added.</li> </ul>	
<b>Watermain</b> – servicing, replacement, monitoring, operating & capital needs, other	<p>No additional recommendations or action items.</p>
<ul style="list-style-type: none"> <li>Discussed the <a href="#">2023-2027 Approved Water [Capital] Budget</a> which includes:               <ul style="list-style-type: none"> <li>– <b>W02-23</b> \$30K for replacement fittings annually</li> <li>– Cast iron replacement projects were discussed, e.g.:</li> </ul> </li> </ul>	

**Infrastructure Review Summary**

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<ul style="list-style-type: none"> <li>- <b>W01-23</b> deferred to 2024 while <b>700286</b> scheduled from 2024 will take its place in 2023</li> <li>- although Emmett St. is scheduled for 2027, College St. is not yet reflected <b>700305</b> in 2027 where watermain breaks are common)</li> <li>- <b>700290, 700279</b>, etc.</li> <li>- It is still estimated by DPW and MPW that cast iron replacement will be complete by 2030</li> <li>• <a href="#">Water Long Range Financial Plan Pelham</a> was also referenced</li> <li>• Reviewed <b>2018-2023YTD break histories</b> to date as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' 'Watermain Break Summary' tab (with clarification from SWW):               <table border="1" style="margin-left: 20px; width: 100%;"> <thead> <tr> <th>Year</th> <th># of Breaks</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>9</td> <td></td> </tr> <tr> <td>2019</td> <td>13</td> <td>5 contractor- and 2 ageing-related, 5 cast iron</td> </tr> <tr> <td>2020</td> <td>12</td> <td>6 contractor-related, 6 cast iron</td> </tr> <tr> <td>2021</td> <td>2</td> <td>due to age / cast iron</td> </tr> <tr> <td>2022</td> <td>4</td> <td></td> </tr> <tr> <td>2023 YTD</td> <td>0</td> <td></td> </tr> </tbody> </table> </li> <li>- replacement process is dependent on funding/available reserves, wastewater, and roads needs</li> </ul>	Year	# of Breaks	Comments	2018	9		2019	13	5 contractor- and 2 ageing-related, 5 cast iron	2020	12	6 contractor-related, 6 cast iron	2021	2	due to age / cast iron	2022	4		2023 YTD	0		
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<p><b>Hydrants</b> – monitoring, servicing, operating &amp; capital needs, other</p> <p>2023 Hydrants and Q3 Valves with Management Review Action <b>2020-AI-02</b> to redefine valves (mostly as one quadrant done annually)/ hydrants quadrants map in progress rescheduled to Fall 2023 (from 2022 and 2021).</p>	<p>No additional recommendations or action items.</p>																					
<p><b>Main valves</b> – monitoring, servicing, operating &amp; capital needs, other</p>	<p><b>2023-AI-05</b> SWW to establish PRV maintenance budget and timeline (i.e.,</p>																					

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<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (tracked via QMS LIST 006)</b>
<ul style="list-style-type: none"> <li>• <a href="#">'Current Combined Water Ops 2015 onward spreadsheet'</a> 'Maintenance Activities' tab identifies <b>valve maintenance</b> taking place as above with all quadrants exercised and maintained as per SWW</li> <li>• <b>Existing Pressure Release Valves (PRVs)</b> – Region responsibility (e.g., Canboro) identified within the 2023 Operational Plan revisions with Town maintenance frequency identified</li> </ul>	<p>Yearly Test and confirm pressure, and which PRVs are scheduled for 2-3 Years isolate, clean, and maintain strainers and rubbers and 5 Year overhaul (e.g., strainer, rubbers as per OP) to be submitted ahead of Operating Budget deliberations <b>by 30-Jul-2022</b>.</p>
<b>Other appurtenances</b> – operating & capital budget needs, other	
<ul style="list-style-type: none"> <li>• <b>Bulk Station</b> is identified as a \$60K replacement in 6 years in the forecast as per SWW which is no longer needed as a result of unplanned overhaul reported by MPW. There is potential to find a new location but not a priority as per MPW.</li> <li>• <b>Water meter program</b> is based on replacement upon request by Water Billing Clerk given data is maintained by Corporate Services with capital to be re-evaluated ahead of 2034.</li> </ul>	<p>No additional recommendations or action items.</p>
<b>Inventory and Tools</b> – operating & capital needs, other	
<ul style="list-style-type: none"> <li>• No additional requirements since 2 <b>Colorimeters</b> (4 in total) were replaced in 2019</li> <li>• <b>NEW Hydrant Flow Tester</b> ordered and scheduled to arrive tomorrow as a result of NFPA requirements</li> </ul>	<p><b>2023-AI-06 MPW</b> to document Hydrant Flow Tester process (e.g., used every 10 years?) either in existing (e.g., QMS SOP 002, O&amp;M, QMS PROC 017) or new procedure and conduct Operator training <b>by 30-Jun-2023</b>.</p>
<b>Software / hardware</b> – capital needs, other	
<ul style="list-style-type: none"> <li>• <b>Operator software tablets Action (2020-OFI-11)</b> is rescheduled for 2024 (from 31-Dec-2022 and Sep-21) with IT support and Public requests as priority and maintenance activities following</li> </ul>	
<b>Pumping Station</b>	
<ul style="list-style-type: none"> <li>• Region attends the site once / month and contacts the Town in the event of an issue, none reported. Although the Region does intend on moving forward with the</li> </ul>	<p>No additional recommendations or action items.</p>

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<p>Water Tower which will obsolete the pumping station (related to Risk Assessment Outcomes #s 1 and 2), it is still in the design stage with property acquisition unknown and Project Manager changed although not known who. Uncertainty of project start, previously identified as 2023 (refer to <i>OPEN 2020-OFI-05 2025 MECP Inspection Recommendation</i>).</p>																																																																															
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<p>As per 17-Nov-2022 Management Review meeting, number of Operators OK until 2025 when work is required on the system as per KPMG report. DPW highlighted the addition of a casual in 2021 (student / co-op).</p>						<p>No additional recommendations or action items.</p>																																																																									
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<p>Annual summary in 'Complaint Summary' tab of '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed. Previous increase in odour complaints in 2021 (6 vs. 4 reported during Infrastructure Review and now 1 as per Current Combined) was discussed and 1 was noted as regulatory. Odour to be tracked as part of new maintenance system.</p>																																																																															
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<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (tracked via QMS LIST 006)</b>
<ul style="list-style-type: none"> <li>• <b>QMS LIST 006 Corrective Action List</b> <ul style="list-style-type: none"> <li>- 2020-OFI-05 OPEN MECP Recommendations were not deemed as BMPs (rescheduled to 2025 pertaining to Region pump station related to Element 14),</li> <li>- 2021-BMP-01 (GPS equipment for valves scheduled to 2025) and</li> <li>- 2023-BMP-02 MECP inspection operator free chlorine residual logs and use of wet tap documentation of Operators and use of watermain commissioning form verification at next scheduled Nov-2023 Internal Audit</li> </ul> </li> <li>• There are no additional Element 14 actions aside from those listed here, 2020-OFI-11 related to software tablets (2025) and 2022-OFI-24 to be confirmed during this meeting in relation to updated Financial Plan (2024)</li> </ul>	<p>No additional recommendations or action items.</p>

## Appendix B - Management Review



**Management Review Meeting Record**

Revision #01 Document #QMS FORM 027

<b>The Corporation of the Town of Pelham Drinking Water Distribution System</b>	
<b>Meeting Location:</b>	Tice Road Operations
<b>Date / Time:</b>	November 16, 2023, 1:30-3:00pm
<b>Attendees:</b>	Ryan Cook (MPW and representing Jason Marr, DPW), Dave Vaccaro (SWW), TGC Facilitator (Sandra Tavares)
<b>Minutes Recorded by:</b>	Sandra Tavares (TGC)
<b>Minutes to be distributed to:</b>	DPW, MPW and Council

Management Review dated 17-Nov-2022 was communicated 21-Feb-2023 via Resolution 8.3.3 as per Operational Plan (rev.17, 17-Oct-2023) Appendix A.

Management Review Minutes are located at 'ops(M:)\Public Works & UTILITIES DEPARTMENT\Water Distribution System\DWQMS\Management Review' by year.

<b>Management Review Meeting Minutes</b> (completion of Action Items to be tracked via QMS LIST 006)				
<b>Input</b>	<b>Details / Discussion Points / Issues Identified /Decisions Made</b>	<b>Action Item(s)</b>	<b>Responsibility</b>	<b>Proposed Due Date</b>
1)	<p><b>NO</b> Incidents of regulatory non-compliance:</p> <ul style="list-style-type: none"> <li>- Last <a href="#">MECP Inspection</a> took place 3-23-Jan-2023 with 1 Non-Compliance (<a href="#">QMS LIST 006</a> COMPLETE 2023-NC-08) and a total of 4 findings (2023-BMP-02 which remains OPEN to be verified as part of the 7-Dec-2023 TGC Onsite day along with the COMPLETE 2023-OFI-27 and -28) and 100% confirmed via 3-Feb-2023 MECP letter provided via email.</li> <li>- <b>2020-OFI-05</b> remains to be determined by Region, estimated 2025:               <ul style="list-style-type: none"> <li>i) Town baffles/mixing systems/rechlorination stations installations, impact of higher pressure on older watermains and adjusting Pressure-Reducing Valve (PRV) strategies accordingly, and</li> <li>ii) visiting the new Port Colborne Barrick and King St. Roads and Well and Bemis Elevated Tanks for issues during construction and decommissioning / demolition.</li> </ul> </li> </ul> <p>Refer to Item 14) below for 2021-BMP-01.</p>	Not applicable (N/A)	N/A	N/A

**Management Review Meeting Record**

Revision #01

Document #QMS FORM 027

2)	<p>Incidents of <a href="#">adverse drinking-water tests</a>:</p> <ul style="list-style-type: none"> <li>- <b>3-2022 Adverse Water Quality Incidents (AWQIs) Total Coliform (TC) and high residuals</b>, and 1 TC identified during the Internal Audit for 14-Nov-2023, likely lab error as per SWW and MPW; new more workable QMS FORM 017 is confirmed as being used being used</li> <li>- Previously, <b>2-2020 TC and high chlorine</b> 9-Sep (151917, resolved 14-Sep) and 25-Jun (150397, resolved 29-Jun) and <b>4 incidents in 2015</b> as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' 'Maintenance Activities' tab.</li> </ul>	<p><b>No need for investigation of 2022 and 2023 AWQIs as per Internal Audit 2022-OFI-26</b></p>	N/A	N/A
3)	<p>Deviations from Critical Control Limits and response actions:</p> <p><b>QMS FORM 008 Chlorine Residual Sampling did not identify any deviations.</b></p>	N/A	N/A	N/A
4)	<p>The effectiveness of the <a href="#">risk assessment process</a>:</p> <ul style="list-style-type: none"> <li>• <b>Re-Assessment</b> completed 16-May-2023 as part of Review of Infrastructure with DPW and MPW, which addressed the recent MECP cybersecurity threat, reviewed for each activity or process step and determined to be applicable to the Region (i.e., Contamination of incoming supply water, including chemical spill of incoming source water, and Inadequate chlorine residual) with some Pelham impact from a documentation perspective; one Critical Control Point, Distribution Loss of chlorine residual due to long residence time, remains</li> <li>• <b>Annual Review</b> last took place 30-Mar-2022</li> </ul>	<p><b>Risk Assessment Review / Review of Infrastructure preliminarily scheduled for 11-Apr-2024</b> (prior to NSF ReAccreditation – refer to <a href="#">QMS LIST 006</a> 'DWQMS Timeline' tab)</p>	TGC	
5)	<p><a href="#">Internal</a> / <a href="#">third-party</a> audit results:</p> <ul style="list-style-type: none"> <li>- <b>2023 Internal Audit</b> resulted in <b>5 Opportunities for Improvement</b> (Elements 2 QMS Policy, 5 Document and Records Control, 10 Competencies, 15 Infrastructure Maintenance, Rehabilitation and Renewal and 16 Sampling, Testing and Monitoring; 1 out of 5 <b>2022 Internal Audit</b> OFIs remain open, 2022-OFI-25/2022-IA-OFI-04 pertaining to valve and hydrant maintenance completion.</li> <li>- The <b>17-Mar-2023 NSF external DWQMS audit</b> generated 1 OFI pertaining to identifying standards other than AWWA for pipe, hydrants and valves which is now COMPLETE with the update of QMS PROC 013 to reference, as per MPW 16-May-2023, Niagara Region Water-Wastewater Project Design Manual</li> </ul>			

**Management Review Meeting Record**

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6)	<p>Results of emergency response testing:</p> <p>Last Conducted 14-Jul-2020 and scheduled for 7-Dec-2023 pertaining to DWQMS emergency scenarios associated with Pressure Release Valves. Awareness training to be completed same day and to include Public Works Administrative Assistant and Engineering Technicians as per MPW.</p>	<p><b>Originally scheduled for 13-Sep-2023 as per QMS LIST 006 'DWQMS Timeline' tab</b></p>	N/A	N/A
7)	<p>Operational Performance:</p> <ul style="list-style-type: none"> <li>• <b>Sampling results</b> were confirmed during the 2023 Internal Audit and confirmed by the SWW for <b>lead</b> (2x/year), and quarterly TriHaloMethane and HaloAceticAcid Running Annual Averages</li> <li>• <b>Maintenance</b> as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was also reviewed during the 2023 Internal Audit: <ul style="list-style-type: none"> <li>- 2023 <b>annual valve maintenance</b> this year for Quad 2 needs to have confirmation of all valves addressed as per open 2022 Internal Audit finding.</li> <li>- <b>annual hydrant maintenance</b> (including flushing, greasing, repair if needed) is also completed in 4 Quadrants although in one year (Spring to Fall) and in the process of being completed with QMS [Hydrants] LIST 003 to be used and updated (331 completed in 2023 as part of Quad 3 is not on this list) as part of 2023 Internal Audit <b>2023-IA-OFI-04 / 2023-OFI-34</b>.</li> <li>- <b>Semi-annual dead end blow off flushing</b> is completed in the <b>Spring</b> and <b>Fall</b> with the latest revision of Dead-End Blow-Off Flushing QMS FORM 001 to be used also as part of 2023 Internal Audit <b>2023-IA-OFI-04 / 2023-OFI-34</b>.</li> <li>- as per MPW and SWW, <b>PRV</b> maintenance is starting next year with an opportunity to utilize QMS [PRV] LIST 015 to track annual and 5-year inspections as part of 2023 Internal Audit <b>2023-IA-OFI-04 / 2023-OFI-34</b> and a new tower maybe eliminating some PRVs, as per MPW.</li> </ul> </li> </ul>	<p><b>2020-AI-01 COMPLETE 31-Jan-2023 to create a procedure for PRV maintenance within OP Section 15</b></p> <p><b>2020-AI-02 to redefine valves / hydrants quadrants map remains OPEN to be verified as part of 7-Dec TGC DWQMS coinciding with end of season maintenance</b></p> <p><b>2020-AI-03 to review Flushing QMS SOP 001 for frequency</b></p> <p><b>2022-AI-01 to develop a backflow SOP</b></p>	<p><b>SWW</b> (Reassigned from MPW)</p> <p><b>SWW</b> (Reassigned from MPW)</p> <p><b>SWW</b> (reassigned from MPW)</p> <p><b>SWW</b> (reassigned from MPW)</p>	<p><b>COMPLETED 31-Jan-2023</b> (reassigned from Apr- to Oct-21 and 31-Dec-2022)</p> <p><b>31-Jul-2023</b> (re-assigned from 1-Sep- and 31-Oct-21, Fall 2022 and 30-Apr-2023)</p> <p><b>COMPLETED 31-Jan-2023</b> (reassigned to 31-Jan-2022 from 1-Sep-2021)</p> <p><b>Q4 2023</b> (from Spring 2023)</p>
8)	<p>Raw water supply <a href="#">reports</a> &amp; drinking water trends:</p> <p>Region of Niagara reports reviewed annually by MPW identified no issues; 1TC AWQI resampled a couple of months ago was cleared.</p>	N/A	N/A	N/A

**Management Review Meeting Record**

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9)	Follow-up on actions from <a href="#">previous Management Reviews</a> :	N/A	N/A	N/A																																																																		
	Refer to Item 7 above and throughout Minutes for additional Management Review Action Items.																																																																					
10)	Status of management actions items identified between reviews:	N/A	N/A	N/A																																																																		
	Refer to Item 9) directly above as well as <a href="#">QMS LIST 006</a>																																																																					
11)	Changes that could affect the Quality Management System:	N/A	N/A	N/A																																																																		
	<ul style="list-style-type: none"> <li>- <b>Annual Calibration</b> completed 19-Apr-2023 and scheduled for Jan-2024 prior to NSF on-site Re-Accreditation contacted by SCG Flowmetrix</li> <li>- A new <b>maintenance management system</b> is expected 2025</li> </ul>																																																																					
12)	Consumer feedback (incl. <a href="#">complaints</a> ):	N/A	N/A	N/A																																																																		
	Annual summary in 'Complaint Summary' tab of ' <a href="#">Current Combined Water Ops 2015 onward spreadsheet</a> ' was reviewed:																																																																					
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="text-align: left;">Complaints / Year</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023 YTD</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Air</td> <td>3</td> <td>1</td> <td>1</td> <td>2</td> <td>2</td> <td>-</td> <td>-</td> <td></td> <td>9</td> </tr> <tr> <td style="text-align: left;">Colour</td> <td>4</td> <td>7</td> <td>3</td> <td>12</td> <td>3</td> <td>7 (construction)</td> <td>2</td> <td>3</td> <td>41</td> </tr> <tr> <td style="text-align: left;">Leaky Service</td> <td>5</td> <td>22</td> <td>3</td> <td>2</td> <td>5</td> <td>7 (mostly age)</td> <td>-</td> <td></td> <td>44</td> </tr> <tr> <td style="text-align: left;">Low Pressure</td> <td>9</td> <td>13</td> <td>5</td> <td>8</td> <td>7</td> <td>7</td> <td>5</td> <td>4</td> <td>58</td> </tr> <tr> <td style="text-align: left;">Odour</td> <td>1</td> <td>2</td> <td>1</td> <td>2</td> <td>1</td> <td>1</td> <td>1</td> <td>-</td> <td>9</td> </tr> <tr> <td style="text-align: left;">TOTAL</td> <td>22</td> <td>45</td> <td>13</td> <td>26</td> <td>18</td> <td>22</td> <td>8</td> <td>7</td> <td>161</td> </tr> </tbody> </table> <p>Previous increase in odour complaints in 2021 (6 vs. 4 reported during Infrastructure Review and now 1 as per Current Combined) was discussed and 1 was noted as regulatory. Odour to be tracked as part of new maintenance system.</p>				Complaints / Year	2016	2017	2018	2019	2020	2021	2022	2023 YTD	TOTAL	Air	3	1	1	2	2	-	-		9	Colour	4	7	3	12	3	7 (construction)	2	3	41	Leaky Service	5	22	3	2	5	7 (mostly age)	-		44	Low Pressure	9	13	5	8	7	7	5	4	58	Odour	1	2	1	2	1	1	1	-	9	TOTAL	22	45	13	26	18
Complaints / Year	2016	2017	2018	2019	2020	2021	2022	2023 YTD	TOTAL																																																													
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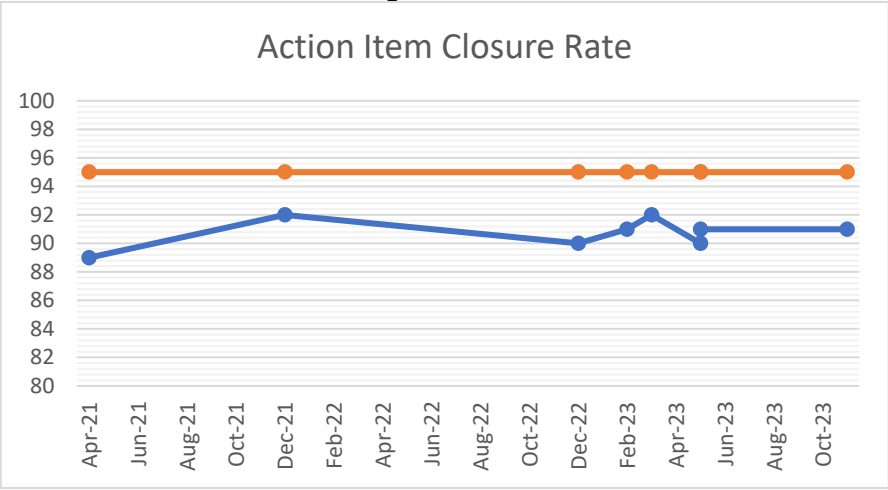
**Management Review Meeting Record**

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13)	<p>The resources needed to maintain the QMS:</p> <ul style="list-style-type: none"> <li>Number of Operators OK until 2025 when work is required on the system as per KPMG report (<i>replacement Operator hired 8-Aug-2023</i>)</li> <li>2024 DWQMS Timeline was reviewed, and dates agreed upon as reported throughout these minutes</li> </ul>	N/A	N/A	N/A
14)	<p>The result of the <a href="#">infrastructure review</a>:</p> <p><b>Infrastructure Review</b> Meeting took place 16-May-2023 and identified now <b>OVERDUE 2023-AI-05</b> to establish PRV maintenance budget and timeline to be submitted ahead of Operating Budget deliberations which as per MPW will be included as part of the 2024 Operational Budget and <b>2023-AI-06</b> to Document Hydrant Flow Tester process and conduct Operator training by MPW with SWW confirming the use of the equipment manual and a departmental procedure to be completed in 2024, with updates to the meeting as follows:</p> <ul style="list-style-type: none"> <li>Last <b>cast iron watermain replacement</b> project was Canboro Rd. with new water rate study as part of license due next year; design for Camber watermain replacement and Pine Crest area (part of \$4M grant submission for cast iron) scheduled for 2026 and 2024 Pelham Spruce side after Quaker Road and Pelham Road, 2027 Emmitt St. and cast iron replacement to be complete by 2030/2035 are pushed out and to be reviewed again next year</li> <li>Clare Avenue Watermain Replacement pushed out and maybe done with Quaker Road</li> <li><b>2020-OFI-11</b> Operator Work Order Software tablets (scheduled for 2024 with Public Service Requests / Complaints already in place but not asset maintenance) and associated <b>2021-BMP-01</b> (scheduled for 2025) pertaining to GPS Equipment for valves and hydrants were reported to be entered with Asset Maintenance Specialist to determine next steps which may be curb boxes) and <b>2020-AI-02</b> to redefine valve / hydrants quadrants map is being worked through; GIS platform and the work order system MuniPaaS and Salesforce are all in place, web mapped with lists as next area of focus</li> </ul>	N/A	N/A	N/A
15)	<p><a href="#">Operational plan currency, content, and updates</a> (incl. need for re-endorsement):</p>	N/A	N/A	N/A

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	Operational Plan (OP) and associated QMS PROC updates (some of which have been discussed above) as per QMS LIST 010 were completed in 2023 with 9-Feb-2021 endorsement by Top Management and Council re-endorsement 21-Feb-2023. 2024 documentation review to focus on O&M Manual and electronic Maintenance records.																																																					
16)	Personnel suggestions: Tracked via <a href="#">QMS LIST 006</a> all CLOSED and last raised in 2020.	N/A	N/A	N/A																																																		
17)	General assessment of suitability, adequacy, and effectiveness <b>QMS LIST 006 Closure Rate with a goal of 95% closure.</b> <div style="text-align: center;">  <p><b>Action Item Closure Rate</b></p> </div> <p>Audits identified the following positive trend:</p> <table border="1"> <thead> <tr> <th></th> <th>2015</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td><b>Internal Audit</b></td> <td>3 NCs, 5 OFIs</td> <td>5 NCs, 13 OFIs</td> <td>8 OFIs</td> <td>6 OFIs</td> <td>1 NC, 4 OFIs</td> <td>5 OFIs</td> <td>3 OFIs</td> <td>1 NC, 5 OFIs</td> <td>5 OFIs</td> </tr> <tr> <td><b>MECP Inspection</b></td> <td>2 NCs</td> <td>3 Recs</td> <td>4 Recs</td> <td>3 NCs, 5 Rec</td> <td>2 Recs, 2 AIs</td> <td>1 NC</td> <td>N/A</td> <td>0</td> <td>1NC, 1BMP, 2OFIs</td> </tr> <tr> <td><b>External audit (OFIs)</b></td> <td>4</td> <td>2</td> <td>2</td> <td>3</td> <td>2</td> <td>2</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td><b>TOTAL</b></td> <td>5 NCs, 9OFIs</td> <td>5 NCs, 18</td> <td>14 OFIs</td> <td>3NCs, 14</td> <td>1 NC, 10</td> <td>1 NC7 6 OFIs</td> <td>4 OFIs</td> <td>1NC, 5 OFIs</td> <td>1NC, 1BMP,</td> </tr> </tbody> </table>		2015	2016	2017	2018	2019	2020	2021	2022	2023	<b>Internal Audit</b>	3 NCs, 5 OFIs	5 NCs, 13 OFIs	8 OFIs	6 OFIs	1 NC, 4 OFIs	5 OFIs	3 OFIs	1 NC, 5 OFIs	5 OFIs	<b>MECP Inspection</b>	2 NCs	3 Recs	4 Recs	3 NCs, 5 Rec	2 Recs, 2 AIs	1 NC	N/A	0	1NC, 1BMP, 2OFIs	<b>External audit (OFIs)</b>	4	2	2	3	2	2	1	1	1	<b>TOTAL</b>	5 NCs, 9OFIs	5 NCs, 18	14 OFIs	3NCs, 14	1 NC, 10	1 NC7 6 OFIs	4 OFIs	1NC, 5 OFIs	1NC, 1BMP,	N/A	N/A	N/A
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<b>TOTAL</b>	5 NCs, 9OFIs	5 NCs, 18	14 OFIs	3NCs, 14	1 NC, 10	1 NC7 6 OFIs	4 OFIs	1NC, 5 OFIs	1NC, 1BMP,																																													

**Management Review Meeting Record**

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	OFls	OFls	OFls	8OFls			
	Most findings are generated from internal audits and mostly OFIs. Corrective and preventive actions are being managed effectively. <b>The QMS is deemed to be suitable, adequate, and effective.</b>						
18)	Review and consideration of applicable Best Management Practices (BMPs) Aside from the BMP identified in item 14) above, the MECP identified <b>2023-BMP-02</b> related to cross-referencing Operator identification related to free chlorine residual logs ( <i>complete</i> ) and wet taps ( <i>to be verified 7-Dec-2023 as part of the next TGG DWQMS onsite day</i> ) and additional review of the Watermain Commissioning Form to ensure all requirements are included ( <i>no changes identified</i> ). This has been included within <a href="#">QMS LIST 006</a> . And being tracked for completion.				N/A	N/A	N/A

## Appendix C – Internal QMS Audit





# The Corporation of the Town of Pelham

Drinking Water Quality Management System (v2)  
Internal Audit Report

*20 Pelham Town Square  
P.O. Box 400  
Fonthill ON, L0S 1E0*

Virtual Internal Audit Dates: 15/16 November 2023

Report Distribution: Ryan Cook, *Manager of Public Works (MPW)*  
Jason Marr, *Director of Public Works (DPW)*

A handwritten signature in black ink, appearing to read "S. Tavares", is positioned above a horizontal line.

Sandra Tavares, *B.Sc., M.Sc., EP(EMSLA), EP-Sustainability*

Report Issued: 28 November 2023

## Project Objectives

Tavares Group Consulting Inc. was engaged by The Town of Pelham to conduct an Internal Audit of the Town's Drinking Water Quality Management System (QMS) against the Drinking Water Quality Management Standard (DWQMS V2). This audit was conducted to satisfy the requirements of the DWQMS Element 19 requirement to complete a QMS internal audit at least once every calendar year. Please see [Annex A](#) for auditor qualifications.

## Project Scope

An onsite audit was performed 15/16-Nov-2023 according to ISO 19011:2018 Guidelines for auditing management systems, including the Internal Audit Plan issued 4-Oct-2022 to confirm:

- the QMS conforms with the applicable elements of the DWQMS; and
- Corporation of the Town of Pelham conforms with its own policies and procedures.

Results of prior internal and external audits were also considered and reviewed through the course of the audit.

An Opening Meeting was held 15-Nov-2023 with the Supervisor Water / Wastewater (SWW) with a Closing Meeting 17-Dec-2022 during Management Review and including the Manager and Director of Public Works (both interviewees).

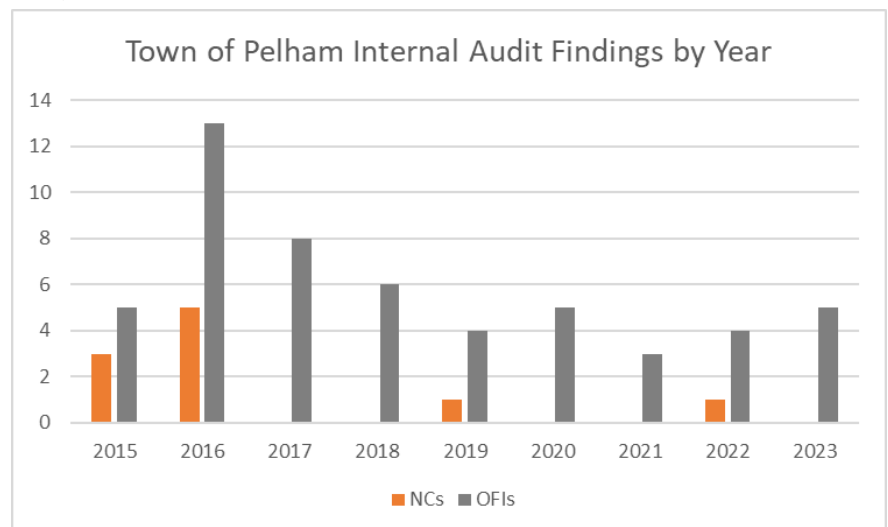
## Conclusions

The Town of Pelham's QMS conforms with:

- the applicable elements of the DWQMS, and
- its own policies and procedures.

Public Works' (Operating Authority [OA]) commitment to the improvement of its QMS is evident and has the appropriate elements in place for further improvement.

In total, there were five [5] Opportunities for Improvement (OFIs) identified. Refer throughout the audit report for previous audit finding follow-up (*details regarding closure and verification can be found in QMS LIST 006*). A [Summary of Findings](#) has been provided below with details in the [Comments](#) portion of the report; identification numbers (e.g., 2023-IA-OFI/NC-XX) have been assigned for new findings.



## Confidentiality

*This report was prepared exclusively for The Corporation of the Town of Pelham and is based on information collected during off- and on-site reviews. The scope of the project is described in this report and is subject to restrictions, assumptions, and limitations. As noted herein, the work was conducted in accordance with the scope of Tavares Group Consulting's proposal and Terms and Conditions.*

## Summary of Findings

Owner (& Operating Authority):		The Corporation of the Town of Pelham (Public Works)
Auditors:		Sandra Tavares ( <i>Lead</i> ) and Francis Chua ( <i>Team Member</i> )
System Reviewed:		Pelham Distribution System (PDS)
REQUIREMENT ↓		FINDING(S) ↓
1. Quality Management System		C
2. Quality Management System Policy		2023-IA-OFI-01
3. Commitment and Endorsement		C
4. Quality Management System Representative		C
5. Document and Records Control		2023-IA-OFI-02 <i>2022-IA-NC-01 and -OFI-01 COMPLETE</i>
6. Drinking Water System		C
7. Risk Assessment		C
8. Risk Assessment Outcomes		C
9. Organizational Structure, Roles, Responsibilities and Authorities		C
10. Competencies		2023-IA-OFI-03
11. Personnel Coverage		C
12. Communication		C
13. Essential Supplies and Services		<i>2022-IA-OFI-02 COMPLETE and OFI 2020-IA-03 CLOSED</i>
14. Review and Provision of Infrastructure		<i>2022-IA-OFI-03 COMPLETE</i>
15. Infrastructure Maintenance, Rehabilitation and Renewal		2023-IA-OFI-04 <i>2022-IA-OFI-04 remains OPEN</i>
16. Sampling, Testing and Monitoring		2023-IA-OFI-05
17. Measurement and Recording Equipment Calibration and Maintenance		C
18. Emergency Management		C
19. Internal Audits		C
20. Management Review		C
21. Continual Improvement		<i>2022-IA-OFI-05 remains OPEN</i>
C	Conforms to the requirement – <a href="#">See comments in body of report</a>	
NC	Non-conformity	
OFI	Opportunity for improvement – See <a href="#">Annex A</a>	
OFI *	Opportunity for improvement which may become a nonconformity if not addressed– See <a href="#">Annex A</a>	

## Comments

DWQMS Reference  
Evidence  
Finding  
Summary

### 1. Quality Management System

Pelham Distribution System (PDS) Operational Plan (Rev.17, 17-Oct-2023)

#### **Conforms**

The Pelham Distribution System Operational Plan (OP) and QMS Policy are available online at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx> (*refer to Element 5 OFI*), revised Appendix A to include 2023 Council endorsement and a reference to drawing G-01, General Plan and associated location and revise Section 15 to reference new QMS SOP 022 to partially address **2022-IA-OFI-04**, documents guiding implementation of a Quality Management System (QMS) that meets the requirements of the DWQMS.

DWQMS Reference  
Evidence

### 2. Quality Management System Policy

PDS OP Element 2, S801-01 (Council Approval date of 22-Mar-2021 and OA sign-off 2-Mar-2021)

Summary

Public Works has established and maintains a QMS Policy documented within S801-01, signed by the DPW and MPW 2-Mar-2021, and approved by Council 22-Mar-2021 via agenda number 10.2.6, sets the foundation for the QMS and meets the requirements of the DWQMS. As per PDS OP Element 2, the Policy is posted at the Town of Pelham Operations Centre, communicated to the Public through the Town's website as per Element 1 directly above and is available upon request. As per QMS PROC 021, it was last communicated to Purchasing Policy Essential Suppliers 14-Apr-2022 via email to Wolseley, Emco, Evans, Niagara industrial and Vancor (equipment), Flowmetrix and Hach (calibration), Cleartech (calibration equipment), and Devine (Pressure Reducing Valve [PRV] maintenance) and is planned for communication Oct-2023 as per the SWW.

Finding  
Details

#### **Opportunity for Improvement 2023-IA-OFI-01**

There is an opportunity to ensure the availability of the QMS Policy as per PDS OP Element 2 is readily observed (e.g., posted in a Public location) and known by Town of Pelham Municipal Offices staff.

DWQMS Reference  
Evidence  
Finding  
Summary

### 3. Commitment and Endorsement

PDS OP Element 3

#### **Conforms**

21-Feb-2023 Council Endorsement of the QMS Policy, the OP and approval of the Financial Plan (*refer to Element 14 2022-IA-OFI-03*) is in Appendix A as per Element 1 above (although minor updates to the OP do not require Owner re-endorsement) with endorsement by OA Top Management (i.e., DPW and MPW) most recently 9-Feb-2021. Top Management has provided evidence of its commitment by:

- i. ensuring a QMS is in place that meets the requirements of the DWQMS (*see Element 1*);
- ii. communicating the QMS (*see Element 12*);
- iii. determining, obtaining, and providing the resources needed to maintain and continually improve the QMS (*see Element 20*); and
- iv. ensuring the OA is aware of applicable regulatory requirements for which none have been identified since the MECP **cybersecurity**

**Potential Risk.** Potential changes continue to be communicated to OA Top Management through the MECP Inspector, e-mails from the Ontario Municipal Water Association (OMWA) and Municipal Water and Wastewater Regulatory Committee (MWWRC) although the Region of Niagara Municipal QMS/Compliance Working Group is mostly relied upon.

DWQMS Reference  
Evidence  
Finding  
Summary

#### 4. Quality Management System Representative

PDS OP Element 4

##### **Conforms**

The QMS Representative is identified within the OP as the MPW, appointed via a Memorandum of Understanding (MoU) issued by the Public Works Department – Engineering 15-Dec-2015 and approved via by-law, as per OP Appendix B. Responsibilities described under Element 9 and confirmed during the audit include:

- administering the QMS by ensuring that processes and procedures needed for the QMS are established and maintained and that current versions of documents are being used (*see Element 5*);
- reporting to Top Management on QMS performance (*see Element 20*); and
- ensuring that personnel are aware of applicable regulatory requirements and the QMS (*refer to Elements 3, 10 and 12*).

DWQMS Reference  
Evidence  
Summary

#### 5. Document and Records Control

PDS OP Element 5, QMS PROC 005 (rev.13, 31-May-2023), QMS LIST 010 Document Management List (rev.3, 14-Feb-2018; last updated 17-Oct-2023)

QMS PROC 005, recently revised to:

- **add** MECP Form 1 and infrastructure review records to the Document/Records Table, which was also updated to reflect new record locations and update document links,
- **clarify** the editor (now assigned to the QMS Rep) who cannot also be approver,
- **remove** instructions for QMS 010, and
- partially address the COMPLETE 2022-OFI-22 to clarify management of external documents (i.e., 3900-2017 - Records Retention By-law and Amendment 3-Apr-2018 S203-04 which enacts the regularly updated Records Retention Schedule/Citation Table #03-01-04 and Town of Pelham Emergency Management Plan adopted by Town Council By-Law 4489-2022),

also identifies the remainder of the document and records control process that includes how documents are kept current through creation and revision, and documents and records remain legible and identifiable, and are retrieved, stored, retained, and disposed of. PDS' QMS documentation includes the OP and associated procedures (PROC-level), Standard Operating Procedures (SOPs), FORMs and LISTs, some of which were confirmed and summarized throughout this audit report. QMS LIST 010 identifies QMS documentation by name, revision number, date, controlled copy location, and, for forms, change history; current OP documents were observed to be maintained in the shared drive ('Public Works & Utilities Department\Water Distribution System\DWQMS\Operational Plan Procedures SOPs Forms' still accessed by the

Finding  
Details

MPW, DPW, Engineering and Supervisors) with the MPW responsible for electronic and Operations Centre and Town Hall updates with the assistance of the Administrative Assistant. Infrastructure review, internal audit and Management Review records date back to 2010 with obsolete documentation such as previous OPs dating back to 2009, still located at 'DWQMS/Obsolete Documents'. **2022-IA-NC-01** pertaining to document and record control processes not consistently followed was **verified complete** (i.e., QMS FORMs latest revision use for Adverse Water Quality Incident [AWQI] 017 as per Element 16 below, 002 as per Element 15 and 008 Chlorine Residual Sampling as per Element 8, 014 Watermain Valve Maintenance and Inspection and Watermain Break 025 (rev.08) completed fully as per Element 15).

**Opportunity for Improvement 2023-IA-OFI-02**

There is an opportunity to ensure:

- i. document control. Operational Plan located at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx> is not the most recent revision.
- ii. electronic record control. For example:
  - a. Scanned / electronic QMS FORM 008 Chlorine Residual Sampling forms were not available for August-December 2022 although observed in hardcopy at Tice Road upstairs.
  - b. 'Current Combined Water Ops 2015 onward spreadsheet' 'Maintenance' (for watermain breaks) and 'Complaint Summary' tab has not been updated.
  - c. Pelham St. Phase 4 200MM Watermain Commissioning Town Checklist QMS FORM 12 dated 20-Sep-2023 scanned copy is not signed off by MPW/ORO for final connection, but hardcopy is.

DWQMS Reference  
Evidence  
Finding  
Summary

**6. Drinking Water System**

PDS OP Element 6

**Conforms**

A description of the Class 2 Water Distribution System has been documented within OP Element 6, owned by the Corporation of the Township of Pelham, and operated by the Public Works Department referencing the annual Engineering inventory for the system's components:

- approximately 86 Km of **water main**,
- **fire hydrants, valves, and service connections**,
- **PRVs** as per QMS LIST 015 (refer to Element 15 below for maintenance and associated OFI with SOP-022 [Maintenance] in place to address 2020-AI-01), and
- a **pressure boosting station** (serving Chestnut Ridge with maintenance and operation contracted to the Region of Niagara and observed completed as per EAM Maintenance Records 2015-2022 [2016 missing, 2023 to be received in 2024] in 'E08/Chestnut Ridge' folder).

PDS receives treated drinking water from the Welland Water Treatment Plant, owned and operated by the Regional Municipality of Niagara which is relied upon to ensure the provision of safe drinking water. A description of the water source and treatment process has been documented, in addition to a process flow chart. The subject system is also connected to the Welland Distribution

System (owned and operated by the City of Welland) via 3 connections (valves have been closed since 1970). The Town of Pelham maintains disinfection residuals through the flushing program – *refer to Element 15 for more details*. There are no common event-driven fluctuations or resulting operational challenges or threats concerning the water source.

DWQMS Reference  
Evidence

#### 7. Risk Assessment

QMS PROC 007 (rev.11, 19-Apr-2023), QMS LIST 001 Risk Assessment Outcomes List (rev. 5, 19-Apr-2023 [Re-assessment])

Finding  
Summary

#### **Conforms**

QMS PROC 007, updated to remove QMS LIST 001 instructions as these are in the form as well as revised to address 2022-OFI-22 / 2022-IA-OFI-01 ii) by adding ‘as amended’ following Ministry [Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment](#) document and remove the risk ranking and added to the Risk Assessment Outcomes Table in the QMS List 001, also documents a risk assessment process where hazards and associated events are ranked based on likelihood, consequence, and detectability, with those meeting the threshold of 7 and higher identified as Critical Control Points (CCPs). A risk review or re-assessment may also be conducted if significant changes occur within the DWS (e.g., change in size or scope of the system, addition of new infrastructure). The annual review was most recently completed on 30-Mar-2022. The Risk Assessment History details the discussions, and the Risk Assessment Results. QMS LIST 001, in addition to changes listed above, was also updated to add a ‘Notes’ column to tab for more efficient reviews. The most recent re-assessment was 19-Apr and 16-May-2023, to consider the Apr-2022 MECP Cybersecurity Potential Hazardous Event for Municipal Drinking Water System for each activity with OPEN backflow MECP recommendation inventory and overdue letter issuing overdue to be verified complete by 7-Dec-2023; there were no changes to the distribution system and the 2023 MECP Inspection findings were discussed.

DWQMS Reference  
Evidence

#### 8. Risk Assessment Outcomes

QMS PROC 007, QMS LIST 001 Risk Assessment Outcomes List, QMS SOP 001 (rev.7, 24-Jan-2023)

Finding  
Summary

#### **Conforms**

QMS LIST 001 demonstrates implementation of a risk assessment that is consistent with QMS PROC 007. MECP hazards such as chemical spill impacting source water is addressed in an evergreen Memorandum of Understanding (MoU, located at ‘Ops:\Public Works\Niagara Region and NPCA\Memorandums of Understanding\final versions’ signed) dated 21-Apr-2016 with the Regional Municipality of Niagara (no proposed changes identified as per MPW; 2017 Water / Wastewater Master Plan will require revision when the tower comes down which has not been determined at this time) and signed by the former DPW, with no incidences reported. One voluntary CCP has been identified related to loss of chlorine residual due to long residence time (Critical Control Limit [CCL] = 0.20 mg/L). Flushing measures to restore residual is documented as per QMS SOP 001 (*refer to Element 6 and 15*), recently updated to remove the reference to Spring and Fall month deadlines and recording of hydrant

meter reading. As confirmed via QMS LIST 006, the last deviation from the identified CCL took place 11-Jun-2020 as per 2021-NC-01; QMS FORM 008 Chlorine Residual Sampling (rev.08) also confirmed this for 2023 (*refer to Elements 5 and 16 OFIs*). Response, reporting, and recording processes in the event of a deviation from the identified CCL have been documented within QMS PROC 016 (*refer to Element 16*). As per QMS FORM 026, the risk assessment outcomes were reviewed at the Infrastructure Review with **2023-AI-06** MPW to document Hydrant Flow Tester process and conduct Operator training postponed to 2024 as per MPW following this audit as part of Management Review and **OVERDUE 2023-AI-05** SWW to establish PRV maintenance budget and timeline to be submitted ahead of Operating Budget deliberations by 30-Jul-2023 (the latter was confirmed by the MPW to be completed via the 2024 Operating Budget).

DWQMS Reference  
Evidence  
Finding  
Summary

## 9. Organizational Structure, Roles, Responsibilities and Authorities

PDS OP Element 9

### **Conforms**

OP Element 9 describes the OA organizational structure including respective roles, responsibilities and authorities which were reviewed during the onsite audit; Figure 3 Organizational Chart for water system relevant personnel identifies all relevant Public Works personnel with no changes noted, confirmed by the MPW. **Top Management**, as per Element 3 above, continues to be involved in Infrastructure and Management Reviews, with the DPW having regular informal DWQMS communication with the MPW. The **SWW** is responsible for ensuring maintenance is conducted and documented (e.g., 'Current Combined Water Ops 2015 onward spreadsheet') as reviewed. **Operators** respond to watermain breaks and conduct maintenance, etc.

DWQMS Reference  
Evidence  
Summary

## 10. Competencies

PDS OP Element 10, Operator Training Summaries

OP Element 10, updated to add 'Water/Wastewater Operator License Renewal and Upgrade Application Process' to address MECP Inspection 2023-OFI-28, documents the required competencies of personnel whose duties directly affect drinking water quality. Regular training is provided and can take place off-site, On-the-Job, or electronically. QMS Awareness training is provided to new operations personnel where the OP is reviewed and covers relevance of duties (also done annually for existing Operators, lastly 19-Apr-2023 which incorporates documentation changes, including record control issues) with one new Operator hired since the last audit. Updated Operator Training Summaries are in place by name and tab related to the certificate duration, signed off by the DPW prior to submission for Operator re-certification, located at 'Ops:\Public Works\Water Distribution System\DWQMS\Training Records' (presentations) and '...\Water Distribution System\Operator Training Records' by name. The following **Class 2 Water Distribution and Supply** certificates are posted at Tice Rd.:

- **B. Smith** #10961 exp.30-Nov-2025 (*records date back to 2018*)
- **L. Johnson** (*newest hire as of 8-Aug-2023 with DWQMS Awareness scheduled for 7-Dec*) #94663 exp.30-Nov-2024) brought over training certificates from previous employer when she was hired



- **R. Cook** #16368 exp.31-Mar-2026 received Operator Commissioning training 31-Jan-2023 to address MECP recommendation
- **S. Berstling** #58758 exp.28-Feb-2026 (*returned 16-Nov-2022*)
- **SWW** #71210 exp.31-Jan-2026

Records for Operators no longer here (**D. Nicholls** and **M. Paniccia**) are located at 'Operator Training Records\Archived' folder.

**Finding  
Details**

***Opportunity for Improvement 2023-IA-OFI-03***

There is an opportunity to:

- update Operator Training Summaries for L. Johnson (Operator Certificate Number incorrect), R. Cook (Operator Certificate expiry incorrect) and S. Berstling (31-Jan-2023 Operator Commissioning Training not reflected although listed on Training Attendance), and
- reflect training records for Operators no longer in place within QMS PROC 005.

**DWQMS Reference  
Evidence  
Finding  
Summary**

**11. Personnel Coverage**

PDS OP Element 11, QMS PROC 011 (rev.9, 30-Mar-2022)

***Conforms***

OP Element 11 documents a process to ensure sufficient personnel meeting the identified competencies outlined in Element 10 directly above are available for duties that directly affect drinking water quality. The Town has an after normal working hours emergency telephone number which is still serviced by a Call Centre and will contact designated On Call Personnel. Overall Responsible Operator (ORO, i.e., MPW) designation is documented via email for holidays backup and observed from MPW 24-Jul-2023 (for 24-31 Jul-2023) to the PW Administrative Assistant, Operator-In-Charge (OIC, first to respond to after hours call) and DPW. After hours calls, approximately once / month, generally still involve water main breaks, service leaks, and emergency shut offs, with call outs documented in the respective form (i.e., watermain breaks or WO), Water Distribution System Operation Record / Logbook or On-Call Log as per MPW. No frozen services were noted since 2021. As per Supervisor, 3 Supervisors rotate every week who in turn pick an appropriate Water Operator from the Seniority List posted in the Supervisor office.

**DWQMS Reference  
Evidence  
Finding  
Summary**

**12. Communication**

PDS OP Element 12, QMS PROC 021 (rev.10) and QMS SOP 016 Consumer Complaints (rev.7, both 17-Feb-2022)

***Conforms***

QMS PROC 021 documents a process that involves communication of the QMS Policy (*refer to Element 2 above*) and how **Top Management** communicates to the **Owner**, e.g.:

- **Committee and Council meetings** (*refer to Element 3 above*), which includes the results of the annual **Management Review** (*refer to Element 20*)
- **Annual Water Quality Reports** (e.g., 2022 available online [dating back to 2003] through [Water and Wastewater Maintenance - Town of Pelham](#)),
- **Infrastructure Review** (*refer to Element 14 below*).
- On-the-job instructions related to changes to the QMS are communicated to **OA personnel** during tailgate talks and may be documented via QMS

FORM 016 (refer to Element 10 above for more information on DWQMS Awareness presentation).

Public water concerns / complaints are managed as per QMS SOP 016, recently revised to clarify receipt (e.g., email or, as observed, via WO in 'Residential Complaints Water\Water Concerns' within 'Operations Maintenance Summary' by year) and remove reference to PSR, with details tracked on the 'Current Combined Water Ops 2015 onward spreadsheet' 'Complaint Summary' tab (refer to Element 5 OFI) which identifies the following:

Complaints / Year	2016	2017	2018	2019	2020	2021	2022	2023 YTD	TOTAL
Air	3	1	1	2	2	-	-		9
Colour	4	7	3	12	3	7 (construction)	2	3	41
Leaky Service	5	22	3	2	5	7 (mostly age)	-		44
Low Pressure	9	13	5	8	7	7	5	4	58
Odour	1	2	1	2	1	1	1	-	9
TOTAL	22	45	13	26	18	22	8	7	161

DWQMS Reference  
Evidence  
Finding  
Summary

**13. Essential Supplies and Services**

PDS OP Element 13, QMS PROC 013 (rev.13, 17-Oct-2023)

**Conforms**

QMS PROC 013, which documents a process by which Public Works lists and ensures the quality of essential supplies and services, was revised to:

- remove reference to specific equipment requiring calibration and reference associated QMS PROC 017,
- address **2022-OFI-23 / 2022-IA-OFI-02** to document confirmation of capital project drinking water quality requirements,
- clarify pipes, valves, fittings, and hydrant quality requirements as a result of the **external audit 2023-OFI-29**, and
- add Devine and Associated as essential supplier of services to support QMS SOP 022.

Procurement Policy By-Law S402-00 was updated 23-Feb-2023 highlights the tendering process with no specific reference to Public Works or DWQMS. Nov-2017 Engineering Design Manual (not on the Town's website) Section 5 located at 'Public Works\X Engineering Design Standards Development\Final for Council Dec 2017' which pertains to drinking water quality requirements (e.g., AWWA, ANSI/NSF 61, no lead for valves, chambers, main) which is still in effect and provided to contractors, is a Q1/Q2 2024 revision project as per MPW with an intent to reference QMS PROC 013. Public Works personnel are responsible for inspecting all received supplies to confirm identified requirements. The following quality requirements were verified with the SWW:

- **Anchem Anchlor 12 sodium hypochlorite** 10L jug last marked dated 17-Aug-2023 in maintenance garage included **NSF/ANSI/CAN 61** mark.
- **CALA Directory of Laboratories Memberships** 3086 for E3 Laboratories Inc. was confirmed valid to 16-Sep-2025 via website and mostly used as per watermain commissioning results documented in Element 15 below (2728 Caduceon Environmental Laboratories listed for inorganic and microbiological sampling is not used as per SWW) and 1003149 ALS (Waterloo) exp.17-Feb-2024 for organic and inorganic testing.

- **Hymax coupling** identified as **NSF/ANSI 61/372** certified located in storage trailer.

**DWQMS Reference Evidence**

**14. Review and Provision of Infrastructure**

PDS OP Element 14 (Rev.16 07-Mar-2023), QMS PROC 014 (rev.12, 16-May-2023), QMS FORM 026 Infrastructure Review Summary (rev.03, 29-Jan-2021) dated 16-May-2023

**Finding Summary**

**Conforms**

QMS PROC 014, recently revised to clarify Council communication timeline and add Manager of Engineering to the infrastructure review team, also addresses proposed needs being identified via Infrastructure Review Team meeting once per calendar year to review the previous year's operational history (including but not limited to watermain break history (*refer to Element 15 directly below for updates*), unplanned maintenance, existing water quality issues, etc.), results of the risk assessment and proposed infrastructure rehabilitation plans as identified in the existing 20-Year Capital forecast, as per QMS FORM 026, lastly completed 16-May-2023. As part of the meeting, the Risk Assessment Meeting results were reviewed, discussed, and confirmed. Also discussed were the infrastructure components (Watermain, Hydrants, Main Valves, etc.), including supporting information (e.g., 2023-2027 Approved Water (Capital) Budget, Water Long Range Financial Plan (**2022-IA-OFI-03** to ensure the latest version of the Financial Plan is available online at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx> now includes the Water (and Wastewater) Long-Range 2019-2024 version), 2018-2023 YTD Break Histories), etc. Additionally, topics such as Staffing, Water Quality Complaints, Best Management Practices were also discussed. As per QMS LIST 006, there are two actions in progress from the 2023 review (**2023-AI-05** and **-06**, both addressed in Element 8 above), one action in progress from the 2021 review (2021-BMP-01 valves / hydrants GPS scheduled for 2025 completion), and one action in progress from the 2020 review (2020-OFI-11 Operator WO software tablets with a revised due date of 2024 from 31-Dec-2022). Updates to the Forecast are reported to the Senior Management Team, led by the Chief Administrative Officer, for review and approval as part of the annual budget process before being presented to Council for approval with removed budgetary requests considered in future years.

**DWQMS Reference Evidence**

**15. Infrastructure Maintenance, Rehabilitation and Renewal**

PDS OP Element 15, Current Combined Water operations 2015-onward Spreadsheet (current to 18-Oct-2023)

**Summary**

OP Element 15, recently revised to remove the reference to pressure meters to partially address **2022-OFI-25/2022-IA-OFI-04** and Element 6 system components (now just referencing Annual Report) to eliminate duplication and reference NEW QMS SOP 022, also documents a summary of the OA's infrastructure maintenance, rehabilitation, and renewal programs. Key infrastructure maintenance and repairs are summarized within 'Current Combined Water Ops 2015 onward' spreadsheet in 'Maintenance Activities (2)' tab up to 18-Oct-2023. The following maintenance was reviewed as per OP Element 15:

- **Annual Valve** Maintenance is being completed in 2023 for **Quad 2** (started in September) via hardcopy QMS FORM 014 Watermain Valve Maintenance and Inspection Form (rev.06, *refer to COMPLETED Element 5 2022-IA-OFI-01 iii and referenced IN PROGRESS 2022-OFI-25 to be verified 7-Dec-2023 as being used as part of this audit through use of QMS LIST 014 to partially address 2022-IA-OFI-04 and 2022-IA-OFI-01*), with 5-May- through 10-Dec-2020 for **Quad 3**, and 4-Jan- through 2-Nov-2021 for **Quad 4** (mainly July-Aug); each Quad is completed annually with all done in 4 years.
- **Annual Hydrant** Maintenance is documented on Hydrant Maintenance and Inspection QMS FORM 002 (rev.06) signed off by SWW completed for each hydrant 1-33 in hardcopy file for **Quad 3** being completed and some **Quad 4** completed in **2022** with records located at 'E08-Water Distribution\System Maintenance Summaries\Operations Maintenance Summary' by year as per QMS PROC 005.
- **Annual and 5-Year PRV** maintenance as per QMS SOP 022 (rev.0, 17-Oct-2023) and QMS LIST 015 PRV Inventory (rev.0) with Effingham completed 11/10/2023 deemed as 5-year maintenance as per SWW and scheduled to formally start in 2024, also confirmed by MPW as per Element 8 above. As per previous internal audit reports, maintenance was conducted at Brock 30-Aug-2021 via Water / Wastewater Work Order (WO) completed by Devine and 28-Oct-2020 at Churchill.
- **Monthly pressure testing** on combined spreadsheet to Sep-2023 with hardcopy Watermain Pressure Testing Procedure Form QMS FORM 013 (rev.05)
- **Semi-annual 2023 dead end blow off flushing** is documented on QMS FORM 001 for Spring (April-May) and Fall (Oct-Nov) and documented. Management Review 2020-AI-03 to review dead end blow off flushing QMS SOP 001 for frequency is complete.
- **Pressure boosting station** by the Region of Niagara is provided upon request 2 **watermain breaks** were captured on newly revised QMS FORM 025 (rev.08, *confirming Element 5 2022-IA-OFI-01 iii completion*) Dec-2021 with 4 Cat 1s Jan and Apr/May-2022 which is sometimes leaky service or connection as per SWW that must be reported on form (construction is not counted, as per MPW). 1 Watermain Break reported on Current spreadsheet 'Maintenance Activities' tab dated 4-Oct-2023 by contractor was not reportable (forms also reviewed for Cat 1 16-Aug-2023] and 5-Sep on Church St. and Kunda Park 8-Jun-2023 [*refer to Element 5 OFI ii.b*]) with **Watermain Commissioning** happening throughout in the latter part of the year (2-Oct witness of final connect for 200MM below) on 'Maintenance Activities' tab for Pelham St. Phase 4 200MM Watermain Commissioning Town Checklist QMS FORM 12 (rev.08) dated 20-Sep-2023 and 300MM 21-Aug-2023; Contractor Plan QMS FORM 010 (rev.3) and Form 1 Record of Watermains both dated 8-Aug-2023 with testing by E3 Labs (refer to Element 13 for quality requirements confirmation). MECP Inspection **2023-NC-08** pertaining to an updated watermain commissioning form which include columns for decrease in chlorine concentrations in mg/L and % is verified complete. The maintenance program is communicated to the Owner through the budgeting process and the Annual Report. The SWW still retains responsibility for issuing daily WOs and tasks to OA personnel and the electronic logbooks are being considered for easier tracking.

Finding:  
Details:

**Opportunity for Improvement 2023-IA-OFI-04**

There is an opportunity to:

- i. utilize QMS [PRV] LIST 015 to track annual and 5-year inspections.
- ii. update QMS LIST 014 with valves 187 and 188 and consider incorporating QMS FORM 014 to streamline documentation.
- iii. ensure QMS [Hydrants] LIST 003 is used and updated (331 completed in 2023 as part of Quad 3 is not on this list).
- iv. ensure use of latest revision of Dead-End Blow-Off Flushing QMS FORM 001.
- v. include piping quality requirements on QMS FORM 025.

DWQMS Reference  
Evidence

**16. Sampling, Testing and Monitoring**

PDS OP Element 16, QMS PROC 016 (rev.13, 21-Feb-2023), QMS SOPs 010 THMs and HAAs (rev.9, 8-Feb-2022), QMS FORM 005 Drinking Water Advisory (DWA), Including Boiling Water (rev.1, 18-Feb-2022)

Summary

QMS PROC 016 was recently revised to reflect the removal of weekly and TriHaloMethane (THM) / HaloAcetic Acid (HAA) sampling locations and **2023-OFI-27** MECP Inspection update to AWWA C51-14. **Adverse** results (e.g., as per 'WDS\System Maintenance Summaries\Operations Maintenance Summary\2022\Adverse', 3 with Forms 2A and 2B complete as well as QMS FORM 017 [rev.0, 25-Mar-2021] dated 15-Dec-2022 (*partially verifying completion of Element 5 2022-IA-NC-01 and Element 21 2022-IA-OFI-04*) and 1 Total Coliform (thought to be lab error and thus not requiring investigation) identified during the audit for 14-Nov-2023 by E3. Upstream testing, sampling, and monitoring is described; source water is tested for turbidity, pH, and temperature; no additional testing was conducted at the Shoalts Drive Reservoir for chlorine residual prior to the discharge of water to PDS as per MPW (as per SWW, no access with additional sampling location within half a kilometre). The program is communicated to Council through mandatory annual MECP reports available at <https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx> (including 2022). **Semi-annual lead and alkalinity** sampling took place 5-Oct-2023 and 3-Mar-2022 as per 'Current Combined Water Ops 2015 onward spreadsheet' with results dating back to 2017 and 'Operations Maintenance Summary/2023/Water Distribution Samples\Leads (as well as 'THMs and HAAs', 'Watermain Commissioning' and 'Weekly Samples' folders); 'THM RAA' and 'HAA RAA' tabs identify 7-Mar-, 6-Jun- and 12-Sep-2022 sampling as well as 13-Dec-2022 (trends were discussed during 2022 Management Review). Hardcopy records are retained in binders dating back to 2016 and at Tice Road upstairs in file folders in boxes to 2003.

Finding  
Details

**Opportunity for Improvement 2023-IA-OFI-05**

Consider trending QMS FORM 008 Chlorine Residual Sampling results to anticipate potential issues.

DWQMS Reference  
Evidence  
Finding  
Summary

**17. Measurement & Recording Equipment Calibration and Maintenance**

PDS OP Element 17, QMS PROC 017 (rev.13, 24-Jan-2023)

**Conforms**

QMS PROC 017, recently revised to removed reference to pressure meter as no longer used, identifies the following equipment confirmed via the SCG

Flowmetrix Water Quality Instrument Verification / Calibration Report dated 23-Jan-2023:

- annual external 4 **pocket colorimeters** calibration (internal verifications were completed via Water/ Wastewater Work Order Forms, e.g., 1-Nov-, Oct- and 29-Sep-2023 as well as documented on 'Colorimeter Comparison' tab of current combined and scanned in 'Monthly Checks' folder); stickers were observed for all (#s 1 and 2 are in the truck)
  - annual external **HR Colorimeter** FOO92701
  - **backflow WATTS** SN 410544 and 12200226
- pH meters are purchased annually to ensure certification / calibration.

DWQMS Reference  
Evidence

### 18. Emergency Management

PDS OP Element 18, QMS LIST 002 Emergency Contacts (rev.5, 30-Mar-2022), QMS PROC 018 Emergency Management (rev.7, 21-Feb-2023), QMS PROC 025 Watermain Break (rev.10), QMS FORM 005 Drinking Water Advisory (rev.1, all 18-Feb-2022), Town of Pelham Emergency Management Plan 4489-2022

Finding  
Summary

#### Conforms

A list of potential emergency situations have been documented in QMS PROC 018 (i.e., distribution system contamination, watermain break, and water quality advisory), which was recently revised to update reference to Emergency Plan to partially address **2022-OFI-22** and include links to Niagara Regions Emergency Response Procedures Manual for Water and Wastewater Systems and [Regional Municipality at Niagara] Memorandum of Understanding – Water Servicing (21-Apr-2016). Other relevant emergency procedures pertain to Region and are in 'Public Works\Niagara Region and NPCA\Emergency response procedures'. Emergency Response Exercises are conducted every 3 years, lastly in 2020 and scheduled for 7-Dec-2023 pertaining to PRVs as per QMS LIST 'DWQMS Timeline' tab. An emergency contact list is documented within QMS LIST 002.

DWQMS Reference  
Evidence

### 19. Internal Audits

PDS OP Element 19, QMS PROC 019 (rev.8, 9-Oct-2018), 2022 Internal DWQMS Audit Report (Audit Date 16/17 Nov 2022, Report Date 30 Nov 2022)

Finding  
Summary

#### Conforms

QMS PROC 019 documents an internal audit process that includes addressing criteria, frequency, scope, methodology and record-keeping requirements, consideration of previous internal and external audit results, and describes how Corrective Actions are identified and initiated (e.g., QMS LIST 006 Corrective and Preventive Actions List). Internal audits have been completed annually by various Tavares Group Consulting Inc. auditors to ensure independence from the activity being audited with all Elements of the DWQMS (both PLAN and DO ions) subject to audit. As per the Management Review Meeting Record (17-Nov-2022), the 2022 internal audit resulted in 5 OFIs in Elements 5, 13, 14, 15, 21 and one non-conformity in Element 5. 2 internal audit findings remain open 2022-OFI-25/2022-IA-OFI-04 discussed in Element 15; all previous external audit findings are either complete or closed.

DWQMS Reference  
Evidence

Finding  
Summary

## 20. Management Review

PDS OP Element 20, QMS PROC 020 (rev.9, 9-Dec-2021), QMS FORM 027 Management Review Meeting Record (rev.01) dated 2022

### Conforms

QMS PROC 020 documents a process for Management Review that incorporates the review and consideration of applicable Best Management Practices (BMPs), as required in DWQMS Element 21; 2021-BMP-01 is IN PROGRESS as per Element 14 above. Management Review was last completed in 2022 with the results communicated to the Owner via the Annual Summary Report (O. Reg. 170/03 Schedule 22) as outlined in Element 3 above. 2020-AI-01 and -03 are closed as per Elements 6 and 14 respectively although -02 to redefine valves / hydrants quadrants map is due for verification 7-Dec-2023. Action items identified as a result of Management Review are being tracked to completion via QMS LIST 006; 2022-AI-01 to develop a backflow SOP now has due date of Q4 2023 (rescheduled from Spring 2023).

DWQMS Reference  
Evidence

Finding  
Summary

## 21. Continual Improvement

PDS OP Element 21, QMS LIST 006 (rev.6, 17-Nov-2022) last updated 31-May-2023)

### Conforms

OP Element 21 is implemented and conforms to QMS tracking and measuring of continual improvement:

- a. to review and consider applicable BMPs including recommendations from MECP, staff suggestions, association-wide best practices, external and internal audits, engineering, or contractor suggestions, etc. which have previously been reviewed as part of Management (*refer to Element 20 directly above*) and Infrastructure Reviews (*refer to Element 14*).
- b. for identification and management of QMS Corrective Actions (e.g., resulting from nonconformities associated with internal / external audits and non-compliances as a result of MECP Inspections) as per QMS PROC 019 that includes, within QMS LIST 006, recently updated to clarify 'Completion/Closure Date', added 'CLOSED' status and associated instruction (DWQMS Action table was also recently revised to clarify Accreditation and Reaccreditation timelines in relation to DWQMS Actions and added annual January MECP inspection) for:
  - i) investigating the cause(s) of an identified non-conformity,
  - ii) documenting the action(s) that will be taken to correct and prevent the non-conformity from re-occurring, and
  - iii) reviewing the action(s) taken to correct and verifying that they are implemented and effective.
  - iv) identifying and implementing Preventive Actions (e.g., OFIs, actions identified during emergency response training/testing and from infrastructure and Management Reviews [*refer to Element 20*], MECP inspection recommendations [1 related to backflow from 2016, 2020-OFI-05 tower and 2023-BMP-02 Operator identification during live wet taps remain OPEN], staff observations [all complete], etc.) to eliminate the occurrence of potential non-conformities that includes:
    1. reviewing potential non-conformities that are identified to determine if preventive actions may be necessary,

2. documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and
3. reviewing the action(s) taken to prevent a non-conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity.

The QMS LIST 006 is being regularly reviewed with the number of “in progress” items reduced for a 95% closure rate as of 31-May-2023. **2022-IA-OFI-05/2022-OFI-26** to add Adverse Water Quality Incidents to QMS LIST 006 for root cause review is now COMPLETE as part of the 2023 Management Review discussions following this Internal Audit.



## Appendix D – External QMS Audit



## NSF International Strategic Registrations Audit Report

### **The Corporation of the Town of Pelham**

20 Pelham Town Square Box 400  
Fonthill, Ontario L0S 1E0 CAN

**C0122277**

#### **Audit Type**

Surveillance Audit

#### **Auditor**

James Pang

#### **Standard**

Ontario's Drinking Water Quality Management Standard Version 2  
(Exp Date: 29-APR-2024)

#### **Audit Date(s):**

03/17/2023 - 03/17/2023

#### **Recommendation**

Ontario's Drinking Water Quality Management Standard Version 2 : Continue Certification, NO CARs



**Executive Summary**

Ontario's Drinking Water Quality Management Standard Version 2	The MPW is familiar with the requirements of the DWQMS standard and open to improvement ideas.
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**Opportunities**

Ontario's Drinking Water Quality Management Standard Version 2	See the lone OFI
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**Corrective Action Requests**

There is NO Corrective Action Request in this audit.	
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**Site Information**

The audit was based on a sampling of the company's management system.

**Industry Codes**

NACE:E 41

**Scope of Registration**

**Ontario's Drinking Water Quality Management Standard Version 2** : Pelham Distribution System, 072-OA1, Entire Full Scope Accreditation



## Opportunities for Improvements

### Ontario's Drinking Water Quality Management Standard Version 2

Opportunity	Observations / Auditor Notes
Opportunities for Improvements (DWQMS)-01	<p><b>Location of OFI</b> Essential Supplies and Services;</p> <p><b>Discussed With</b> Ryan Cook;</p> <p><b>Description</b> As described in QMS PROC 013. Reviewed QMS-Proc-13 to be in general conformance but observed that only AWWA was specified as the specification for pipes, valves and hydrants. The management may consider to expend the specification to include NSF, ANSi and other relevant standards. ;</p>

## General Information

<b>Operating Authority: Legal Name &amp; Address</b>	<b>The Corporation of the Town of Pelham, 20 Pelham Town Square, Box 400 Fonthill, Ontario, Canada, L0S 1E0</b>
<b>Language Preference: Correspondence</b>	<b>English</b>
<b>Language Preference: Audit</b>	<b>English</b>
<b>Owner: Legal Name and Address</b>	<b>The Corporation of the Town of Pelham, 20 Pelham Town Square, Box 400 Fonthill, Ontario, Canada, L0S 1E0</b>
<b>Owner Language Preference: Correspondence</b>	<b>English</b>
<b>Owner Language Preference: Audit</b>	<b>English</b>
<b>Applicant Representative Information; Include Name, Title, Phone, Fax, Email &amp; Website</b>	<b>Ryan Cook Manager of Public works T - 905 892 2607 x 362 rcook@pelham.ca</b>
<b>Accreditation Option</b>	<b>Full Scope - Entire DWQMS</b>
<b>Date of Previous Systems Audit:</b>	<b>April 19, 2022</b>
<b>Date of Previous On-Site Verification Audit:</b>	<b>April 6, 2021</b>

## Processes

### Ontario's Drinking Water Quality Management Standard Version 2

Process Name	Observations / Auditor Notes
Processes or Activities (DWQMS)-01	<p><b>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths &amp; weaknesses of process:</b></p> <p>All conforming elements are listed below:            Element 1 - All 21 elements were incorporated in the Operational Plan (OP), Rev16 dated March 7, 2023.            Element 2 - The Pelham Distribution System QMS Policy is as documented in S801-01.            Element 3 - Owner's endorsement through a Council Resolution on Feb 21, 2023. Top Management endorsement by the Director of Public Works and Manager of Public Works on Feb 9, 2021.</p>



Process Name	Observations / Auditor Notes
	<p>Element 4 - The Manager of Public Works is the QMS Rep.</p> <p>Element 5 - As described in Document and Records Control Procedure 'QMS PROC 005'.</p> <p>Element 6 - As described in section 6 of the OP, and in QMS PROC 016 "Sampling, Testing and Monitoring".</p> <p>Element 7 - As described in QMS PROC 007. Last annual review on March 30, 2022.</p> <p>Element 8 - As described in Risk Assessment Outcomes List QMS LIST 001. Last full risk assessment on July 14, 2020.</p> <p>element 9 - As described in section 9 of the OP.</p> <p>Element 10 - As described in section 10 of the OP. Reviewed all five operator licenses to be valid.</p> <p>Element 11 - As described in 'QMS PROC 011' Personnel Coverage Procedure and 'QMS SOP 004' Overtime Call-In</p> <p>; Element 12 - As described in QMS PROC 021 and 012.</p> <p>Element 14 - Reviewed record of a review fo the the infrastructure on March 30, 2022 attended by the DPW, MPW and SWW, to be in general conformance.</p> <p>Element 15 - As described in QMS PROC 014. Reviewed the 10-year capital budget plan from 2023 to 2032, to be in general conformance.</p> <p>Element 16 - As described in QMS PROC 016.</p> <p>element 17 - As described in QMS PROC 017.</p> <p>Element 18 - Element 18 of the DWQMS Standard doesn't specify the frequency of training and test of your emergency procedures. However, it does specify "to maintain a state of emergency preparedness". Since the Operating Authority is comfortable with their current practice, the OFI from 2022 is considered closed.</p> <p>Element 19 - Reviewed records of internal audit performed by Tavares Group on Nov 16 / 17, 2022 . All 21 elements were addressed and it was found to be in general conformance.</p> <p>-</p> <p>Element 20 - Reviewed record of management review held on Nov 17, 2022 to be generally conforming. Top Management was in attendance, All required agenda items were covered. The Record included decision, action and timeliness where relevant.</p> <p>Element 21 - The continual improvements of the QMS was logged in the QMS List 006 Corrective and Preventive Action List last updated on Nov 17, 2022.</p>



<b>Summary of Findings</b>	
<b>Requirement</b>	<b>Finding</b>
1. Quality Management System	C
2. Quality Management System Policy	C
3. Commitment and Endorsement	C
4. Quality Management System Representative	C
5. Document and Record Control	C
6. Drinking-Water System	C
7. Risk Assessment	C
8. Risk Assessment Outcomes	C
9. Organizational Structure, Roles, Responsibilities, and Authorities	C
10. Competencies	C
11. Personnel Coverage	C
12. Communications	C
13. Essential Supplies and Services	OFI
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	C
16. Sampling, Testing & Monitoring	C
17. Measurement & Recording Equipment, Calibration & Maintenance	C
18. Emergency Management	C
19. Internal Audits	C
20. Management Review	C
21. Continual Improvement	C
<b>Mj</b>	Major Non-Conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
<b>Mn</b>	Minor Non-Conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
<b>OFI</b>	Opportunity for Improvement. Conforms to requirement, but there is opportunity for improvement.
<b>C</b>	Conforms to requirement.
	Not Applicable to this audit
*	Additional Comment added by auditor in the body of the report.



**Verification of CARs For Ontario's Drinking Water Quality Management Standard Version 2**

**Have you verified the effectiveness of all previous CARs? (List all new CAR's that you initiated in this report because you did not verify effective implementation of a previous CAR)**

N/A.

**Discuss your evaluation in detail.**

No CAR from the previous audit.