
	<p>Town of Perth Drinking Water System</p>	<p>DWQMS #: QMS-DWS-D01 Doc name: DWS description (public)</p>
---	--	--

DOCUMENT:

Town of Perth Drinking Water System Description

Table of Contents

- 1. Purpose..... 2
- 2. Scope..... 2
- 3. DWS Operations Overview 2
- 4. DWS Subsystem Descriptions 2
 - 4.1. Water Treatment Subsystem..... 2
 - 4.2. Water Distribution Subsystem 3
- 5. DWS Operational Challenges and Threats 4
 - 5.1. Source Water 4
 - 5.2. Water Treatment Challenges and Threats 4
 - 5.3. Water Distribution Challenges and Threats..... 4
- 6. Public Concerns (water quality, loss of pressure) 4

	<p>Town of Perth Drinking Water System</p>	<p>DWQMS #: QMS-DWS-D01 Doc name: DWS description (public)</p>
---	--	--

1. Purpose

The purpose of this document is to provide the public with a general description of the Drinking Water System owned by the Corporation of the Town of Perth.

2. Scope

The following descriptions of the DWS sub-systems are to give a brief overview of the processes associated with the sub-system's operations. For more detailed descriptions, please refer to Town of Perth DWQMS Element 6.

3. DWS Operations Overview

The Corporation of the Town of Perth is both the Owner, and the Operating Authority for the Town of Perth DWS.

The DWS serves the Town of Perth municipality, and parts of the neighboring Tay Valley municipality which are tied directly into the DWS and recognized as consumers of the Perth DWS. It is classified as a large municipal residential drinking water system, and comprised of two subsystems, a Class III water treatment facility and a Class I water distribution system.


The main office is located at the Perth Town Hall, 80 Gore St E. The Water Treatment Plant and Water Distribution Operations are located at 15 Sunset Blvd in Perth.

4. DWS Subsystem Descriptions

4.1. Water Treatment Subsystem

The Water Treatment Plant was constructed in 1964 replacing the old Plant on Leslie Street, which was built in 1897. The water source is the Tay River. At the plant, conventional filtration practices are followed using a multiple barrier approach, including disinfection at various points in the process.

Raw water pretreatment consists of double screening for solids, and disinfection when needed with chlorine dioxide. Water is then subject to the clarification process, involving coagulation, flocculation, and sedimentation stages. Clarified water (supernatant) from the settling tanks is the directed to the filtration process, where filter

	<p>Town of Perth Drinking Water System</p>	<p>DWQMS #: QMS-DWS-D01 Doc name: DWS description (public)</p>
---	--	--

beds consisting of granular activated carbon and sand, further removes suspended solids.

Filter effluent water is directed to the clearwell contact chamber for primary disinfection. The treated water then passes to the reservoir, where further contact time can occur with the disinfectant. Prior to entering the reservoir, calcium hydroxide (lime) is added for pH adjustment, and fluoride (as recommended by the Ministry of Health).

The underground reservoir at the plant has a storage capacity of approximately 2,800,000 liters. The treated water remains there until demand requires it in the distribution system. Before pumping the water directly into the distribution system, secondary disinfection occurs to bring the free chlorine residual up to a level required to maintain a residual throughout the distribution system.

A process wastewater residue management system is used to reduce solids and dechlorinate the wastewater, prior to discharging back into the Tay River. Wastewater sludge is directed to a treatment system involving geo membrane bags. The membrane is designed to capture and contain solids, while letting “filtered” water to be released. The captured solids are allowed to dry in the membrane bags, then removed and disposed of in a sanitary landfill.


4.2. Water Distribution Subsystem

The distribution subsystem is comprised of approximately 40 km of water mains constructed primarily of cast, PVC and ductile iron pipe ranging in diameter from 100 mm to 400mm. The system serves a population of approximately 6000, supplies approximately 2400 service connections, and has approximately 250 hydrant installations.

An elevated tank, with storage capacity of 945 m³, provides system pressure and storage. A water mixing system in the tank ensures adequate disinfection is maintained while water is stored in the tank.

Weekly grab sampling of the distribution subsystem is done to confirm free chlorine residuals are present to ensure that drinking water remains safe, free of bacteria and disinfected.

A hydrant flushing program occurs twice a year, to help maintain the system integrity and proper operations. A distribution water main valve turning program is done throughout the Town prior to hydrant flushing to help ensure proper operations are maintained.

	<p>Town of Perth Drinking Water System</p>	<p>DWQMS #: QMS-DWS-D01 Doc name: DWS description (public)</p>
---	--	--

5. DWS Operational Challenges and Threats

Specific operational challenges associated with the source water, the WTP operations, and the WD operations can be referenced in Element 6.

5.1. Source Water

The DWS source water is from the Tay River, and although source water protection zones are established for the Town's DWS, upstream activities still occur which could impact the DWS ability to treat water. In most cases, it is mainly operational challenges that the source water poses, rather than operational threats.

5.2. Water Treatment Challenges and Threats

The age of the Water Treatment Plant and the facility's infrastructure at times poses finding suitable replacement parts a challenge, and often it involves replacing more than just the failed component. Whenever possible, critical equipment has backup units in place to switch over to whenever faults or failures are experienced. Efforts are continuing to equip operations and processes with monitoring devices and alarm notification protocol when failures are experienced. Developing an involved preventative maintenance program also helps mitigate any potential operational down time.


5.3. Water Distribution Challenges and Threats

Operational challenges associated with the distribution system and elevated tank are limited. Aged water distribution lines have been gradually replaced with more acceptable modern materials, reducing water fouling or discolouration risks. The elevated tank contains equipment to promote water mixing, reducing any prolonged tank retention time risks.

In some cases, shallow overburden to bedrock poses operational challenges during colder temperatures due to ground frost. In other cases, varied pressure zones or dead ends of the distribution system can exist, although mitigated by looping lines and use of bleeder valves when required.

6. Public Concerns (water quality, loss of pressure)

If there is a concern regarding water quality or pressure loss, please contact the Town Hall (613) 267-3311, or the WTP (613) 267-1072.

	<p>Town of Perth Drinking Water System</p>	<p>DWQMS #: QMS-DWS-D01 Doc name: DWS description (public)</p>
---	--	--

The DWS water quality is monitored and tested regularly, in accordance to strict government standards. This information is available on the Town’s website in the Annual Report, or updated information can be provided by contacting the Town.

Water distribution system pressure is monitored at the WTP, and typically will be between 45 and 70 psi. Should there be a significant drop (or loss) of pressure in the distribution system, it could be an indication of a potential water main break or some other operational failure. Calling the Town to determine if a water distribution issue actually exists, will be a first step in helping determine if the problem is not internal plumbing related.

Please be aware that during the water distribution valve turning and hydrant flushing programs, water can become temporary discolored and consumers could experience temporary pressure loss. Again, this should only be temporary conditions, and normal service should return once crews are no longer working in the area. Media notification is done to alert residents and DWS consumers as to times when this work is scheduled throughout the Town.

List of changes

Rev.	Date	Cause of change	Compiled by
00	June 05, 2023	First edition – revised from old documentation (DWS 160-401)	D. Gibson
01	October 31, 2024	Revised to convert into a DWQMS public document for publication and posting on the Town’s website.	D. Gibson

Written By: D. Gibson

Approved by: