



**POINT PLEASANT  
WATER TREATMENT PLANT  
2021 ANNUAL REPORT**

**Drinking Water System Number:** 220001851  
**Drinking Water System Owner:** City of Kingston  
**Drinking Water System Category:** Large Municipal Residential

**TABLE OF CONTENTS**

1 EXECUTIVE SUMMARY ..... 3

2 PLANT DESCRIPTION AND TREATMENT PROCESS ..... 3

Raw Water Source ..... 3

Zebra Mussel Control..... 3

Screening ..... 3

Low Lift Pumps ..... 3

Floc Tanks..... 3

Filters ..... 3

Backwash ..... 3

Process Waste Facility ..... 4

Post Chlorination ..... 4

Clear Well/Treated Water Reservoir ..... 4

High Lift Pumps ..... 4

Standby Equipment..... 4

    Figure 1 – Point Pleasant Water Treatment Plant Process Flow Diagram ..... 5

    Figure 2 – Kingston Distribution System Process Flow Diagram ..... 6

3 DISTRIBUTION SYSTEM..... 7

3.1 DISTRIBUTION AREA 1..... 7

3.2 DISTRIBUTION AREA 2..... 7

3.3 DISTRIBUTION AREA 3..... 7

4 MONETARY EXPENSES ..... 7

    Major Expenses: ..... 7

5 NOTIFICATIONS..... 8

    Events Requiring Notifications:..... 8

6 GLOSSARY ..... 8

Appendix A – Water Quality Test Results ..... 9

## DOCUMENT:

Point Pleasant Water Treatment Plant Annual Report

## 1 EXECUTIVE SUMMARY

Utilities Kingston is proud to present this annual report on drinking water quality. This report has been prepared in accordance to Section 11 of Ontario Regulation 170/03. Regulation 170/03 sets requirements for public waterworks with regard to sampling and testing, levels of treatment, licensing of staff, and notification of authorities and the public about water quality. Free copies of this report and the Summary report prepared in accordance to Schedule 22 of Ontario Regulation 170/03, are available by public request at any City of Kingston offices, at our water plant locations, and at <http://www.utilitieskingston.com>. Notices of availability are generally made through the local newspapers and radio. More information on the Drinking Water Regulations can be found on the Ministry of the Environment web site at <http://www.ene.gov.on.ca>. For further information about this report or any questions regarding accessibility, contact Robert Cooney with email at [rcooney@utilitieskingston.com](mailto:rcooney@utilitieskingston.com), or call 613-546-1181 Ext 2291.

## 2 PLANT DESCRIPTION AND TREATMENT PROCESS

### Raw Water Source

The source of water treated by this plant is Lake Ontario at the mouth of the St. Lawrence River. The 1.2 m diameter intake extends about 570 m and is located directly south of the treatment plant, at a depth of approximately 18 m.

### Zebra Mussel Control

Pre-chlorination takes place at the mouth of the intake. This protects the intake from becoming encrusted with zebra mussels, which would restrict the flow of water through the intake.

### Screening

A revolving screen and a coarse screen in the suction well of the low lift building remove any large debris such as weeds, fish, etc.

### Low Lift Pumps

Four low lift pumps draw water from the suction wells and lift that water from lake level through a common discharge header and then through two separated headers (750mm and 900mm) to the process building.

### Floc Tanks

Devices called flocculators agitate the water in these tanks allowing proper mixing of the chlorine and Poly Aluminum Chloride (PACl) with the water. The dirt particles in water will join together with the PACl to form larger particles called floc.

### Filters

Eight dual media (95% granular activated carbon and 5% silica sand) filters operating in parallel remove the floc particles formed in the floc tanks, as well as compounds that may cause tastes and odours. Water flows through the filters to a clean water reservoir called the clear well.

### Backwash

Filters are washed regularly to remove the particulates they have collected. The filter is air scoured to break up any large particles, and clean water from the clear well is pumped backwards through the filter to wash it.

**DOCUMENT:**

Point Pleasant Water Treatment Plant Annual Report

**Process Waste Facility**

Effluent from the filter backwash process is directed to the process waste facility for further treatment. Supernatant from the process is de-chlorinated using a 30% Calcium Thiosulphate solution, and then directed back to Lake Ontario. The sludge is pumped to the sanitary sewer system for further treatment at the Cataraqui Bay Wastewater Treatment Plant.

**Post Chlorination**

A chlorine solution is added to the water as it enters the contact tanks to ensure proper disinfection is achieved through adequate chlorine contact time, and to provide chlorine residual which remains in the distribution system. This ensures protection to the customers' tap.

**Clear Well/Treated Water Reservoir**

Filtered water is stored in the clear well/treated water reservoir. From here it is pumped to the distribution system or used for filter washing. The reservoir at the plant site holds approximately 14.0 million litres.

**High Lift Pumps**

The high lift (HL) pumping system at the Point Pleasant Water Treatment Plant consists of five (5) HL pumps which pump treated water from the high lift suction well to the distribution system, storage reservoirs and elevated tanks, through two (2) 900 m distribution headers.

**Standby Equipment**

A combination diesel/natural gas generator provides electricity to run the necessary operational components of the plant. In addition, one Low Lift Pump 1 is equipped with a dual drive system and diesel backup engine to allow continued low lift pumping when electrical power is not available. High Lift Pump 5 is equipped with a diesel drive system complete with a variable speed diesel engine and is used only as a backup pump upon electrical system failure within the facility. These diesel driven pumps are maintained to provide a continuous supply of water during power failures. These provide enough capacity to meet fire-fighting requirements as well as normal flows during power outages.

Figure 1 – Point Pleasant Water Treatment Plant Process Flow Diagram

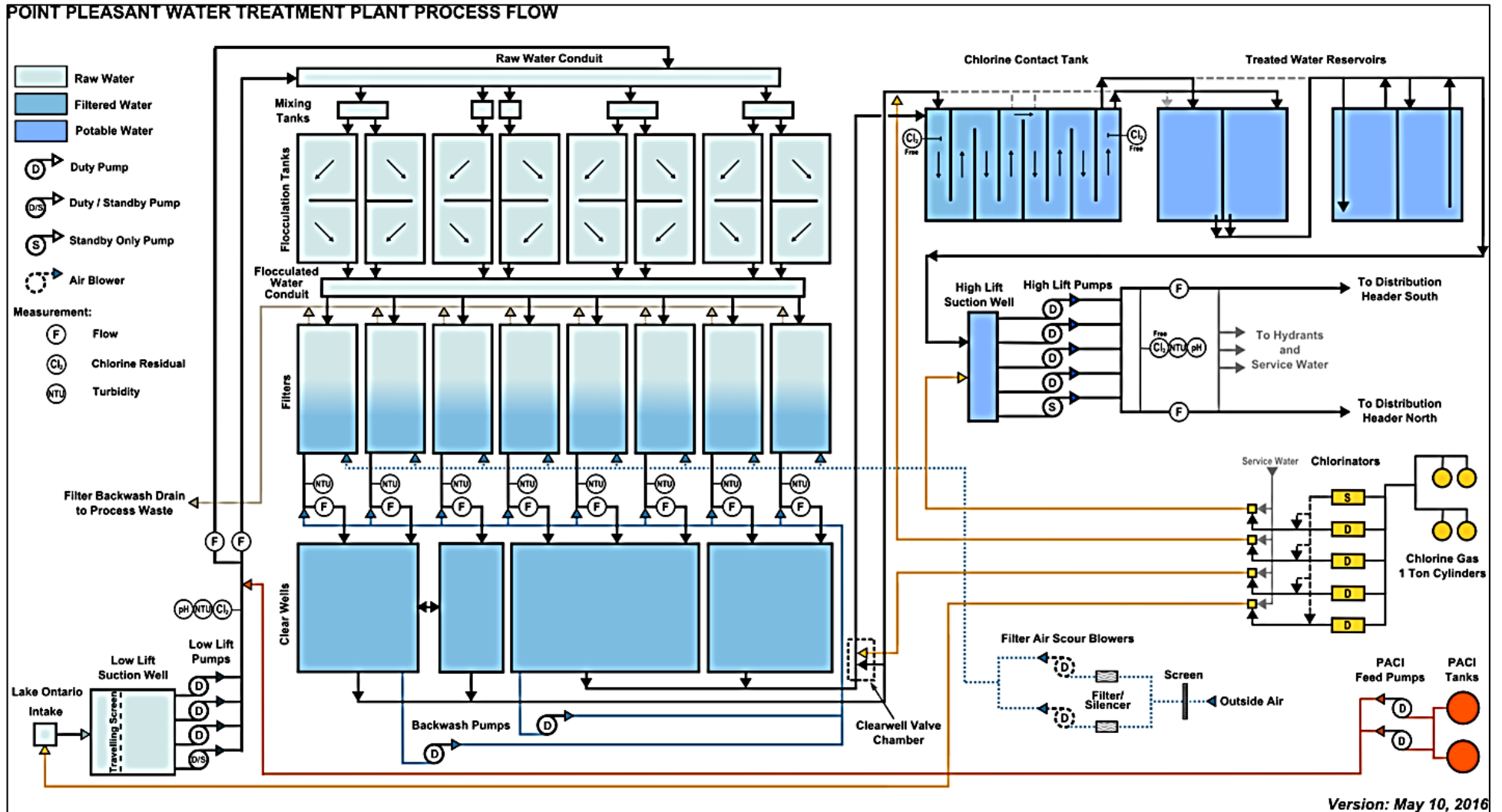
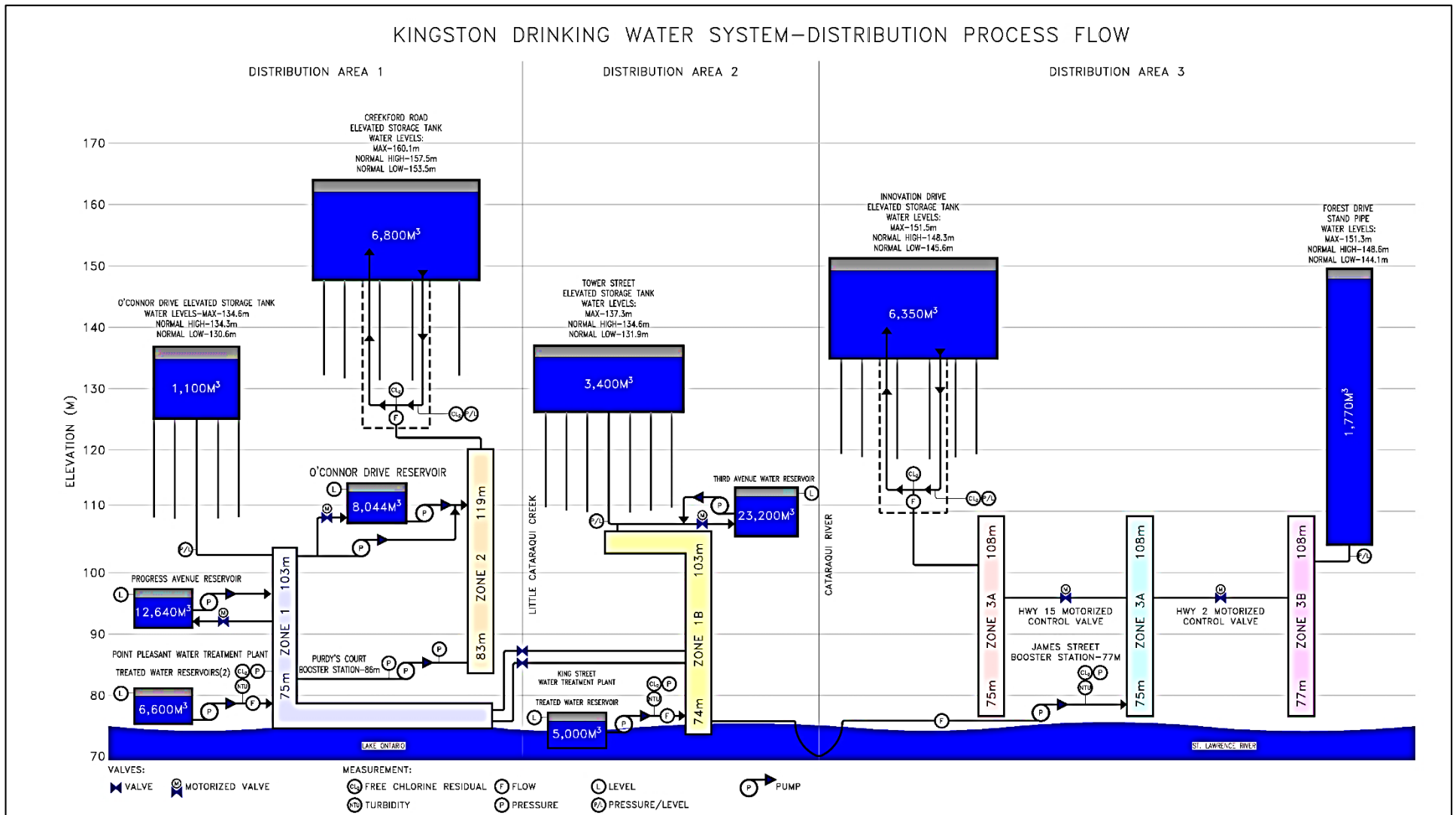


Figure 2 – Kingston Distribution System Process Flow Diagram



**DOCUMENT:**

Point Pleasant Water Treatment Plant Annual Report

### 3 DISTRIBUTION SYSTEM

The Kingston Drinking Water System, which receives water from both the King Street Water Treatment Plant and the Point Pleasant Water Treatment Plant, has a service population of approximately 123,798 (population estimate based on growth rates from Census data for 2016). The distribution system is divided into three distribution areas.

#### Distribution Area 1

Distribution Area 1 is that area west of the Little Cataraqui Creek, south of Highway 401 and east of Coronation Boulevard, and north of Highway 401 along Sydenham Road northward to Mildred Street and eastward from Sydenham Road along Sunnyside Road for approximately 1.2 kilometers.

Distribution Area 1 is comprised of approximately 220 km of water mains, 2 ground level reservoir/pumping stations, 2 elevated storage tanks, 4 booster stations, over 2,500 main line valves, and over 1,300 fire hydrants and their associated isolation valves.

#### Distribution Area 2

Distribution Area 2 is that area which is east of the Little Cataraqui Creek, west of the Cataraqui River, and south of Highway 401. A small area on the east side of the Cataraqui River upstream of the pumps at the James Street Booster Station is part of distribution Area 2. In addition, Collins Bay Institution, which is west of the Little Cataraqui Creek on Bath Road, is supplied with water from this area and from Area 1.

Distribution Area 2 is comprised of over 250km of water mains, 1 ground level reservoir/pumping station, 1 elevated storage tank, over 2,000 main line valves, and over 1,200 fire hydrants and their associated isolation valves. The King Street Water Treatment Plant provides water to Distribution Area 2. The Tower Street Elevated Storage Tank and the Third Avenue Reservoir are located within this distribution area.

#### Distribution Area 3

Distribution Area 3 is that area which is east of the Cataraqui River. Distribution Area 3 is comprised of over 70km of water mains, 1 water booster station, 2 elevated storage facilities, over 250 main line valves, and over 300 fire hydrants and their associated isolation valves.

Water is supplied to Distribution Area 3 from Distribution Area 2 through the James Street Booster Station. DND elevated storage facility was decommissioned in 2020 at the request of the Department of National Defence. The most recent upgrades at the James Street Booster Station facilitated the removal of DND tower, without any adverse impacts to distribution area 3.

### 4 MONETARY EXPENSES

Under Section 11 of Ontario Regulation 170/03, a description of any major expenses incurred during this reporting period must be included in the annual report.

#### Major Expenses:

- Water main replacement projects throughout the city were continued throughout the reporting year.
- Improvements to the chlorine gas feed system continued in 2021
- Replacement of the filter pressure differential units

**DOCUMENT:**

Point Pleasant Water Treatment Plant Annual Report

- Intake inspections were completed, including subsequent maintenance on the pre-chlorination feed system (zebra mussel control system) as well as system cleanout, and intake system repair design
- GAC media replacement on 2 filters
- O'Connor Reservoir was cleaned out
- HVAC upgrades were completed on the James Street Booster Station
- Milton Tower hydro services were upgraded
- Distribution system upgrades were completed between pressure zones

## 5 NOTIFICATIONS

Under Ontario Regulation 170/03, notifications were required for any instances where a sample result indicated that a parameter used to measure water quality exceeded a Maximum Acceptable Concentration (MAC). Once a notification is received from a laboratory or an observation of any other indicator of adverse water quality is made by operations personnel, corrective action as dictated by the regulations is initiated in an effort to confirm the initial result. If confirmed, further action may be recommended by the Medical Officer of Health. If not confirmed sampling will typically return to the normal schedule, or depending on the parameter, Utilities Kingston may choose to increase the sampling frequency to monitor the parameter more closely for a period of time.

### Events Requiring Notifications:

- There were no events within the Point Pleasant Water Treatment Plant that required notification during this reporting period

## 6 GLOSSARY

**TCU** – True Colour Units

**mg** – Milligram

**N/A** – Not Applicable

**N/D** – Non-Detectable

**NTU** – Nephelometric Turbidity Units - A measure of the amount of particles in water.

**mg/L** – Milligrams per litre. This is a measure of the concentration of a parameter in water, also called parts per million (ppm).

**µg/L** – Micrograms per litre, also called parts per billion.

**ng/L** – Nanograms per litre, also called parts per trillion.

**Parameter** – A substance that we sample and analyze for in the water.

**AO** – Aesthetic Objective. AOs are not health related, but may affect the taste, odour, colour, or clarity of the water

**OG** – Operational guideline. Set to ensure efficient treatment and distribution of water.

**MAC** – Maximum Acceptable Concentration. This is a health-related drinking water standard established for contaminants having known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter