Corporation of the Town of Perth

Drinking Water System

2024 Summary Report

Document created
January 30, 2025

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2024 DWS Summary Report

DWS Summary Report Overview

A Summary Report, as per Ontario Regulation 170/03, Schedule 22 must be prepared for each drinking water system in the province of Ontario. The report must be provided no later than March 31 to members of Municipal Council.

Free copies are available on our website, and paper copies available upon request. Notices of availability on our website and/or through media releases.

The DWS Summary report will cover a period for the preceding calendar year, January 01 to December 31, 2024.

The completion and presentation of this report will also fulfill the requirement for a compliance report to be produced in accordance applicable regulations.

Section 1 contains,

- any failures during the reporting periods to achieve the requirements of the Safe Drinking Water Act, associated drinking water regulations and guidelines, any approvals, any operating licences or permits, or any orders applicable to the Perth DWS system;
- duration of the failure, and measures taken to correct the failure;
- any priority concerns that might lead to failures to meet the operating requirements.

Section 2 contains,

- summary of quantities and flow rates of water taken from the Tay River, in addition to water production and process wastewater generation.

Supplemental Perth DWS information sources would include, but not limited to,

- The Town of Perth Water Treatment Plant year end documentation,
- The Town of Perth Water Distribution year end documentation,
- The Town of Perth DWS Annual Report, Infrastructure Report, Water Taking report.

Supplemental government legislation sources would include, but limited to,

- Safe Drinking Water Act, 2002
- Ontario Regulation 170/03, Drinking Water Systems
- Ontario Regulation 169/03, Ontario Drinking Water Quality Standards
- Ontario Regulation 128/04, Certification of Drinking Water System Operators and Water Quality Analysts

It is noted to ensure currency, up to date documents can be reviewed at http://www.e-laws.gov.on.ca.

Supplemental government support documentation is available at the Ministry of the Environment and Climate Change's Drinking Water Ontario website, https://www.ontario.ca/page/drinking-water.

Ontario Regulation 170/03, Schedule 22 – Summary Reports for Municipalities

Section 22-1

- as a large municipal residential system, the Town of Perth is required to complete and submit a Summary Report.

Section 22-2 (1)

- requires the Summary Report is prepared in accordance with the regulation by no later than March 31, covering a period for the preceding calendar year.
- as the drinking water system is owned by the municipality, the Summary Report is required to be given to the members of the municipal council by March 31 of each year

Section 22-2 (2)

- *The report must,*
  - *a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and*
  - b) *for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure*.
- Please refer to Section 1 of the Summary Report for this information

Section 22-2 (3)

- *The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:*
  - *a) A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.*
  - *b) A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.*
- Please refer to Section 2 of the Summary Report for this information

Section 22-2 (4)

- *If a report is prepared for a system that supplies water to a municipality under the terms of a contract, the owner of the system shall give a copy of the report to the municipality by March 31*
- Some services of the Perth DWS are located in Tay Valley Township, and as such, the Perth DWS Summary Report is forwarded to the Municipality by March 31.

DWS Information

Drinking-Water System Number	220001272
Drinking-Water System Name:	Perth Drinking Water System
Drinking-Water System Owner:	Perth, The Corporation of the Town of

Period being reported:	Jan 01, 2024 to Dec 31, 2024
Latest MOECC Inspection	January 15, 2025
Previous MECP Inspection	Jan 2023 (on-site); Feb 2024 (on-site)

Drinking-Water System Category:	Large Municipal Residential System (LMRS)
Drinking Water System Facilities	• Class III Water Treatment Subsystem, • Class I Water Distribution Subsystem

Municipal Drinking Water Licence (MDWL)	160-101
Licence Issue Date	July 26, 2021
Licence Revision Date (most recent)	July 26, 2021 (issue #7)
Licence Expiry Date	July 25, 2026

Drinking Water Works Permit	160-201
DWWP Issue Date	July 26, 2021 (Issue #3)
DWWP Expiry Date	July 25, 2026

Permits to Take Water	7770-A8HKRH
PTTW Issue Date	March 29, 2016
PTTW Expiry Date	March 31, 2026
Water Taking Location	Tay River
Financial Plan Number (under O. Reg. 453/07)	160-301
Financial Plan Issue Date	June 01, 2021
Accredited Operating Authority	The Corporation of the Town of Perth
Operating Authority No.	160-OA1
Operational Plan No.	160-401

SECTION 1 – FAILURE TO MEET REQUIREMENTS

1.1. Adverse Water Quality Incident reports (Drinking Water System)

1.1.1 AWQI #166105 (Class 2 WD watermain break)
August 27, 2024 – received notification of a watermain damage event in the vicinity of an exposed replacement sewer line. Watermain was already isolated and inactive due to construction work on the street. Watermain repair work was done, flushing of watermain completed, with sampling results of 0 total coliform.

1.2. Ministry Orders

1.2.1 Drinking Water System
- No MOE orders issued.

1.2.2 Water Treatment Subsystem
- No MOE orders issued.

1.2.3 Water Distribution Subsystem
- No MOE orders issued.

1.3. Notifications to MECP regarding operational issues

1.3.1 WTP treatment operation continuing without fluoride addition

Some operational issues with the fluoride feeder continued during 2024, with times in June-August where no or partial service operations occurred. The concern was feed issues with an overfeed situation experienced on June 11, 2025. Full time operations were restored by end of August 2024.

Government authorities (MECP, MOH) were kept aware of the situation and given status updates of any work.

1.4. MECP Identified Known Failures to Meet Requirements

1.4.1 February 06, 2024 MECP DWS Inspection

A MECP DWS on-site inspection was conducted on February 06, 2024, which covered a period from January 12, 2023 to February 06, 2024. This was a focused inspection, with the Inspector's report released April 12, 2024. The following were identified non-compliance/ non-conformance issues (known failures to meet requirements) contained in the inspection report,

- NC-1. The owner/operating authority was not in compliance with the requirement to follow proper reporting procedures of adverse conditions, as well as to do proper corrective actions to address the adverse condition (including other steps as directed by the Medical Officer of Health). This non-compliance was believed to be the result of the handling of AWQI #162870 in August 2023 (WD sampling adverse result).
- NC-2. The owner/operating authority was not in compliance with the requirement to prepare Form 1 documents (Watermain work) as required by the DWWP. This was similar to a non-compliance item identified in the previous year's MECP inspection report.
- NC-3. The owner/operating authority was not in compliance with the requirement to prepare Form 2 documents as required by the DWWP. It is believed this related to improper filling of Form 2's for WD work at the elevated tank.

1.4.2 January 2025 MECP DWS Inspection

On January 15, 2025, an unannounced MECP DWS inspection was conducted covering operations from February 7, 2024 to January 10, 2025. The MECP has the opportunity to make the inspection announced (Inspector schedules a date ahead of arrival), or unannounced (where the Inspector may just arrive on-site without notice). As of January 30, 2025, the inspection report had not been received.

1.5. MECP identified areas for possible improvement

In the MECP Inspection Report, dated April 12, 2024 some areas for improvement and other recommendations were as follows,

- A Director's Notification Form needs to be submitted within 30 days of changing equipment status (adding, updating, deleting) listed in the DWWP
- To ensure all required actions identified in the DWWP are completed when filling out a Form 3

The Drinking Water System Infrastructure Review Report outlines operational and infrastructure areas for possible improvement, with some identified by MECP. Any corrective actions taken, being done, or to be considered, is included in the report.

1.6. Additional concerns meeting potential compliance or operational requirements

The Drinking Water System Infrastructure Review Report, to be presented to Town of Perth Municipal Council, highlights abilities to maintain operational abilities, along with immediate, short term, and long term DWS operational needs.

In the report, significant issues or areas of concern that might be viewed as potential impact items to operations were listed. These lists contained issues identified by operational staff and management which might,

- pose potential risk with inability to meet compliance and/or operational requirements,
- help prevent equipment failure or down time,
- assist with more efficient operations.

Section 2 of the Infrastructure Report provided detailed assessment of the drinking water system abilities, including

- water treatment ability,
- water pumping capacity,
- process wastewater residue management ability,
- process automation computer system capability,
- water storage ability, and
- drinking water system staffing requirements.

Section 3 of the Infrastructure Report outlined,

- work completed in 2024,
- DWS administrative infrastructure issues and considerations,
- immediate and short-term needs, and
- long term (2 to 5 year) operational needs forecasting.

SECTION 2 – SUMMARY OF PLANT FLOWS

2.1. Raw Water (Source water)

Individual daily RW flow expressed in Liters/day (1000 L = 1 m^3) can be found in the Town's 2024 Annual Record of Water Taking (Permit to Take Water) report.

The table below (RW-1) gives the monthly average RW flow, monthly single day max and min flows, and the monthly total RW intake flow volume. A comparison of the single day maximum of the month to the PTTW allowable volume of 9092 m^3 is shown.

Table RW-1

2024 Raw Water Volumes					
	Average Daily Flow (m^3)	Minimum Daily Flow (m^3)	Maximum Daily Flow (m^3)	TOTAL FLOW (m^3)	Daily Maximum % of PTTW Allowable Volume (9092 m^3)
January	2863.7	2498	3155	88775	34.7%
February	3199.4	2988	3487	92784	38.4%
March	3063.2	2591	3517	94958	38.7%
April	3022.4	2521	4501	90671	49.5%
May	3246.7	2685	4417	100648	48.6%
June	3274.7	2559	4018	98240	44.2%
July	3166.6	2668	3693	98166	40.6%
August	3186.0	2682	3759	98766	41.3%
September	3164.6	2781	3755	94937	41.3%
October	3174.3	2688	5194	98403	57.1%
November	3085.6	2834	3646	92568	40.1%
December	3207.9	2956	3606	99446	39.7%
ANNUAL TOTALS	avg 3137.93	Min 2498	Max 5194	Total 1,148,362	

2.1.1. Average Daily Raw Water Flow:

The monthly average of daily average raw water flow was 3137.9 m^3 in 2024, or approximately 34.5% of the PTTW. It was slightly lower in 2023 at 31.8%.

The daily average in 2021 was 2932 m^3, followed by 2977 m^3 in 2022, and 2893 m^3 in 2023.

2.1.2 Maximum Raw Water Flow:

The maximum day flow for 2024 was on Oct 02 (5194 m^3), during hydrant flushing. The second highest maximum flow day also occurred during hydrant flushing 5060 m^3 (Oct 01). Hydrant flushing accounts typically of the higher intake (raw water) flow times during a typical year, as indicated by,

- Spring flushing (Apr 29-May 02) had an average day flow of 4189.3 m^3 (max 4501)
- Fall flushing (October 01-03) had an average day flow of 4915.7 m^3 (max 5194)

Excluding hydrant flushing times, some maximum day flow volumes were June 19 at 4018 m^3; August 15 at 3759 m^3; and Sept 04 at 3755 m^3. Most higher intake flows can be attributed to maintenance, repair work, or spot hydrant flushing. On April 10, a high raw volume flow day of 3831 m^3 was the result of a large rural structure fire requiring Town water supply to assist with fire fighting efforts.

2.2. Service Water (Treated Discharged Water)

Below are the Treated Water monthly volumes, noting the high daily flow volume in May and October can be attributed to Hydrant Flushing week(s). Water main breaks can also be associated with high treated water flows.

2024 Treated Water Volumes Discharged to Town					
	Average Daily Flow (m^3)	Minimum Daily Flow (m^3)	Maximum Daily Flow (m^3)	TOTAL FLOW (m^3)	Daily Maximum % of Design flow (9090 m^3)
January	2687.6	2337	2997	83317	33.0%
February	3062.1	2883	3213	88802	31.7%
March	2911.1	2567	3148	90245	34.6%
April	2875.0	2578	4518	86251	49.7%
May	3144.8	2666	4132	97489	45.5%
June	3193.5	2628	3746	95806	41.2%
July	3101.2	2754	3636	96138	40.0%
August	3091.4	2664	3727	95834	41.0%
September	3047.7	2794	3401	91431	37.4%
October	3028.7	2618	5248	93889	57.7%
November	2810.5	2630	2984	84315	32.8%
December	2980.2	2811	3226	92385	35.5%
ANNUAL TOTALS	avg 2994.50	Min 2337	Max 5248	Total 1,095,902	

Table TW-1

2.2.1. Average Daily Service Water Flow:

Annual service water daily average flow

Year	2019	2020	2021	2022	2023		2024
Annual avg flow m^3	3011	2896	2787	2872	2761		2995

The service water daily average water flow was 2994.50 m^3 in 2024. Over 5 years (2019-2023), the average daily service water flow was 2865 m^3, making 2024 service water volumes slightly higher to recent years.

2.2.2. Service Water Discharge:

Annual service water total flow

Year	2019	2020	2021	2022	2023		2024
Annual avg flow m^3	1,099,316	1,060,407	1,017,774	1,049,000	1,007,957		1,095,902

In 2024, the total discharge amount was 1,095,902 m^3 to the Town. Over 5 years (2019-2023), the average annual water discharged was 1,046,891 m^3, making 2024 annual service water discharging slightly higher to previous years.

The consistent annual service discharge amount is significant as it directly equates to revenue generation. As operating costs continue to rise, so will water rates in order to keep pace if volumes remain the same. The annual service water volume is relevant to doing future financial projections of future water service revenues.

2.3. Plant process water

The WTP Process Wastewater Residue Management involves two individual treatment processes, direct Geo Bag system deployment, and a separate pre-treatment Backwash Equalization Tank (BET) system.

Sludge from the settling tanks is typically dense enough for direct processing and sending to the Geotubes (solids collection geo membrane bags). The geo membrane captures the solids, and allows “cleaned” water to pass through. The water is discharged back to the Tay River.

Filter backwash wastewater is directed to a “geo membrane pre-treatment” system, or Backwash Equalization Tanks (BET). The backwash wastewater contains a higher percentage of water, opposed to solids. The BET system allows time for sludge separation through sedimentation, and supernatant removal. The BET supernatant is discharged to the Tay River, with sludge directed to the Geotubes for treatment. Backwash wastewater is dechlorinated prior to entering the BETs.

The accumulation of “clean wastewater” from non-process water sources (such as roof drains, work sinks, analyzer bypass flows, engine and pump coolant water) continues to fill BET(s) and use up residue processing time and resources. As mentioned in previous DWS Summary Reports, a feasibility study should be considered to explore options to divert this water away from the process residue management system and possibly to sanitary sewer discharges.

2.3.1. Waste Volumes

Annual total Geo-tube influent flow

Year	2019	2020	2021	2022	2023		2024
Annual total flow m^3	13,528	12,867	15,244	15,124	15,148		15,745

In 2024, a total volume of 15,745 m^3 was directed to the Geo-tubes (solids collection membrane bags), up from previous years (2019-23 avg of 14,282 m^3). It is noted the volume being generated annually can be influenced by many uncontrollable operational factors, such as raw water conditions and rainfall accumulation (overabundance or lack of).

Annual total filter backwash wastewater generation

Year	2018	2019	2020	2021	2022	2023	2024
Annual total flow m^3 (est)	11,391	10,934	10,377	15,936	9,906	9,569	10,219

Backwash wastewater generation for 2024 was estimated at 10,219 m^3, slightly higher than the two previous years but also reflecting a degrading GAC media. The higher volume in 2021 was attributed to GAC removal and replacement media “cleaning” through repeated backwashes, something that could be experienced in 2025 as well. Of note, with no air scour in 2016, normal annual backwash volumes were significantly higher and estimated at 14,131 m^3.

Appendix

4.1 Appendix Table 1 – Summary of Flows January 1, 2023 to December 31, 2024

Perth Water Treatment Plant

PTTW maximum allowable flow rate: **9,092 m^3/ day**

	Raw water (m^3)		Discharge (Service) Water (m^3)	
Month	**Monthly Daily Average Flow**	**Monthly Total Flow**	**Monthly Daily Average Flow**	**Monthly Total Flow**
January	2863.7	88775	2687.6	83317
February	3199.4	92784	3062.1	88802
March	3063.2	94958	2911.1	90245
April	3022.4	90671	2875.0	86251
May	3246.7	100648	3144.8	97489
June	3274.7	98240	3193.5	95806
July	3166.6	98166	3101.2	96138
August	3186.0	98766	3091.4	95834
September	3164.6	94937	3047.7	91431
October	3174.3	98403	3028.7	93889
November	3085.6	92568	2810.5	84315
December	3207.9	99446	2980.2	92385
Year Average	3137.92	95696.8	2994.50	91325.2
Year Total		1,148,362		1,095,902

4.2 Appendix Table 2 – Historical Average Daily Treated Water Flow (m^3)

	2024	2023	2022	2021	2020	2019	2018
JANUARY	2688	2603	2570	2491	2762	2972	2982
FEBRUARY	3062	2642	2773	2670	2750	3036	2890
MARCH	2911	2672	3008	2630	2704	3047	2961
APRIL	2875	2791	2835	2409	2555	3038	2983
MAY	3145	2814	3293	3030	2938	3049	3363
JUNE	3194	3114	3188	3154	3347	3062	3268
JULY	3101	3154	3191	2993	3635	3469	3602
AUGUST	3091	2789	3208	3498	3223	3228	3269
SEPTEMBER	3048	2852	2728	2890	2981	2902	2947
OCTOBER	3029	2771	2728	2774	2805	2912	2982
NOVEMBER	2811	2445	2455	2486	2513	2707	2840
DECEMBER	2980	2487	2491	2417	2534	2711	2776
MAXIMUM	**3,194**	**3,154**	**3,293**	**3,498**	**3,635**	**3,469**	**3,602**
MINIMUM	**2,688**	**2,445**	**2,455**	**2,409**	**2,513**	**2,707**	**2,776**
AVERAGE	**2,995**	**2,761**	**2,872**	**2,787**	**2,896**	**3,011**	**3,072**