

Dorchester Drinking Water System

2024 Summary Report



Presented to Council March 24, 2025

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Background

The delivery of potable water in Ontario is regulated by the Ministry of the Environment, Conservation and Parks (MECP) under the Safe Drinking Water Act. On June 1, 2003 O. Reg. 170/03 came into effect. This regulation prescribes requirements for owners and operators of municipal drinking water systems.

Among the obligations, O. Reg. 170/03 prescribes the need for all owners of licensed water works to produce a Summary Report with the following information:

- The list of requirements of the Act, regulations and the system's approval. It must also note any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure and describe the measures taken to correct the situation.
- Summary of quantities of water used for the period covered by the report.
- The Summary Report must be presented and accepted by Council by March 31st of each year.

This Regulation also requires the owner to produce an Annual Report that includes the following:

- A system description
- Summary of any adverse water quality reports and corrective actions
- Summary of all required testing results
- Description of any major expenses incurred to install, repair or replace required equipment
- The Annual Report must be completed by February 28th of each year and available to the public

The Dorchester Drinking Water System - 2024 Annual Report was presented to Council on February 24th and made available to the public on February 25th.

Drinking Water System Description

The Dorchester Drinking Water System services about 6,270 people via approximately 2,273 service connections. There are an estimated 47.51 kilometres of watermain located within the village of Dorchester; the oldest being 66 years old. There are 195 municipal hydrants and 18 private property fire hydrants providing fire protection including 315 valves of various sizes throughout the system to control water flow. Water is supplied to the village from the Dorchester Water Treatment Facility through a network of wells, reservoirs, and an elevated storage tank. The treatment process and distribution system are monitored on-line, 24 hours per day by licenced municipal operators through a SCADA (System Control and Data Acquisition) system.

The water treatment facility and water distribution system are both owned and operated by the Municipality of Thames Centre.

Legislation

The following are the primary pieces of legislation that directly affect the operation of the

Dorchester Drinking Water System.

Safe Drinking Water Act

The Safe Drinking Water Act's (SDWA) purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water.

Highlights of the Act address:

- Accreditation of operating authorities
- Municipal drinking water systems
- Drinking water testing
- Inspections, Compliance and Enforcement

Standard of Care, Section 19, Safe Drinking Water Act

The Standard of Care defines the legal responsibility of the owner and operating authority of a municipal drinking water system. It requires that the owners and operating authorities exercise the level of care, diligence and skill with regard to a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation. Owners and operating authorities must exercise this due diligence honestly, competently and with integrity. Based on the definition of owner in the SDWA, the Municipality of Thames Centre is considered the owner of the Dorchester Drinking Water System.

The three key messages identified for Municipal Councillors are as follows:

It is Your Duty: The Standard of Care is for individuals who have oversight responsibilities for municipal drinking water systems that can extend to Municipal Councillors. There are legal consequences for negligence of financial penalties up to imprisonment for individuals, corporations or both.

Be Informed: Ask questions; Get answers. Councillors do not have to be an expert in drinking water operations, but they do need to be informed about them. Council decisions can have an impact on public health. Councillors should seek advice from those with expertise and act prudently on that advice.

Be Vigilant: Complacency can pose one of the greatest risks to drinking water systems. It is critical that Councillors never take drinking water safety for granted or assume all is well with the drinking water systems under their care and direction. The health of the community depends on diligent and prudent oversight of its drinking water systems.

Ontario Regulation 170/03: Drinking Water Systems Regulation

The Drinking Water Systems Regulation (O. Reg. 170/03) regulates municipal and private water systems that provide water to year-round residential developments. This regulation stipulates treatment equipment usage, operational checks and sampling, chemical and microbiological testing requirements, corrective actions, and reporting requirements.

Drinking Water Quality Management Standard (DWQMS)

The purpose of this Standard is to assist owners and operating authorities in the effective management and operation of their municipal residential drinking water systems. This Standard outlines the requirements for a Quality Management System (QMS) to ensure high quality drinking water. In the development of a QMS, the Operating Authority must create an Operational Plan; this document defines the QMS and will be subject to internal and external audits for accreditation. As referenced in the Standard, the QMS must be embraced by all those with active rolls in the water system, from front line staff to the highest level of management.

Environmental Services staff have developed and implemented a QMS specific to Thames Centre's two drinking water systems. Certification was originally obtained on September 10, 2010. Recertification was successfully achieved in 2013, 2016, 2019, and 2022. The next external certification audit will be carried out in 2025.

Ontario Regulation 435/07: Financial Plans

The O. Reg. 453/07, requirements dictate that all owners of municipal residential drinking water systems to prepare a Financial Plan that detail the system's financial information projected forward for at least six years. The Financial Plan must include income statements (which set out revenues and expenses), as well as balance sheets (which include financial assets, non-financial assets, total liabilities, cash flow, etc.).

The Financial Plan must then be formally approved by the owner of the municipal system through a resolution of the municipal council. The Financial Plan requires regular updates before every Operating License renewal application (every 5 years). Council report ES-017-11 was submitted and approved by Council on June 13, 2011. This report formed the foundation for the Financial Plan that was then submitted to the Ministry of the Environment, Conservation and Parks (MECP). On May 25, 2020, through council report PW-004-20 the five-year renewal application of the Long Range Financial Plan was presented to Council for acceptance and subsequently submitted to the Province.

Non-Compliances with Legislation

Schedule 22 of Ontario Regulation 170/03 requires that all non-compliance with applicable legislation be discussed in the Summary Report. The Dorchester Drinking Water System has extensive requirements for monitoring and reporting of water quantity and quality. These requirements include proper documentation, analytical testing, adverse incident reporting, corrective actions, and calibration of flow meters and online continuous water quality monitoring instrumentation. The Ministry of the Environment, Conservation, and Parks (MECP) completed their annual drinking water system inspection on January 27, 2025 for the period of December 15, 2023 to January 27, 2025. The following "**Non-Compliance/Non-Conformance Items**" section has been taken from the Ministry Drinking Water Inspection Report for the Dorchester Drinking Water System dated March 13, 2025. (attached)

Non-Compliance/Non-Conformance (Legislative):

1. Primary disinfection equipment was not equipped with alarms or shutoff mechanisms that satisfied the standards described in Schedule 1-6 of O. Reg. 170/03.

Required Action(s):

The system owner corrected the issue before the issuance of this report. No further actions required.

Action(s) Taken by staff:

Staff adjusted the UVT default set point that would send out a SCADA alarm alerting operators that there is a fault on the UVT.

2. Primary disinfection chlorine monitoring was not conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit, or at/near a location where the intended CT had just been achieved.

Required Action(s):

The system owner shall ensure that primary disinfection chlorine is monitored at the location included or referenced within the procedures of the O&M Manual, as required by condition 16.4 of Schedule B of the MDWL. By April 30, 2025, provide written notification that chlorine residual for CT is being monitored at the location identified in the Dorchester Water Treatment Facility O&M Manual.

Action(s) Taken by staff:

The Operations and Maintenance (O&M) Manual identifies the reservoir chlorine analyzers as the CT and chlorine monitoring point. Since the plant was commissioned in 2003, the effluent chlorine analyzer has been used as the CT and chlorine monitoring point. Before the April 30, 2025 deadline, staff will have the SCADA contractor change the CT and chlorine monitoring point to the reservoir chlorine analyzers.

3. The owner and operating authority did not ensure that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.

Required Action(s):

The system owner shall ensure that UVT tests are performed, utilized, and recorded by the UV system in accordance with the frequency identified in condition 1.6.2 of Schedule C of the MDWL. It is understood that the current ageing UV system includes proprietary software without the option to remove a default UVT value and has been due for replacement for several years. Replacing aging equipment may help to prevent future compliance concerns, and escalated compliance measures.

Action(s) Taken by staff:

In response to this, the UVT Response Procedure (ES-DWS-SOP-004-004) has been established. During the upcoming MDWL renewal process in 2025, staff will collaborate with the MECP approvals branch to develop a safe and effective procedure to follow in the event of a UVT failure.

Non-Compliance/Non-Conformance (Best Management Practices):

There were no Best Management Practices identified during the 2024 inspection period.

A copy of the 2024 Dorchester Drinking Water System Inspection Report is attached.

Testing Results

Summary of reports made to the Ministry under subsection 18(1) of the Safe Drinking-Water Act or Schedule 16-4 of O.Reg.170/03:

ADVERSE WATER QUALITY INCIDENTS (AWQI)

AWQI #	DATE 2024	LOCATION	PARAMETER	RESULT	MECP CRITERIA	CORRECTIVE ACTION
There were no Adverse Water Quality Incidents in 2024.						

Permit to Take Water, Drinking Water Works Permit, and Municipal Drinking Water Licence

The Dorchester Drinking Water System has restrictions on instantaneous flow rates (peak flow rates) and maximum daily flow volumes. These limits are identified in the Amended PTTW No. 4304-AABHQE, the Drinking Water Works Permit 059-202, and the Municipal Drinking Water Licence 059-102.

There was one (1) permit exceedance in 2024. On May 1, 2024, the total permitted effluent flow was exceeded due to an instantaneous flow spike. The incident was thoroughly investigated, but no cause was found.

Table A: PTTW and Municipal Drinking Water Licence Flow Limit Exceedances

DATE 2024	DWWP # 059-202 Exceedances Water Plant rated capacity: 90l/s	TIME / DURATION	EXPLANATION / CORRECTIVE ACTION
May 1	93.6 l/s	12:52 pm, (less than 1 minute)	Unknown cause

Chart 1: Combined flow rate of the Overburden Production Wells

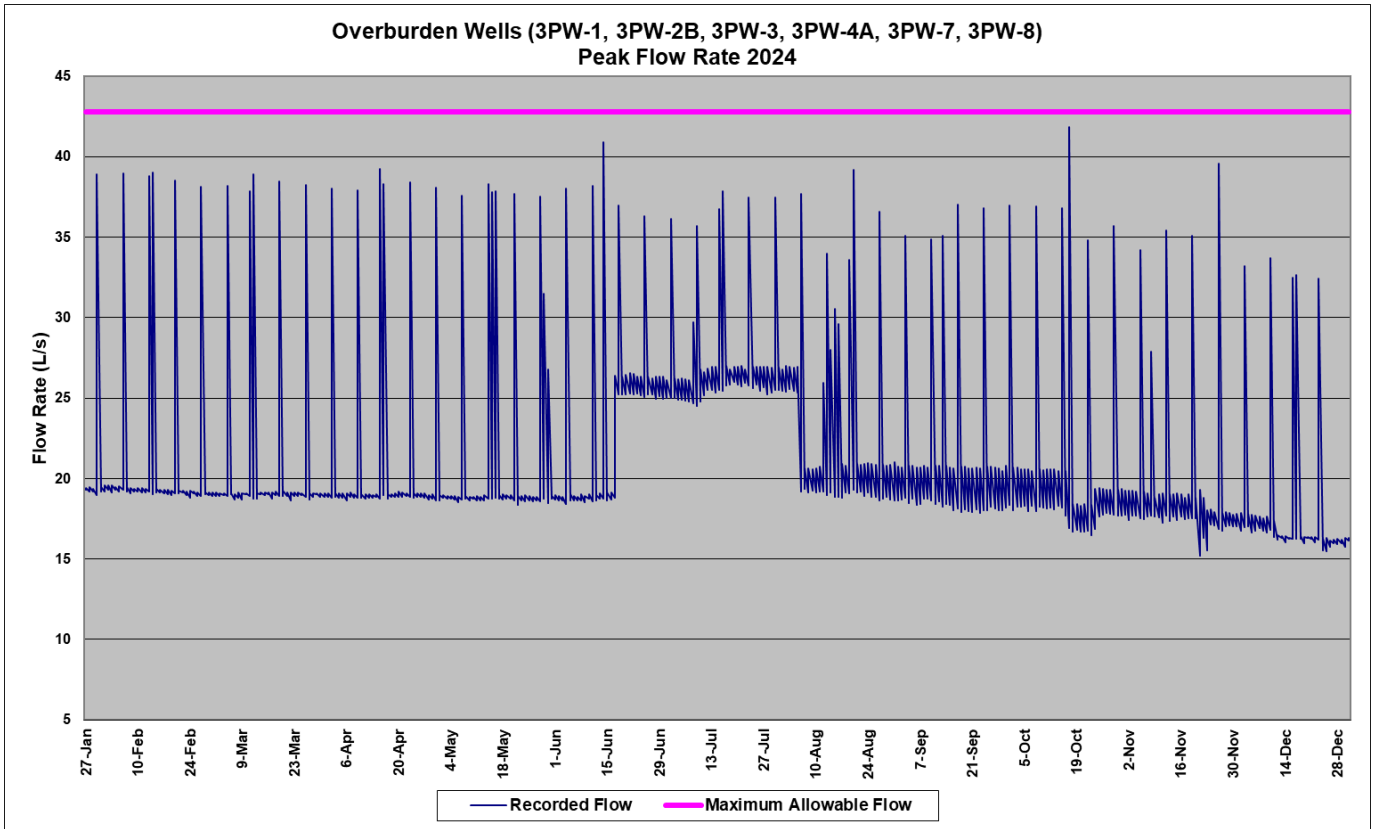


Chart 2: Total flow rate of Production Well 2PW-1

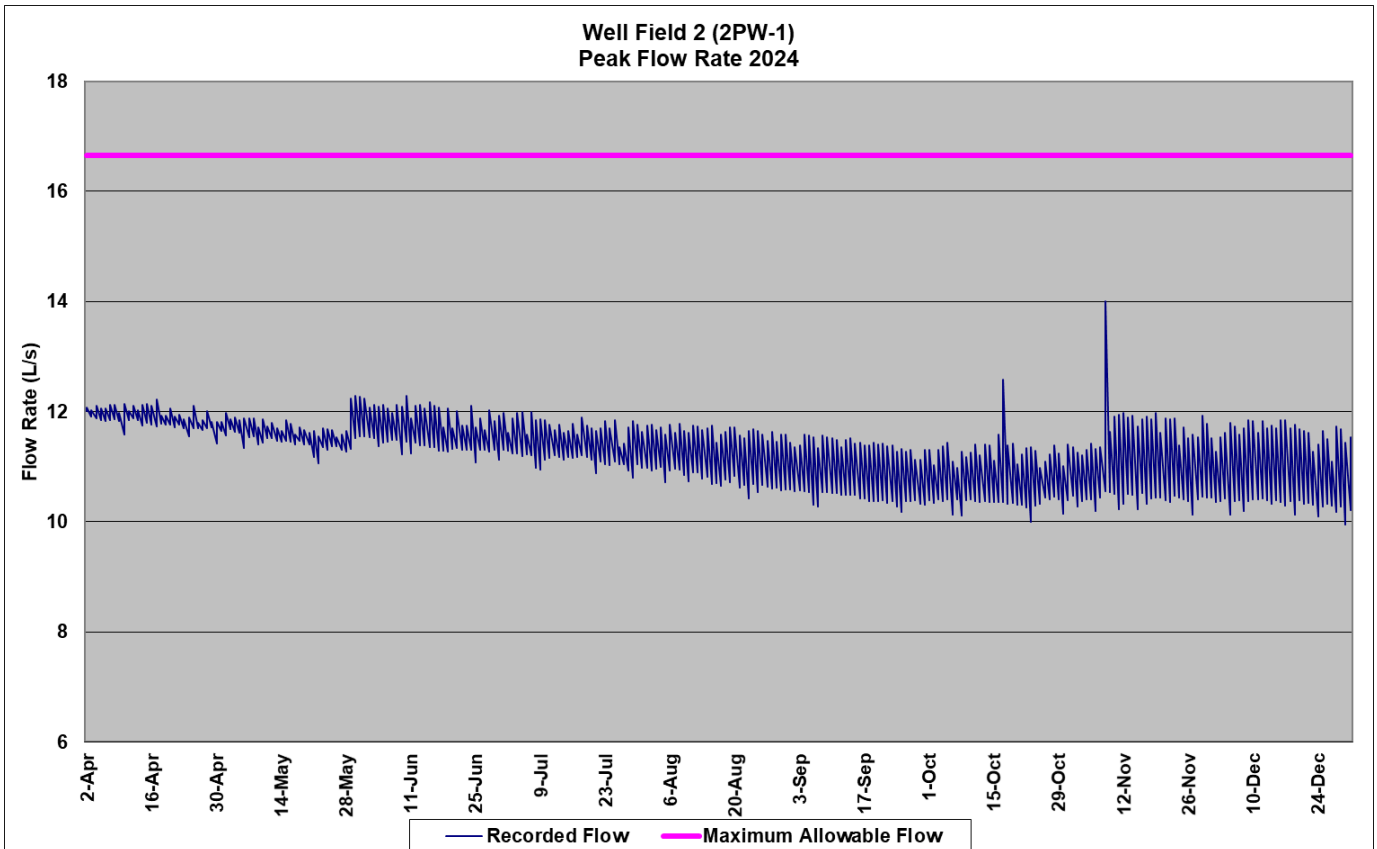
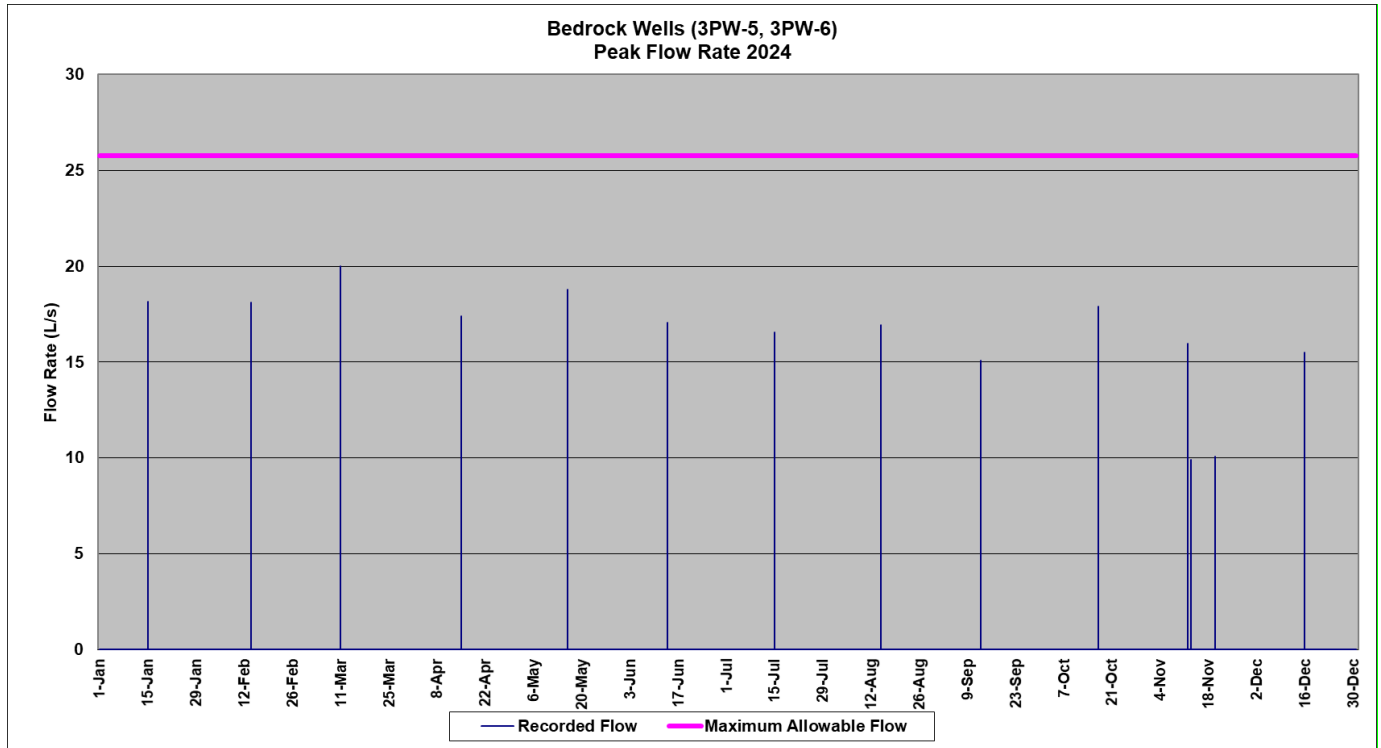


Chart 3: Combined flow rate of the Bedrock Production Wells



Production Well Maintenance

Routine (weekly) well inspections conducted by Thames Centre staff, in accordance with the Dorchester Well Inspection and Maintenance Plan, indicate all drinking water supply wells were in compliance. Wells are maintained in accordance with O. Reg. 903, (made under the Ontario Water Resources Act).

The Dorchester drinking water system consists of nine (9) production wells. A major challenge of utilizing a groundwater supply, especially shallow overburden wells, is the fact that groundwater is highly mineralized, which if not addressed, leads to a combination of corrosive and mineral encrusting (scale) related issues. The accumulation of scale and mineral deposits over time, specifically across the well screen and around the pump intake screen, has led to a restriction in groundwater flow and a drop in well productivity. It should be understood that these processes are natural and that routine well maintenance must be considered if this resource is to be utilized in a sustainable manner. Two (2) production wells received maintenance in 2024. The scope of work included testing, and pumping equipment inspection/servicing of production wells 3PW-1 and 3PW-4A. These procedures, conducted by licenced well contractors, have been successfully used on other Dorchester overburden wells in the past. During the rehabilitation, it was found that well 3PW4A had pitting and several holes in the well casing. It was decided to leave the well out of service until the well could be repaired. The repairs are expected to be completed in early 2025.

Table B: *Production Well Maintenance Summary*

PRODUCTION WELL	OUT OF SERVICE DURATION	REASON FOR MAINTENANCE	CORRECTIVE ACTION / RESULTS (data collected from Inspection Report)
3PW-1	August 12 – August 16	preventative maintenance	Well rehabilitation - pump test, cleaning, pump cleaned & motor replaced
3PW-4A	August 19 – Present	preventative maintenance	Well rehabilitation - pump test, cleaning, pump & motor cleaned, well left out of service for casing repair

Water Usage

From January 1st to December 31st the Dorchester Water Distribution System received a total of 490,825 m³ of water from Dorchester Water Treatment Facility. This compares to 502,209 m³ from the previous year (a decrease of 2.3%).

Chart 4: *Dorchester DWS - 2024 Monthly Water Consumption*

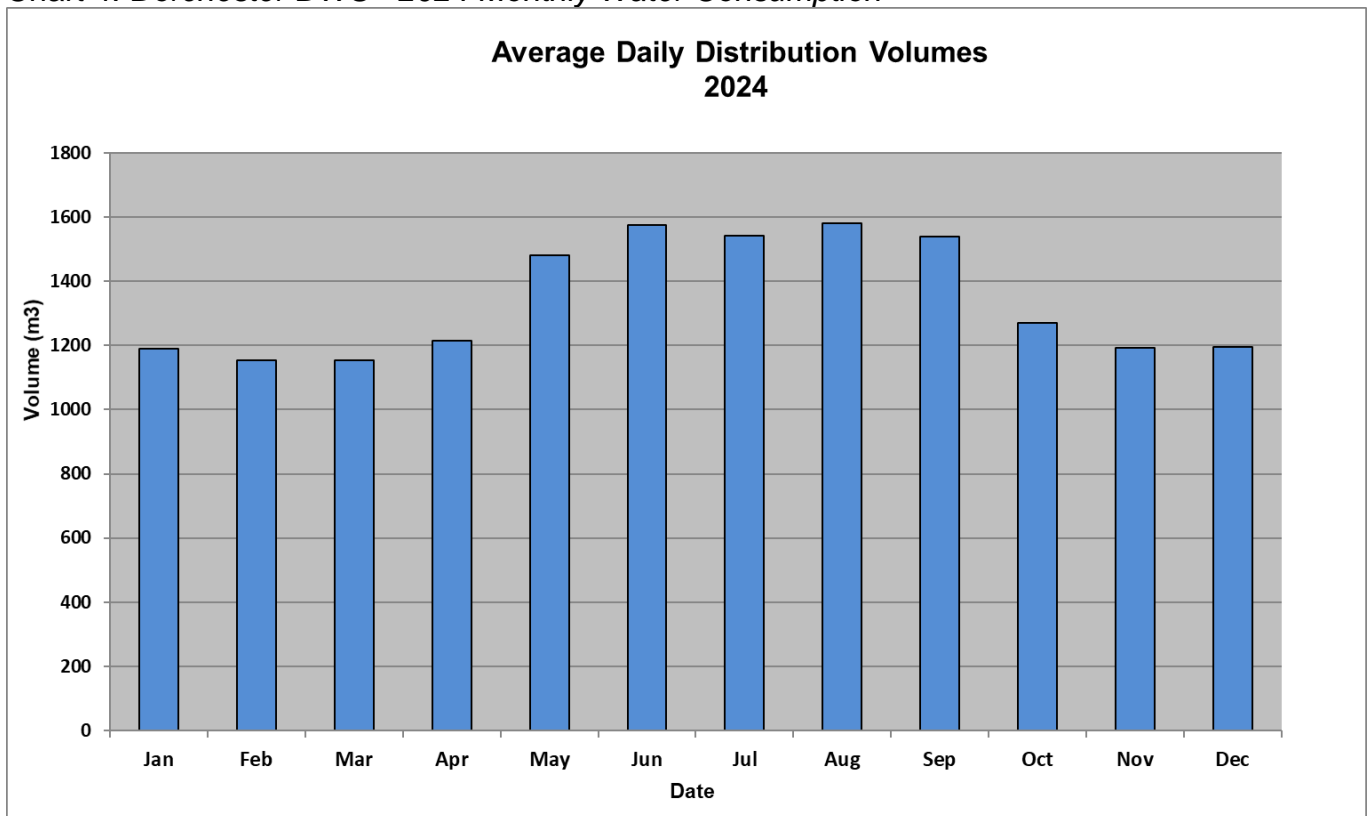
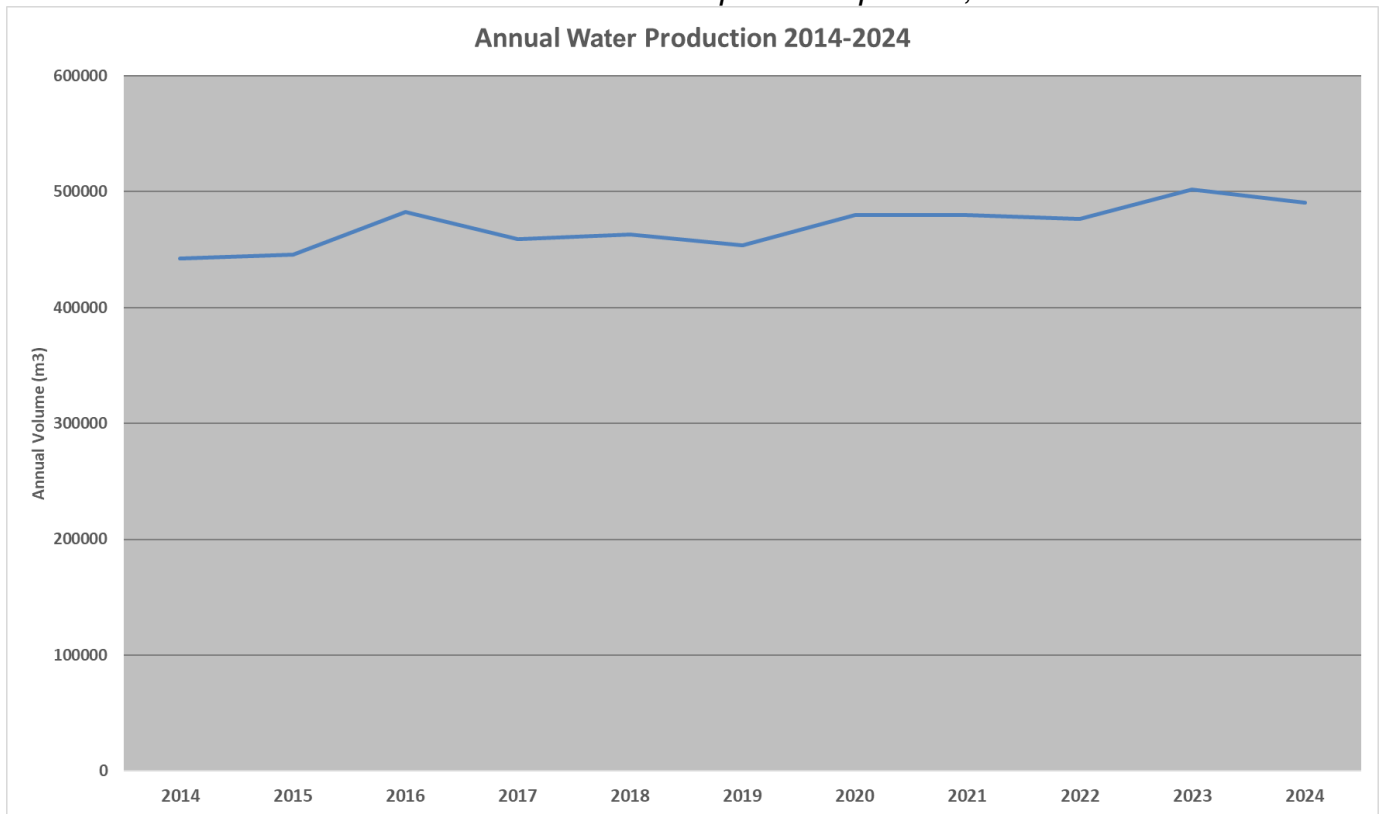


Chart 5: *Dorchester DWS - Annual Water Consumption comparison, 2014 to 2024*



This report is presented based on recorded information taken by the licenced water operators and to the best of my knowledge, it is complete and accurate.

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