



Department/Division:	Public Works / Pelham Distribution System
Report:	Municipal Summary Report
Covering:	January 1, 2021 to December 31, 2021

## 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.

Two annual water reports are required by the Ministry of the Environment, Conservation and Parks (MECP) to be prepared: (1) the 'MECP Annual Report' (O.Reg. 170/03 section 11), and (2) the municipal 'Summary Report' (O. Reg. 170/03 schedule 22).

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.

The MECP Annual Report has been prepared and submitted as an attachment to the Public Works Report #2022-0027, 2021 Pelham Distribution System Summary Report.

This is the Municipal Summary Report.

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 13,300 residents through 5373 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 2021 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 eighteen water quality/supply complaints in 2021. Seven were related to low pressure concerns, seven to water colour, and four 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. Also, 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 – 2019 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	~ 36 per month	0 CFU/100mL Not detected	--	0

Total Coliform (bacteriological)	22 per month	~ 36 per month	0 CFU/100ml Not detected	--	0
HPC (heterotrophic plate count)	6 per month	~ 36 per month	--	< 500 CFU/100mL (AWWA c651-05)	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 **zero** incidents of adverse water quality conditions were detected in the system in 2021.

## 6. MECP Drinking Water System Inspection Report

The Town of Pelham’s drinking water distribution system did not undergo an MECP inspection for the period of 2021 at the time of authoring this report.

## 7. Regulatory Updates

As a result of the current COVID-19 pandemic, the ministry recently amended O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts and O. Reg. 129/04 Licensing of Sewage Work Operators. These amendments are intended to provide systems with temporary staffing options (e.g. use of knowledgeable non-certified persons) during an emergency that could adversely affect the operation of a system resulting in a drinking water health hazard or a significant risk to human health or the natural environment.

The new provisions are available to owners and operating authorities, as long as, they have reasonable grounds for believing that there is an existing or impending critical shortage of certified operators and the use of non-certified persons is necessary to ensure the safe and efficient operation of the subsystem and the continued provision of safe drinking water.

## 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 2021, a total of 1,584,270 cubic meters (m<sup>3</sup>) of water flowed to the Town of Pelham in total. (1 cubic meter of water = 1,000 litres).

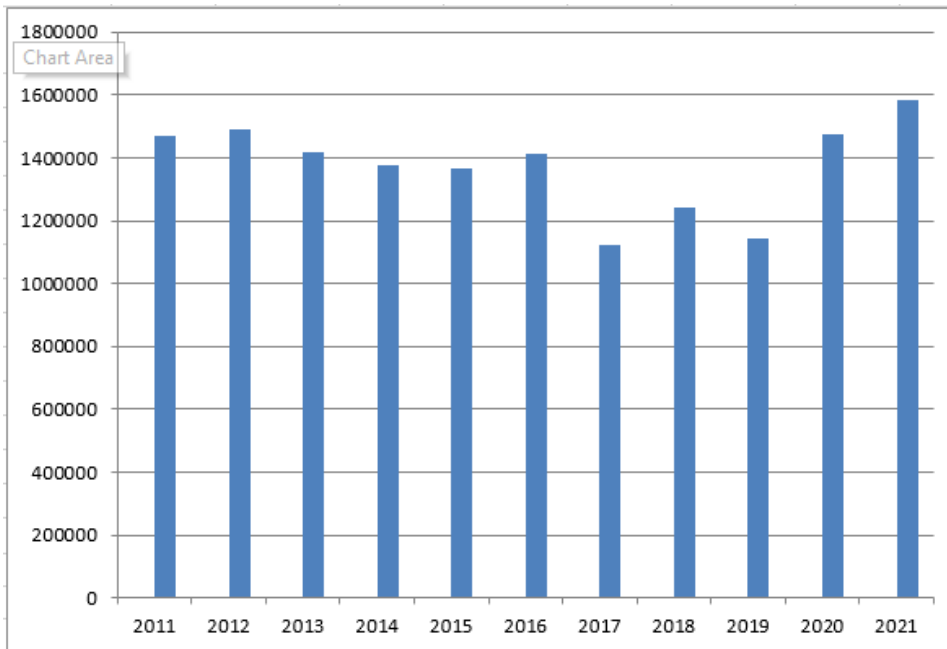
The Town of Pelham’s accounted water use which includes revenue, and accounted non-revenue water use totaled 1,346, 923m<sup>3</sup>. The total volume of unaccounted for water in 2021 was 237,347m<sup>3</sup>. Water loss is the difference between the total flow input and the accounted for water volume shown as a percentage. In 2021 the Town of Pelham’s water loss was 15%.

**Table 2 – Annual Totals**

<b>Year</b>	<b>Supply (m<sup>3</sup>)</b>
2011	1,469,470
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	<b>1,584,270</b>

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

**Figure 1 – 2021 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 2021 average daily consumptions are shown in **Table 3**, along with the maximum daily flows for each month.

**Table 3 – 2021 Daily Water Usage**

Month	Average Daily Flow (m³)	Maximum Flow in One Day (m³)
January	3287	4420
February	3439	4190
March	3498	4120
April	3501	4320
May	5229	7840
June	6238	8090
July	5001	8520
<b>August</b>	<b>6037</b>	<b>8920</b>
September	4491	6170
October	3920	4860
November	3770	4420
December	3609	4710

The 2021 highest demand day occurred in August, which aligns with the typical high monthly demands in the summer.

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.

The replacement of watermain on Pelham Street from John Street to 55m South of John has been completed as part of the Pelham Street Phase 2 project.

Developments involving the construction of new watermain by developers included: One-Twenty Condos, Lavender Fields, Canboro Place, Fonthill Abbey, Shops on 20, and Saffron Meadows Phase 3.

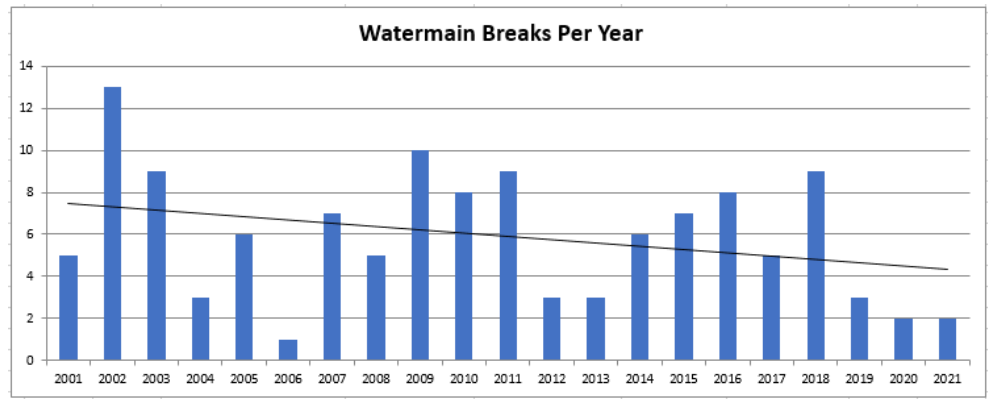
**11. Rehabilitation and Repairs**

A Total of 2 watermain breaks occurred in 2020, summarized in **Table 4. Figure 2** shows the overall trend for the total number of watermain breaks caused by pipe material and age.

**Table 4 – Watermain Break Summary**

Date	Location	Pipe Material	Suspected Cause	Planned Replacement
3-1-2021	College Street	Cast	Bedding, Age	
12-1-2021	Pancake Lane	Cast	Bedding, Age	2024

**Figure 2 – Town of Pelham – Watermain Breaks per Year**



In addition to watermain repairs, in 2021 Town of Pelham Staff replaced 6 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.

The creation of a backflow prevention policy, associated by-law and program has been placed on hold due to the Covid-19 pandemic and existing labour resources. Once completed it will be presented to Council for consideration.

## 13. Leak Detection

The Town of Pelham did not complete a leak detection program for 2021.

## 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	Renewed July 23, 2019 – Expires July 22, 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 2018, covering 2019 – 2024 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 2021 review were translated accordingly into the 2022 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 December 2021, 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 2021 are summarized. The internal audit must be performed once per year.

The Internal Audit found three (3) 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 2021, 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

<b>Infrastructure Review Summary</b>
Revision #03 <span style="float: right;">Document #QMS FORM 026</span>

<b>The Corporation of the Town of Pelham Drinking Water Distribution System</b>	
<b>Meeting Location:</b>	Tice Road Operations Centre
<b>Date / Time:</b>	March 25, 2020 1:00 – 2:20pm
<b>Attendees:</b>	Jason Marr (DPW), Ryan Cook (MPW), Dave Vaccaro (SWW)
<b>Minutes Recorded by:</b>	Sandra Tavares (Facilitator, Tavares Group Consulting Inc.)
<b>Minutes to be distributed to:</b>	DPW, MPW, SWW

<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)</b>
<p>Outcomes of the <b>Risk Assessment</b> (check what applies):</p> <p><input checked="" type="checkbox"/> <b>12-month annual</b>   <input type="checkbox"/> 24-month annual   <input type="checkbox"/> 36-month reassess</p> <ul style="list-style-type: none"> <li>Reviewed the Town of Pelham's <b>Critical Control Point (CCP), loss of chlorine residual</b>, associated Critical Control Limit (CCL = 0.20 mg/L after routine flush) and processes in place to maintain (i.e., Spring/Fall and watermain flushing) and monitor (weekly distribution system Cl2 sampling). 11-Jun-2020 <b>CCL deviation</b> was identified as part of Annual MECP Inspection 14-Dec-2020 review of QMS FORM 008 Twice Weekly Chlorine Residual Sampling Program Forms and was captured as part of 2021-NC-01 which has been closed as QMS FORM 008 was revised to clarify CCP exceedance but awaiting verification as part of the 2021 Internal Audit. <b>There are no current implications to the capital request.</b></li> <li>No other risks / hazards to be addressed by budget aside from backflow which is currently on hold due to COVID (<b>linked to risk assessment outcome #11</b>) and tracked via QMS LIST 006 Corrective and Preventive Action List.</li> </ul>	<p>No additional recommendations or action items.</p>
<p><b>Watermain</b> – servicing, replacement, monitoring, operating &amp; capital needs, other</p> <ul style="list-style-type: none"> <li>Reviewed the <b>2021 Proposed Capital Budget</b> (approved Jan-2021 as per DPW) which focuses on cast iron watermain replacement (e.g., Pelham St. -</li> </ul>	<p>No additional recommendations or action items.</p>

**Infrastructure Review Summary**

Revision #03 Document #QMS FORM 026

<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)</b>
<p>Port Robinson Road) with an annual \$400K placeholder as well as \$30K redundancy fund observed in the also reviewed <b>20 Year Capital Plan</b> (e.g., Bacon Lane which experienced a water main break in 2018 as outlined below; elevated tank may not need 2024 Daleview upgrade, 2025 water loading station addition) whose work is scheduled to restart July 2021.</p> <ul style="list-style-type: none"> <li>• Reviewed <b>2020 Infrastructure Review Summary</b> and associated recommendations (<b>current status is in bold text</b>):               <ul style="list-style-type: none"> <li>- Clare Avenue Watermain Replacement - development driven (<b>carried over to 2021 as per DPW</b>)</li> <li>- Station Street: Hwy 20 to Port Robinson, Watermain Replacement (<b>WTR 02-18 completed</b>)</li> <li>- Backflow Prevention Program (<b>WTR 01-2018 repeated recommendation from MECP – refer to item above for additional details</b>)</li> </ul> </li> <li>• Reviewed <b>2018-2020YTD 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):               <ul style="list-style-type: none"> <li>- <b>9</b> (revised from 2020 meeting) <b>in total in 2018</b> (1 pulled by contractor on Hurricane [risk assessment outcome 8]) 2x Pelham St N, 2x Pelham St S, 1 Strathcona Drive, 165 Welland and 1441 Station St. (watermain to be replaced in these areas) and 1 Bacon Lane</li> <li>- <b>13 in 2019</b> (5 contractor- and 2 ageing-related, 5 cast iron)</li> <li>- <b>12 in 2020</b> (6 contractor-related, 6 cast iron)</li> <li>- <b>1 in 2021</b> (due to age / cast iron)</li> <li>- Numbers confirmed to continue to be in line with 5-10 / year with highest frequency in replacement process which is also dependent on funding/available reserves, wastewater, and roads needs.</li> </ul> </li> </ul>	
<p><b>Hydrants</b> – monitoring, servicing, operating &amp; capital needs, other</p> <p>'Hydrant Maintenance 2020' spreadsheet identified completion in all 4</p>	<p>No additional recommendations or action items.</p>

**Infrastructure Review Summary**

Revision #03 Document #QMS FORM 026

<b>Infrastructure Review Meeting Minutes</b>	
<b>Details / Discussion Points / Issues Identified</b>	<b>Recommendation (for budget ask) / Action Items (to be tracked via QMS LIST 006)</b>
quadrants in 2020 with Management Review Action 2020-AI-02 to redefine valves / hydrants quadrants map by Fall 2021.	
<b>Main valves</b> – monitoring, servicing, operating & capital needs, other	
<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 5-May through 10-Dec-2020 and also 4/27-Jan- and 4Mar-2021 with all quadrants exercised and maintained as per SWW</li> <li>• <b>Existing Pressure Release Valves (PRVs)</b> – March 2020 inspection took place as part of the operating budget with no short-terms concerns aside from Operating Budget 2022/2023 maintenance as per MPW; 2020 Final 20-Year Capital identified projected needs in 2034 and 2035 replacement</li> </ul>	No additional recommendations or action items.
<b>Other appurtenances</b> – operating & capital budget needs, other	
<ul style="list-style-type: none"> <li>• <b>Bulk Station</b> (identified 50-year life span) continues to have no short-term concerns / implications to capital request.</li> <li>• MPW identified halfway through <b>water meter program</b></li> </ul>	No additional recommendations or action items.
<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> </ul>	No additional recommendations or action items.
<b>Software / hardware</b> – capital needs, other	
<ul style="list-style-type: none"> <li>• <b>Action (2020-OFI-11)</b> is on scheduled for Sep-21</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; leaky seal was recently replaced on duty pump (which is now the back up) as per SWW and MPW. Although the Region does intend on</li> </ul>	No additional recommendations or action items.

**Infrastructure Review Summary**

Revision #03 Document #QMS FORM 026

<b>Infrastructure Review Meeting Minutes</b>																																																		
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<p>moving forward with the Water Tower which will obsolete the pumping station (related to Risk Assessment Outcomes #s 1 and 2), it is currently on hold and to be discussed with the Region the week of 29-Mar-2021 (refer to OPEN 2020-OFI-05 MECP Inspection Recommendation).</p>																																																		
<p><b>Staffing</b></p> <p>No requirements were identified.</p>	No additional recommendations or action items.																																																	
<p><b>Water Quality Complaints</b></p> <p>Annual summary in 'Complaint Summary' tab of '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed (1 due to pressure was identified YTD in 2021 in addition to inquiries about pressure, as per SWW):</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TYPE</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td><b>Air Complaints / Year</b> – tied to watermain breaks and colour</td> <td>3</td> <td>1</td> <td>1</td> <td>2</td> <td><b>2</b></td> <td><b>9</b></td> </tr> <tr> <td><b>Colour Complaints / Year</b> – internal plumbing issues led to an increase in 2019 (e.g., rusty water tanks)</td> <td>4</td> <td>7</td> <td>3</td> <td>12</td> <td><b>3</b></td> <td><b>29</b></td> </tr> <tr> <td><b>Leaky Service Complaints / Year</b> – water main replacement has reduced this number</td> <td>5</td> <td>22</td> <td>3</td> <td>2</td> <td><b>5</b></td> <td><b>37</b></td> </tr> <tr> <td><b>Low Pressure Complaints / Year</b> – moves from one area to another</td> <td>9</td> <td>13</td> <td>5</td> <td>8</td> <td><b>7</b></td> <td><b>42</b></td> </tr> <tr> <td><b>Odour Complaints / Year</b></td> <td>1</td> <td>2</td> <td>1</td> <td>2</td> <td><b>1</b></td> <td><b>7</b></td> </tr> <tr> <td style="text-align: right;"><b>TOTAL</b></td> <td><b>22</b></td> <td><b>45</b></td> <td><b>13</b></td> <td><b>26</b></td> <td><b>18</b></td> <td><b>124</b></td> </tr> </tbody> </table>	TYPE	2016	2017	2018	2019	2020	TOTAL	<b>Air Complaints / Year</b> – tied to watermain breaks and colour	3	1	1	2	<b>2</b>	<b>9</b>	<b>Colour Complaints / Year</b> – internal plumbing issues led to an increase in 2019 (e.g., rusty water tanks)	4	7	3	12	<b>3</b>	<b>29</b>	<b>Leaky Service Complaints / Year</b> – water main replacement has reduced this number	5	22	3	2	<b>5</b>	<b>37</b>	<b>Low Pressure Complaints / Year</b> – moves from one area to another	9	13	5	8	<b>7</b>	<b>42</b>	<b>Odour Complaints / Year</b>	1	2	1	2	<b>1</b>	<b>7</b>	<b>TOTAL</b>	<b>22</b>	<b>45</b>	<b>13</b>	<b>26</b>	<b>18</b>	<b>124</b>	No additional recommendations or action items.
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<p><b>Best Management Practices (BMPs)</b></p> <ul style="list-style-type: none"> <li>Although <b>QMS LIST 006 Corrective Action List</b> OPEN 2018-OFI-13, 2019-OFI-01 and 2020-OFI-05 OPEN MECP Recommendations were not deemed as BMPs at the last meeting, they are closed and scheduled to be verified later this year; there are no additional Element 14 actions aside from those listed here</li> </ul>	As per SWW, GPS equipment for valves / hydrants to start up by late summer / early Fall ( <b>2021-BMP-01 added to QMS LIST 006</b> ).																																																	

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>	Online
<b>Date / Time:</b>	December 9, 2021
<b>Attendees:</b>	Jason Marr (DPW), Ryan Cook (MPW), 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 2-Dec-2020 was communicated via <https://www.pelham.ca/en/living-here/resources/Documents/Municipal-Summary-Report.pdf> and approved 16-Feb-2021 via Committee of the Whole Minutes COW-03/2021 agenda number 9.1 (no longer needed within OP Binder as available electronically).

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

\*Please refer to Management Review Data Summary Package dated 2-Dec-2020 for previous details reviewed for each of the inputs below.

<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 14-Dec-2020 (2021 inspection has not yet been scheduled) with a Noncompliance (2021-NC-01) pertaining to 11-Jun-2020 deviation from Critical Control Limits (CCL) not identified; QMS FORM-008 was revised to identify limit and confirmed as being used as part of the 2021 Internal Audit</li> <li>- no associated 'Recommendations and Best Management Practices' were identified in 2021 although <a href="#">QMS LIST 006</a> open items dated <b>2016-09-01</b> (backflow which is also addressed in subsequent MECP Inspection Reports and <b>2020-OFI-05</b> (TBD by Region with a tentative date of 2025) remain relating to:               <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>	<a href="#">QMS LIST 006</a> to be shared with MECP for updates on 2019 same issues raised but not requested by MECP as per MPW	N/A	N/A

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<b>Management Review Meeting Minutes</b> <i>(completion of Action Items to be tracked via QMS LIST 006)</i>				
Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date
2)	<p>Incidents of <a href="#">adverse drinking-water tests</a>:</p> <ul style="list-style-type: none"> <li>- <b>2-2020 Total Coliform (TC) and high chlorine</b> Adverse Water Quality Incidents (AWQIs) on 9-Sep (151917, resolved 14-Sep) and June 25 (150397, resolved 29-Jun)</li> <li>- Previously, <b>4 incidents in 2015</b> as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' 'Maintenance Activities' tab</li> <li>- New more workable QMS FORM 017 (25-Mar-21) to replace QMS SOP 027</li> </ul>	Not applicable (N/A)	N/A	N/A
3)	<p>Deviations from critical control point limits and response actions:</p> <p><b>Refer to Item 1)</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 2020-07-14</li> <li>• <b>Annual Review</b> resulted in no changes and took place with Review of Infrastructure</li> </ul>	Next proposed Mar-21 prior to NSF Re-Accreditation and to coincide with 2021 budget process <i>(refer to 'DWQMS Timeline' tab of <a href="#">QMS LIST 006</a>)</i>	<b>TGC</b>	<b>COMPLETED</b> 25-Mar-2021
5)	<p><a href="#">Internal</a> / <a href="#">third-party</a> audit results:</p> <ul style="list-style-type: none"> <li>- Results of the remote <b>2021 Internal Audit</b> were reviewed with report to be issued by 17-Dec-2021. <b>3 OFIs</b> were identified and added to added to <a href="#">QMS LIST 006</a> relating to Elements 6, 10 and 17</li> <li>- <b>Previous Internal Audit findings 2019-OFI-05</b> pertaining to correctly characterizing frozen [home] services within 'Current Combined Water Ops 2015 onward spreadsheet', currently identified as "scheduled" is now <b>CLOSED</b> as MPW deleted this column; <b>2020-OFI-14</b> pertaining to contractor related breaks and Region of Niagara water-specific contractor training is on hold and <b>2020-OFI-15</b> to ensure maintenance forms are completed in their entirety is to be discussed again at the 2022 Calibration Session</li> </ul>	<p><b>2019 findings to be addressed.</b></p> <p><b>Photos of colorimeters are to be provided for verification of 2019-OFI-07 (2019-IA-04).</b></p>	<p><b>TGC / MPW</b></p> <p><b>SWW</b></p>	<p>end of Q1 2020 - <b>COMPLETED</b></p> <p>due 31-Dec-2020 <b>COMPLETE</b> <b>2-Feb-2021</b></p>

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	- The <b>NSF external DWQMS audit</b> took place 6-Apr-2021 with 1 OFI pertaining to not addressing all audit OFIs as some were already closed with no further action and all previous findings closed			
6)	Results of emergency response testing:  Last Conducted 14-Jul-2020 with <b>2020-OFI-10 CLOSED</b> for verification on the use of the NEW QMS FORM 005 Drinking Water Advisory Form that replaces QMS SOP 026	Next proposed for 2023 as per 'DWQMS Timeline' tab of <a href="#">QMS LIST 006</a>	N/A	N/A
7)	Operational Performance:  <ul style="list-style-type: none"> <li>• <b>Sampling results</b> were presented by MPW for lead (none identified), and THM and HAA RAAs below requirements and latter downward trend</li> <li>• <b>Maintenance</b> as per '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed: <ul style="list-style-type: none"> <li>- 2021 <b>PRV Maintenance</b> took place 27-Jan, 25-Jun and 30-Aug; as per MPW, an overhaul delineated upper and lower pressure zones where a Contractor set up PRVs and completed maintenance</li> <li>- 2021 <b>annual valve maintenance</b> initiated 4-Jan through 2-Nov for <b>Quad 4; Quad 2</b> was completed in 2019; <b>Quad 3</b> completed Fall 2020; and <b>Quad 1</b> confirmed scheduled by MPW for next year</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); <b>Quad 3</b> in 2020/2021 and <b>2 &amp; 4</b> in 2020/2021 with some <b>Quad 1</b> in 2021</li> <li>- <b>dead end blow off flushing</b> was completed in the <b>Spring</b> (23-Mar- to 20-Apr-2020, 14-Apr to 3-May-2021) and <b>Fall</b> (5-22 Oct-2020, 20-Sep- to 13-Oct-2021)</li> </ul> </li> </ul>	<p><b>Create a procedure for PRV maintenance.</b> (2020-AI-01)</p> <p><b>Redefine valves / hydrants</b> (already addressed annually) <b>quadrants map.</b> (2020-AI-02)</p> <p><b>Review procedure(s) for frequency.</b> (2020-AI-03)</p>	<p>MPW / SWW <b>(Reassigned to SWW)</b></p> <p>MPW / SWW <b>(Reassigned to SWW)</b></p> <p>TGC / MPW</p>	<p>April 2021 <b>(postponed to Oct-21 and 31-Dec-2022)</b></p> <p>1-Sep-2021 <b>(postponed from 31-Oct-21 to Fall 2022)</b></p> <p>1-Sep-2021 <b>(postponed to 31-Jan-2022)</b></p>
8)	Raw water supply <a href="#">reports</a> & drinking water trends:  Region of Niagara reports reviewed annually by MPW identified no issues	N/A	N/A	N/A

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9)	<p>Follow-up on actions from <a href="#">previous Management Reviews</a>:</p> <ul style="list-style-type: none"> <li>• <b>2019-OFI-08</b> to obtain a copy of the draft Ontario Watermain Disinfection Procedure was tied with MECP Inspection Recommendation <b>2020-OFI-04</b> pertaining to associated chlorine sampling, both <b>COMPLETE 23-Jan-2020</b>, which led to internal QMS PROC 025 Watermain Break Procedure and associated forms (QMS FORMS 010 Watermain Commissioning Contractor Plan, 012 Watermain Commissioning Town Checklist, 025 Watermain Break Report) revisions in Jan/Feb-2021 coinciding with license renewal.</li> <li>• Refer throughout Minutes for additional Management Review Action Items</li> </ul>	Procedure to be reviewed by time license renews.	SWW	1-Feb-2021  <b>COMPLETE</b> <b>29-Jan-2021</b> as per QMS LIST 010 Document Management List
10)	<p>Status of management actions items identified between reviews:</p> <p>Refer to Item 9) directly above</p>	<p><b>2020-OFI-12</b> ii) Consider making the OP in its entirety available electronically - <b>now located at</b> <a href="https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx">https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx</a> with location to be reviewed by MPW</p>	<b>Admin-Assistant</b>	<p><b>1-Mar-2021</b> <i>(following Annual Summary Report presentation to Council)</i></p> <p><b>COMPLETE</b> 1-Apr-2021</p>
11)	<p>Changes that could affect the Quality Management System:</p> <ul style="list-style-type: none"> <li>- <b>2021 Annual Calibration</b> completed 1-Apr prior to the External Audit and proposed again for 6-Apr-2022 prior to NSF on-site Re-Accreditation 16-Apr-2022 as per DWQMS Timeline (other DWQMS dates agreed upon) and to include DWQMS stats</li> </ul>	<b>i) Obtain a copy of the draft Ontario Watermain Disinfection Procedure.</b>	MPW	<p>i) 15-Jan-2020 <b>RESCHEDULED</b> to 1-FEB-2021, <b>COMPLETED</b> as per Item 9)</p>
12)	Consumer feedback (incl. <a href="#">complaints</a> ):	N/A	N/A	N/A

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Input	Details / Discussion Points / Issues Identified /Decisions Made	Action Item(s)	Responsibility	Proposed Due Date																																																	
	<p>Annual summary in 'Complaint Summary' tab of '<a href="#">Current Combined Water Ops 2015 onward spreadsheet</a>' was reviewed:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <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>21YTD</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Air</td> <td style="text-align: center;">3</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">Colour</td> <td style="text-align: center;">4</td> <td style="text-align: center;">7</td> <td style="text-align: center;">3</td> <td style="text-align: center;">12</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">Leaky Service</td> <td style="text-align: center;">5</td> <td style="text-align: center;">22</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">5</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">Low Pressure</td> <td style="text-align: center;">9</td> <td style="text-align: center;">13</td> <td style="text-align: center;">5</td> <td style="text-align: center;">8</td> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">Odour Complaints</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">6</td> </tr> <tr style="background-color: #cccccc;"> <td style="text-align: center;">TOTAL</td> <td style="text-align: center;">22</td> <td style="text-align: center;">45</td> <td style="text-align: center;">13</td> <td style="text-align: center;">26</td> <td style="text-align: center;">18</td> <td style="text-align: center;">14</td> </tr> </tbody> </table> <p>An increase in odour complaints is partially unexplained by SWW as the issue has dissipated by the time an Operator tends to the issue. Sampling takes place to try and resolve the issue.</p>	Complaints / Year	2016	2017	2018	2019	2020	21YTD	Air	3	1	1	2	2	-	Colour	4	7	3	12	3	4	Leaky Service	5	22	3	2	5	-	Low Pressure	9	13	5	8	7	4	Odour Complaints	1	2	1	2	1	6	TOTAL	22	45	13	26	18	14			
Complaints / Year	2016	2017	2018	2019	2020	21YTD																																															
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Odour Complaints	1	2	1	2	1	6																																															
TOTAL	22	45	13	26	18	14																																															
13)	<p>The resources needed to maintain the QMS:</p> <ul style="list-style-type: none"> <li>MPW and DPW identified assistance services an asset and to continue into 2022</li> <li>Number of Operators OK until 2025 when work is required on the system</li> <li>2022 DWQMS Timeline was reviewed and dates agreed upon</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 25-Mar-2021 with the Risk Assessment Outcomes Review with the 2021 Proposed Capital Budget approved Jan-2021 as per DPW which includes the following updates since the meeting:</p> <ul style="list-style-type: none"> <li>- cast iron watermain replacement (e.g., Pelham St.)</li> <li>- Clare Avenue Watermain Replacement to be tendered as well as Station St. and partial replacement at MS Park</li> <li>- Backflow Prevention Program (WTR 01-2018 repeated recommendation from MECP on hold – refer to item above for additional details)</li> </ul>	More detailed review of 20-year projects (e.g., cast iron, from developers) prior to review of infrastructure	DPW	<p>1-Apr-2021</p> <p style="color: green; font-weight: bold;">COMPLETED</p> <p>25-Mar-2021</p>																																																	

**Management Review Meeting Record**

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	<ul style="list-style-type: none"> <li>- <b>2020-OFI-11</b> pertaining to Work Order Software tablets required for Operators and associated <b>2021-BMP-01</b> pertaining to GPS Equipment for valves and hydrants hves been rescheduled to 31-Dec-2022</li> <li>- 4-2022 projects discussed, two of which focus on design</li> </ul>																																															
15)	<p><u>Operational plan currency, content, and updates</u> (incl. need for re-endorsement):</p> <p>Operational Plan and associated QMS PROC updates (some of which have been discussed above) as per QMS LIST 010 were completed in 2021 and submitted to Council resulting in NEW endorsement 22-Mar-2021 by Council and 9-Feb-2021 by Top Management. QMS PROC 020 Management Review proposed changes to minimise duplication by referencing agenda rather than relisting inputs.</p>					N/A	N/A	N/A																																								
16)	<p>Personnel suggestions:</p> <p>Tracked via <u>QMS LIST 006</u> - <b>2018-OFI-13, 2019-OFI-01</b> (backflow testing form) and <b>2020-OFI-06</b> related to backflow, calibration and Final Guideline for Canadian Drinking Water Quality for Chloramines, respectively are now CLOSED.</p>					N/A	N/A	N/A																																								
17)	<p>General assessment of suitability, adequacy, and effectiveness</p> <p><b>QMS LIST 006 Closure Rate of 89% in Apr-2021 TO 92% as of 9-Dec-2021.</b> 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> </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> </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>Date TBD</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> </tr> <tr> <td><b>TOTAL</b></td> <td><b>3 NCs, 9OFIs</b></td> <td><b>5 NCs, 18 OFIs</b></td> <td><b>16 OFIs</b></td> <td><b>9 OFIs</b></td> <td><b>1 NC, 6 OFIs</b></td> <td><b>7 OFIs</b></td> <td><b>4 OFIs</b></td> </tr> </tbody> </table> <p>Most findings are generated from internal audits and mostly OFIs. Corrective and preventive actions are being managed effectively. The QMS is deemed to be suitable, adequate, and effective.</p>						2015	2016	2017	2018	2019	2020	2021	<b>Internal Audit</b>	3 NCs, 5 OFIs	5 NCs, 13 OFIs	8 OFIs	6 OFIs	1 NC, 4 OFIs	5 OFIs	3 OFIs	<b>MECP Inspection</b>	2 NCs	3 Recs	4 Recs	3 NCs, 5 Rec	2 Recs, 2 AIs	1 NC	Date TBD	<b>External audit (OFIs)</b>	4	2	2	3	2	2	1	<b>TOTAL</b>	<b>3 NCs, 9OFIs</b>	<b>5 NCs, 18 OFIs</b>	<b>16 OFIs</b>	<b>9 OFIs</b>	<b>1 NC, 6 OFIs</b>	<b>7 OFIs</b>	<b>4 OFIs</b>	N/A	N/A	N/A
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18)	Review and consideration of applicable Best Management Practices (BMPs)	N/A	N/A	N/A
	MECP website identified no BMPs but would be included within <a href="#">QMS LIST 006</a> if identified from this or other source – none identified by DPW and MPW.			

Appendix C – Internal 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: 16 November and 2/9 December 2021

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: 16 December 2021

## Project Objectives

Tavares Group Consulting Inc. was engaged by The Town of Pelham to conduct a virtual 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

A virtual audit was performed 16-Nov- and 2/8-Dec-2021 preceding interviews 9-Dec-2021, according to ISO 19011:2018 Guidelines for auditing management systems, including the Internal Audit Plan issued 18-Oct-2021 to confirm:

- the management system conforms with the applicable elements of the Standard; and
- the organization 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 16-Nov-2021 with the Manager of Public Works and Supervisor Water / Wastewater (SWW) with a Closing Meeting 9-Dec-2021 also including the Director of Public Works (all interviewees).

## Conclusions

The Town of Pelham's QMS conforms with:

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

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

In total, there were three [3] Opportunities for Improvement (OFIs) identified. Refer throughout the audit report for 2020 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., 2020-IA-XX) have been assigned for new findings.

**2015 – 3 NCs, 5 OFIs**  
**2016 – 5 NCs, 13 OFIs**  
**2017 – 8 OFIs**  
**2018 – 6 OFIs**  
**2019 – 1 NC, 4 OFIs**  
**2020 – 5 OFIs**  
**2021 – 3 OFIs**

### 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

<b>Owner &amp; Operating Authority:</b>	The Corporation of the Town of Pelham (Public Works)
<b>Auditors:</b>	Sandra Tavares ( <i>Lead</i> ) and Francis Chua ( <i>Team Member</i> )
<b>System Reviewed:</b>	Pelham Distribution System (PDS)
REQUIREMENT ↓	FINDING(S) ↓
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 Records Control	OFI 2020-IA-01 IN PROGRESS
6. Drinking Water System	OFI-2021-IA-01
7. Risk Assessment	OFI 2020-IA-02 COMPLETE
8. Risk Assessment Outcomes	C
9. Organizational Structure, Roles, Responsibilities and Authorities	C
10. Competencies	OFI-2021-IA-02
11. Personnel Coverage	C
12. Communication	C
13. Essential Supplies and Services	OFI 2020-IA-03 ON HOLD
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	OFI 2020-IA-04 COMPLETE
16. Sampling, Testing and Monitoring	C
17. Measurement & Recording Equipment Calibration and Maintenance	OFI-2021-IA-03
18. Emergency Management	C
19. Internal Audits	C
20. Management Review	C
21. Continual Improvement	OFI 2020-IA-05 COMPLETE
C	Conforms to the requirement – <a href="#">See comments in body of report</a>
Mj	Major Non-conformity
Mn	Minor 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

<p>DWQMS Reference Evidence Finding Summary</p>	<p><b>1. Quality Management System</b> Pelham Distribution System (PDS) Operational Plan (Rev.13, 25-Mar-2021) <b>Conforms</b> The Pelham Distribution System Operational Plan (OP) documents, now available online at <a href="https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx">https://www.pelham.ca/en/living-here/water-and-wastewater-maintenance.aspx</a>, addressing OFI 2020-IA-01 iii, and is implementing a Quality Management System (QMS) that meets the requirements of the DWQMS.</p>
<p>DWQMS Reference Evidence Finding Summary</p>	<p><b>2. Quality Management System Policy</b> PDS OP Element 2, S801-01 (22-Mar-2021) <b>Conforms</b> Public Works, as the OA, has established and maintains a QMS Policy documented within S801-01, recently revised for conciseness, signed by the DPW and MPW 2-Mar-2021, and approved by Council 22-Mar-2021 via agenda number 10.2.6, that sets the foundation for the QMS and meets the requirements of the DWQMS. The Policy is posted at the Town of Pelham Operations Centre (as per photo sent by SWW), available for viewing at the Town of Pelham Municipal Offices (currently closed to the Public due to COVID) and communicated to the Public through the Town's website, <a href="https://www.pelham.ca/en/living-here/resources/S801-01---Quality-Management-System-Policy.pdf">https://www.pelham.ca/en/living-here/resources/S801-01---Quality-Management-System-Policy.pdf</a> and is available upon request. Refer to Element 12 for communication of the Policy to Suppliers.</p>
<p>DWQMS Reference Evidence Finding Summary</p>	<p><b>3. Commitment and Endorsement</b> PDS OP Element 3 <b>Conforms</b> Endorsement of the QMS Policy, the OP (now included in OP Appendix A to address OFI 2020-IA-01 iv) and approval of the Financial Plan was completed by Council as per Element 2 directly above (although minor updates to the OP do not require Owner re-endorsement) with the former endorsed by OA Top Management (i.e., DPW and MPW) most recently 9-Feb-2021. Top Management has provided evidence of its commitment by:</p> <ul style="list-style-type: none"> <li>i. ensuring a QMS is in place that meets the requirements of the DWQMS (<i>see Element 1</i>);</li> <li>ii. communicating the QMS (<i>see Element 12</i>);</li> <li>iii. determining, obtaining, and providing the resources needed to maintain and continually improve the QMS (<i>see Element 20</i>); and</li> <li>iv. ensuring the OA is aware of applicable regulatory requirements which since the last internal audit include, as documented via QMS LIST 006 Corrective Action List: <ul style="list-style-type: none"> <li>a) <b>2020-OFI-06 Final Guideline for Canadian Drinking Water Quality for Chloramines</b> discussed during 5-Dec-2020 Management Review identified through a Staff Observation</li> </ul> </li> </ul>

which is now closed as deemed by the MPW with no impact on the system.

- b) 2019-OFI-08 **watermain disinfection** 19-Dec-2019 Management Review meeting item with a Feb-2021 deadline leading to document revisions (e.g., Watermain Commissioning – Contractor Plan QMS FORM 010 [rev.3, 29-Jan-2021 was completed 1-Apr-, 26-Jul- and 27-Jul-2021; rev.1 was completed 2/3/8-Jul-2021 with Section 6. Bacteriological confirmation location for free chlorine incomplete to be discussed at next Annual Calibration] and associated Town Checklist QMS FORM 012 [rev.06, 9-Feb-2021 completed for 23-Jul- and 4-Aug-2021]), and
- c) **2021-NC-01 Critical Control Limit (CCL) deviation** identified as a result of the last Ministry of Environment, Conservation and Parks (MECP) Inspection which led to its identification on QMS-008 as a revision (*form verified in use as part of this audit*)

As confirmed via interview with the MPW, 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 despite 2021 communication / notification having no impact on the Pelham Distribution System.

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 bylaw, as per OP Appendix B (to address OFI 2020-IA-01 iv). Responsibilities (described under Element 9 and confirmed during the audit) include:

- i. administering the QMS by ensuring that processes and procedures needed for the QMS are established and maintained (*see Element 1*);
- ii. reporting to Top Management on QMS performance (*see Element 20*);
- iii. ensuring that current versions of documents are being used (*see Element 5*); and
- iv. ensuring that personnel are aware of applicable regulatory requirements and the QMS (*refer to Elements 3, 10 and 12*).

DWQMS Reference  
Evidence  
Finding  
Summary

#### 5. Document and Records Control

PDS OP Element 5, QMS PROC 005 (rev.10, 23-Jan-2020), QMS LIST 010 Document Management List (rev.3, 14-Feb-2018; last updated 1-Apr-2021)

##### **Opportunity for Improvement 2020-IA-01 IN PROGRESS (Verification pending)**

QMS PROC 005 identifies a 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, and

protected through back-ups, retained, and disposed of. Record filing and disposal is also addressed. 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 and many issued partially addressing OFI 2020-IA-01 i. QMS LIST 010 identifies QMS documentation by name, revision number, date, controlled copy location, and, for forms, change history; most current OP documents were observed to be maintained in the shared drive ('Public Works Drive\Water\DWQMS\OP Procedures SOPs Forms' still accessed by the 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'.

**DWQMS Reference  
Evidence  
Summary**

**6. Drinking Water System**

**PDS OP Element 6**

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 as per the most recent revision. 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. The subject system's components include approximately 83.6 Km of water main as per Engineering's last annual 16-Dec-2020 inventory update as well as 569 fire hydrants and 674 town owned valves (4728 service connections require confirmation through the metering program, 9 pressure reducing valves (as part of Operational Manual, 2 PRVs are operated by the Region of Niagara and 7 by PDS), and a pressure boosting station (serving Chestnut Ridge with maintenance and operation contracted to the Region of Niagara). 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.

**Finding  
Details**

**Opportunity for Improvement OFI-2021-IA-01**

There is an opportunity to update the Drinking Water System description as per annual inventory and metering program updates.

**DWQMS Reference  
Evidence**

**7. Risk Assessment**

QMS PROC 007 (rev.9, 11-Nov-2019), QMS LIST 001 Risk Assessment Outcomes List (rev.3, 16-May-2018; last reviewed 25-Mar-2021)

**Summary**

QMS PROC 007 documents a risk assessment process that includes consideration of potential hazardous events and associated hazards, as

identified in MECP's [Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment](#) (Feb-2017). 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). As per the Management Review Meeting Record (3-Dec-2020), "A delayed Re-Assessment due to COVID was completed 2020-07-14 (previously 2-May-2017 and last reviewed 28-Oct-2019) as a precursor to review of infrastructure, conducted on the same day.". The OFI identified in the internal audit (5-Nov-2020) to document the 36-month risk outcomes re-assessment discussions (e.g., within the Review of Infrastructure minutes as they are completed at the same time) was completed as per QMS LIST 006 (2020-OFI-13, 2020-IA-02) and as evidenced in the annual Infrastructure Review Summary (25-Mar-2021), attended by DPW, MPW, and SWW with no changes to ratings or thresholds.

**DWQMS Reference  
Evidence**

**8. Risk Assessment Outcomes**

QMS PROC 007 (rev.9, 11-Nov-2019), QMS LIST 001 Risk Assessment Outcomes List (rev.3, 16-May-2018; last reviewed 25-Mar-2021), QMS PROC 016 (rev.11, 21-Jan-2021), QMS SOP 001 (rev.6, 26-May-2017)

**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) 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 in a couple of years) 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 (CCL = 0.20 mg/L). Flushing measures to restore residual is documented as per QMS SOP 001 Flushing (*refer to Element 6*). As confirmed via QMS LIST 006, the last deviation from the identified CCL took place 11-Jun-2020 as per 2021-NC-01 (*refer to Element 3 for follow up*). 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; no additional recommendations or actions were required and there are no current implications to the capital request.

**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 SWW. Top Management continues to be involved in Infrastructure and Management Reviews, with the DPW having weekly 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 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 more recently electronically due to COVID. QMS awareness training is provided to new operations personnel where the OP is reviewed and covers relevance of duties although no new Operators have been hired since the last audit, as per the SWW. Operator certificates were current and still posted at the Tice Road Operations Centre SWW desk. 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' and '..\Water Distribution System\Training Records\Operator Training Records' by name. The following records were reviewed:

- **S. Berstling** Class 1 #58758 exp.31-Jan-2021 (*off since September*)
- **R. Cook** Class 2 #16368 (31-Mar-2023) received 28-Sep-2021 OETC Watermain Disinfection Procedure
- **M. Hollingshead** Class 2 #11624 exp.30-Jun-2022 (*retired*)
- **D. Nichols** Class 1 #95085 (31-Oct-2022, *hasn't been in water department for 3-4 years*)
- **M. Paniccia** (*most recent 2019 hire*) exp.31-Dec-2023 had 22/24-Feb-2021 WWOTC Maintaining Chlorine Residuals and Flushing Techniques, respectively; 31-May WWOTC Operational Imperatives (all with B. Smith and D. Vaccaro), OWWA Cross Connection Control 27-Aug, and with B. Smith 8-Nov-2021 OETC Drinking Water Law and Due Diligence
- **B. Smith** exp.28-Feb-2023
- **D. Vaccaro** Class 2 #71210 (31-Jan-2023) received MECF 24-Sep2021 Risk Management with B. Smith

Finding  
Details

### Opportunity for Improvement OFI-2020-IA-02

There is an opportunity to update [former OIT] Operator Training Summaries with current certificate numbers and track whether online or in-person training.

DWQMS Reference  
Evidence  
Finding  
Summary

### 11. Personnel Coverage

PDS OP Element 11, QMS PROC 011 (rev.8, 9-Oct-2018)

#### Conforms

OP Element 11 documents a process to ensure that 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 which will contact designated On Call Personnel. Overall Responsible Operator (ORO, i.e., MPW as per QMS PROC 011) designation is documented via email for holidays backup only despite additional responsibilities and observed from MPW 31-Aug-2021 and 16-Nov-2021 to the PW Administrative Assistant, Operator-In-Charge (OIC) 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 work order), or Water Distribution System Operation Record / Logbook or on-call log as per MPW. 3-2021 frozen services were noted (1 unscheduled and 2 scheduled leading to the removal of the similarly titled column in the 'Current Combined...' spreadsheet by the MPW to address a 2020 OFI).

DWQMS Reference  
Evidence  
  
Finding  
Summary

**12. Communication**

PDS OP Element 12, QMS PROC 021 (rev.9, 29-Jan-2021), QMS SOP 016 (rev.6, 26-May-2017), DWQMS Awareness Training (14-Jul-2020)

**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., 2020 available online 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 (Awareness presentation completed 1-Apr-2021 which incorporated all documentation changes, including record control issues) and may be documented via QMS FORM 016 (refer to Element 10 above).

**Public** water concerns / complaints are managed as per QMS SOP 016, with details tracked on the 'Current Combined Water Ops 2015 onward spreadsheet' 'Complaint Summary' tab which identifies the following:

Complaints / Year	2016	2017	2018	2019	2020	2021 YTD
Air	3	1	1	2	2	-
Colour	4	7	3	12	3	4
Leaky Service	5	22	3	2	5	-
Low Pressure	9	13	5	8	7	4
Odour	1	2	1	2	1	6
<b>TOTAL</b>	<b>22</b>	<b>45</b>	<b>13</b>	<b>26</b>	<b>18</b>	<b>14</b>

The reason for the decreasing number of complaints from 2019 (latter construction related complaints as per SWW) is unknown as per MPW and an increase in odour complaints difficult to ascertain as per SWW as the issue is not observed when Operators arrive (MPW suggested sink traps may be the issue and maybe seasonal); notes are typically tracked through work order and logbook with chlorine levels tested as per QMS SOP 016. Communication with **Suppliers** is done according to QMC PROC 013; suppliers associated with

affecting the water system were last communicated to by the SWW via email 29-Mar-2021 re: quality requirements and the QMS Policy as per QMS LIST 006 'DWQMS Timeline' tab, to partially address External Audit 2020-OFI-08 (now deemed complete).

DWQMS Reference  
Evidence  
Finding  
Summary

### 13. Essential Supplies and Services

PDS OP Element, QMS PROC 013 (rev.10, 26-Jan-2021)

#### **OFI 2020-IA-03 ON HOLD**

QMS PROC 013, most recently revised 26-Jan-2021 to include essential supplier communication of 12-hour service expectation to address the External Audit 2020-OFI-08 referred to in Element 12, also documents a process by which the OA lists and ensures the quality (e.g., NSF/ANSI, AWWA, CALA) of essential supplies and services (*refer to Element 12 above for the most recent communication*). OA personnel are responsible for inspecting all received supplies to confirm identified requirements. The following quality requirements were verified with the SWW/MPW:

- Photo provided by SWW of **Anchem Anchlor 12 sodium hypochlorite** 10L jug dated 1-Apr-2021 included **NSF/ANSI/CAN 61** mark
- **AWWA** was confirmed for Cambridge brass fittings and curbstop on website observed Cambridge brass. Engineering design manual not on website with Nov-2017 design requirements provided to contractors
- **CALA Directory of Laboratories Memberships** 3086 for E3 Laboratories Inc. was confirmed valid to 8-Sep-2023 (2728 Caduceon Environmental Laboratories listed for inorganic and microbiological sampling is not used as per SWW) and 3149 ALS exp.16-Feb-2023 for organic and inorganic testing

DWQMS Reference  
Evidence  
Finding  
Summary

### 14. Review and Provision of Infrastructure

PDS OP Element 14, QMS PROC 014 (rev. 10, 28-Jan-2019), QMS FORM 026 Infrastructure Review Summary dated 25-Mar-2021 (rev.03)

#### **Conforms**

QMS PROC 014 addresses proposed needs are 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, unplanned maintenance activities, 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; the 2022 Capital Presentation (e.g., \$830K Roads and Bridges, and 4 projects [2 design and Pelham St. and Water System Repair Equipment]) was presented to the Committee of the Whole (COW) 29-Nov and is to be presented to Council for consideration 14-Dec through special meeting with final approval anticipated 20-Dec as per MPW. Any updates to the Forecast as a result of the infrastructure review are reported to the Senior Management Team, led by the Chief Administrative Officer (CAO), 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. The outcomes of the risk assessment (12-month annual) were reviewed and documented in the Infrastructure Review Summary (25-Mar-2021) with no implications to the

capital request. In addition, the Infrastructure Review Summary included a review of Best Management Practices resulting in 2021-BMP-01 on GPS equipment for valves / hydrants being added to QMS LIST 006. 2020-OFI-11 identified during the Infrastructure Review (14-Jul-2020) pertaining to work order software tablets required for Operators is an action item in progress with a revised due date of 31-Dec-2022.

**DWQMS Reference Evidence**

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

PDS OP Element 15, Current Combined Water operations 2015-onward Spreadsheet

**Finding**

**Opportunity for Improvement 2020-IA-04 COMPLETE** with annual recordkeeping practice emphasized during annual calibration

**Summary**

OP Element 15 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 2-Nov-2021:

- **Valve** Maintenance (i.e., fixes) took place from 5-May through 10-Dec-2020 for Quad 3 and 4-Jan- through 2-Nov-2021 for Quad 4 and **Hydrant** Maintenance 14-Apr through 7-Oct-2021, both yearly checks and repairs for all quads) from sources such as forms and Logbooks (2 **watermain breaks** identified in 2021 – both Cat 1 ring breaks, 14-Jul in a Construction Zone Contractor Compacted and 1-Mar at 34 College [newly revised QMS FORM 025 (rev.08) was completed for both]) also identifies dead end **flushing**.
- Annual **hydrant** maintenance (including flushing, greasing, repair if needed) is also completed in 4 quadrants. Completion of individual hydrants are tracked using QMS FORM 002 (rev.06) observed completed 14 (hydrants 367 and 368)/20-May- and 21(not signed by Operator)-Jun-2021 and all signed off by SWW 15-Jun-2021.

The maintenance program is communicated to the Owner through the budgeting process and the Annual Report. The SWW still retains responsibility for issuing daily work orders and tasks to OA personnel and the electronic logbooks are being considered for easier tracking.

**DWQMS Reference Evidence**

**16. Sampling, Testing and Monitoring**

PDS OP Element 16, QMS PROC 016 (rev.11, 21-Jan-2021), SOPs 010 THMs (rev.8) and 019 HAAs (rev.2, both 23-Jan-2020), QMS FORM 005 Drinking Water Advisory (DWA), Including Boiling Water (rev.0, 2-Feb-2021)

**Finding**

**Conforms**

**Summary**

QMS PROC 016, most recently updated 21-Jan-2021 as a result of CCL exceedance reporting 11-Jun-2020 and to reference the new Watermain Disinfection Procedure (Aug-2020) and associated procedures, also documents a sampling, testing, and monitoring process where sampling parameters (collected internally, tested externally) have been documented and kept up to date. In the event of an adverse result (e.g., as per 'Current Combined Water Ops 2015 onward spreadsheet' which shows the last being 9/10-Sep-2020 as per the 'Maintenance Activities' tab addressed during last year's audit and confirmed with SWW), notification is to be received from the lab and new AWQI

QMS FORM 017 followed (predecessor QMS PROC 027 was obsoleted for a more workable process). Upstream testing, sampling, and monitoring is described; source water is tested for turbidity, pH, and temperature; additional testing is conducted at the Shoalts Drive Reservoir for chlorine residual prior to the discharge of water to PDS. 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 2020). 2021 Semi-annual lead and alkalinity took place 30-Sep and 5-Mar as per 'Current Combined Water Ops 2015 onward spreadsheet' with results dating back to 2017; 'THM RAA' and 'HAA RAA' tabs identify 9-Mar-, 8-Jun- and 14-Sep-2021 sampling as well as 1-Dec-2020.

**DWQMS Reference  
Evidence**

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

PDS OP Element 17, QMS PROC 017 (rev.11, 14-Jul-2020), SCG Flowmetrix Water Quality Instrument Verification / Calibration Report 6-Jan-2021

**Summary**

QMS PROC 017 documents a process for the calibration and maintenance of measurement and recording equipment and includes reference the 'Current Combined Water Operations 2015-onward/' spreadsheet for Hach Pocket Colorimeter II S/Ns, attributing to the OIC. Table 1 summarizes the various equipment and corresponding calibration and maintenance procedure and records, including frequencies. The following were confirmed on the SCG Flowmetrix Water Quality Instrument Verification / Calibration Report dated Jan-2021:

- annual external 4 **pocket colorimeters** calibration (verifications observed on 'Current Combined Water Operations 2015-onward/' spreadsheet 'Colorimeter Comparison' tab for Jan- through Oct-2021)
- annual external **TELOG Hydrant Pressure Recorder** (HPR) serial no. 205156
- annual external **HR Colorimeter** FOO92701
- **backflow WATTS** SN 410544

pH meters are purchased annually to ensure certification / calibration.

**Finding  
Details**

**Opportunity for improvement OFI-2021-IA-03**

There is an opportunity to ensure calibration stickers are consistently updated on handhelds.

**DWQMS Reference  
Evidence**

**18. Emergency Management**

PDS OP Element 18, QMS LIST 002 Emergency Contacts (rev.3, 18-Feb-2020), QMS PROC 018 Emergency Management (rev.5, 28-Feb-2020), QMS PROC 025 Watermain Break (rev.9, 27-Jul-2021), QMS FORM 005 Drinking Water Advisory (rev.0, 09-Feb-21), Town of Pelham Emergency Management Plan (adopted by Town Council By-Law #4179 (2019), QMS SOP 020 Frozen Service Response (rev.1, 14-Jul-2020)

**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), updated 25-Mar-2021 to reference QMS FORMs 017 Adverse Water Quality and 005 DWA not yet used (replacing QMS PROCs 027 and 026, respectively) in addition to reference the existing but updated QMS PROC 025,

and includes the Town of Pelham's adopted By-Law #4179 (2019) enacting the Town of Pelham Emergency Response Plan (amended 5-Nov-2019) including specific staff roles and responsibilities. Emergency Response Exercises are conducted every 3 years, lastly in 2020 and scheduled for 2023 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), 2020 Internal DWQMS Audit Report (Audit Date 5-Nov-2020, Report Date 25-Nov-2020)

**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 Action List). Internal audits have been completed annually (5-Nov-2020, 25-Nov-2019, 29-Nov-2018 and 27-Nov-2017 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 sections) subject to audit. Previous internal and external audit findings were reviewed as per QMS LIST 006:

- 2019-OFI-05 (2019-IA-02) is verified complete as no DWAs have taken place.
- The status of 5 OFIs were identified in the 5-Nov-2020 internal audit are outlined on the Audit Summary page of this report and addressed throughout the audit summary.
- All external audit OFIs are complete; this includes external audit 2020-OFI-09 which was slated for discussion at the December 2020 Management Review as noted in Element 20 below.

**DWQMS Reference  
Evidence**

**20. Management Review**

PDS OP Element 20, QMS PROC 020 (rev.8, 9-Oct-2018), QMS FORM 027 Management Review Meeting Record (rev.01) dated 3-Dec-2020

**Finding  
Summary**

**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. Management Review was last completed 3-Dec-2020 with the results communicated to the Owner via the Annual Summary Report (O. Reg. 170/03 Schedule 22) as outlined in Elements 3 and 12 above. 2020-AI-01, -02, and -03 Action items identified as a result of Management Review are being tracked to completion via QMS LIST 006. The 19-Dec-2019 Management Review meeting item pertaining to **watermain disinfection** with a Feb-2021 deadline as per the MPW was noted as complete in QMS LIST 006 with revisions made as per Element 3.

## DWQMS Reference

## Evidence

## Finding

## Summary

**21. Continual Improvement**

PDS OP Element 21, QMS LIST 006 (rev.4, 11-Nov-2019) last updated 1-Apr-2021)

***Opportunity for Improvement 2020-IA-04 COMPLETE***

OP Element 21 is in place, implemented and conforms to QMS tracking and measuring of continual improvement requirements:

- 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:
  - 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) a process for identifying and implementing Preventive Actions (e.g., opportunities for improvement, 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 and another from 2020 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 now being regularly reviewed with the number of “in progress” items reduced.

Appendix D – External 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**

Re-certification Audit

#### **Auditor**

James Pang

#### **Standard**

Ontario's Drinking Water Quality Management Standard Version 2  
(Exp Date: 06-SEP-2021)

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

04/06/2021 - 04/06/2021

#### **Recommendation**

Ontario's Drinking Water Quality Management Standard Version 2 : Recertification; No NCRs





**Executive Summary**

Ontario's Drinking Water Quality Management Standard Version 2	Willingness by management to participate in the DWQMS effort.
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**Opportunities**

Ontario's Drinking Water Quality Management Standard Version 2	<p>See the lone OFI a. Reviewed record of management review meeting held on Dec 3, 2020 to be generally conforming except for the following possible improvements:</p> <ul style="list-style-type: none"> <li>i. ensure that all OFIs from previous audits were reviewed. There were three OFIs from the 2020 external audit but it was recorded as two being reviewed.</li> <li>ii. the OFI regarding reliance on external resource was closed without recording the decision by the management.</li> </ul>
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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> Management review;</p> <p><b>Discussed With</b> Ryan Cook;</p> <p><b>Description</b> Reviewed record of management review meeting held on Dec 3, 2020 to be generally conforming except for the following possible improvements: 1 - ensure that all OFIs from previous audits were reviewed. There were three OFIs from the 2020 external audit but it was recorded as two being reviewed. 2 - the OFI regarding reliance on external resource was closed without recording the decision by the management.;</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 16, 2020</b>
<b>Date of Previous On-Site Verification Audit:</b>	<b>May 11, 2018</b>

## Processes



<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	C
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	OFI
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)**

No.

**Discuss your evaluation in detail.**

There was no previous CAR.