



**WATER  
RIVERVIEW PARK AND ZOO**

# Annual Drinking Water Report 2023



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# 2023 Annual Drinking Water Report

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## **2023 Peterborough Utilities Commission**

Mayor Jeff Leal..... Chair  
Councillor Lesley Parnell..... Vice-Chair  
Councillor David Haacke ..... Commissioner  
Councillor Keith Riel..... Commissioner  
Councillor Don Vassiliadis..... Commissioner

## **2023 Riverview Park and Zoo Advisory Committee**

<b>Name of Volunteer</b>	<b>Date Appointed</b>
Wally Davidson	Lifetime Member
Shauna Moodie	January 2021
Susan Ramey	January 2021
Scott Baker	January 2022
Neil Hamilton	January 2022
Alan Ingram	January 2022

### *Questions or comments*

Please contact us either by mail, phone or email.

PUG Services Corp.  
1867 Ashburnham Drive, Peterborough, ON K9L 1P8  
705-748-9300, ext. 1258  
Patricia Skopelianos, Water Quality Assurance Manager  
[pskopelianos@peterboroughutilities.ca](mailto:pskopelianos@peterboroughutilities.ca)

## Introduction

All Peterborough Utilities Commission facilities are managed and operated under contract by PUG Services Corp. (PUGSC). The Water Utility section of PUGSC includes the following operating departments:

- Water Treatment Plant
- Water Distribution
- Water Engineering Services
- Riverview Park and Zoo

## Financials

The audited financial statements for 2023 are included as Appendix A. Further details can be found in CFO's report 2.03, presented to The Commission in April 2024.

## Drinking Water System

### Source 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.

Peterborough Utilities continued its participation in the Source Water Protection Committee in 2023.



## Treatment Plant Operations

The plant is located at 1230 Water Street North, Peterborough, adjacent to 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 and a process waste treatment facility to dewater the backwash sludge.

Total raw water processed in 2023 was 11,479.75 megalitres (ML), this is an average of 31.45 ML daily (Table 1). The daily average consumption increased 1.7% from 2022. The maximum daily pumpage of 37.69 ML, occurred on August 7<sup>th</sup>, was a 2.6% increase from the maximum daily value (36.99 ML) recorded on May 21<sup>st</sup>, 2022.

Table 1

Water Treatment Plant Operations	2022	2023
Total Annual Raw Water	11,138.41	11,479.75
Average Day ML	30.52	31.45
Total Annual Treated Water	10,117.70	10,288.06
Average Day Consumption ML	27.70	28.18
Max. Daily Pumpage	37.69 – Aug 7	36.99 – May 31
Max. Daily City Consumption ML	37.46 – July 15	36.26 – June 1
Peak Hourly Consumption Rate ML	65.82 – Sept 10 @12:30h	70.96 – July 4 @ 09:00h
Total Wash Water ML	199.50	182.34
Average of Plant Effluent	2.0%	1.8%
Total Zone #1 Pumpage	6,207.44	6,282.79
Average Day ML	17.00	17.21
Total Zone #2 Pumpage	3,910.26	4,005.27
Average Day ML	10.70	10.97

## Reservoirs, Elevated Tanks, Water Booster Pumping Stations

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 55.36 ML, including the Water Treatment Plant. Water storage around the city is as follows:

Water Treatment Plant	8.5 ML
High Street Elevated Tank	4.55 ML
Clonsilla Avenue Reservoir	18.18 ML
Towerhill Reservoir	22.73 ML
Sherbrooke Elevated Tank	2.3 ML
Milroy Elevated Tank	0.5 ML

## Water Distribution

The water distribution system consists of approximately 472 kilometres of pipe (water mains), 2,462 hydrants and 27,818 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.





## PTBO H<sub>2</sub>O

The Utilities' mobile drinking water station, named PTBO H<sub>2</sub>O operated from May – October in 2022. This year PTBO H<sub>2</sub>O participated in municipally sponsored events, concerts, sporting events and local festivals.

The mobile drinking water station stations was created to provide fresh clean tap water to event patrons. Visitors to the mobile station can use a fountain to have a drink or to refill water bottle while staff promotes our tap water and other conservation activities. The mobile unit compliments our corporate values on the Environment, with the promotion of resource conservation.



## Capital Works Summary

The Water Treatment Plant underwent the following upgrades in 2023

- ◆ Raw water ozone feed system preliminary design.
- ◆ Replaced five of the fifteen HACH turbidity meters with Swan turbidity meters in the WTP.



- ◆ Two intrinsically safe heaters replaced in the Sodium Hydroxide/Fluoride Storage tank areas.
- ◆ TSSA upgrades were completed to the diesel engine driven pumps/generators at the WTP and Pumping Stations.

## Water Main Replacement

Approximately 990 m of distribution water mains were replaced on:

- ◆ Parkhill Road
- ◆ Armour Road

## New Water Main Installation

Approximately 3500 m of water main was installed in the Lily Lake Subdivision.

## Water Service Replacement

A total of 53 water services were replaced in 2023.

## Water Distribution Upgrades

An additional permanent sample station was installed in the west end of the city to assist Operators in monitoring water quality throughout the distribution system.

Cleaning and lining of approximately 3.64 km of existing distribution water mains took place on:

- ◆ Murray Street
- ◆ Cambridge Street
- ◆ Gilchrist Street
- ◆ Park Street. (Murray to Sherbrooke)
- ◆ Rubidge Street
- ◆ Kirk Street
- ◆ Downie Street.
- ◆ King Steet
- ◆ Rubidge Steet
- ◆ Webber Street



## **Summary of Inspection & Compliance**

### Ministry of Environment Conservation & Parks Inspection

During 2023, there was a Ministry of the

Environment, Conservation & Parks (MECP) Inspection on May 17, 2023, report # 1203847500. The Peterborough Drinking Water System received a 100% compliance rating. There were no recommended best practices noted in the report.

### Adverse Water Quality Incidents

There were two incidents of adverse drinking water quality test results in Peterborough for 2023

The first adverse water quality sample was reported on May 1, 2023. This was an exceedance for fluoride in the treatment plant. During routine maintenance of the fluoride pump, a high level was detected. The operator determined that there was no actual exceedance of fluoride in the distribution system. This was reported to the Ministry as a precautionary measure and no corrective action was required.

The second adverse water quality sample was reported on August 28, 2023, for total coliform at the Lansdowne Street Pumping Station. This was reported to the MECP and appropriate corrective action was taken according to MECP standards and the issue was resolved, with no negative impacts to the drinking water quality.

### Drinking Water Quality Management System

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. The Peterborough municipal water system received full scope accreditation in June 2011.

The Peterborough Drinking Water System maintained accreditation to the Drinking Water Quality Management Standard (DWQMS). In advance of the annual verification audit an internal audit was conducted in August 2023. The internal audit found seven opportunities for improvement and one corrective action was required. The external audit, conducted by NSF International, later in October 2023 described that the management system was well documented and continues to be effective.

## Water Flows

### Permit to Take Water

The *Ontario Water Resources Act, Regulation 387/05* authorized Peterborough Utilities Commission in accordance with Permit to Take Water (PTTW), 5167-9BVR6A the withdrawal of 190.68 ML per day.

A new PTTW (0232-CWCS6X) was issued on October 29, 2023 and is valid for 10 years. Under this Regulation we are required to report the daily water taking annually by March 31<sup>st</sup> each year. In 2023, there were no instances of water taking in excess of this daily limit. The total volume of water pumped into the Water Treatment Plant was 11,479.75 megalitres (ML), this is an average of 31.45 ML daily.

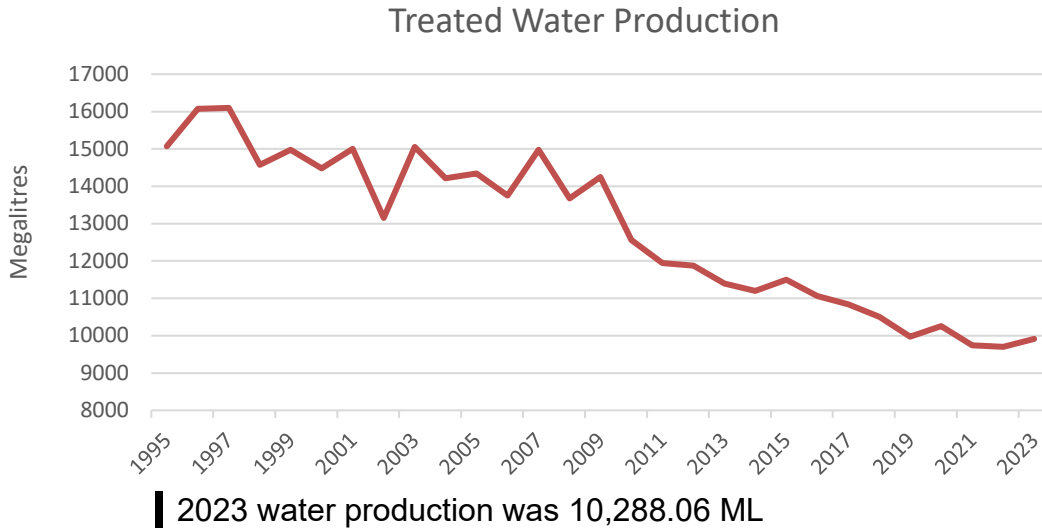
### Treated Water Production

The Water Treatment Plant produced 10,288.06 megalitres (ML) in 2023, this is an average of 28.18 ML daily (Chart 1). Historically the highest water consumption recorded was in 1980 (18,621.20 ML).

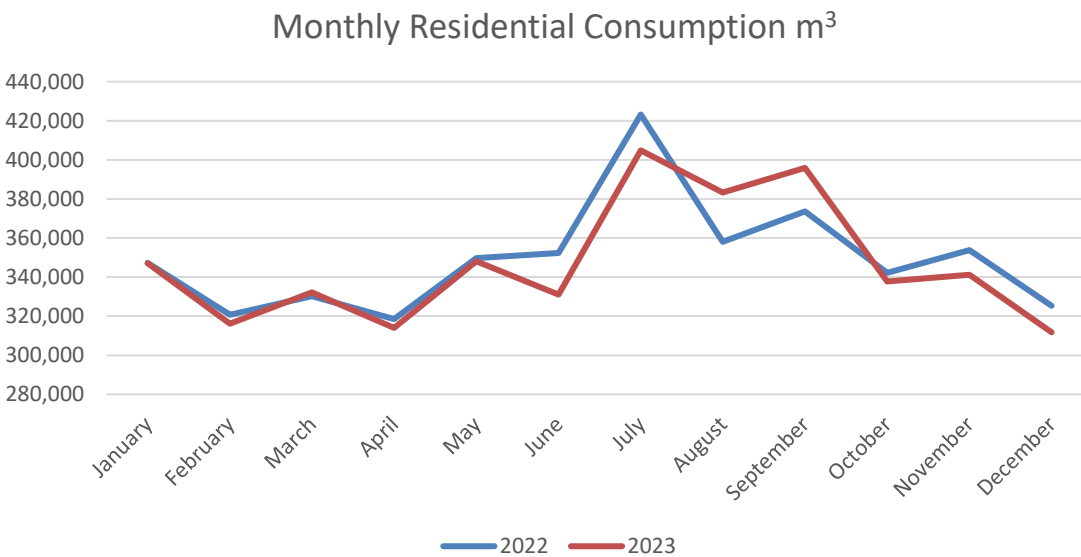
Peterborough Utilities monitors water usage through water meters, most of the water usage in 2023 was by industrial, institutional and large commercial users. There was a certain amount of water used for distribution system maintenance to maintain the water quality in the distribution system.



## Chart 1

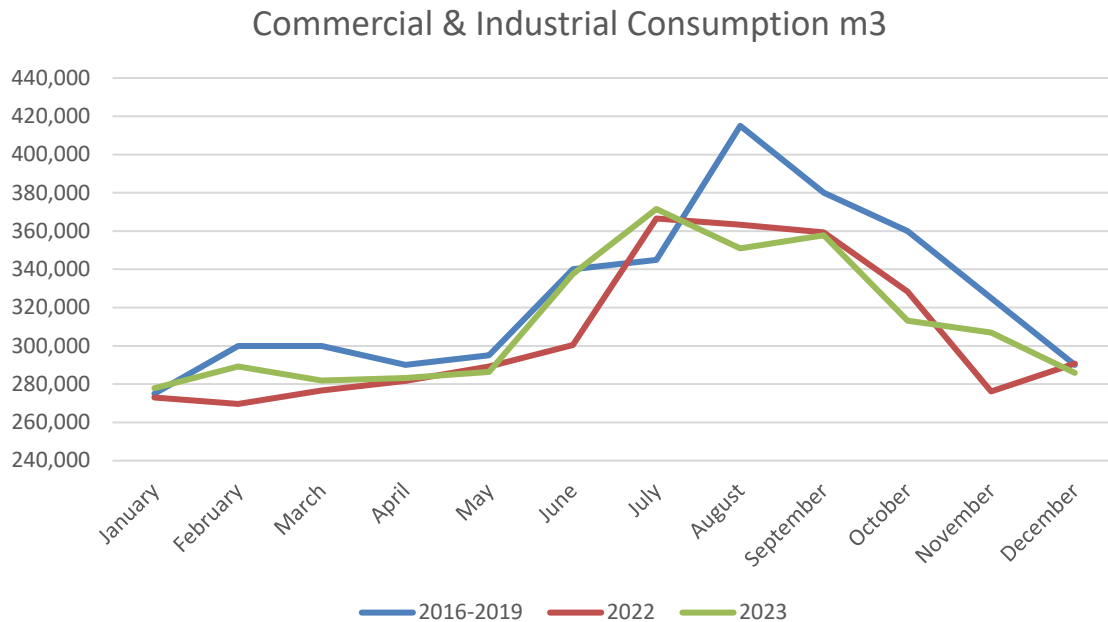


## Chart 2



The residential water consumption pattern is driven by annual weather patterns, as shown in Chart 2.

**Chart 3**



The industrial water consumption typically peaks annually in the third quarter as shown in Chart 3. However, numbers are still below the pre-pandemic historical trend (2016-2019).

Water Treatment Plant Laboratory and approximately 6,000 microbiological and chemical tests were performed by Peterborough Environmental Protection Laboratory.

### **Water Quality Results**

Continuous monitoring of turbidity, chlorine, fluoride and pH levels at the Water Treatment Plant, thousands of water samples are taken each year for chemical, physical and microbiological tests. These tests are carried out on water samples before and after treatment as well as on samples collected from different points in the water distribution system.



A total of approximately 20,000 individual tests were performed on Water Treatment Plant and water distribution samples in 2023. Approximately 13,000 individual tests were performed in the

Results of the laboratory testing continue to confirm that the Peterborough Water Treatment Plant produces good quality water and this quality is maintained throughout the water distribution system to the customer's tap.

O. Reg. 169/03 contains the *Ontario Drinking Water Quality Standards* (ODWQS). The purpose of the Province's ODWQS is to establish parameter limits to protect public health. An exceedance of any parameter would result in an adverse water quality event with notification to the Medical Officer of Health and the MECP. Appropriate corrective action would have to be initiated to address the adverse incident.

### Chlorine Residual

The Peterborough Water Treatment Plant uses chlorine for disinfection against viruses and bacteria in accordance with O. Reg. 170/03. Sample results reported under Schedule 7 for plant effluent was 0.43 -2.29 mg/L.

### Turbidity

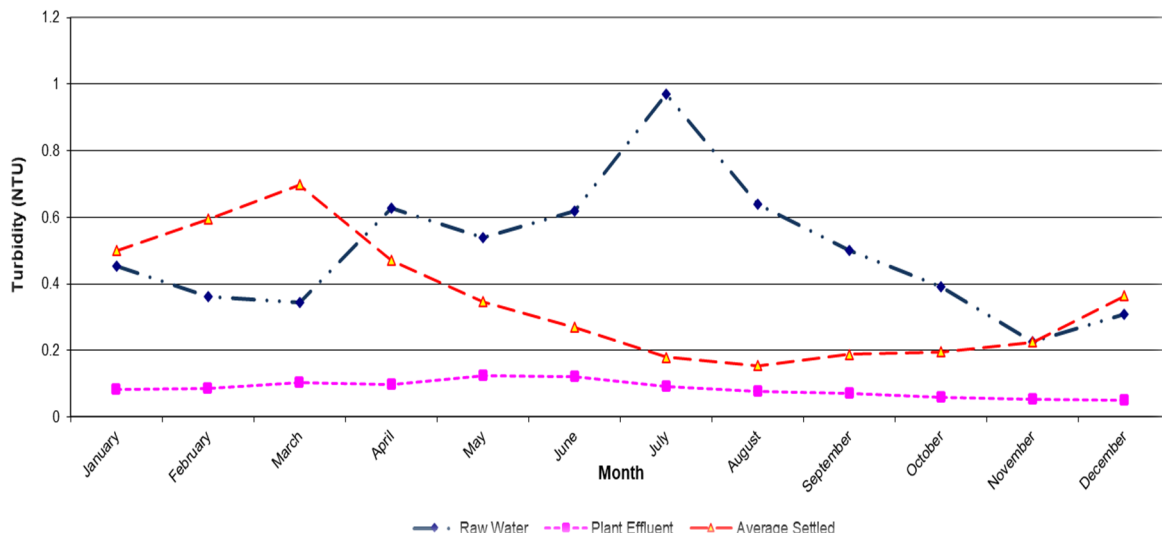
The average raw water turbidity in 2023 was 0.50 NTU; average during 2022 was 0.46 NTU. The monthly raw water turbidity peak occurred in July at 0.97 NTU as shown in Chart 4, the past 20-year average raw water turbidity was 0.56 NTU and treated water turbidity was 0.10 NTU.

The zebra mussel population in the river could also be a contributing factor for the cyclical increases and decreases in raw water turbidity. Raw water turbidity has slowly dropped since 2008.

The performance criteria for filtered water is 0.30 NTU for 95% of the time, without exceeding 1.0 NTU for more than fifteen minutes. The average filtered water turbidity was 0.05 NTU for 2023 and in 2022 was 0.05 NTU. Filters are taken off-line when the turbidity reaches 0.15 NTU. The 2023 average treated water turbidity was measured at 0.09 NTU.

Chart 4

Average Monthly Turbidity 2023



## **Microbiological Standards Testing**

### **Escherichia coli**

During 2023, a total of 245 Escherichia coli (E.coli) samples were analyzed from the Otonabee River (at the WTP intake) to assist in determining the source of fecal contamination within our source water. Monthly values ranged from 0 to 200 Colony Forming Units (CFU) per liter.



A total of 1,341 E.coli samples were analyzed from the plant effluent and distribution system. All values in the treated drinking water samples were zero.

### **Total Coliform**

The MECP guidelines for Total Coliform are to have all samples collected from the plant effluent to be zero CFU per litre of water sampled. During 2023, a total of 245 samples were analyzed from the Otonabee River. Monthly values ranged from 8 to 395 Colony Forming Units (CFU) per liter. A total of 1,341 Total Coliforms samples were analyzed from the plant effluent and distribution system.

### **Inorganic Parameters**

No known health-related water quality guidelines for inorganic (Table 2) and organic (Table 3) parameters were exceeded in 2023 in Peterborough's drinking water. To ensure that Peterborough's water is safe to drink, water quality is carefully monitored and subject to constant surveillance.

Table 2

Schedule 23	Unit	2023 Results	MAC
Antimony	mg/L	<0.00006	0.006
Arsenic	mg/L	<0.00002	0.025
Barium	mg/L	0.0260	1.0
Boron	mg/L	0.013	5.0
Cadmium	mg/L	0.000003	0.005
Chromium	mg/L	0.00034	0.05
Mercury	mg/L	<0.00001	0.001
Selenium	mg/L	0.00006	0.01
Uranium	mg/L	0.00017	0.02



## Organic Parameters

Table 3

Schedule 24	Unit	2023 Results	MAC
Alachlor	mg/L	<0.00002	0.005
Atrazine + N-dealkylated metabolites	mg/L	<0.00001	0.005
Azinphos-methyl	mg/L	<0.00005	0.02
Benzene	mg/L	<0.00032	0.005
Benzo(a)pyrene	mg/L	<0.000004	0.00001
Bromoxynil	mg/L	<0.00033	0.005
Carbaryl	mg/L	<0.00005	0.09
Carbofuran	mg/L	<0.00001	0.09
Carbon Tetrachloride	mg/L	<0.00017	0.005
Chlorpyrifos	mg/L	<0.00002	0.09
Diazinon	mg/L	<0.00002	0.02
Dicamba	mg/L	<0.0002	0.12
1,2-Dichlorobenzene	mg/L	<0.00041	0.2
1,4-Dichlorobenzene	mg/L	<0.00036	0.005
1,2-Dichloroethane	mg/L	<0.00035	0.005
Dichloromethane	mg/L	<0.00035	0.05
2,4-Dichlorophenol	mg/L	<0.00015	0.9
2,4-Dichlorophenoxy acetic acid (2,4-D)	mg/L	<0.00019	0.1
Diclofop-methyl	mg/L	<0.0004	0.009
Dimethoate	mg/L	<0.00006	0.02
Diquat	mg/L	<0.001	0.07
Diuron	mg/L	<0.00003	0.15
Glyphosate	mg/L	<0.001	1
Haloacetic acids (HAA)	mg/l	0.0587	0.08
Malathion	mg/L	<0.00002	0.19
2-Methyl-4-chlorophenoxyacetic acid	mg/L	<0.0000019	0.00012
Metolachlor	mg/L	<0.00001	0.05
Metribuzin	mg/L	<0.00002	0.08
Monochlorobenzene	mg/L	<0.0003	0.08
Paraquat	mg/L	<0.001	0.01
Pentachlorophenol	mg/L	<0.00015	0.06
Phorate	mg/L	<0.00001	0.002
Picloram	mg/L	<0.001	0.19
Polychlorinated Biphenyls (PCB)	mg/L	<0.00004	0.003
Prometryne	mg/L	<0.00003	0.001
Simazine	mg/L	<0.00001	0.01

Schedule 24	Unit	2023 Results	MAC
Terbufos	mg/L	<0.00001	0.001
Trihalomethane (THM)	Mg/L	0.063	
Tetrachloroethylene (perchloroethylene)	mg/L	<0.00035	0.03
2,3,4,6-Tetrachlorophenol	mg/L	<0.0002	0.1
Triallate	mg/L	<0.0001	0.23
Trichloroethylene	mg/L	<0.00044	0.005
2,4,6-Trichlorophenol	mg/L	<0.00025	0.005
Trifluralin	mg/L	<0.00002	0.045
Vinyl Chloride	mg/L	<0.00017	0.002

## Trihalomethanes -THM

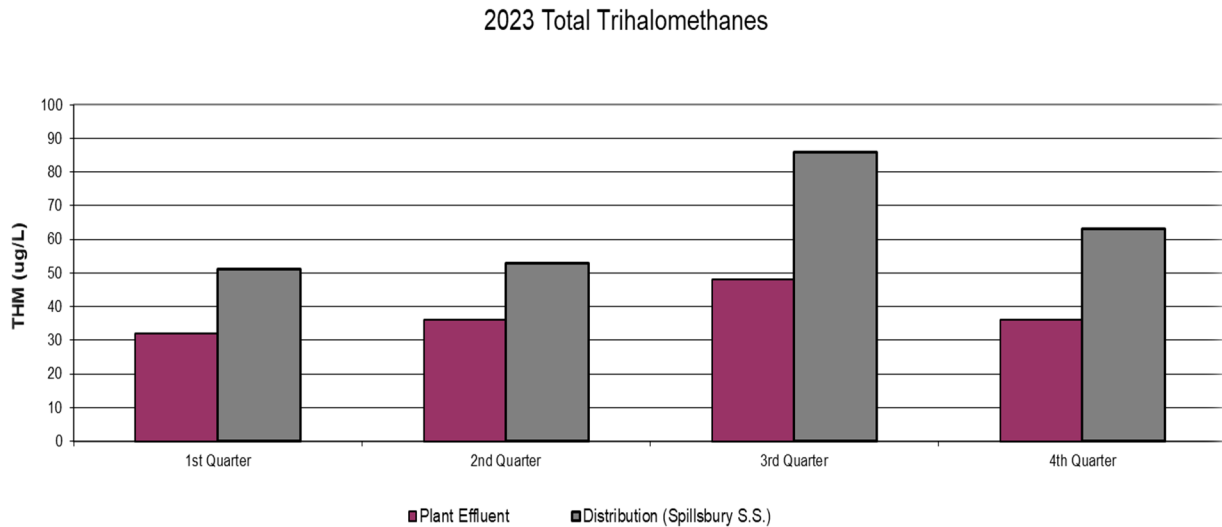
In Ontario, the Ministry of the Environment Conservation & Parks' Maximum Acceptable Concentrations (MAC) for total THM's (total concentration of chloroform, bromoform, bromodichloromethane and dibromochloromethane) are set to 100 µg/L (running annual average) for the distribution system. According to O. Reg. 170/03, distribution THM samples must be collected and analyzed quarterly.

Trihalomethanes (THM's) are formed as a by-product when chlorine is used to disinfect water for drinking. The presence of organic materials along with the use of chlorine in the water treatment process can contribute to the formation of disinfection by-products. The THM's may have adverse health effects at high concentrations and many governments set limits on the amount permissible in drinking water.

The THM average values found leaving the Water Treatment Plant during 2023 was 38.0 µg/L. The past 10-year average plant effluent has been 41 µg/L.

Distribution levels are always found to be higher than those leaving the Water Treatment Plant since THM's continue to form as the water travels through the distribution piping system. During 2023, one distribution location was selected to assist in determining areas of the city where THM's may be highest. The annual average THM value in the distribution system was 63 µg/L (Chart 5). The average THM value during 2022 was 85 µg/L. The 10-year average of distribution THM concentration was found to be 75 µg/L. The regulatory limit for distribution samples are 100 µg/L (running annual average); therefore, the Peterborough Drinking Water System maintained compliance.

## Chart 5



### Haloacetic Acid

HAA's are another group of chemicals that are formed as disinfection by-products similar to trihalomethanes (THM).

The 2023 average treated water HAA was 32.8 µg/L and the average distribution sample was found to be 58.7 µg/L. O Reg. 170/03 was amended to include HAAs in 2021. The regulatory limit for distribution samples are 80 µg/L (running annual average); therefore, the Peterborough Drinking Water System maintained compliance.

### Sodium

Sodium is not part of Schedule 23 or 24 but is required to be tested at least once every five (5) years. It has been sampled every year and was found to be below the ODWS aesthetic objective of 200 mg/L. In 2023, the sodium result was

found to be 10.7 mg/L (9.3 mg/L in 2022). The local Medical Officer of Health must be notified when the sodium concentration exceeds 20 mg/L so that this information may be passed on to local physicians.

### Lead

Lead sampling is required under O. Reg. 170/03, schedule 15.1. Peterborough requires 8 distribution samples to be collected and analyzed for lead, pH and alkalinity every sampling period within the distribution. Peterborough is required to sample any residential house in the city that requests sampling for the same parameters mentioned above.

In 2023, 21 distribution points were sampled for lead. Customers are offered free testing of their private dwelling. The distribution sample results were less than 0.0005 to 0.0005 mg/L which indicates that the distribution system

does not contribute to lead contamination.

## Taste and Odour

During 2023, the primary source of taste and odour in our raw water was from the naturally occurring compounds geosmin (name derived from the Greek 'earth' and 'smell') and 2-MIB (2-methylisoborneol). These compounds are monitored as a precursor to taste and odour complaints (earthy/musty) of the water and are not a health concern. They can be detected by humans at very low levels (less than 10  $\eta\text{g/L}$ ). The bacteria actinomycetes, zebra mussels and some species of algae can produce geosmin and 2-MIB, though all of the contributing organisms are not known. Observations have shown that when we have greater zebra mussel and/or algae populations we experience higher amounts of geosmin and 2-MIB.

Previous annual data indicates that geosmin and 2-MIB would hit peaks at the same time during the summer months. There is usually a large peak near the end of the summer when the water temperature is highest and sunlight hours are high. The concentration peaks for both taste and odour causing compounds occurred approximately July to November. Geosmin is thought to originate higher in the water column and produce an earthy odour. The average raw water value during 2023 was 6.6  $\eta\text{g/L}$  and the average plant treated water was 5.9.g/L

The 2-MIB is produced in the sediment or benthic layer and gives off a musty odour. 2-MIB can reproduce well when sunlight can penetrate down to the bottom of lakes and streams. The

average raw water value during 2023 was 4.1  $\eta\text{g/L}$  and the average plant effluent was 3.9  $\eta\text{g/L}$  (Chart 6).

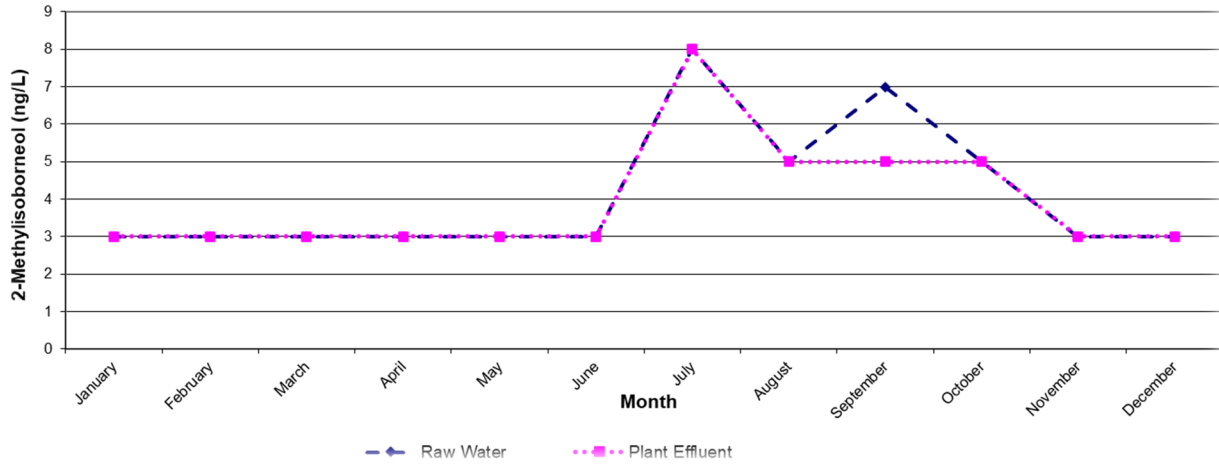


The reduction of geosmin and 2-MIB due to water treatment processes (coagulation, sedimentation, filtration and chlorination) was negligible. Both geosmin and 2-MIB compounds resist oxidation (disinfection) and are difficult to remove by conventional water treatment processes.

# 2023 Annual Drinking Water Report

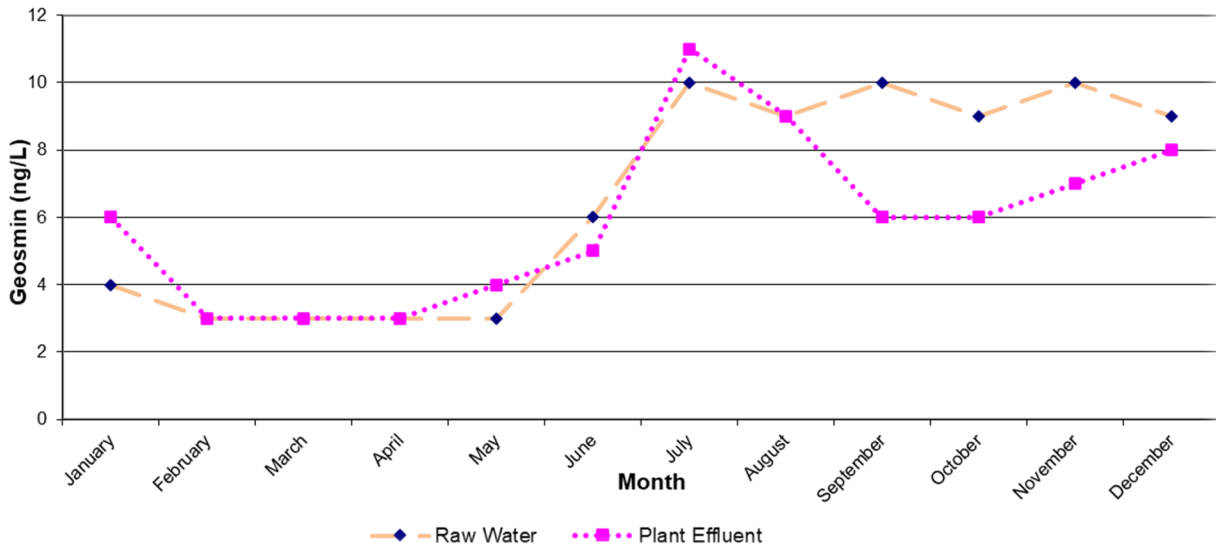
**Chart 6**

2023 Average Monthly 2-Methylisoborneol (2-MIB)



**Chart 7**

2023 Average Monthly Geosmin





## Summary Report

The summary of water delivered as per O. Reg. 170/03 Schedule 22 in 2023 is shown in Table 4.

Table 4

Month	Average Day (M <sup>3</sup> /d)	Maximum Day (M <sup>3</sup> /d)	Peak Flows (L/m)
January	26,492	33,785	23,462
February	26,229	34,729	24,117
March	26,269	33,094	22,982
April	26,932	28,713	19,940
May	29,723	36,990	25,688
June	31,295	35,656	24,761
July	31,172	36,161	25,112
August	29,794	34,001	23,612
September	30,619	35,737	24,817
October	27,545	31,427	21,824
November	26,602	29,115	20,219
December	25,465	32,901	22,848
<b>Rated Capacity</b>	<b>104,000</b>	----	----
<b>Approved Flowrate</b>	----	190.68	132,743 L/m

## Chemical Consumption

Table 5

Chemical Use	2022	2023
Total Chlorine	41,704 kg	38,486 kg
Average Dosage	1.31 mg/L	1.16 mg/L
Total Aluminum Sulphate	853,479 L	873,938L
Average Dosage	49.6 mg/L	49.8 mg/L
Total Hydrofluosilicic Acid	25,845 L	20,208 L
Average Dosage	0.68 mg/L	0.68 mg/L
Total Sodium Hydroxide	40,962	80,043
Average Dosage	4.0 mg/L	5.9 mg/L

### Chlorine Dosage

The average dose of chlorine for 2023 was 1.16 mg/L (Table 5). This value fluctuates throughout the year as higher

doses of primary chlorine are required during the summer months because it takes more chlorine to disinfect the water when the water is warmer.

Chlorine is also added into the treated water before it leaves the WTP. This secondary chlorine is added to help maintain the chlorine residual throughout the distribution system to comply with the Ontario Drinking Water Standards (ODWS).

Zebra mussel control for the Water Treatment Plant included adding approximately 0.5 mg/L of chlorine into the Water Treatment Plant intakes.

### Hydrofluorosilicic Acid (fluoride)

Hydrofluorosilicic acid (fluoride) was added to the treated water to attain a combined concentration (target value) of 0.70 mg/L. Fluoride is added to the water depending on the total concentration required in the treated water and also the concentration of the raw water. The average dosage of fluoride added to the water in 2023 was approximately 0.68 mg/L (Table 5). The average treated water fluoride residual was 0.65 mg/L. The average fluoride concentration found in the raw water (natural fluoride) during 2023 was 0.09 mg/L.

### Sodium Hydroxide

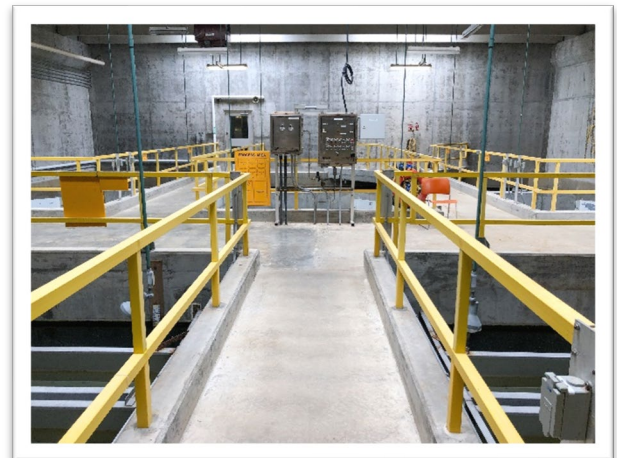
Sodium Hydroxide (NaOH) is normally added to the plant effluent for corrosion control within the distribution system as well as plant effluent pH adjustment. The use of chlorine and aluminium sulphate (alum) during the water treatment process lowers the pH level causing the water to be slightly acidic (corrosive). The addition of NaOH increases the pH to a more acceptable value of 7.1.

### Aluminium Sulphate

Aluminium Sulphate (alum) is used as our primary coagulant causing particles (silt, sand, algae, and bacteria) to coagulate or 'clump' to form a floc, which can settle in the sedimentation basins. The water is further treated by filtration. Alum was added to the water during 2023 at an average rate of 49.8 mg/L (Table 5). Aluminium residual found in the WTP treated water can be a by-product of the addition of alum. The average treated water aluminium residual for 2023 was 0.036 mg/L the operational guideline for aluminium is 0.1 mg/L.

### Water Treatment Plant

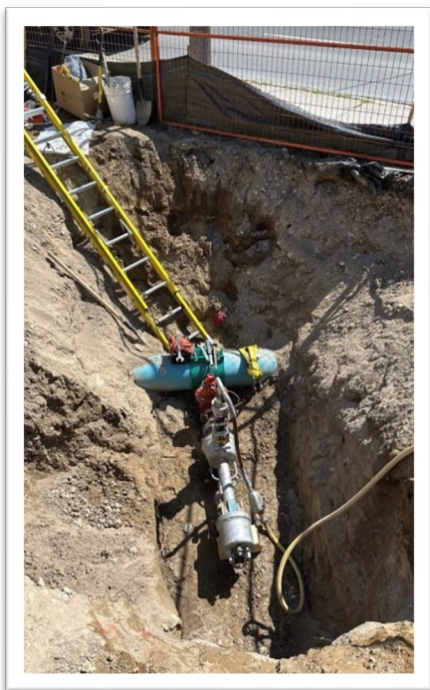
Annual maintenance was conducted at the Water Treatment Plant, Water Street Pumphouse, reservoirs, elevated tanks and booster pumping stations.



## Water Distribution

Annual water distribution review and maintenance programs are necessary to ensure the safe delivery of drinking water in Peterborough. These programs include:

- ◆ Valve maintenance
- ◆ Hydrant maintenance
- ◆ Dead end flushing
- ◆ Service post repair



## Impact of Climate Events

The temperature during June, July and August averaged approximately 25.2°C. This is above normal summertime temperature. Environment Canada data describes the average normal value of 18.3°C (normal data 1981 – 2010). The summer months in 2023 were hotter than normal with 6 days where temperatures were higher than 30°C. Rainfall totals for the three summer months of June, July and August was

234.1 mm. This is considered to be a normal rainfall value for the summer months.

The Otonabee Water Response Team met monthly from May – October 2023. There were no Low Water Advisory Conditions issued during the summer months in 2023.

## Pilot Plant

The Peterborough Water Treatment Plant, working together with the University of Toronto's Drinking Water Research Group (DWRG), has completed pilot-scale studies to optimize production, improve water quality, and investigate next-generation treatment technologies for the citizens of Peterborough.

A 5000:1 scale-model version of the main treatment facility, the pilot plant includes processes such as coagulation, tapered mixing, flocculation, settling and filtration. In addition to conventional water treatment studies, ozone and advanced oxidation applications have been investigated.

## Ozone

Our current study in 2023 focused on evaluating ozone and advanced oxidation potential (AOP) using hydrogen peroxide as a next generation technology. The study was completed to provide additional information in completing the final design for ozone implementation at our facility. The study objectives were to determine if AOP will provide enhanced organic and disinfection by-product (DBP) removal. We also wanted to determine the optimal ozone dose and the impact of dissolved

oxygen (DO) concentrations on filter performance and loss-of-head (LOH).

Our pilot system tested ozone pre-coagulation under flow conditions of 40 and 60 MLD. Ozone dose was optimized for seasonal variations in water temperature that impact ozone half-life and decay rates. Ozone and ozone/AOP (O<sub>3</sub> and H<sub>2</sub>O<sub>2</sub>) pilot trains were set-up to compare the impact on treatment. In the ozone/AOP train, hydrogen peroxide was dosed at 0.5 mg/1.0 mg of ozone upstream of ozonation.



Water quality parameters were monitored for total organic carbon (TOC), natural organic matter (NOM), trihalomethane (THM) and haloacetic acid (HAA) formation.

## Peracetic Acid

Pilot research also examined peracetic acid (PAA) as an alternative to chlorination in the untreated source water. Previous studies have shown the effectiveness of PAA as a barrier to zebra mussel infiltration and subsequent reduction in DBP formation in the treated water. PAA is a potential alternative to raw water chlorination, a chemical barrier used to inhibit zebra mussel

veligers from entering the WTP. The removal of raw water chlorination would also serve to ameliorate DBP formation.

## Customer Service

### Customer Calls

Customer concerns relating to water are tracked by WTP staff and logged using computer software. Some questions and concerns that were asked to our WTP staff were related to taste and odour, colour, hardness, general water quality, information on water treatment, sampling, operations, and questions to assist with school projects on water treatment.

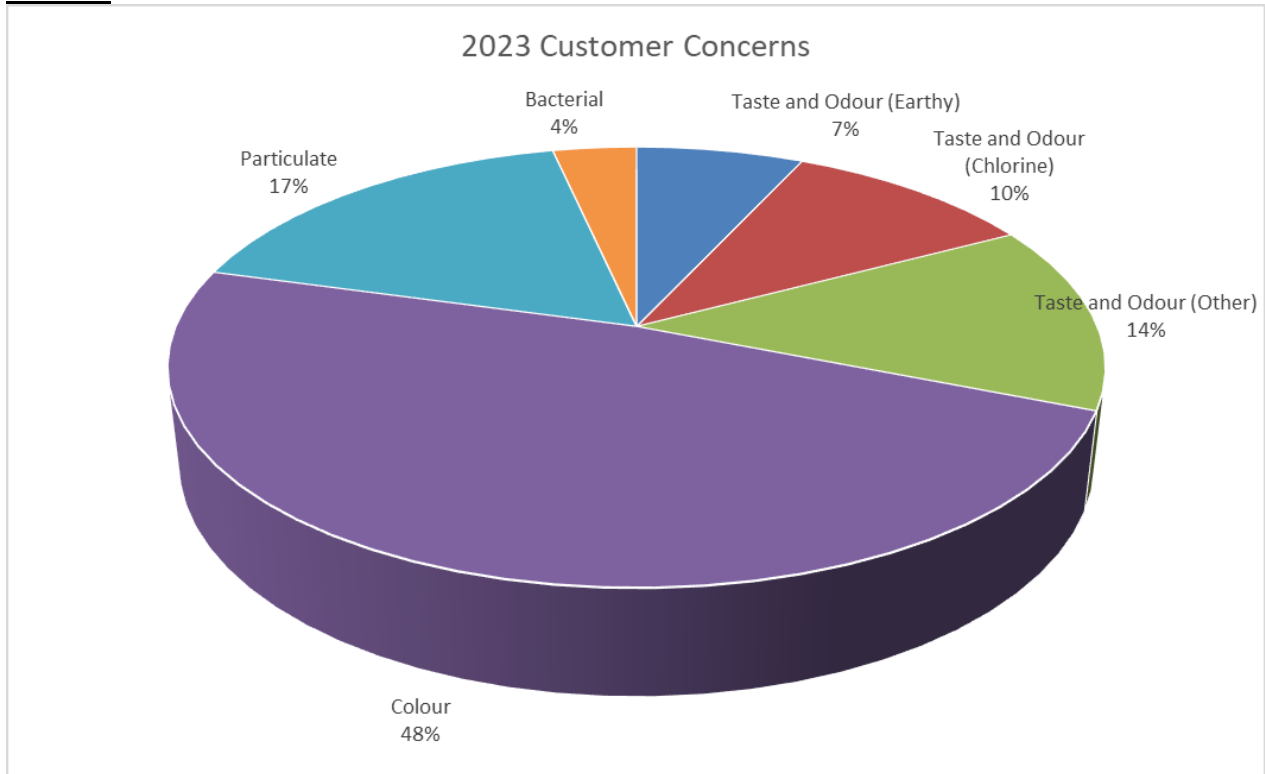
In 2023, staff responded to a total of 29 inquiries, compared to 37 in 2022. The 29 inquiries were related to the following concerns; 48% of customer concern calls were relating to colour (usually rusty coloured water), 17% were relating to particulate matter, a total of 31% relating to taste and odour, and 4% relating to bacteriological concerns.

A further breakdown of the 16 taste and odour complaints revealed the following: 2 concerns were for an earthy musty odour, 3 concern was for a chlorine taste and odour, and 4 concerns were for various other taste and odours, from metallic to medicinal.

### Tours

Tours have been an important part of public education at the Peterborough Water Treatment Plant. In 2023 water treatment plant staff conducted tours again after a break due to the pandemic. A total of 136 people toured the Water Treatment Plant.

Chart 8





## Riverview Park & Zoo

In 2023, Riverview Park and Zoo (RPZ) was fully open and operated 365 days from 8:30 am until dusk. Attendance was stronger than ever, with a total annual attendance estimated at over 300,000 visitors. In part, the post-pandemic economy led more families, school boards, and tourists to travel from further areas to attend the only free-admission accredited zoo in Canada.

Further improvements were made to facilities, park infrastructure, and equipment in 2023. Among these items are investments in the new parking lot to playground accessible ramp, expansion of animal exhibits, safety upgrades to facilities, improved park infrastructure, as well as climate change and emergency preparedness.

RPZ has earned a reputation of excellence in biodiversity conservation, at-risk species propagation, outdoor education, student mentorship job training, as well as being a notable accessible recreation space throughout the province. RPZ was voted Top Outdoor Attraction in Ontario's Choice Awards in 2023 and was one of three top vote-getters for Ontario's Best Attraction overall, recognized by Ontario Tourism and Peterborough and Kawartha Tourism.

## Park Operation & Facilities

The beloved 1867 replica locomotive is a multi-generational culture landmark and favorite attraction for the City of Peterborough celebrating 50 years on the track next year. The train ride operated for 102 days in 2023, hosting 64,000 riders between Victoria Day and

Labour Day, which is a testament to the clear weather of the season. Mechanical maintenance and repairs to the train, as well as routine dam maintenance and construction had a minimal impact on the operating season. Efficient repairs by the city garage mechanics, as well as expert project planning by Peterborough Utilities' engineers, and the enthusiasm of the dedicated train operators helped to meet 99% of revenue goals on ticket sales during the operating season.



Park investments included new equipment in the playground tot lot with help from the Kiwanis Club of Scott Plains and accessibility features thanks to the Kiwanis Action Club donations in 2023. Investment in new substrate for the whole playground was prioritized due to the volume of visitors year-round and heavy use of the multifaceted play structures to meet and exceed CSA standards and ensure a safe outdoor play space for all. The wooden super slide stairs require renovation. Phase one of this project included engineering designs along with slope integrity testing now completed.

Naturalization of the shoreline and picnic areas on our source water protection site

also helped to meet our commitment to Bird Friendly Peterborough, and Healthy Communities creating homes and food sources for native wildlife and pollinators.



Necessary repairs to the ornamental fountain, the event Gazebo, splash pad, and snack bar became priorities this season. An additional drinking water fountain was installed, along with a retaining wall in the playground.

Climate readiness was among our top priorities this year in response to the weeklong power outage following the 2022 devastating storm challenging the park and zoo operations. Sizable losses in feed and supplies, along with risk to life systems for exotic animals if the outage had been in the winter months, resulted in efforts to obtain and install 2 new 14kV generators for the primate building and the Education Centre. Thus, ensuring all 4 major exhibit buildings with life systems and food storage have back up power in an extreme event.

Significant investment in slope erosion studies along the Riverview Trail was required because of the derecho storm that wiped out 80 trees on the park and

zoo property. This damage coupled with heavy rains led to slope stability investigation, beginning with the integrity testing by a local engineering firm to ensure the appropriate strategy and plan

## Zoo Operations & Facilities

Animal collection status is healthy and moving toward goals of fewer, bigger, better exhibits with emphasis on conservation, increasing local native species, and animals acclimatized to our region, facilities, and staff capacity. Acquisitions of Ontario turtles, leopard frogs, wild turkeys, and spotted salamanders were complimented with exotic species acquisitions such as golden pheasants, parakeet, and sloths that were added to our zoo family in 2023. Dispositions as a part of our species survival plans and sustainability goals included tropical fish, elongated tortoises, juvenile crocodiles, and young



wallabies. Successfully rehoming our Chestnut-fronted macaw Pauly, was sent to partner accredited facility with appropriate capacity, space, socialization, and staffing levels.

## Animal Health & Welfare

Routine animal health processing of all 127 animals in the collection was done weekly animal health and welfare assessments by our contracted veterinarian and animal health team. Formalizing the Enrichment and Training Program at RPZ in 2023 resulted in a record breaking 18,500 individual enrichment sessions, as well as an outstanding 52 individual training sessions preformed to support the animals in voluntary participation in their health programs, reducing stress and increasing animal welfare standards. RPZ helped remove 74 animals through Animal Welfare Services in partnership with Ontario Provincial Police, Toronto Zoo, and Little Ray's Nature Centre. This partnership included temporarily housing 16 of these animals, fully supported by the Solicitor General's office. RPZ invites audit and in 2023 was chosen by Animal Welfare Services, the new regulatory authority in animal welfare enforcement and investigations, to develop their own formal auditing process of their first Proactive Inspection in August. RPZ was found to be exceptional in the level of care and animal welfare standards. We are proud to partner with Animal Welfare Services on several initiatives.

## **Recognition**

In 2023, the world lost veterinarian Dr. Mike Cranfield who had been a RPZ consulting vet along with contracted Dr. John Sallaway for the past 47 years. Dr. Cranfield was a Peterborough inspiration and international success, founding the Gorilla Doctors in the Congo and supporting young veterinarian apprenticeships throughout the world for

over 5 decades. This included hundreds here at the RPZ. Dr. Cranfield will be recognized as one of the contributors of the design and concept of the Animal Health Center through dedication. This building ensures we can care for the animals on site to promote the best health and learning opportunities to future generations of veterinarians and conservationists.

## Zoo Animal Collection

In 2023 there were 5 births/hatchings and 14 deaths of animals during the year. This included the loss of our senior serval and our capybara; RPZ welcomed the newest member of the domestic yak herd in October. Post-mortems were performed on those animals that had died, to determine the cause of death where possible. Acquisitions of 30 new animals were accomplished during the year.



As of December 31, 2023, the animal collection on site had 93 animals, representing 69 species (excluding groups of fish and invertebrates). The collection had 32 animals on loan and 12 animals out on loan. (Table 6).



Table 6

	January 1	Birth/ Hatchings	Acquisitions	Deaths	Disposition	December 31
# Animals Owned on site	85	5	30	14	12	94
# Animals at Zoo on Loan	36	0	2	1	4	33
# Animals out on loan	11	0	0	1	0	10
Total Animals On Site	121	5	32	16	16	127

## Capital Program

Generous support from the community through the annual fun run event and donations from local businesses, helped to construct what is now the largest Slender-tailed Meerkat exhibit in the country.

Other infrastructure investments included installing exhibit access gates for large equipment, and animal health processing chutes to improve animal welfare and improved safety for staff and animals.



## Grant Contributions

Grant applications and awards were maximized, significant examples of success include:

- Social Development Canada Enabling Accessibility Grant to build the Parking Lot accessible Ramp \$100,000. Canada Summer Jobs to support 50% of the income for nine summer students for eight summer weeks contributed \$18,480
- Young Canada Works Ontario Cultural Living Museum Grant supported hours for two public educators or \$14,100 to animate our conservation exhibit.

## Education

RPZ hosted 10,000 students for education programs. These included school trips, classroom tours, early childhood programming Zoo Crew, special accessibility groups, adult learning, and community groups. Each education program includes a curriculum-linked focus on conservation and the actions we can take to protect animals and their habitats. Education at RPZ include programs offered to a wide

variety of audiences and staff through publications, exhibit interpretation, graphics, on-site presentations, tours, responsible pet ownership, Roberta Bondar Photography Challenge for youth, summer camps, the classroom pet outreach program through Pathways, meet-the-keepers, and teacher training.

Park and Zoo education programs raised a record breaking \$16,000 including our virtual adaptations of our education programs that were maintained by several schools. The Bondar Challenge program connecting youth to nature through the art of photography in partnership with Otonabee Conservation engaged 22 participants in person for the first time since 2019.

Other programming included:

- virtual “Classroom Pets” “Zoo Trek” tours as delivery agents of the Pathway to Stewardship Program: Classroom Pets reaching early years classrooms focused on Landmark #3: weekly positive interactions with animals. Over 400 students participated in this program.
- Virtual Environment Symposium with both local school boards on biodiversity and conservation in May engaged over 700 students in 2 days.



## Conservation

A native turtle nesting site was constructed on the shore of the Otonabee River in the lower park with volunteer support in partnership with Otonabee Conservation, the Ontario Turtle Conservation Centre (OTCC), Trent University, and the Ministry of Natural Resources and Forestry. RPZ supports other conservation facilities like the OTCC with turtle food and equipment to home injured and orphaned turtles. This collaboration helps improve their capacity to help over 6000 animals in 2023. Zookeepers and wildlife experts supported re-releasing of healed and hatched turtles to their original habitat, their native lakes, and rivers.

The RPZ has invested in more local species in the collection and supporting impact work for IUCN species of special interest, endangered, and at-risk through membership in the Species Survival Plans, stud books, and research with other accredited facilities, thus ensuring a healthy genetically diverse captive population for eventual release, once habitats are protected. These conservation species include Woodland Caribou, Slender-Tailed Meerkats,



Squirrel Monkeys, Spotted Salamanders, and Leopard Frogs.

## Research

In 2023 we hosted 4 Research Students from Trent University Conservation Biology who are helping us to study the animals, with observation and ethograms which helps support our Enrichment and Training Program for better insight into animal welfare needs of social groups in captivity for our squirrel monkeys and slender-tailed meerkats, Eurasian Lynx and camels. Their findings and projects will contribute as a pilot for ongoing projects in subsequent years.

In 2023 we partnered with Peterborough field naturalists and Bird Friendly Peterborough to help our visitors be a part of the animal and pollinator counts seen on site. Data collection will continue to grow in partnership with Trent University.



## Special Events

The annual Fun Run came back for the first time in person since 2019 to remarkable success with over 250 participants raising \$6,000 toward the capital investment to deconstruct and rebuild the new outdoor meerkat exhibit. Sunday Concerts in the park also returned to a full season with guests including the local youth orchestra, blues, folk, and rock bands for visitor enjoyment.

## Volunteers

Over 68 volunteers supported interactive touch tables, educational tours, the conservation exhibit and events like the animal art auction, and Storytime in the Park. Community partner events were held here at Riverview Park and Zoo like the Gutsy Walk for Chrones and Colitis, and Trent Excalibur Sumer Camp.



# 2023 Annual Drinking Water Report

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## Appendix A – Financial Statement

**PETERBOROUGH UTILITIES COMMISSION**  
**FINANCIAL STATEMENTS**  
**AT DECEMBER 31, 2023**

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Statement of Cash Flows	3
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# 2023 Annual Drinking Water Report

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Baker Tilly KDN LLP  
272 Charlotte Street  
Peterborough, ON  
Canada K9J 2V4

D: 705.742-3418  
F: 705.742-9775

[www.bakertilly.ca](http://www.bakertilly.ca)

## INDEPENDENT AUDITOR'S REPORT

### To the Chair and Members of the Peterborough Utilities Commission

#### *Opinion*

We have audited the financial statements of Peterborough Utilities Commission (the Commission), which comprise the statement of financial position as at December 31, 2023 and the statements of operations and accumulated surplus, changes in net financial assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Commission as at December 31, 2023, and the results of its operations and cash flows for the year then ended in accordance with Canadian Public Sector Accounting Standards.

#### *Basis for Opinion*

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Commission in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

#### *Responsibilities of Management and Those Charged with Governance for the Financial Statements*

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian Public Sector Accounting, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Commission's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Commission or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Commission's financial reporting process.

#### *Auditor's Responsibilities for the Audit of the Financial Statements*

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

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Peterborough

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# 2023 Annual Drinking Water Report

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As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Commission's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Commission's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Commission to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

*Baker Tilly KDN LLP*

Chartered Professional Accountants  
Licensed Public Accountants  
Peterborough, Ontario  
April 24, 2024

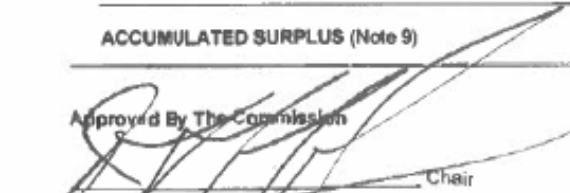



# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
**STATEMENT OF FINANCIAL POSITION**  
**At December 31, 2023**

	2023 \$	2022 \$
<b>FINANCIAL ASSETS</b>		
Cash (Note 4)	25,717,042	26,535,573
Accounts receivable		
Customer accounts	1,212,234	1,170,531
Sewer surcharge	1,300,824	1,318,861
Sundry	705,208	768,759
Unbilled water revenue on customer accounts	1,434,036	1,708,280
Unbilled sewer surcharge	1,481,206	1,708,280
	<b>31,850,550</b>	<b>33,210,284</b>
<b>LIABILITIES</b>		
Accounts payable and accrued charges	5,085,989	5,130,242
Sewer surcharge payable (Note 7)	3,615,038	3,726,876
Long term debt (Note 5)	11,044,023	12,115,977
Customer deposits	423,211	409,910
Asset retirement obligation (Note 6)	59,650	-
	<b>20,227,911</b>	<b>21,383,005</b>
<b>NET FINANCIAL ASSETS</b>	<b>11,622,639</b>	<b>11,827,279</b>
<b>NON-FINANCIAL ASSETS</b>		
Inventories	933,764	792,049
Tangible capital assets (Note 8)	124,809,205	121,612,018
	<b>125,742,969</b>	<b>122,404,067</b>
<b>ACCUMULATED SURPLUS (Note 9)</b>	<b>137,365,608</b>	<b>134,231,348</b>

Approved By The Commission

  
 \_\_\_\_\_ Chair

  
 \_\_\_\_\_ Member

The accompanying notes are an integral part of this financial statement.

# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
**STATEMENT OF OPERATIONS AND ACCUMULATED SURPLUS**  
**For The Year Ended December 31, 2023**

	Budget 2023 \$ (Unaudited)	Actual 2023 \$	Actual 2022 \$
<b>REVENUES</b>			
Sale of water	19,025,000	19,242,005	18,729,962
Contributed capital installation charges	300,000	131,369	522,022
Development charges earned	667,000	34,963	596,951
Fire protection	650,000	650,000	650,000
Sewer surcharge billings	448,000	447,625	439,000
Riverview Park and Zoo (Note 13)	321,000	335,288	312,822
Interest	700,000	1,492,773	620,939
Other	325,000	473,910	321,136
Electricity	350,000	291,424	280,452
Donations	50,000	81,460	139,411
	22,836,000	23,180,817	22,612,695
<b>EXPENSES</b>			
Water treatment and storage	4,793,000	4,617,042	4,357,134
Water distribution	2,454,000	2,135,722	2,213,994
Riverview Park and Zoo (Note 13)	1,911,000	2,117,380	2,041,057
Administration	4,424,000	4,639,100	4,272,235
Amortization	6,375,000	6,230,539	6,099,524
Interest	360,000	306,772	346,116
	20,317,000	20,046,555	19,330,060
<b>ANNUAL SURPLUS</b>	2,519,000	3,134,262	3,282,635
<b>OPENING ACCUMULATED SURPLUS</b>	132,612,000	134,231,346	130,948,711
<b>CLOSING ACCUMULATED SURPLUS</b>	135,131,000	137,365,608	134,231,346

The accompanying notes are an integral part of this financial statement.

# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
**STATEMENT OF CASH FLOWS**  
**For The Year Ended December 31, 2023**

	2023	2022
	\$	\$
<b>CASH PROVIDED BY (USED IN):</b>		
<b>OPERATIONS</b>		
Annual surplus	3,134,262	3,282,635
Add: Non-cash charges to operations		
Amortization	6,230,539	6,099,524
Contributed capital installation charges	(131,369)	(522,022)
	9,233,432	8,860,137
Change in non-cash working capital items (Note 10)	256,698	(1,541,226)
	9,490,130	7,318,911
<b>INVESTING ACTIVITY</b>		
Purchase of tangible capital assets	(9,236,707)	(6,650,835)
<b>FINANCING ACTIVITIES</b>		
Repayment of long term debt	(1,071,954)	(1,057,298)
<b>NET CHANGE IN CASH DURING THE YEAR</b>	<b>(818,531)</b>	<b>(389,222)</b>
<b>CASH POSITION - BEGINNING OF YEAR</b>	<b>26,535,573</b>	<b>26,924,795</b>
<b>CASH POSITION - END OF YEAR</b>	<b>25,717,042</b>	<b>26,535,573</b>

The accompanying notes are an integral part of this financial statement.



# 2023 Annual Drinking Water Report

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**PETERBOROUGH UTILITIES COMMISSION**  
**STATEMENT OF CHANGES IN NET FINANCIAL ASSETS**  
**For The Year Ended December 31, 2023**

	Budget 2023 \$ (Unaudited)	Actual 2023 \$	Actual 2022 \$
<b>ANNUAL SURPLUS</b>	2,519,000	3,134,262	3,282,635
Acquisition of Tangible Capital Assets	(9,828,000)	(9,368,076)	(7,172,857)
Amortization of Tangible Capital Assets	6,375,000	6,230,539	6,099,524
Decrease in Inventories	(100,000)	(141,715)	(183,046)
Increase in Asset Retirement Obligation	-	(59,650)	-
<b>CHANGE IN NET FINANCIAL ASSETS</b>	<b>(1,034,000)</b>	<b>(204,640)</b>	<b>2,026,256</b>
<b>NET FINANCIAL ASSETS, BEGINNING OF YEAR</b>	<b>9,504,000</b>	<b>11,827,279</b>	<b>9,801,023</b>
<b>NET FINANCIAL ASSETS, END OF YEAR</b>	<b>8,470,000</b>	<b>11,622,639</b>	<b>11,827,279</b>

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The accompanying notes are an integral part of this financial statement.

# 2023 Annual Drinking Water Report

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## **PETERBOROUGH UTILITIES COMMISSION**

### **NOTES TO THE FINANCIAL STATEMENTS**

**For The Year Ended December 31, 2023**

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#### **1. NATURE OF ORGANIZATION**

Operating under the authority of the Municipal Act, the Peterborough Utilities Commission (the "Commission") provides water services to the residents of the City of Peterborough along with operational governance and funding for the Riverview Park and Zoo.

Under a service arrangement model, PUG Services Corp., a subsidiary of the City of Peterborough Holdings Inc., a company owned 100% by the City of Peterborough, provides the PUC operations, all of the employees and related supporting assets and systems to run the PUC operations.

On December 11, 2023, the City of Peterborough Council approved in principle the cancellation of the service agreement and the transfer of the Commission, including the Riverview Park and Zoo to the City. This transfer of the operations is expected to take place in 2024 and should not have a material impact on the overall operations of the Commission.

#### **2. SIGNIFICANT ACCOUNTING POLICIES**

The financial statements of the Peterborough Utilities Commission have been prepared in accordance with Canadian generally accepted accounting principles for local governments and their local boards as recommended by the Public Sector Accounting Board of the Chartered Professional Accountants Canada.

Significant aspects of the accounting policies adopted by the Commission are as follows:

##### **(a) Recognition of Revenue and Expenses**

Revenue is recorded using the accrual basis of accounting, as water is used by customers. Unbilled revenue is calculated as the estimated consumption between the last meter reading date and the year end date.

The value of distribution systems installed by developers is recorded in revenue as capital installation charges in the year in which the Commission assumes ownership at the fair market value.

Development charges are recognized as revenue when they are transferred out of the reserve fund and spent on growth related projects.

Revenue from fire protection, sewer charges and electricity is recognized when the service is provided.

Expenses are recognized in the period the goods or services are acquired and a legal liability is incurred by transfers are due.

##### **(b) Management Estimates**

The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities as well as the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures during the year. Significant estimates and assumptions used in the preparation of financial statements include, but are not limited to: estimates of revenue, allowance for doubtful

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# 2023 Annual Drinking Water Report

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## PETERBOROUGH UTILITIES COMMISSION

### NOTES TO THE FINANCIAL STATEMENTS

For The Year Ended December 31, 2023

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#### 2. SIGNIFICANT ACCOUNTING POLICIES – (Continued)

accounts, and amortization rates, carrying values of property, plant and equipment, and asset retirement obligations. Actual results could differ from these estimates.

##### (c) Inventories

Inventories consist of maintenance supplies and construction materials and are valued at the lower of moving average cost and replacement cost.

##### (d) Tangible Capital Assets

Tangible capital assets are stated at cost or deemed cost. Amortization on the water treatment plant and reservoirs, distribution system and Riverview Park and Zoo (purchased from operating and donated funds) is recorded on a declining balance basis at a rate of 5% per annum. Water meters are amortized on a straight-line basis over 20 years. The Commission capitalizes assets with a value of \$5,000 or greater.

Tangible capital assets categorized as construction-in-progress are not amortized until they are put into service.

##### (e) Reserve Funds

Certain amounts as approved by the Commission and those required under legislative or other authority are set aside in reserve funds for future operating or capital purposes. Transfers to and/or from reserve funds are an adjustment to the respective fund when approved or required by agreement.

The following reserve funds are included in the accumulated surplus:

##### (i) Water Treatment Plant Reserve Fund

In December 1990, the City of Peterborough passed a by-law authorizing the Peterborough Utilities Commission to establish a reserve fund for the purpose of upgrading the water treatment plant. The established practice is to appropriate 4.2% of the water revenues to this fund each year. Utilization of these funds is authorized by the Commission.

##### (ii) Park And Zoo Major Projects Reserve Fund

In September 1993, the City of Peterborough passed a by-law authorizing the Peterborough Utilities Commission to establish a reserve fund for major projects at the Riverview Park and Zoo. The revenues received for this fund include donations from estates and the general public, the utility's share of profits from the refreshment booth operations and profits from the sale of birds and animals. Utilization of these funds is authorized by the Commission on a project-by-project basis based upon the recommendation of the Riverview Park and Zoo Advisory Committee.

**PETERBOROUGH UTILITIES COMMISSION**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**For The Year Ended December 31, 2023**

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**2. SIGNIFICANT ACCOUNTING POLICIES – (Continued)**

**(iii) Park and Zoo Animal Care Reserve Fund**

In July 1999, the City of Peterborough passed a by-law authorizing the Peterborough Utilities Commission to establish a reserve fund for animal care at the Riverview Park and Zoo. The fund was established through a capital donation from a Peterborough resident. The income generated annually will be used for the care, treatment, habitat or display of the animals at the Riverview Park and Zoo for special or exceptional purposes beyond standard care.

**(iv) Park and Zoo State of Good Repair Reserve Fund**

In November 2016, the Commission authorized the establishment of an internally restricted Riverview Park and Zoo state of good repair reserve fund. The purpose of the fund is to cover major repair and maintenance costs incurred by the Riverview Park and Zoo that would be required to maintain the quality of its tangible capital assets.

**(f) Non-Financial Assets**

Tangible capital and other non-financial assets are accounted for as assets by the Commission because they can be used to provide services in future periods. These assets do not normally provide resources to discharge the liabilities of the Commission unless they are sold.

**(g) Inter-Entity Transactions**

The Commission has an agreement with the City of Peterborough, which results in transactions between the two entities.

Allocated costs between the City of Peterborough and the Commission, are measured at the exchange amount, which is the amount of consideration established and agreed to by the parties.

Unallocated costs are measured at the carrying amount, which is the amount recorded in the records of the City of Peterborough.

**(h) Financial Instruments**

Financial instruments are classified into three categories: fair value, amortized cost or cost. The following chart shows the measurement method for each type of financial instrument.

<b>Financial Instrument</b>	<b>Measured Method</b>
Cash	Amortized Cost*
Accounts receivable	Cost
Unbilled revenue	Amortized Cost*
Accounts payable	Amortized Cost*
Sewer surcharge payable	Amortized Cost*
Customer deposits	Amortized Cost*
Long term debt	Amortized Cost*

**PETERBOROUGH UTILITIES COMMISSION**  
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**2. SIGNIFICANT ACCOUNTING POLICIES – (Continued)**

\*Upon standard implementation, amortized cost will be measured using the effective interest rate method, as opposed to the straight-line method.

**Fair value category:** The Commission manages and reports performance for groups of financial assets on a fair-value basis. Investments traded in an active market are reflected at fair value as at the reporting date. Sales and purchases of investments are recorded on the trade date. Transaction costs related to the acquisition of investments are recorded as an expense. Unrealized gains and losses on financial assets are recognized in the Statement of Remeasurement Gains and Losses until such time that the financial asset is derecognized due to disposal or impairment. At the time of derecognition, the related realized gains and losses are recognized in the Statement of Operations and Accumulated Surplus and related balances reversed from the Statement of Remeasurement Gains and Losses. The Commission has no such investments at the reporting date and therefore, the Statement of Remeasurement Gains and Losses is not provided.

**Amortized cost:** Amounts are measured using the effective interest rate method. The effective interest method is a method of calculating the amortized cost of a financial asset or financial liability (or a group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period, based on the effective interest rate. It is applied to financial assets or financial liabilities that are not in the fair value category and is now the method that must be used to calculate amortized cost.

**Cost category:** Amounts are measured at cost less any amount for valuation allowance. Valuation allowances are made when collection is in doubt.

**(i) Asset Retirement Obligation**

An asset retirement obligation is recognized when, as at the financial reporting date, all of the following criteria are met:

- There is a legal obligation to incur retirement costs in relation to a tangible capital asset;
- The past transaction or event giving rise to the liability has occurred;
- It is expected that future economic benefits will be given up; and
- A reasonable estimate of the amount can be made.

The liability for the removal of asbestos in several of the buildings owned by the Commission has been recognized based on estimated future expenses on closure or remediation of the site.

The recognition of a liability resulted in an accompanying increase to the respective tangible capital assets. The increase to the tangible capital assets is being amortized in accordance with the depreciation accounting policies outlined in (d).

## **PETERBOROUGH UTILITIES COMMISSION** **NOTES TO THE FINANCIAL STATEMENTS** **For The Year Ended December 31, 2023**

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### **3. CHANGE IN ACCOUNTING POLICIES**

The Commission has implemented the following sections which are now effective under the Public Sector Accounting ("PSA") Handbook: PS 1201 Financial Statement Presentation, PS 2601 Foreign Currency Translation, PS 3041 Portfolio Investments, PS 3450 Financial Instruments and PS 3280 Asset Retirement Obligations were adopted prospectively on January 1, 2023.

PS1201 Financial Statement Presentation replaces PS 1200 Financial Statement Presentation. This standard establishes general reporting principles and standards for the disclosure of information in government financial statements. The standard introduces the Statement of Remeasurement Gains and Losses separate from the Statement of Operations. Requirements in PS 2601 Foreign Currency Translation, PS 3450 Financial Instruments, and PS 3041 Portfolio Investments, which are required to be adopted at the same time, can give rise to the presentation of gains and losses as remeasurement gains and losses.

PS 2601 Foreign Currency Translation replaces PS 2600 Foreign Currency Translation. The standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of foreign currency transactions. The adoption of this standard did not have an impact on the financial statements.

PS 3041 Portfolio Investments replaces PS 3040 Portfolio Investments. The standard provides revised guidance on accounting for, and presentation and disclosure of, portfolio investments to conform to PS 3450 Financial Instruments.

PS 3450 Financial Instruments establishes accounting and reporting requirements for all types of financial instruments including derivatives. Financial instruments are included on the statement of financial position and are measured either at fair value or cost or amortized cost based on the characteristics of the instrument and the accounting policy choices (see Note 1. Significant Accounting Policies). The new standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of financial instruments. The adoption of this standard did not have an impact on the financial statements.

PS 3280 Asset Retirement Obligations addresses the reporting of legal obligations associated with the retirement of certain tangible capital assets, such as asbestos removal in buildings by public sector entities.

In accordance with the provisions of this new standard, the Commission reflected the following adjustments at January 1, 2023:

- An increase of \$38,950 to the water treatment plant capital asset account, \$16,100 to the water distribution capital asset account and \$4,600 to the Riverview Park and Zoo capital asset account representing the estimate of the obligation as of the date of the adoption of the standard.
- An asset retirement obligation in the amount of \$59,650, representing the estimate of the obligation as of the date of adoption of the standard.



# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
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**4. CASH**

	2023 \$	2022 \$
Unrestricted cash	15,905,229	18,085,308
Restricted cash	9,811,813	8,450,265
	<b>25,717,042</b>	<b>26,535,573</b>

**5. LONG TERM DEBT**

Long term debt is issued on behalf of the Commission by The Corporation of the City of Peterborough and consists of the following:

	Interest Rate	2023	2022
Date of Maturity/Payment Terms	%	\$	\$
July 5, 2027, semi-annual blended payments of \$274,120	3.18	2,044,023	2,515,977
November 6, 2036, semi-annual principal payments of \$150,000 plus interest	2.79	3,900,000	4,200,000
December 15, 2040, semi-annual principal payments of \$150,000 plus interest	2.04	5,100,000	5,400,000
		<b>11,044,023</b>	<b>12,115,977</b>

# 2023 Annual Drinking Water Report

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## PETERBOROUGH UTILITIES COMMISSION NOTES TO THE FINANCIAL STATEMENTS For The Year Ended December 31, 2023

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### 5. LONG TERM DEBT - (Continued)

Future repayments for the long term debt are as follows:

	Principal \$	Interest \$	Total \$
2024	1,087,083	270,947	1,358,030
2025	1,102,695	240,262	1,342,957
2026	1,118,808	209,659	1,328,467
2027	1,135,437	178,540	1,313,977
2028	600,000	151,670	751,670
Thereafter	6,000,000	743,781	9,743,781
	11,044,023	1,794,859	15,838,882

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### 6. ASSET RETIREMENT OBLIGATION

The Commission's asset retirement obligation consists of the following:

#### Asbestos Obligation

The Commission owns and operates several buildings that are known to have asbestos, which represent a health hazard upon demolition or remediation of the buildings and there is a legal obligation to remove it. Following the adoption of PS3260 – Asset retirement obligations, the Commission recognized an obligation relating to the removal and post-removal care of the asbestos in these buildings as estimated at January 1, 2023.

# 2023 Annual Drinking Water Report

## PETERBOROUGH UTILITIES COMMISSION NOTES TO THE FINANCIAL STATEMENTS For The Year Ended December 31, 2023

### 7. RELATED PARTY AND INTER-ENTITY TRANSACTIONS

The Commission is a board of the City of Peterborough and is consolidated with the City's financial statements. In the ordinary course of business, the Commission enters into transactions with the Corporation of the City of Peterborough and other related corporations. These transactions, which include the sale of water and the purchase and sale of other goods and services, are exchanged at the same prices and terms as arm's length customers. The affiliated corporations of the Commission are:

The City of Peterborough Holdings Inc.,  
Peterborough Utilities Services Inc.,  
Peterborough Utilities Inc., and  
PUG Services Corp.

Details of services provided during the year by the affiliated corporations to the Commission are:

	2023 \$	2022 \$
Expenditures		
Professional services	9,951,070	9,262,355
Building rent	391,419	394,678
Software and equipment rent	163,759	183,788
	10,506,248	9,840,821

Billing and collecting for the sewer surcharge is done by the Commission for the City of Peterborough. During the year \$447,625 (2022 - \$439,000) was recognized as revenue for providing this service. At December 31, the sewer surcharge payable of \$3,615,038 (2022 - \$3,726,876) recognized on the Statement of Financial Position is payable to the City of Peterborough. All amounts owing to the City are unsecured, without interest and no specific terms of repayment.

# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
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**For The Year Ended December 31, 2023**

**8 TANGIBLE CAPITAL ASSETS**

	Water Treatment Plant and Reservoirs	Water Distribution System	Riverview Park and Zoo	Other	Construction in Progress	Total
	\$	\$	\$	\$	\$	\$
<b>Cost or Deemed Cost</b>						
Balance at January 1, 2022	51,537,973	188,995,195	11,778,388	17,403	3,679,034	256,007,993
Additions	580,569	3,725,006	174,977	-	2,682,305	7,172,857
<b>Balance at December 31, 2022</b>	<b>52,128,542</b>	<b>192,720,201</b>	<b>11,953,365</b>	<b>17,403</b>	<b>6,361,339</b>	<b>263,180,850</b>
Additions	2,516,776	8,676,264	436,487	-	(2,261,451)	9,368,076
Asset retirement obligation adjustments	38,950	16,100	4,600	-	-	59,650
<b>Balance at December 31, 2023</b>	<b>54,684,268</b>	<b>201,412,565</b>	<b>12,394,452</b>	<b>17,403</b>	<b>4,099,888</b>	<b>272,608,576</b>

# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
**NOTES TO THE FINANCIAL STATEMENTS**  
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8. **TANGIBLE CAPITAL ASSETS** --(Continued)

	Water Treatment Plant and Reservoirs \$	Water Distribution System \$	Riverview Park and Zoo \$	Other \$	Construction in Progress \$	Total \$
<b>Accumulated Amortization</b>						
Balance at January 1, 2022	28,250,733	101,540,671	5,660,638	17,266	-	135,469,308
Amortization for the year	1,066,642	4,722,613	310,262	7	-	6,099,524
Balance at December 31, 2022	29,317,375	106,263,284	5,970,900	17,273	-	141,568,832
Amortization for the year	1,092,942	4,827,325	310,265	7	-	6,230,539
Balance at December 31, 2023	30,410,317	111,090,609	6,281,165	17,280	-	147,799,371
<b>Net Book Value</b>						
At December 31, 2022	22,811,167	86,456,917	5,982,465	130	6,361,339	121,612,018
At December 31, 2023	24,273,951	90,321,956	6,113,287	123	4,099,888	124,809,205

# 2023 Annual Drinking Water Report

**PETERBOROUGH UTILITIES COMMISSION**  
**NOTES TO THE FINANCIAL STATEMENTS**  
**For The Year Ended December 31, 2023**

9. **ACCUMULATED SURPLUS**

Accumulated surplus consists of the following:

	2023 \$	2022 \$
Operating surplus	13,848,263	16,285,040
Investment in tangible capital assets		
Tangible capital assets - net book value	124,809,205	121,612,018
Long term debt	(11,044,023)	(12,115,977)
Asset retirement obligation	(59,650)	-
Reserve funds (Note 12)	9,811,813	8,450,265
	137,365,608	134,231,346

10. **CHANGE IN NON-CASH WORKING CAPITAL ITEMS AND OTHER INFORMATION**

	2023 \$	2022 \$
Accounts receivable	39,885	(686,663)
Unbilled revenue and sewer surcharge	501,318	(241,560)
Inventories	(141,715)	(183,046)
Accounts payable and sewer surcharge payable	(156,091)	(409,179)
Customer deposits	13,301	(20,778)
	256,698	(1,541,226)
Other information:		
Interest paid	299,982	329,129



# 2023 Annual Drinking Water Report

## PETERBOROUGH UTILITIES COMMISSION

### NOTES TO THE FINANCIAL STATEMENTS

For The Year Ended December 31, 2023

#### 11. BUDGET FIGURES

The budget, approved by the Commission, for 2023 is reflected on the Statement of Operations and Accumulated Surplus and the Statement of Changes in Net Financial Assets. The budgets established for capital investment in tangible capital assets are on a project-oriented basis, the costs of which may be carried out over one or more years and therefore may not be comparable with current year's actual amounts. Budget figures have been reclassified for the purposes of these financial statements to comply with Public Sector Accounting Board reporting requirements. Budget figures are not subject to audit.

#### 12. RESERVE FUNDS

	Budget 2023 \$ (Unaudited)	Actual 2023 \$	Actual 2022 \$
<b>TRANSFERS FROM OPERATIONS:</b>			
Sale of water	793,000	810,581	775,028
Development charges	667,000	34,963	596,951
Interest	299,000	474,722	332,592
Donations	50,000	81,460	139,411
	1,809,000	1,401,726	1,843,982
<b>TRANSFERS</b>			
For tangible capital assets	(667,000)	(40,178)	(4,605,397)
<b>CHANGE IN RESERVE FUNDS</b>	1,142,000	1,361,548	(2,761,415)
<b>OPENING RESERVE FUNDS</b>	8,132,000	8,450,265	11,211,680
<b>CLOSING RESERVE FUNDS</b>	9,274,000	9,811,813	8,450,265
<b>ANALYZED AS FOLLOWS:</b>			
<b>INTERNALLY RESTRICTED</b>			
Water treatment plant reserve fund		8,214,933	7,013,962
Park and zoo state of good repair reserve fund		113,056	107,348
		8,327,989	7,121,310
<b>EXTERNALLY RESTRICTED</b>			
Park and Zoo major projects reserve fund		949,012	821,140
Park and Zoo major animal care reserve fund		534,812	507,815
		1,483,824	1,328,955
		9,811,813	8,450,265

# 2023 Annual Drinking Water Report

## PETERBOROUGH UTILITIES COMMISSION

### NOTES TO THE FINANCIAL STATEMENTS

For The Year Ended December 31, 2023

#### 13. OPERATIONS FOR RIVERVIEW PARK AND ZOO

	Budget 2023 \$ (Unaudited)	Actual 2023 \$	Actual 2022 \$
<b>EXPENSES</b>			
Maintenance park	728,000	686,756	652,768
Maintenance train	99,000	142,278	97,154
Animal care and zoo maintenance	1,084,000	1,288,346	1,291,135
	1,911,000	2,117,380	2,041,057
<b>REVENUES</b>			
Train	130,000	128,623	133,094
Miscellaneous	191,000	206,665	179,728
	321,000	335,288	312,822
<b>NET EXPENSES FOR THE YEAR</b>	<b>1,590,000</b>	<b>1,782,092</b>	<b>1,728,235</b>

#### 14. FINANCIAL INSTRUMENTS

##### Risks Arising From Financial Instruments and Risk Management

The Commission's financial instruments consist of cash, accounts receivable, unbilled revenue, accounts payable and accrued charges, sewer surcharge payable, customer deposits and long-term debt. It is the Commission's opinion that the Commission is not exposed to significant market, interest rate, liquidity or currency risks arising from these financial instruments except as otherwise disclosed.

##### *Credit risk*

Credit risk is the risk that one party to a transaction will fail to discharge an obligation and cause the other party to incur a financial loss. The Commission's principal financial assets are cash, accounts receivable and unbilled revenue, which are subject to credit risk. The carrying amounts of financial assets on the Statement of Financial Position represent the Commission's maximum credit exposure as at the Statement of Financial Position date.

# 2023 Annual Drinking Water Report

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# 2023 Annual Drinking Water Report

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## **Appendix B – Abbreviations**

Abbreviation	Full Description
2-MIB	2-methlisoborneol
CFU	Colony Forming Unit
COD	Chemical Oxidization Demand
CTS	Calcium Thiosulphate
DBP	Disinfection by-product
DWQMS	Drinking Water Quality Standard
DWRG	Drinking Water Research Group
EDC	Endocrine disrupting compounds
HAA	Haloacetic Acid
KM	Kilometers
L/m	Litres per Minute
m <sup>2</sup>	Square Meters
m <sup>3</sup>	Cubic Meters
MAC	Maximum Acceptable Concentration
mg/L	Milligram per Litre
ML	Megalitres
MECP	Ministry of Environment & Climate Change
MOH	Medical Officer of Health
ng/L	Nanogram per Litre
NTU	Nephelometric Turbidity Unit
ODWQS	Ontario Drinking Water Quality Standards
ORCA	Otonabee Region Conservation Authority
ORP	Oxidative Reduction Potential
PACL	Polyaluminum Hydroxychloride
PUC	Peterborough Utilities Commission
PUGSC	Peterborough Utilities Services Inc.
RP& Z	Riverview Park & Zoo
STS	Sodium thiosulphate
THM	Trihalomethane
TOC	Total Organic Carbon
µg/L	Microgram per Litre
UVA	Ultra Violet Absorbance
WTP	Water Treatment Plant

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