
2022 Annual Report on Drinking Water Quality

January 1 – December 31, 2022

Peterborough Water Treatment System

Drinking Water System Number 220000497
Municipal Drinking Water Licence 145-101, Issue 6
Owner: Peterborough Utilities Commission
Operating Authority: PUG Services Corp.



Peterborough Utilities Commission is the owner of the Peterborough Municipal Water System. PUG Services Corp. is under contract with the owners to operate and maintains the System, as the Operating Authority. We are committed to providing safe drinking water to all our customers. This report has been prepared in accordance with Section 11 of Ontario Regulation 170/03 and as mandated by the Safe Drinking Water Act 2002. Free copies of this report are available on our website www.peterboroughutilities.ca. Further information on the Drinking Water

Regulations can be found on the Ministry of the Environment website at www.ene.gov.on.ca.

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System Description

Raw Water

The source of raw (untreated) water for Peterborough's drinking water is the Otonabee River. The Otonabee River Water is of good quality and can be described as a moderately coloured water of low turbidity. The river water temperature ranges from 0°C (winter) to approximately 26°C (summer). The raw river water is what we call a surface water supply, which means that it is considered to be an unprotected source.

Accordingly, we assume that raw water always requires full treatment at the Peterborough Water Treatment Plant to make it drinkable or potable.

The river water quality is monitored by staff at the plant as well as the Otonabee Region Conservation Authority (ORCA) and the Peterborough Health Unit (beaches only). The watershed is protected by planning and approvals processes through the City of Peterborough and ORCA. Since 1998, ORCA has monitored water quality in the Otonabee watershed under the Watershed 2000 Program and the Provincial Water Quality Monitoring Network.

Water Treatment Plant

The plant is located at 1230 Water Street North, Peterborough, adjacent the Riverview Park & Zoo. The plant was initially built in 1922 and expanded in 1952, 1965, 1995 and 2016. The conventional treatment process includes coagulation, flocculation, sedimentation, filtration and chlorine disinfection.

The following chemicals were used in the drinking water treatment process:

Aluminum sulphate (alum) is used as the primary coagulant. The current rated capacity of the plant is 104 ML/day.

Water Storage Tanks and Reservoirs

Treated water is stored at various locations throughout the City in underground reservoirs and elevated storage tanks. Storage is used to supplement supply during times of high water demand and in emergency situations such as firefighting. The water storage capacity in the system is 48.2 ML.

Water Pumping Stations

There are five individual pressure zones in Peterborough. Water supply is pumped from the plant or from the Water Street Pumping Station. Approximately one half of the City's water supply is pumped using water-driven turbine pumps powered by the Otonabee River flow. There are six water booster pumping stations around the city, which pump water from lower pressure zones to higher pressure zones. Two of the most critical stations have diesel-powered backup in case of an electrical power outage.

Water Distribution Piping Systems

The water distribution system consists of approximately 470 kilometers of pipe (water mains), 2,394 hydrants and 27,323 individual water services. Hydrants are colour-coded according to the Ontario Fire Code requirements to indicate the available flow rate at a 20 psi residual pressure.



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- ◆ Chlorine
- ◆ Alum (Aluminum Sulphate)
- ◆ Hydrofluosilicic Acid
- ◆ Sodium hydroxide

Woodland Acres Drinking Water System (# 210001503) receives drinking water from the Peterborough Drinking Water System and is a connected system.

Legislation

Since the issuance of the Walkerton Reports I and II in 2002, many legislative and regulatory changes have occurred for those supplying drinking water in Ontario. The following are the primary pieces of legislation that have directly affected the operation of the City of Peterborough's municipal water system.

Safe Drinking Water Act

As recommended by Commissioner O'Connor in the Walkerton Inquiry Report Part 2, the government passed the Safe Drinking Water Act in 2002, which expands on existing policy and practice and introduced new features to protect drinking water in Ontario. The Act's purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act also provides legislative authority to implement the recommendations made in Commissioner O'Connor's Walkerton Part One and Two Reports. As of August 2007, all 28 recommendations made in Part One, and all 93 in Part Two have been implemented. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water. Parts of the Act address:

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

Drinking Water Quality Management Standard (DWQMS)

On October 30, 2006, the finalized standard was issued on the Environmental Bill of Rights Registry. 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 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 will define the QMS and will be subject to external audits for accreditation. Staff developed and implemented a QMS specific to the Peterborough municipal water system, which received full scope accreditation in June 2011.

Ontario Regulation 435/07: Financial Plans



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In 2007, Ministry of Environment, Conservation & Parks (MECP) developed the Financial Plans Regulation (O. Reg. 453/07) under the SDWA that prescribes the requirements for Financial Plans. The Financial Plans Regulation requires all owners of municipal residential drinking water systems to prepare Financial Plans that detail the system's financial information projected forward for at least six years. The Financial Plans 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 Plans 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 license renewal application (every 5 years).

Adverse Water Quality Results

There was an incidents of adverse drinking water quality test results in July for total coliform in the distribution system.

An adverse water quality sample was reported on July 11, 2022. Samples taken at Lansdowne Pumping station

sampling station had a positive total coliform parameter. This was reported to the MECP and appropriate corrective action was taken according to MECP standards and the issue was resolved.

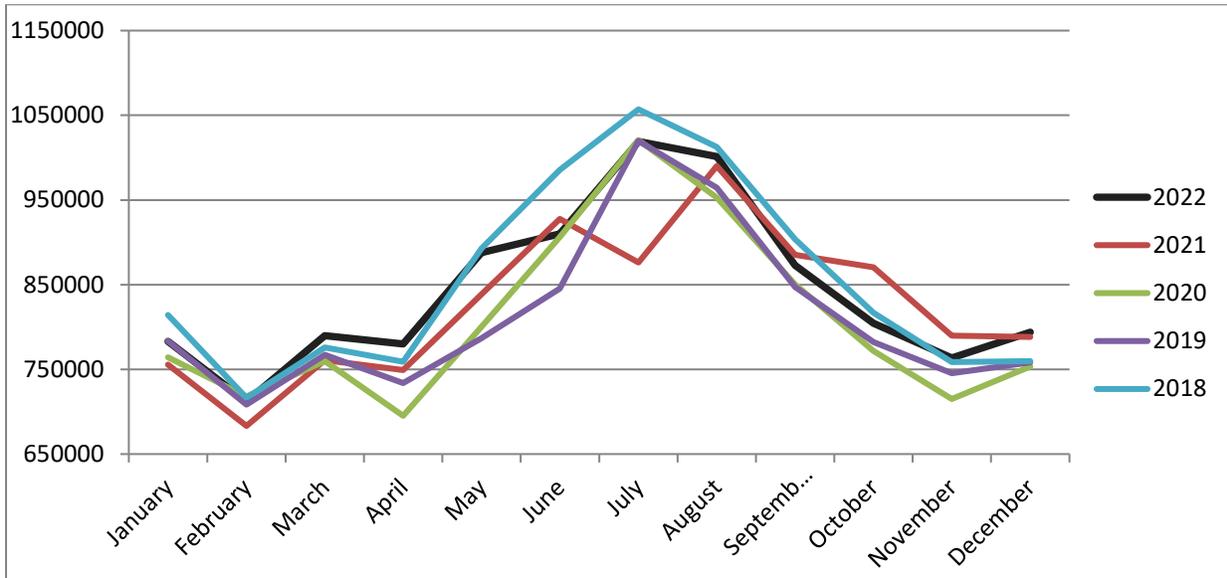


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Water Usage

From January 1 to December 31, 2022, the Peterborough Water Treatment Plant produced 10,117,704 cubic metres of water. This compares to 9,916,058 cubic metres from the previous year.

Monthly Water Consumption



Water Quality

Microbiological Parameters Sampling Summary – Schedule 10, O Reg. 170/03

	Number of Samples	Range of E.Coli Results	Range of Total Coliform Results	Number of HPC Samples	Range of HPC Results
Raw	247	0 - 200	0 - 800	7	3 - 2120
Treated	247	0 - 0	0 - 0	246	0 - 16
Distribution	1216	0 - 0	0 - 9*	1224	0 - 95

*Full description of exceedance in Adverse Water Quality Results on Page 4

Operational Sampling Summary - Schedule 7, O Reg. 170/03

	Number of Grab Samples	Range of Results	Unit of Measure	Number of Exceedances
Turbidity	11 x 8,760	0.01 – 1.38	NTU	0
Chlorine	8,760	0.91 – 2.31	mg/L	0
Fluoride	365	0.01 – 0.84 LIMS	mg/L	0



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Additional Sampling

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure	Number of Exceedances
Aug 16, 2006	Suspended Solids waste process	Quarter 1	1	mg/L	0
		Quarter 2	2		
		Quarter 3	1		
		Quarter 4	1		

Inorganic Sampling Summary – Schedule 23, O Reg. 170/03

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Antimony	Feb 9	<0.06	µg/L	0
Arsenic	Feb 9	<0.02	µg/L	0
Barium	Feb 9	27.0	µg/L	0
Boron	Feb 9	7	µg/L	0
Cadmium	Feb 9	<0.003	µg/L	0
Chromium	Feb 9	0.08	µg/L	0
Lead	Feb 9	<0.0005	µg/L	0
Mercury	Feb 9	<0.01	µg/L	0
Selenium	Feb 9	0.04	µg/L	0
Sodium	Feb 9	9.3	mg/L	0
Uranium	Feb 9	0.073	µg/L	0
Nitrite	Jan 18	0.05	mg/L	0
	Apr 11	0.05		
	Jul 20	0.05		
	Oct 24	0.05		
Nitrate	Jan 18	0.26	mg/L	0
	Apr 11	0.33		
	Jul 20	0.05		
	Oct 24	0.05		

Organic Sampling Summary - Schedule 24, O Reg. 170/03

Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Alachlor	Feb 9	0.02<MDL	µg/L	0
Atrazine + N-dealkylated metabolites	Feb 9	0.01<MDL	µg/L	0
Atrazine	Feb 9	0.01<MDL	µg/L	0
Azinphos-methyl	Feb 9	0.05<MDL	µg/L	0
Benzene	Feb 9	0.32<MDL	µg/L	0
Benzo(a)pyrene	Feb 9	0.004<MDL	µg/L	0
Bromoxynil	Feb 9	0.33<MDL	µg/L	0
Carbaryl	Feb 9	0.05<MDL	µg/L	0
Carbofuran	Feb 9	0.01<MDL	µg/L	0
Carbon Tetrachloride	Feb 9	0.17<MDL	µg/L	0



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Parameter	Sample Date	Result Value	Unit of Measure	Number of Exceedances
Chlorpyrifos	Feb 9	0.02<MDL	µg/L	0
Diazinon	Feb 9	0.02<MDL	µg/L	0
Dicamba	Feb 9	0.20<MDL	µg/L	0
1,2-Dichlorobenzene	Feb 9	0.41<MDL	µg/L	0
1,4-Dichlorobenzene	Feb 9	0.36<MDL	µg/L	0
1,2-Dichloroethane	Feb 9	0.35<MDL	µg/L	0
1,1-Dichloroethylene (vinylidene chloride)	Feb 9	0.33<MDL	µg/L	0
Dichloromethane	Feb 9	0.35<MDL	µg/L	0
2-4 Dichlorophenol	Feb 9	0.15<MDL	µg/L	0
2,4-Dichlorophenoxy acetic acid (2,4-D)	Feb 9	0.19<MDL	µg/L	0
Diclofop-methyl	Feb 9	0.40<MDL	µg/L	0
Dimethoate	Feb 9	0.06<MDL	µg/L	0
Diquat	Feb 9	1<MDL	µg/L	0
Diuron	Feb 9	0.03<MDL	µg/L	0
Glyphosate	Feb 9	1<MDL	µg/L	0
HAA – Annual Average	Average	85.25	µg/L	0
Malathion	Feb 9	0.02<MDL	µg/L	0
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	Feb 9	0.00012 <MDL	µg/L	0
Metolachlor	Feb 9	0.01<MDL	µg/L	0
Metribuzin	Feb 9	0.02<MDL	µg/L	0
Monochlorobenzene	Feb 9	0.03<MDL	µg/L	0
Paraquat	Feb 9	1<MDL	µg/L	0
Pentachlorophenol	Feb 9	0.15<MDL	µg/L	0
Phorate	Feb 9	0.01<MDL	µg/L	0
Picloram	Feb 9	1<MDL	µg/L	0
Polychlorinated Biphenyls(PCB)	Feb 9	0.04<MDL	µg/L	0
Prometryne	Feb 9	0.03<MDL	µg/L	0
Simazine	Feb 9	0.01<MDL	µg/L	0
THM - Annual Average	Average	74.25	µg/L	0
Terbufos	Feb 9	0.01<MDL	µg/L	0
Tetrachloroethylene	Feb 9	0.35<MDL	µg/L	0
2,3,4,6-Tetrachlorophenol	Feb 9	0.20<MDL	µg/L	0
Trillate	Feb 9	0.01<MDL	µg/L	0
Trichloroethylene	Feb 9	0.44<MDL	µg/L	0
2,4,6-Trichlorophenol	Feb 9	0.25<MDL	µg/L	0
Trifluralin	Feb 9	0.02<MDL	µg/L	0
Vinyl Chloride	Feb 9	0.17<MDL	µg/L	0



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Lead Sampling Summary – Schedule 15.1, O Reg. 170/03

*The Peterborough Municipal Water Treatment System was granted relief from regulatory lead sampling in Schedule 15.1 of O. Reg. 170/03, as described in Schedule D of the Municipal Drinking Water Licence #145-101, Issue #5, dated November 7, 2019.

Location Type	Number of Samples	Range of Lead Results	Unit of Measure	Number of Exceedances
Plumbing	0	0	mg/L	0
Distribution	18	<0.0005 - 0.0007	mg/L	0

Questions or comments

Please contact us either by mail, phone or email.

PUG Services Corp.

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