Utilities Kingston
Report to Council
Report Number 26-057

To:	**Mayor and Members of Council**
From:	**David Fell, President & CEO, Utilities Kingston**
Resource Staff:	**Heather Roberts, Director, Water & Wastewater Services**
Date of Meeting:	**February 17, 2026**
Subject:	**2025 Annual Water Summary Reports and 2025 Annual Wastewater Reports**

Council Strategic Plan Alignment:

Theme: Regulatory & compliance

Executive Summary:

This report provides Council with copies of the Annual Water Summary Reports and Annual Wastewater Reports for the following Water and Wastewater Treatment Facilities and Systems owned by the City of Kingston, and managed, operated, and maintained by Utilities Kingston:

A. King Street Water Treatment Plant
B. Point Pleasant Water Treatment Plant
C. Cana Water Treatment Plant
D. Ravensview Wastewater Treatment Plant
E. Cataraqui Bay Wastewater Treatment Plant
F. Cana Wastewater Treatment Plant
G. Kingston Wastewater Collection System

It is a requirement of the Safe Drinking Water Act, 2002 that Council formally receive the Annual Summary Reports for each of the Water Treatment Facilities. The Annual Reports for the Wastewater Treatment Facilities and System are provided for information purposes to Council and require no action. All reports are provided to the Ministry of the Environment, Conservation and Parks.

Recommendation:

That Council receive the 2025 Annual Water Summary Reports for the King Street Water Treatment Plant, the Point Pleasant Water Treatment Plant and the Cana Water Treatment Plant as required by the terms and conditions outlined in Schedule 22 of Ontario Regulation 170/03 for Drinking Water Systems.

Authorizing Signatures:

ORIGINAL SIGNED BY PRESIDENT & CEO, UTILITIES KINGSTON

David Fell, President & CEO,
Utilities Kingston

ORIGINAL SIGNED BY CHIEF ADMINISTRATIVE OFFICER

Lanie Hurdle, Chief
Administrative Officer

(Approved by the CAO with respect to municipal considerations and reporting format only.)

Consultation with the following Members of the Corporate Management Team:

Paige Agnew, Commissioner, Growth & Development Services	Not required
Jennifer Campbell, Commissioner, Community Services	Not required
Neil Carbone, Commissioner, Corporate & Emergency Services	Not required
Desirée Kennedy, Chief Financial Officer & City Treasurer	Not required
Jenna Morley, City Solicitor	Not required
Ian Semple, Commissioner, Transportation & Infrastructure Services	Not required

Options/Discussion:

Annual Water Summary Reports

The Annual Water Summary Reports are a statement to satisfy compliance with the terms and conditions of Schedule 22 of Ontario Regulation 170/03 for Drinking Water Systems. There is a compliance report for each water treatment plant. The purpose of this covering report is to provide details related to compliance with the Drinking Water Works Permit and the Municipal Drinking Water License. These reports are Exhibits A, B and C, attached to this covering report.

The terms and conditions of the Drinking Water Works Permit and the Municipal Drinking Water License are located under the "Compliance" section of the annual summary reports. The compliance section in each report summarizes the activities of the licensed water system operations as they relate to the water quality parameters outlined within the drinking water regulations.

The reports also summarize specific instances of non-compliance and adverse water quality during the 2025 reporting period which are summarized below.

King Street Water Treatment Plant

There were no instances of non-compliance with the terms and conditions of the Drinking Water Works Permit or the Municipal Drinking Water License during the 2025 reporting year.

There were three (3) notifications of adverse water quality reported to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health during the 2025 reporting period.

1. An adverse water quality indicator notification was received from Caduceon Environmental Laboratories regarding a sample collected on **June 23rd**, **2025**, which was determined to have a Total Coliform (TC) count of **2 cfu/100mL**. The free chlorine residual at the time of sampling was **1.72 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.
2. An adverse water quality indicator notification was received from Caduceon Environmental Laboratories regarding a sample collected on **July 8th**, **2025**, which was determined to have a Total Coliform (TC) count of **3 cfu/100mL**. The free chlorine residual at the time of sampling was **1.61 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

3. An adverse water quality indicator notification was received from Caduceon Environmental Laboratories regarding a sample collected on **July 28th**, **2025**, which was determined to have a Total Coliform (TC) count of **123 cfu/100mL**. The free chlorine residual at the time of sampling was **1.05 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

For context and comparison with the free chlorine residuals noted at the time of the events listed above, a free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. In all instances, the chlorine residual was above the limit.

It should be noted that the Kingston Drinking Water System receives water from both the King Street WTP and the Point Pleasant WTP. The drinking water distribution system is included in the Drinking Water Works Permit and the Municipal Drinking Water License issued for the King Street Water Treatment Plant.

Point Pleasant Water Treatment Plant

There were no instances of non-compliance with the terms and conditions of the Drinking Water Works Permit or the Municipal Drinking Water License during the 2025 reporting year.

There was one (1) notification of adverse water quality reported to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health during the 2025 reporting period.

1. An adverse water quality indicator notification was received from Caduceon Environmental Laboratories regarding a treated water sample collected on **June 16th, 2025**, which was determined to have a Total Coliform (TC) count of **14 cfu/100mL**. The free chlorine residual at the time of sampling was **1.85 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

For context and comparison with the free chlorine residuals noted at the time of the event listed above, a free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. In the instance above, the chlorine residual was above the limit.

Cana Water Treatment and Supply System

There were no instances of non-compliance with the terms and conditions of the Drinking Water Works Permit or the Municipal Drinking Water License during the 2025 reporting year.

There was one (1) notification of an adverse water quality observation reported to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health during the 2025 reporting period.

1. An adverse water quality observation notification was provided to the Medical Officer of Health and Spills Action Centre on **October 22nd, 2025.** As part of the annual equipment calibration program for the water treatment plant, equipment was placed into calibration mode. Upon completion of the testing, the system was not returned to regular mode and resulted in a loss of pressure to the system. Utilities Kingston staff responded immediately to a “no water” call and within 5-10 minutes water was restored to the system. Utilities Kingston reported the adverse observation immediately and were directed by the Medical Officer of Health to issue a Boil Water Advisory. Staff hand delivered notices to all properties to advise all users. Two sets of bacteriological samples were also collected and tested for E. coli and total coliform. Upon receipt of clear test results and consultation with the Medical Officer of Health, the boil water advisory was rescinded on **October 24th, 2025**.

In addition, it should be noted that the groundwater supply for the Cana Water Treatment Plant contains a sodium concentration greater than 20 mg/L which requires a notification to the Medical Officer of Health and to the Spills Action Center if a report under subsection 18 (1) of the Safe Drinking Water Act has not been made in respect of sodium in the preceding 57 months. This notification was last completed in July of 2022.

Wastewater Annual Reports

Annual reports for the wastewater facilities and system are a requirement identified in the terms and conditions of the environmental approvals for each treatment facility and the wastewater collection system. The annual reports are required to be submitted to the Ministry of the Environment, Conservation and Parks by March 31, 2025. Although the regulation does not compel the Operating Authority to provide the reports to Council to be formally received, Utilities Kingston provides them annually for information purposes. The reports provide a summary of the operations for the previous year at Ravensview, Cataraqui Bay and Cana Wastewater Treatment Plants, and for the Kingston Wastewater Collection System.

Ravensview Wastewater Treatment Plant

In November 2025, there was one non-compliant condition reported. The average monthly concentration total for Total Phosphorus was 1.03 mg/L, exceeding the limit of 1.00 mg/L. This non-compliant result was reported to the Ministry of the Environment, Conservation and Parks. No actions or directives were provided by the Ministry of the Environment, Conservation and Parks.

Following routine maintenance on the coagulant system, the plant experienced lower than normal dosing of coagulant into the influent flow for 15 days. This occurred through the middle of November, leading to the limit exceedance. To correct the issue, safeguards have been put in

place, including dosage calculations in the daily rounds sheet, to ensure a similar issue of this nature does not occur again or impact the performance of the plant.

The 2025 monthly average effluent monitoring results can be found on Tables 4-7 in Exhibit D.

No other parameters exceeded the compliance limit as outlined in the Environmental Compliance Approval, however, there were four samples throughout the year where plant effluent was below the pH objective of 6.50, but above the limit of 6.00.

Average flows through the plant were recorded at 52,788 m^3/day, slightly higher than the 2024 flows recorded at 52,292 m^3/day. Total flow received by the plant was 19,267,737 m^3.

There were two bypass events at Ravensview WWTP in 2025, and two spills of unburnt digester gas.

There were two secondary bypass events during the reporting year. A secondary bypass is when wastewater receives primary treatment but skips secondary treatment before returning to the process stream (disinfection in this case). The plant is designed to allow bypasses, to protect infrastructure and flooding. One event occurred during heavy rain combined with snow melting. The second bypass occurred following an equipment failure. There was a total volume of 1,809 m^3 bypassed during these two events.

There were two spill events of unburnt digester gas to the environment totaling 557 m^3. The spills were reported to and/or planned with the Ministry of the Environment, Conservation and Parks.

In the 2025 reporting year, the Ravensview WWTP received one complaint regarding odours from the facility. A primary clarifier was taken offline to enable the cleaning of the tank, which is inferred to be the source of the odour. The tank was cleaned, and no further complaints were received.

Cataraqui Bay Wastewater Treatment Plant

In 2025, the Cataraqui Bay WWTP was in compliance with all of the conditions outlined in Condition 7 of the Environmental Compliance Approval issued for the plant.

Cataraqui Bay WWTP did not exceed any of the limits set out in the Environmental Compliance Approval throughout the calendar year. However, the plant exceeded the average monthly concentration objective of Total Suspended Solids, Total Phosphorous, and the E. Coli parameters once each, in different months through 2025, refer to Tables 4 and 5 in Appendix E. Operational adjustments were made and each of those objective exceedances were corrected for the following month.

Average flows through the plant were recorded at 25,483 m^3/day, slightly lower than the 2024 flows recorded at 25,890 m^3/day. Total flow received by the plant was 9,317,209 m^3.

There were no bypass events at Cataraqui Bay WWTP in 2025. There was a spill of digested sludge from a digester, and two spills of unburnt digester gas to the environment totaling 360 m^3 in 2025.

The failure of an entryway hatch resulted in the spill of 56 m^3 of liquid sludge from Digester 2. The spill was contained and a contractor was hired to clean up the spilled sludge and restore the surrounding area. Digester 2 remains offline and Utilities Kingston is rehabilitating the digester to put it back into service. In addition to the spill of liquid sludge, during the same event there was a spill of unburnt digester gas.

The other spill of unburnt digester gas was experienced during a routine maintenance procedure. Condensation was being released from the gas system, and a drain valve was left open, which led to the release of digester gas. The leak was identified and the valve was closed within 1 hour.

In the 2025 reporting year, the Cataraqui Bay WWTP received no official complaints regarding the facility or treatment process.

Cana Wastewater Treatment Plant

In 2025, the Cana WWTP was in compliance with all of the conditions outlined in Condition 7 of the Environmental Compliance Approval issued for the plant.

Cana WWTP did not exceed any of the limits set out in the Environmental Compliance Approval throughout the calendar year. However, there were several months when the Total Suspended Solids, and Total Phosphorous concentrations exceeded the effluent objectives due to operational challenges and changes. Staff regularly performed in-house laboratory sampling and testing to optimize the treatment process to maintain limits and objectives. All other effluent parameters with objectives set out in the Environmental Compliance Approval maintained monthly average concentrations below the objectives.

Average flows through the plant were recorded at 50 m^3/day, lower than the 2024 flows recorded at 57 m^3/day. Total flow received by the plant was 18,303 m^3.

There were no bypass events during 2025.

In the 2025 reporting year, the Cana WWTP received no complaints regarding the facility or treatment process.

Kingston Wastewater Collection System

In 2025, the west collection system collected and conveyed 9,317,209 m^3 of wastewater to the Cataraqui Bay WWTP. The Central and East Collection system collected and conveyed 19,267,737 m^3 of wastewater to Ravensview WWTP. The Cana Collection system received and conveyed 18,303 m^3 of wastewater to the Cana WWTP.

The collection system had several wet weather overflow events which released a total of 21,013 m^3 of sewage to the environment, considerably more than the 913 m^3 reported for 2024.

In addition, the collection system had several spills to the environment from sewage pumping stations due to wet weather and from a collection system break totaling 1,266 m^3, more than the 46 m^3 reported for 2024. The overflow and spill locations are provided in Exhibit G. The number of wet weather overflow events and volume of diluted sewage released to the environment in 2025 was more than the number of events and volume reported in 2024. This is due to more severe/significant wet weather events (when they did occur). It should be noted that the number of events and volume remains less than several years back, due to the success of sewer separation projects.

The Utilities Kingston Pollution Prevention and Control Plan was developed in 2017 and is set to be updated by late 2026. The Pollution Prevention and Control Plan focuses on combined sewer separation to reduce the number of overflows from the facilities in the future. The 2025 combined sewer separation projects reduced a large section of combined sewers that lead to a Combined Sewer Overflow tank that regularly overflows during rain events.

Utilities Kingston is working towards meeting the objectives set out in procedures F-5-1, and F-5-5 by the Ministry of the Environment, Conservation and Parks, which describe the treatment requirements for municipal sanitary, and combined sewage systems. More details can be found in Appendix G.

In the 2025 reporting year, several complaints were received, investigated, and resolved.

There were 13 odour complaints from residents regarding the sewage collection system. Three of these complaints were related to the Days Rd. Pumping Station. To respond to the ongoing complaints, filters are regularly changed on the odour control unit and Utilities Kingston is trialing a new type pf carbon media in the filter. On-going monitoring continues. With regards to the other complaints, all were responded to and investigated by staff. Responses to these complaints included inspecting infrastructure upstream and downstream of the complaint, installing dishes in manholes to reduce the chance of sewer gasses being released, jetting and cleaning pipes, inspecting lines with a camera, some visits to residences and businesses, and sewage sampling.

Further, another 159 complaints about lateral and main collection system backups were investigated. Operators worked with property owners and tenants at each site to locate and confirm the source of the backup. Most of the sewer backups were caused by non-flushable materials, tree root growth, or deformed or degraded pipes. 69 of the 159 complaints were related to private infrastructure (i.e., the homeowner or business owner’s sewer lateral on their property). When required/requested, Operators relieved these backups using different methods. Crews rodded lines, performed camera work to identify and locate the issue, used jet trucks to clear blockages to return the collection system to good working order. Operators also proactively flush known problem sewers, to maintain the integrity of the collection system.

Public Engagement

In accordance with Schedule 22 of Ontario Regulation 170/03 for Drinking Water Systems, the 2025 annual drinking water quality reports will be available and posted to the Utilities Kingston website. For example, and reference, the 2024 annual drinking water reports can be viewed here. Appropriate public notice will be provided in the form of a public news release and on social media. Reports are also available in hard copy at the request of a member of the public.

The Annual Wastewater Reports will be available and posted to the Utilities Kingston website. For example, and reference, the 2024 annual reports can be viewed here.

Existing Policy/By-Law

The Annual Water Summary Reports are a statement to satisfy compliance with the terms and conditions of Schedule 22 of Ontario Regulation 170/03 for Drinking Water Systems, a regulation under the Safe Drinking Water Act, 2002.

As per the Environmental Compliance Approvals, the Annual Reports for the Wastewater Facilities and System are required to be submitted to the Ministry of the Environment, Conservation and Parks by March 31 of each year.

Notice Provisions

Notice to the public on the completion and availability of the annual drinking water reports is required and will be provided by the end of February.

Financial Considerations

None.

Contacts:

Heather Roberts, Director, Water and Wastewater Services, 613-546-1181 extension 2400

Other City of Kingston Staff Consulted:

Phil Emon, Manager, Water and Wastewater Treatment Operations

James Patenaude, Supervisor, Water and Wastewater Treatment Operations

Exhibits Attached:

Exhibit A – King Street Water Treatment Plant, Annual Summary Report 2025

Exhibit B – Point Pleasant Water Treatment Plant, Annual Summary Report 2025

Exhibit C – Cana Water Treatment Plant, Annual Summary Report 2025

Exhibit D – Ravensview Wastewater Treatment Plant, Annual Report 2025

Exhibit E – Cataraqui Bay Wastewater Treatment Plant, Annual Report 2025

Exhibit F – Cana Wastewater Treatment Plant, Annual Report 2025

Exhibit G – Kingston Wastewater Collection System, Annual Report 2025

KING STREET WATER TREATMENT PLANT

2025 ANNUAL SUMMARY REPORT

Drinking Water System Number: 220001860
Drinking Water System Owner: City of Kingston
Drinking Water System Category: Large Municipal Residential

Submitted by:
Heather Roberts
Director, Water & Wastewater Services

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1 INTRODUCTION

This report has been prepared as required under Ontario Regulation 170/03 of the Safe Drinking Water Act (SDWA) to acknowledge compliance with the terms and conditions of the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL) issued for the King Street Water Treatment Plant (WTP), comment on any incidents of non-compliance during the reporting period, summarize the quantities of the water supplied, and compare those quantities to the rated capacity and flow rates as set out in the system's permit and MDWL during the reporting period.

This report is specific to the King Street WTP located at 302 King Street West, in the City of Kingston and its associated distribution system, which serves Kingston's municipal water customers in the areas North to Cataraqui Arena, Hwy#2 west to Westbrook, Bath Road to Coronation Blvd, south of Hwy #401, Hwy#2 east to Milton subdivision, and Hwy #15 north to the St. Lawrence Business Park known as the Kingston Drinking Water System.

The Kingston Drinking Water System receives water from both the King Street WTP and the Point Pleasant WTP. The WTPs and its associated distribution system are owned by the City of Kingston, with Utilities Kingston acting as the operating authority.

2 NON COMPLIANCE

There were no issues of non-compliance with the terms and conditions of the DWWP or MDWL during this reporting period.

3 COMPLIANCE

The Treatment Operations department of Utilities Kingston, for the City of Kingston, operates and maintains the King Street WTP and complies with the terms and conditions of the DWWP and MDWL issued for the WTP. The Utilities Kingston Systems Operations department and the Treatment Operations department of Utilities Kingston operate and maintain the associated distribution system and storage and pumping facilities. Staffing is maintained at levels to ensure adequate numbers of trained and licensed personnel are available for proper operations during emergency or upset conditions, vacation/sick relief, or to respond to equipment breakdown.

The Quality Management System (QMS), response plans, and operations manuals are established and are located in the appropriate facilities and available to appropriate staff. A QMS for the City of Kingston's drinking water supply systems has been developed and implemented by Utilities Kingston management and staff to ensure the continued safety and security of the community's drinking water by meeting or exceeding the requirements of all relevant legislation and regulations, and the Drinking Water Quality Management Standard (DWQMS).

Operations manuals include information necessary for the day-to-day operations and maintenance of the WTP and distribution system as well as information that may not be regularly used but that might be required to be accessed quickly for various purposes. Response plans include information that may be required for proper operation of the WTP or distribution system during emergency or upset conditions and contain items such as emergency plans and contact lists, alternate materials supply sources and notification lists.

The operations strategy of Utilities Kingston includes ensuring that permits, approvals, and licenses are in place, that efficient maintenance and operations ensure the quality of water supplied to its customers meets or exceeds the minimum requirements as set out in the SDWA, and that permissible flow rates are not exceeded. The City of Kingston, as a means of source water protection, considers the impact of decisions made within its authority on the drinking water supply source for the WTP.

Flow measuring devices for measuring the amount of water taken from Lake Ontario, and the amount of water supplied to the distribution system are calibrated annually by a third party. Accuracy in these measurements ensures that treatment chemicals are precisely applied and that flows do not exceed the capacity at which the WTP is designed to be effective. These flows are recorded to provide current and historical information which is used for operational decision making and to allow both the public and the Ministry of the Environment, Conservation and Parks (MECP) the ability to review WTP operations.

Water quality analyzers that monitor parameters such as chlorine residual and turbidity of critical process streams and water directed to the distribution system are alarm equipped and are maintained in accordance with the manufacturer's recommendations as well as the conditions of the DWWP/MDWL.

Water sampling is conducted to a level that exceeds the minimum requirements of schedule 13 of Ontario Regulation 170/ 03 of the Safe Drinking Water Act, and includes additional sampling as well as sampling recommended in the first Engineers Report for the WTP. Raw water sampling is conducted to give operational staff information required to determine the level of treatment required to make the water potable. In-plant process stream samples provide monitoring of treatment processes. Treated and distribution system sampling provides information regarding the quality of water delivered to customers. All of these samples are analyzed by either licensed staff or by laboratories accredited by the Standards Council of Canada through the Canadian Association for Environmental Analytical Laboratories.

All sampling information, annual reports and all other documentation required by the DWWP, and regulations are available for public viewing at the WTP during normal business hours. Annual Reports are also available on the Utilities Kingston website as well as at the Utilities Kingston and City of Kingston offices. Residents of the City of Kingston are encouraged to review this information, the availability of which is advertised through various local media.

4 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 incident 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 (MOH). 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. The details of any events requiring notifications are listed below.

4.1 EVENTS REQUIRING NOTIFICATIONS

- An adverse water quality incident notification was received from Caduceon Environmental Laboratories regarding a sample collected on **June 23rd**, **2025**, which was determined to have a Total Coliform (TC) count of **2 cfu/100mL**. The free chlorine residual at the time of sampling was **1.72 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

- An adverse water quality incident notification was received from Caduceon Environmental Laboratories regarding a sample collected on **July 8th**, **2025**, which was determined to have a Total Coliform (TC) count of **3 cfu/100mL**. The free chlorine residual at the time of sampling was **1.61 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.
- An adverse water quality incident notification was received from Caduceon Environmental Laboratories regarding a sample collected on **July 28th**, **2025**, which was determined to have a Total Coliform (TC) count of **123 cfu/100mL**. The free chlorine residual at the time of sampling was **1.05 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

5 QUANTITY OF WATER SUPPLIED

Listed in Tables 3,4 and 5 following this report are the treated water flows for the King Street WTP. The serviced population for the King Street WTP and Point Pleasant WTP is 132,485 (population from Census data for 2021). The annual average daily use was 18,467 m^3/day from the Point Pleasant WTP and 46,932 m^3/day from the King Street WTP. Total average per capita use was calculated at 493 litres per person/day. The typical Canadian average is 250-350 litres per person/day residential use (source: Environment Canada). The City has imposed limitations and/or restrictions on water use when necessary. System losses through leakage do occur and are mainly due to the age and condition of the distribution system infrastructure and state of private services to users. Water systems operators perform proactive leak detection throughout the year and perform reactive leak detection based on reports of high water demand.

6 FLOW RATE EXCEEDANCES

There were no instances during this reporting period where flows at the King St WTP exceeded the maximum allowable flow rate of 118,000 m^3/day. Listed in Tables 1 and 2 following this report are the raw water flows (water taken from Lake Ontario) for the King Street WTP.

7 TREATMENT CHEMICALS USED

There are two treatment chemicals in use at this treatment plant. Chlorine, in the form of 12% sodium hypochlorite, is used as the disinfectant. Poly Aluminum Chloride (PACl) is used as the coagulant for the WTP.

Chlorine is dosed at the treatment plant at a rate which ensures an adequate residual is maintained at those points in the distribution system that are farthest from the point of entry of treated water to the system and, that an adequate chlorine Contact Time (CT) value is maintained for the rate of flow. The average chlorine dosage for this treatment plant is approximately 2.41 mg/l. Residuals are routinely measured in the distribution system, and the treatment plant chlorine dosage is adjusted as required to ensure the chlorine residual stays above the critical control limit of 0.20 mg/L. The critical control limit is chosen to ensure operators have ample time to respond and correct issues before the chlorine residual reaches the regulatory limit of 0.05 mg/L.

The average PACl dosage for this treatment plant is approximately 6.65 mg/l. This dosage is also adjusted to ensure efficiency in the coagulation process as various changes occur in the raw water. Changes are based on things such as pH, temperature, turbidity, and the aluminum residual in the treated water.

Chlorine is also added to the water as it passes through the James St. Booster Station. The booster station is located in Barriefield village, and pumps water from the distribution system at the west of the Cataraqui River into the distribution system located east of the Cataraqui River. Chlorine is added here to slightly raise the level of chlorine to ensure adequate residual remains in the water in this part of the distribution system.

8 SUMMARY

The King Street WTP supplied water to residents of Kingston at flow rates which allowed adequate treatment while not exceeding permitted flows. Water of good quality which is safe to drink was produced by the treatment plant during this reporting period.

Further information is available for this system and is included in the annual reports which can be accessed from the Utilities Kingston Website at http://www.utilitieskingston.com or is available at Kingston City Hall, or the Utilities Kingston offices. For further information about this report or any questions regarding accessibility, contact Robert Cooney at rcooney@utilitieskingston.com, or call 613-546-1181 Ext 2291.

9 FLOWS

Raw, Treated, and Distribution flows are summarized in the following tables.

Table 1 – Raw Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	41,443	51,418	51,303	51,432	51,570	45,688	44,824	51,096	50,850	51,518	45,218	51,640
2	42,550	54,265	51,904	50,913	51,240	44,719	43,290	50,835	51,521	51,848	45,182	51,266
3	44,150	48,850	52,405	50,051	49,506	50,915	48,698	50,651	51,316	49,611	45,235	47,708
4	43,950	63,327	52,073	52,095	44,600	47,054	48,636	51,081	51,434	52,071	45,149	44,055
5	46,472	47,391	52,304	52,185	44,621	41,571	47,034	46,827	51,583	49,667	45,454	45,032
6	50,097	55,431	55,083	52,144	45,096	50,372	51,355	44,529	51,753	47,103	52,123	49,099
7	50,208	47,781	49,571	50,362	45,943	50,338	50,824	42,847	51,486	51,325	46,565	52,035
8	49,980	45,196	50,100	50,891	51,555	51,007	50,242	42,021	51,248	52,445	47,296	51,743
9	49,313	45,123	48,936	50,621	51,357	43,235	46,856	41,595	44,846	48,508	51,846	51,190
10	47,757	51,739	47,533	51,031	46,461	43,677	43,626	42,900	45,537	46,028	51,993	48,344
11	49,976	52,027	61,375	51,390	44,860	44,547	45,157	50,568	51,254	50,961	51,623	46,961
12	49,462	52,217	47,636	50,854	48,226	43,817	51,592	51,216	50,620	50,444	51,388	51,551
13	49,991	52,390	45,108	51,177	51,143	44,583	51,920	48,515	46,579	46,405	51,518	51,837
14	50,384	51,872	48,516	50,898	52,551	44,764	51,505	44,982	51,360	44,819	51,374	51,610
15	50,391	51,912	51,869	51,003	54,113	44,584	45,057	44,848	51,200	47,788	50,296	51,882
16	50,411	51,591	51,797	51,114	48,996	46,170	44,443	46,125	50,919	51,359	45,254	51,124
17	50,761	51,540	51,118	50,978	50,049	51,107	46,996	51,395	49,425	50,808	45,758	50,903
18	51,956	50,925	51,788	50,630	50,178	51,059	51,241	46,025	46,163	42,079	52,233	49,542
19	51,617	51,347	51,383	50,860	50,689	50,419	50,966	45,015	51,318	42,651	51,220	50,881
20	51,524	51,676	51,218	50,894	49,777	50,547	46,652	46,471	51,325	42,433	51,270	51,331
21	51,325	51,568	51,232	51,065	47,702	50,327	44,509	44,738	51,732	42,460	52,045	47,913
22	51,847	51,801	51,321	50,766	48,690	46,042	44,565	44,953	47,472	42,554	44,899	46,264
23	51,569	51,634	51,450	50,269	44,540	44,743	44,715	45,957	47,432	51,175	45,187	51,676
24	51,681	51,966	51,355	50,761	44,763	47,280	45,020	50,736	51,922	52,158	51,640	50,784
25	51,041	51,728	50,956	51,003	44,719	45,546	50,730	44,531	52,249	51,838	52,007	46,160
26	51,576	52,989	50,666	51,279	44,703	48,294	49,942	44,819	51,770	47,339	51,883	44,602
27	51,644	59,654	51,069	51,630	44,661	44,890	44,611	44,345	51,542	45,078	51,061	47,911
28	51,634	51,752	51,804	51,280	46,143	46,227	45,619	44,839	52,067	45,098	51,696	51,596
29	55,803	N/A	51,207	49,468	50,655	51,124	51,592	44,732	51,692	47,280	51,251	51,524
30	57,194	N/A	46,606	44,964	50,901	47,147	50,972	44,972	52,169	49,689	51,363	51,083
31	51,614	N/A	47,448	N/A	51,027	N/A	50,606	45,014	N/A	45,038	N/A	45,916
Total	1,549,321	1,451,110	1,578,133	1,524,006	1,501,037	1,411,794	1,483,795	1,439,179	1,511,783	1,489,577	1,481,025	1,535,164
Average	49,978	51,825	50,908	50,800	48,421	47,060	47,864	46,425	50,393	48,051	49,368	49,521
Min	41,443	45,123	45,108	44,964	44,540	41,571	43,290	41,595	44,846	42,079	44,899	44,055
Max	57,194	63,327	61,375	52,185	54,113	51,124	51,920	51,395	52,249	52,445	52,233	52,035

Permit To Take Water (m3/day)	118,000
Yearly Average (m3)	49,218
Yearly Min (m3)	41,443
Yearly Max (m3)	63,327

Table 2 – Peak Raw Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	45,701	95,241	70,000	100,000	57,136	55,288	49,830	56,259	57,245	56,833	49,777	92,091
2	53,007	95,081	94,000	65,819	56,938	52,871	60,135	57,164	56,885	56,692	49,693	91,871
3	50,848	95,015	94,000	95,000	56,748	56,162	60,136	57,206	57,784	57,178	49,688	55,460
4	50,288	94,943	94,000	100,000	49,921	55,689	56,498	56,057	56,758	56,621	49,609	49,427
5	54,996	94,653	95,000	100,000	49,861	58,951	56,612	55,370	57,859	56,242	57,529	49,411
6	55,778	80,000	90,000	100,000	50,139	56,253	57,425	51,144	56,785	56,726	56,201	5,625
7	56,249	94,664	95,000	56,908	56,430	56,301	56,992	48,396	56,523	56,657	56,438	91,435
8	55,444	51,098	99,000	99,000	56,986	56,526	57,063	48,146	56,316	93,008	55,423	91,289
9	95,506	51,481	95,000	57,128	57,166	51,350	55,076	46,181	49,364	55,338	56,476	92,177
10	55,019	95,316	95,000	56,565	55,132	70,252	53,297	59,386	53,845	58,015	56,062	91,547
11	55,892	95,539	98,000	57,589	49,942	56,575	50,642	56,676	57,570	55,669	92,051	91,742
12	55,412	105,475	97,000	56,943	98,000	49,503	56,886	57,996	57,231	54,856	55,950	91,738
13	56,390	95,319	54,200	100,000	56,480	53,339	57,090	55,848	57,354	52,982	51,518	91,678
14	55,726	103,805	95,000	57,356	98,000	50,332	56,823	50,363	57,478	49,870	51,374	91,456
15	55,527	94,888	95,000	98,000	98,000	49,804	72,057	50,877	56,931	97,064	55,898	91,623
16	57,129	94,408	95,000	60,263	59,415	56,272	59,330	54,843	56,704	56,457	50,334	91,342
17	95,608	56,111	80,000	98,000	57,714	57,418	58,439	56,513	56,502	90,694	55,767	91,775
18	95,480	95,087	95,000	95,000	55,506	56,473	56,843	54,750	55,675	49,784	56,667	91,242
19	95,994	80,000	95,000	57,255	56,546	56,165	55,599	49,601	55,758	45,591	57,217	87,742
20	95,476	95,000	95,000	96,000	56,135	55,730	54,156	56,496	56,594	45,918	92,374	56,157
21	105,711	95,246	56,559	57,382	52,697	55,634	49,248	116,156	96,263	48,983	92,277	91,657
22	96,039	95,217	95,000	57,384	58,173	55,499	50,737	50,613	56,054	51,742	49,090	55,897
23	95,669	95,789	100,000	57,923	49,476	73,312	50,614	55,350	92,848	108,045	50,295	91,315
24	95,086	95,554	95,000	57,281	49,870	55,470	52,610	57,404	56,988	56,698	56,624	55,626
25	94,850	94,512	95,000	57,790	49,954	93,817	56,574	49,676	56,823	56,856	56,535	54,165
26	94,998	96,000	100,000	57,358	50,266	56,401	56,874	51,188	56,792	56,689	92,039	48,951
27	96,144	95,311	95,000	57,093	49,840	50,227	50,089	50,944	93,053	49,136	57,110	55,283
28	95,134	94,278	98,000	56,888	95,000	55,497	53,908	49,707	93,056	49,995	51,696	91,682
29	95,213	N/A	95,000	56,333	96,000	56,362	57,062	51,046	56,458	92,044	92,325	55,914
30	95,122	N/A	97,000	56,180	57,002	54,170	58,089	51,510	92,536	92,063	56,543	56,082
31	95,025	N/A	98,000	N/A	56,303	N/A	55,899	51,770	N/A	49,950	N/A	54,491
Monthly Max	105,711	105,475	100,000	100,000	98,000	93,817	72,057	116,156	96,263	108,045	92,374	92,177

Permit To Take Water (m3/day)	118,000
Yearly Max (m3)	116,156

Table 3 – Treated Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	40,200	48,300	48,300	48,500	48,400	42,500	41,539	47,908	47,339	47,786	41,430	47,661
2	40,300	51,100	48,600	48,600	48,100	41,600	40,543	47,687	47,840	48,010	41,501	47,636
3	40,500	46,500	49,100	47,100	46,400	47,800	45,595	47,511	47,648	45,704	41,445	43,779
4	40,400	59,100	48,700	48,700	54,400	44,000	45,391	47,603	47,913	47,883	41,406	41,414
5	42,700	45,100	48,400	48,700	41,500	39,500	43,778	43,435	47,891	45,493	41,813	41,451
6	46,400	51,600	52,400	48,500	41,700	47,100	48,032	41,376	47,940	43,379	48,077	45,397
7	46,500	45,400	46,600	48,900	42,900	47,300	47,535	41,416	47,715	47,520	42,687	48,068
8	46,300	42,100	46,600	47,800	48,200	47,800	47,236	41,341	47,455	47,958	43,561	47,835
9	45,700	42,000	46,000	48,200	48,100	41,600	43,581	41,011	41,324	44,597	47,830	47,297
10	44,700	48,200	44,400	48,500	43,200	41,600	41,609	42,158	41,965	42,351	47,957	44,539
11	46,900	48,700	57,800	48,500	41,700	41,400	42,071	47,223	47,602	47,031	47,744	43,428
12	46,400	49,000	44,600	48,200	45,700	41,000	48,274	48,254	47,010	46,612	47,409	47,686
13	48,800	49,100	42,200	48,500	47,800	41,400	48,585	44,630	43,222	42,572	47,618	47,908
14	46,900	48,700	45,400	47,900	47,700	41,500	47,883	41,163	47,884	41,049	47,484	47,794
15	47,000	48,600	48,700	48,100	47,500	41,300	41,773	41,475	47,557	44,059	46,238	47,997
16	46,600	48,300	48,500	48,500	45,900	42,800	41,533	42,543	47,162	47,432	41,524	47,452
17	47,300	48,300	48,000	48,300	46,800	47,800	43,951	47,900	47,140	47,427	42,150	47,709
18	48,700	47,600	48,800	48,000	47,000	47,800	48,059	42,588	42,274	40,067	48,048	45,735
19	48,500	48,500	48,600	48,200	47,400	47,100	47,769	41,604	47,581	41,334	47,378	47,416
20	48,600	48,500	48,200	48,000	45,400	47,300	43,289	42,889	47,509	40,940	47,557	47,513
21	48,000	48,300	48,400	48,400	41,300	47,100	41,389	41,577	47,998	41,077	48,097	44,077
22	48,500	48,600	48,600	48,100	41,300	42,700	41,438	41,416	43,538	41,359	41,256	42,528
23	48,400	48,500	48,600	47,700	41,300	42,000	41,612	42,479	44,093	47,122	41,505	47,740
24	48,500	48,700	48,600	48,100	41,500	42,000	41,945	47,112	48,000	48,056	47,822	46,937
25	47,900	48,400	48,700	48,300	41,400	44,428	47,628	40,994	48,249	47,780	48,013	42,488
26	48,400	49,200	48,200	48,500	41,300	44,967	46,655	41,302	47,810	43,340	47,978	40,983
27	47,900	56,800	48,500	48,800	41,300	41,686	41,503	41,299	47,893	41,230	47,201	44,269
28	48,100	48,400	48,700	48,100	41,300	43,085	42,444	41,372	47,904	41,313	47,942	47,740
29	51,800	N/A	48,300	46,200	44,200	47,775	48,278	41,071	47,749	43,586	47,451	47,523
30	53,900	N/A	44,500	42,000	47,500	43,852	47,814	41,361	48,123	45,722	47,461	47,245
31	48,500	N/A	44,400	N/A	47,600	N/A	47,456	41,337	N/A	41,241	N/A	42,126
Total	1,449,300	1,361,600	1,485,400	1,439,900	1,395,800	1,319,792	1,386,186	1,343,033	1,401,328	1,381,029	1,365,582	1,419,369
Average	46,752	48,629	47,916	47,997	45,026	43,993	44,716	43,324	46,711	44,549	45,519	45,786
Min	40,200	42,000	42,200	42,000	41,300	39,500	40,543	40,994	41,324	40,067	41,256	40,983
Max	53,900	59,100	57,800	48,900	54,400	47,800	48,585	48,254	48,249	48,056	48,097	48,068

Municipal Drinking Water Licence Max (m3/day)	118,000
Yearly Average (m3)	45,910
Yearly Min (m3)	39,500
Yearly Max (m3)	59,100

Table 4 – Peak Treated Water Flow Daily Totals

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	41,670	61,160	50,030	50,330	50,270	48,040	43,621	50,881	51,539	52,106	42,692	50,485
2	41,740	60,360	50,570	50,370	49,970	48,760	47,239	50,845	51,670	50,908	42,656	50,201
3	41,770	60,720	50,990	50,180	49,680	50,220	52,995	51,043	51,440	50,726	42,659	49,394
4	41,650	61,430	50,790	50,360	52,600	49,100	51,306	50,711	51,549	50,585	42,940	42,775
5	48,000	61,420	51,480	50,820	42,520	49,880	51,512	51,208	50,973	51,133	41,814	42,609
6	48,570	61,190	61,280	50,520	42,770	48,910	50,847	44,113	50,870	50,379	50,909	50,195
7	48,490	60,220	60,850	50,590	57,870	49,600	53,911	43,602	51,357	50,318	49,141	50,599
8	48,260	42,840	50,400	50,040	50,620	49,760	57,234	43,930	51,905	50,451	49,910	51,129
9	47,760	32,960	50,310	50,350	50,420	46,280	50,658	43,015	43,487	54,193	50,696	50,101
10	47,430	50,910	61,050	50,280	49,680	42,470	55,175	51,245	51,145	49,703	49,982	50,826
11	47,990	50,620	61,280	50,700	42,790	42,570	50,916	50,663	51,661	49,434	50,492	56,249
12	48,040	53,360	60,820	50,770	49,420	58,020	51,353	51,378	51,658	48,690	50,394	50,160
13	48,930	50,540	46,760	50,280	49,260	42,460	50,922	44,630	51,217	47,789	50,758	50,413
14	48,800	50,690	20,200	50,730	49,720	42,240	51,730	43,129	51,543	48,724	50,411	50,343
15	58,520	50,580	50,210	50,590	49,770	42,480	49,641	43,060	50,489	44,059	50,540	50,116
16	58,180	50,200	50,250	50,230	49,910	49,250	43,823	51,222	50,092	50,914	43,079	50,415
17	60,520	49,890	59,420	51,310	50,060	49,400	52,961	50,716	50,220	49,854	50,240	49,830
18	50,430	49,540	50,710	50,410	49,690	50,090	50,892	50,621	50,539	48,519	51,168	50,277
19	50,400	50,410	50,570	50,030	49,650	49,410	50,207	43,760	50,828	42,624	50,847	50,534
20	50,520	50,600	51,210	50,610	49,620	48,960	50,690	59,801	50,745	42,954	51,169	49,587
21	50,030	50,620	50,710	50,250	42,200	49,061	43,534	59,801	51,077	42,689	50,750	50,030
22	50,520	50,680	50,024	50,290	42,370	47,830	43,627	43,229	51,056	49,984	42,877	49,999
23	50,470	50,370	50,300	50,500	42,280	48,000	43,798	49,458	49,476	50,552	42,623	50,014
24	50,100	50,460	50,190	50,760	42,260	48,579	51,266	51,124	50,956	50,568	50,691	49,637
25	50,110	50,650	50,190	50,630	42,190	53,004	50,762	42,994	50,406	50,527	50,720	47,024
26	50,080	60,250	50,400	50,940	42,240	50,230	51,673	43,192	50,930	49,871	50,745	42,614
27	50,540	61,090	50,380	50,300	42,490	51,335	43,398	43,247	50,788	42,841	63,653	49,868
28	50,330	50,360	50,580	50,520	48,900	51,445	51,149	43,984	50,729	42,708	47,942	50,160
29	61,960	N/A	49,420	50,510	51,090	50,900	51,663	43,181	51,228	50,433	50,374	49,864
30	61,650	N/A	50,400	50,420	49,990	51,134	51,772	43,423	51,096	50,124	50,379	50,357
31	61,280	N/A	50,050	N/A	49,530	N/A	50,264	43,338	N/A	42,704	N/A	47,952
Monthly Max	61,960	61,430	61,280	51,310	57,870	58,020	57,234	59,801	51,905	54,193	63,653	56,249

Municipal Drinking Water Licence Max (m3/day)	118,000
Yearly Max (m3)	63,653

Table 5 – Net to Distribution System Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	39,127	52,037	49,791	45,949	46,439	45,495	43,063	49,750	46,908	48,992	43,636	48,827
2	39,710	51,922	51,303	49,991	47,736	43,872	44,259	49,217	47,529	48,752	42,806	46,357
3	42,534	50,270	48,656	51,439	48,831	47,184	44,595	49,174	47,973	47,294	41,140	48,701
4	41,871	54,516	49,859	46,721	57,289	45,948	45,066	45,509	46,118	47,559	45,302	43,302
5	46,317	51,003	51,660	49,667	43,156	46,602	46,600	44,097	48,090	48,302	43,642	44,929
6	48,474	50,626	52,625	49,527	44,277	44,927	49,476	44,556	48,490	46,446	46,957	44,655
7	46,169	49,554	51,185	48,138	43,112	44,511	45,189	44,503	48,603	47,156	45,575	49,797
8	48,321	42,358	43,804	49,993	47,332	48,264	46,063	42,467	46,223	46,971	45,913	45,947
9	46,926	45,717	47,246	49,028	46,788	45,727	47,337	43,237	45,352	45,173	46,625	47,655
10	44,819	49,525	47,275	50,223	45,843	43,548	43,695	44,430	46,656	46,015	45,459	49,051
11	46,251	48,766	52,379	49,375	43,694	44,136	45,304	45,136	47,092	46,647	48,187	45,998
12	46,950	48,304	49,403	45,861	47,621	41,828	46,982	46,565	45,261	45,976	48,893	45,923
13	50,715	50,571	44,684	50,958	47,171	41,718	46,657	43,040	46,004	44,354	50,917	47,537
14	48,159	49,647	46,877	49,404	45,434	41,626	46,326	45,124	46,453	46,468	46,351	48,489
15	49,246	49,316	47,342	49,253	48,640	44,454	46,119	44,787	47,597	43,688	45,688	49,812
16	48,177	48,486	49,110	49,792	49,782	43,304	45,441	41,795	47,997	46,690	46,135	49,499
17	47,963	49,724	54,426	49,897	48,085	45,004	45,157	45,581	47,504	43,121	44,747	49,379
18	48,899	50,330	47,588	46,874	48,431	47,316	42,858	45,503	46,699	45,268	48,757	43,847
19	49,759	47,493	51,171	48,896	46,386	47,358	47,743	43,445	45,554	45,634	47,265	49,205
20	48,789	47,480	48,266	47,762	46,619	48,857	46,973	41,319	51,226	43,133	45,371	46,347
21	46,874	48,399	49,699	48,599	43,705	47,835	41,946	43,955	50,675	43,177	49,395	44,945
22	52,707	51,164	50,276	51,565	44,831	46,059	44,041	44,225	44,300	43,889	44,164	47,126
23	48,877	49,593	51,151	50,019	42,751	45,140	44,666	42,612	46,074	45,333	47,580	48,330
24	49,262	48,402	49,799	50,439	41,705	42,861	44,973	46,529	47,020	46,665	46,332	45,062
25	46,529	51,130	49,720	47,836	42,334	46,469	43,673	43,293	48,739	46,866	49,483	42,786
26	50,255	50,969	50,718	48,553	42,546	43,807	46,642	43,481	46,909	48,044	46,885	47,264
27	51,034	52,361	48,891	49,979	44,036	44,826	46,578	40,504	47,144	43,688	49,374	45,667
28	50,008	52,925	48,806	46,517	41,903	44,728	44,557	41,974	49,792	42,062	48,306	46,600
29	49,196	N/A	47,969	47,889	45,041	47,344	47,079	41,661	48,889	43,440	49,346	45,337
30	54,834	N/A	49,138	45,975	44,718	44,435	46,403	41,957	48,090	44,828	48,640	46,861
31	50,812	N/A	46,288	N/A	46,196	N/A	48,787	44,868	N/A	45,209	N/A	47,890
Total	1,479,560	1,392,585	1,527,102	1,466,117	1,422,433	1,355,183	1,414,249	1,374,296	1,420,957	1,416,838	1,398,872	1,453,124
Average	47,728	49,735	49,261	48,871	45,885	45,173	45,621	44,332	47,365	45,704	46,629	46,875
Min	39,127	42,358	43,804	45,861	41,705	41,626	41,946	40,504	44,300	42,062	41,140	42,786
Max	54,834	54,516	54,426	51,565	57,289	48,857	49,476	49,750	51,226	48,992	50,917	49,812

Yearly Average (m3)	46,932
Yearly Min (m3)	39,127
Yearly Max (m3)	57,289

Table 6 – City East Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	7,458	8,828	8,421	8,396	7,793	8,274	7,793	9,496	8,210	8,460	7,061	8,060
2	6,961	8,828	9,564	9,538	8,172	7,644	8,216	8,631	9,510	7,892	7,500	8,000
3	8,292	8,902	7,940	8,716	9,049	8,623	9,279	9,402	8,032	8,224	7,817	7,760
4	7,661	9,333	9,191	9,716	7,811	8,803	8,500	8,837	8,097	7,640	10,100	7,240
5	8,460	9,077	8,947	8,285	8,423	7,644	7,914	9,824	7,803	8,267	7,669	8,050
6	8,627	9,362	8,447	9,449	8,215	9,279	9,185	8,839	7,520	8,154	7,342	7,700
7	8,460	8,655	8,594	9,524	8,659	8,892	9,102	9,850	7,675	6,964	8,151	7,990
8	8,442	8,190	8,601	8,209	8,174	8,870	9,514	9,151	7,638	7,436	6,816	7,400
9	8,014	8,851	8,409	9,083	8,863	7,643	9,236	9,154	7,746	7,150	7,655	7,760
10	7,573	9,484	8,908	9,018	7,808	7,643	9,583	10,087	8,789	6,577	8,870	7,980
11	8,918	8,853	9,001	8,932	8,696	9,329	9,025	9,759	8,322	7,943	8,100	7,330
12	8,868	8,302	8,540	8,327	9,472	8,276	9,770	10,110	7,851	7,031	7,270	7,910
13	7,841	8,331	7,969	8,741	8,366	8,295	8,421	8,508	8,551	6,879	7,920	8,400
14	8,663	9,096	9,084	9,511	8,329	8,123	9,518	8,415	8,834	8,476	7,560	8,570
15	9,188	8,210	8,868	8,788	8,515	8,503	8,784	10,998	8,202	7,471	7,080	8,100
16	8,147	7,914	8,657	8,658	8,987	8,665	10,282	8,764	8,736	7,772	8,120	7,660
17	8,149	9,001	9,771	8,840	7,852	9,265	8,695	9,141	8,469	6,432	7,310	8,570
18	8,547	8,998	8,775	7,694	8,256	9,288	9,024	9,174	9,188	7,417	7,920	7,600
19	8,340	8,535	9,652	8,657	7,693	8,390	9,796	8,312	8,151	8,008	7,340	7,790
20	8,828	8,092	8,707	8,555	8,809	8,839	8,615	7,198	7,083	6,690	7,730	8,510
21	9,260	9,012	8,631	7,706	8,011	8,404	8,808	8,772	7,974	7,005	8,050	7,600
22	8,615	8,180	9,711	9,651	8,667	8,064	9,994	8,793	9,754	7,088	7,270	7,880
23	8,252	9,139	8,333	8,284	7,690	8,264	9,254	8,873	7,767	6,668	10,650	7,790
24	8,828	9,046	9,348	9,100	8,165	9,271	9,088	9,191	7,620	7,624	7,500	8,030
25	8,784	8,527	9,584	8,122	8,089	9,027	9,068	8,791	7,419	6,486	8,330	8,170
26	8,653	8,714	9,291	7,915	8,388	8,237	8,778	8,500	7,681	7,333	7,410	7,500
27	9,559	8,730	8,529	9,351	8,524	9,081	8,163	8,684	7,002	7,734	7,550	8,170
28	8,692	8,104	9,007	8,461	8,289	8,466	9,464	9,055	8,371	7,124	7,920	8,520
29	8,222	N/A	9,212	7,686	8,692	8,876	9,302	7,660	7,746	6,703	7,610	7,520
30	9,866	N/A	9,133	9,426	8,517	8,747	8,990	7,418	7,685	7,798	7,070	7,860
31	8,828	N/A	9,200	N/A	7,644	N/A	8,588	7,880	N/A	6,944	N/A	8,860
Total	262,996	244,290	276,025	262,341	258,616	256,725	279,746	277,267	243,427	229,389	234,691	246,280
Average	8,484	8,725	8,904	8,745	8,342	8,557	9,024	8,944	8,114	7,400	7,823	7,945
Min	6,961	7,914	7,940	7,686	7,644	7,643	7,793	7,198	7,002	6,432	6,816	7,240
Max	9,866	9,484	9,771	9,716	9,472	9,329	10,282	10,998	9,754	8,476	10,650	8,860

Yearly Average (m3)	8,417
Yearly Min (m3)	6,432
Yearly Max (m3)	10,998

POINT PLEASANT WATER TREATMENT PLANT

2025 ANNUAL SUMMARY REPORT

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

Submitted by:
Heather Roberts
Director, Water & Wastewater Services

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1 INTRODUCTION

This annual summary report has been prepared as required under Ontario Regulation 170/03 of the Safe Drinking Water Act (SDWA) to acknowledge compliance with the terms and conditions of the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL) issued for the Point Pleasant Water Treatment Plant (WTP), to comment on any incidents of non-compliance during the reporting period, to summarize the quantities of the water supplied and to compare the summaries to the rated capacity and flow rates approved in the system's permits and approvals during the reporting period.

This report is specific to the Point Pleasant WTP located at 80 Sunny Acres Road in the City of Kingston, the associated distribution system, which serves Kingston's municipal water customers in the areas North to Cataraqui Arena, Hwy #2 west to Westbrook, Bath Road to Coronation Blvd, south of Hwy #401, Hwy #2 east to Milton subdivision, and Hwy #15 north to the St. Lawrence Business Park is known as the Kingston Drinking Water System.

The Kingston Drinking Water System receives water from both the King Street WTP and the Point Pleasant WTP. The WTPs and its associated distribution system are owned by the City of Kingston, with Utilities Kingston acting as the operating authority.

2 NON COMPLIANCE

There were no issues of non-compliance with the terms and conditions of the DWWP or MDWL during this reporting period.

3 COMPLIANCE

The Treatment Operations Department of Utilities Kingston, for the City of Kingston, operates and maintains the Point Pleasant WTP and complies with the terms and conditions of the DWWP and MDWL issued for the WTP. The Utilities Kingston Systems Operations department and the Treatment Operations department of Utilities Kingston operate and maintain the associated distribution system as well as the storage and pumping facilities. Staffing is maintained at levels to ensure adequate numbers of trained and licensed personnel are available for proper operations during emergency or upset conditions, vacation/sick relief, or to respond to equipment breakdown.

The Quality Management System (QMS), response plans, and operations manuals are established and are located in the appropriate facilities and available to appropriate staff. A QMS for the City of Kingston's drinking water supply systems has been developed and implemented by Utilities Kingston management and staff to ensure the continued safety and security of the community's drinking water by meeting or exceeding the requirements of all relevant legislation and regulations, and the Drinking Water Quality Management Standard (DWQMS).

Operations manuals include information necessary for the day to day operations and maintenance of the WTP and distribution system as well as information that may not be regularly used but that might be required to be accessed quickly for various purposes. Response plans include information that may be required for proper operation of the WTP or distribution system during emergency or upset conditions and contain items such as emergency plans and contact lists, alternate materials supply sources and notification lists.

The operations strategy of Utilities Kingston includes ensuring that permits, approvals, and licenses are in place, that efficient maintenance and operations ensure the quality of water supplied to its customers meets or exceeds the minimum requirements as set out in the SDWA, and that permissible flow rates are not exceeded. The City of Kingston, as a means of source water protection, considers the impact of decisions made within its authority on the drinking water supply source for the WTP.

Flow measuring devices for measuring the amount of water taken from Lake Ontario, and the amount of water supplied to the distribution system are calibrated annually by a third party. Accuracy in these measurements ensures that treatment chemicals are precisely applied and that flows do not exceed the capacity at which the WTP is designed to be effective. These flows are recorded to provide current and historical information, which is used for operational decision making, and to allow both the public and the Ministry of the Environment, Conservation and Parks (MECP) the ability to review WTP operations.

Water quality analyzers that monitor parameters such as chlorine residual and turbidity of critical process streams and water directed to the distribution system are alarm equipped and are maintained in accordance with the manufacturer's recommendations as well as the conditions of the DWWP/MDWL.

Water sampling is conducted to a level that exceeds the minimum requirements of schedule 13 of Ontario Regulation 170/03 of the Safe Drinking water Act, and includes additional sampling as well as sampling recommended in the first Engineers Report for the WTP. Raw water sampling is conducted to give operational staff information required to determine the level of treatment required to make the water potable. In-plant process stream samples provide monitoring of treatment processes. Treated and distribution system sampling provides information regarding the quality of water delivered to customers. All of these samples are analyzed by either licensed staff or by laboratories accredited by the Standards Council of Canada through the Canadian Association for Environmental Analytical Laboratories.

All sampling information, annual reports, and all other documentation required by the DWWP, and regulations are available for public viewing at the WTP during normal business hours. Annual Reports are also available on the Utilities Kingston website as well as at the Utilities Kingston and City of Kingston offices. Residents of the City of Kingston are encouraged to review this information, the availability of which is advertised through various local media.

4 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 incident 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 (MOH). 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. The details of any events requiring notifications are listed below.

4.1 EVENTS REQUIRING NOTIFICATIONS

- An adverse water quality incident notification was received from Caduceon Environmental Laboratories regarding a treated water sample collected on **June 16th**, **2025**, which was determined to have a Total Coliform (TC) count of **14 cfu/100mL**. The free chlorine residual at the time of sampling was **1.85 mg/L**. Notifications were made to the Spills Action Centre and to the Environmental Health Division of the local Ministry of Health. Resamples were collected from the same location, upstream and downstream and sent to the lab for analysis. With the free chlorine residual present in the original sample and the subsequent re-samples not indicating any adverse conditions, a contaminated sample bottle or sampling error is suspected.

5 QUANTITY OF WATER SUPPLIED

Listed in Tables 3 and 4 following this report are the treated water flows for the Point Pleasant WTP. The serviced population for the King Street WTP and Point Pleasant WTP is 132,485 (population from Census data for 2021). The annual average daily use was 18,467 m^3/day from the Point Pleasant WTP and 46,932 m^3/day from the King Street. Total average per capita use was calculated at 493 litres per person/day. The typical Canadian average is 250-350 litres per person/day residential use (source: Environment Canada). The city has imposed limitations or restrictions on water use when necessary. System losses through leakage do occur and are mainly due to the age and condition of the distribution system infrastructure and state of private services to users. Water systems operators perform proactive leak detection throughout the year and perform reactive leak detection based on reports of high water demand.

6 FLOW RATE EXCEEDANCES

There were no instances during this reporting period where flows at the Point Pleasant WTP exceeded the daily maximum allowable flow rate of 80,000 m^3/day. Listed in Tables 1 and 2 following this report are the raw water flows (water taken from Lake Ontario) for the Point Pleasant WTP.

7 TREATMENT CHEMICALS USED

There are two treatment chemicals in use at this treatment plant. Chlorine is used as the disinfectant, and Poly Aluminum Chloride (PACl) is used as the coagulant for the WTP. A more detailed description of the function of each of these chemicals and where they fit in the treatment processes is contained in the annual reports produced for this treatment plant.

Chlorine is dosed at the treatment plant at a rate which ensures an adequate residual is maintained at those points in the distribution system that are farthest from the point of entry of treated water to the system and, that an adequate chlorine Contact Time (CT) value is maintained for the rate of flow. Average chlorine dosages for this treatment plant are approximately 2.87 mg/L. Residuals are routinely measured in the distribution system, and the treatment plant chlorine dosage is adjusted as required to ensure the chlorine residual stays above the critical control limit of 0.20 mg/L. The critical control limit is chosen to ensure operators have ample time to respond and correct issues before the chlorine residual reaches the regulatory limit of 0.05 mg/L.

The average PACl dosage for this treatment plant is approximately 6.43 mg/L. This dosage is also adjusted to ensure efficiency in the coagulation process as various changes occur in the raw water. Changes are based on things such as pH, temperature, turbidity, and the aluminum residual in the treated water.

8 SUMMARY

The Point Pleasant WTP supplied water to residents of Kingston at rates which allowed adequate treatment. Water of good quality which is safe to drink was produced by the treatment plant during this reporting period.

Further information is available for this system and is included in the annual reports which can be accessed from the Utilities Kingston Website at http://www.utilitieskingston.com or is available at Kingston City Hall, or the Utilities Kingston offices. For further information about this report or any questions regarding accessibility, contact Robert Cooney at rcooney@utilitieskingston.com, or call 613-546-1181 Ext 2291.

9 FLOWS

Raw, Treated, and Distribution Flows are summarized in the following tables.

Table 1 – Raw Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	19,685	19,321	23,344	20,943	16,550	16,982	23,094	19,368	23,455	16,010	13,985	14,870
2	20,854	19,600	19,354	18,839	14,174	23,603	29,794	18,351	22,934	16,642	18,133	18,849
3	18,195	21,473	20,620	15,947	14,138	17,674	27,156	18,479	19,966	19,022	18,273	18,197
4	21,139	14,007	21,693	21,011	18,387	23,094	25,629	23,818	19,679	15,562	16,485	23,620
5	17,406	22,515	16,556	14,722	20,165	23,845	21,847	27,426	16,536	20,812	17,074	19,316
6	18,665	18,561	16,537	20,054	19,650	24,297	22,045	26,728	13,988	20,605	13,135	20,361
7	17,959	19,095	19,068	18,765	20,300	23,335	24,434	27,911	17,667	17,353	13,838	16,646
8	16,816	28,654	24,777	17,325	14,832	20,936	24,819	29,469	20,368	16,691	15,844	20,571
9	19,028	23,857	19,864	18,795	15,591	19,923	24,676	28,870	23,918	17,809	16,875	18,567
10	21,621	21,607	20,806	18,138	18,493	22,285	31,239	28,203	20,722	17,958	16,521	19,596
11	19,740	20,604	15,373	16,200	20,681	26,470	27,710	27,780	20,265	16,396	13,920	20,602
12	19,153	20,399	19,513	17,453	16,852	28,107	26,069	25,395	21,353	12,432	15,026	23,110
13	17,911	17,255	23,808	16,120	17,049	21,996	25,615	24,383	21,895	15,281	13,135	17,860
14	17,919	19,067	20,762	19,037	20,263	24,212	27,165	23,720	22,669	17,541	16,635	19,633
15	18,219	16,823	20,956	18,650	14,973	22,854	28,716	26,296	24,078	19,261	16,388	16,477
16	19,399	15,829	20,488	16,918	15,394	27,120	33,736	27,944	22,621	15,168	18,396	17,797
17	17,433	18,771	17,352	14,491	16,948	25,384	26,054	21,898	23,367	17,815	19,636	18,237
18	17,479	15,855	19,669	17,966	12,803	23,313	26,144	21,125	24,107	15,242	15,820	24,937
19	18,893	18,160	17,546	14,987	16,661	20,114	19,004	21,548	22,456	18,424	18,591	12,676
20	19,614	18,468	19,733	16,071	17,018	17,302	20,620	20,172	20,808	18,866	17,381	19,071
21	20,703	19,381	17,109	16,315	19,500	20,335	27,297	21,537	16,092	17,467	14,155	19,606
22	16,071	16,822	17,342	14,528	19,796	21,772	26,643	21,349	24,854	13,460	20,084	16,098
23	19,824	21,422	17,620	14,651	19,352	25,804	28,470	25,529	20,520	13,152	21,739	14,766
24	19,896	21,079	17,645	16,172	19,451	27,668	28,125	19,671	15,769	12,531	17,769	18,571
25	22,730	17,056	18,660	14,299	20,901	25,509	26,227	23,039	15,995	10,935	16,596	17,694
26	19,190	18,839	15,922	15,125	22,548	24,444	23,138	22,443	16,684	13,903	18,059	14,651
27	17,101	17,791	18,932	15,102	21,330	23,276	21,066	24,159	15,146	15,806	16,832	16,979
28	19,568	15,539	18,750	16,721	24,228	23,651	26,647	20,973	16,160	17,063	15,415	17,326
29	19,012	N/A	20,408	17,026	17,858	20,984	25,464	21,509	15,727	14,696	15,262	19,067
30	14,876	N/A	18,573	19,884	19,679	23,132	27,033	20,948	17,587	14,720	15,547	17,884
31	19,306	N/A	20,542	N/A	13,907	N/A	18,761	19,581	N/A	12,957	N/A	18,032
Total	585,405	537,850	599,322	512,255	559,472	689,421	794,437	729,622	597,386	501,580	496,549	571,667
Average	18,884	19,209	19,333	17,075	18,047	22,981	25,627	23,536	19,913	16,180	16,552	18,441
Min	14,876	14,007	15,373	14,299	12,803	16,982	18,761	18,351	13,988	10,935	13,135	12,676
Max	22,730	28,654	24,777	21,011	24,228	28,107	33,736	29,469	24,854	20,812	21,739	24,937

Permit To Take Water (m3/day)	90,000
Yearly Average (m3)	19,648
Yearly Min (m3)	10,935
Yearly Max (m3)	33,736

Table 2 – Peak Raw Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	27,488	31,613	31,661	34,644	34,803	31,845	38,368	31,824	31,727	23,059	36,663	20,210
2	28,498	35,528	31,487	35,438	22,976	36,893	43,564	30,020	35,737	26,865	37,208	27,504
3	28,543	34,495	36,000	26,043	21,953	29,910	41,319	30,017	32,395	31,550	37,291	38,693
4	37,274	25,938	30,157	30,176	29,717	39,015	41,998	36,514	31,429	31,452	36,810	34,221
5	27,490	27,575	30,178	29,806	31,899	38,161	29,419	40,540	26,368	31,718	23,332	43,622
6	28,531	29,122	37,342	31,314	30,604	36,216	39,729	35,933	22,634	31,451	23,553	31,752
7	27,850	38,065	40,873	30,182	31,631	31,872	29,923	37,567	26,268	31,646	29,199	27,687
8	28,528	38,436	41,251	29,777	27,042	27,127	38,948	44,218	26,456	25,988	25,777	31,692
9	31,840	38,896	38,221	27,764	27,502	31,810	40,702	42,144	37,591	27,619	31,643	34,439
10	30,180	38,249	26,126	28,515	29,133	30,592	45,133	45,637	40,250	26,199	28,611	31,044
11	36,258	27,422	25,907	27,549	29,107	40,102	43,567	39,370	37,635	28,366	27,521	30,885
12	35,366	28,422	38,559	25,945	29,139	39,546	36,483	41,358	35,501	24,827	22,241	35,057
13	31,309	30,164	37,394	27,564	38,368	35,832	36,613	37,646	36,643	21,918	20,634	35,796
14	29,834	35,564	31,672	28,979	29,052	35,356	32,283	29,818	35,741	31,349	27,595	35,070
15	39,982	25,707	35,636	39,104	26,788	32,578	42,790	35,739	31,753	32,377	31,531	27,439
16	39,275	35,461	35,519	29,007	26,488	45,339	42,382	38,195	36,548	30,085	35,029	24,367
17	37,735	35,309	30,058	28,389	26,460	39,933	46,277	36,575	35,650	27,563	29,960	34,840
18	27,598	30,915	31,694	26,205	20,655	35,747	36,060	35,639	37,192	25,809	31,463	38,697
19	28,560	29,823	35,478	26,240	26,194	32,622	27,581	31,614	37,373	27,183	30,289	38,129
20	28,559	27,871	29,862	26,351	26,425	32,556	35,667	31,692	24,006	27,424	25,939	25,864
21	28,592	27,670	28,757	26,210	29,171	31,660	35,744	28,997	28,768	31,372	25,906	26,014
22	27,424	27,483	28,810	22,584	38,009	32,724	35,575	29,050	28,792	31,014	25,925	38,517
23	27,670	38,621	28,631	23,520	31,599	40,958	40,202	40,390	28,802	27,206	36,278	22,421
24	35,489	28,620	38,552	21,884	29,953	41,406	40,225	38,298	26,556	22,930	26,032	42,419
25	35,493	26,154	28,707	23,140	35,459	41,178	35,724	29,025	22,924	22,380	41,573	38,808
26	35,411	38,678	25,975	22,057	35,701	41,853	29,215	28,964	27,545	23,056	26,017	28,275
27	29,584	28,549	27,518	22,107	36,619	39,995	29,385	29,121	26,443	23,103	26,086	28,191
28	31,822	27,537	35,693	27,139	35,352	40,509	38,965	31,600	25,751	33,891	24,394	28,453
29	27,672	N/A	35,361	31,319	35,472	42,562	38,959	32,486	26,007	23,219	27,475	25,808
30	31,502	N/A	35,684	29,894	27,649	39,706	40,036	27,558	28,783	36,164	27,454	28,020
31	31,557	N/A	34,806	N/A	23,148	N/A	43,452	32,282	N/A	23,704	N/A	27,403
Monthly Max	39,982	38,896	41,251	39,104	38,368	45,339	46,277	45,637	40,250	36,164	41,573	43,622

Permit To Take Water (m3/day)	80,640
Yearly Max (m3)	46,277

Table 3 – Treated Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	19,329	19,195	22,647	20,041	15,655	15,729	20,307	17,951	22,411	14,633	16,701	14,107
2	20,157	18,857	19,140	17,844	13,917	22,521	26,639	17,634	22,415	15,443	21,409	17,656
3	18,050	21,076	19,811	15,759	13,866	16,867	24,508	17,750	18,821	18,199	21,952	17,627
4	20,860	13,218	20,955	20,484	18,205	21,850	23,390	22,970	18,932	15,882	19,198	22,967
5	17,516	21,928	16,471	14,420	19,360	22,905	19,700	25,993	15,764	19,419	20,501	18,351
6	17,978	18,174	16,339	19,446	18,625	22,839	19,911	25,464	13,782	19,309	15,623	19,210
7	17,458	18,475	18,292	18,324	19,427	21,711	22,920	26,581	16,364	16,004	14,680	15,467
8	16,677	28,033	24,142	16,493	13,620	19,150	21,922	28,215	19,161	15,614	15,098	19,956
9	18,653	23,132	18,981	18,670	14,905	18,149	21,596	27,579	22,416	16,389	15,842	17,669
10	21,375	20,733	20,437	17,287	17,222	20,339	28,882	26,804	20,179	16,751	16,582	18,633
11	18,989	19,824	15,018	16,037	19,271	24,421	24,218	26,443	18,981	14,886	13,303	19,655
12	18,573	20,178	18,820	17,090	16,366	26,067	22,880	24,524	20,013	11,466	13,722	22,019
13	17,166	16,607	23,679	15,998	15,860	19,930	22,033	23,100	20,646	14,300	11,905	16,884
14	17,446	19,070	19,765	18,348	18,953	22,502	24,071	22,538	21,478	16,090	16,657	18,541
15	17,909	16,058	20,679	18,187	13,617	21,454	24,998	24,524	22,682	17,985	15,154	15,532
16	18,941	15,609	19,957	16,601	14,735	25,144	17,622	26,763	21,209	14,443	17,002	17,007
17	16,999	17,983	16,670	13,825	16,068	23,956	22,824	20,602	22,071	16,607	18,516	17,001
18	16,639	16,140	19,000	17,965	12,803	21,683	24,273	20,235	22,822	14,477	14,873	24,286
19	18,075	17,418	17,104	14,637	15,542	17,984	17,590	20,500	20,917	17,253	17,964	11,947
20	19,449	18,343	19,300	15,788	16,264	15,405	19,261	19,577	13,152	19,400	16,788	17,701
21	20,367	18,770	16,789	15,530	18,437	18,570	25,968	20,321	14,946	20,216	12,884	18,670
22	15,051	16,261	16,618	14,081	18,235	19,862	24,612	20,455	23,510	15,652	19,299	14,604
23	19,115	21,090	17,280	14,572	18,100	23,883	27,193	24,010	19,127	15,381	21,062	13,479
24	19,679	20,663	16,697	15,986	18,380	25,051	26,624	19,236	14,627	14,866	16,828	18,203
25	22,047	16,754	18,265	13,972	19,879	22,582	24,677	21,721	14,645	13,604	15,346	16,980
26	18,734	18,595	15,488	15,088	21,302	21,018	21,716	21,262	15,461	16,094	17,390	13,397
27	16,427	16,939	18,304	14,874	19,964	21,302	19,910	22,884	14,276	18,535	15,909	16,056
28	19,010	15,337	18,815	16,631	22,593	22,055	25,099	20,275	15,357	20,009	14,259	16,865
29	18,449	N/A	19,803	15,544	16,541	19,025	23,858	20,468	14,959	17,549	14,757	17,670
30	14,532	N/A	17,602	18,424	18,411	21,267	25,405	19,732	16,361	17,642	15,030	16,807
31	18,756	N/A	20,381	N/A	12,701	N/A	18,039	18,796	N/A	14,718	N/A	17,777
Total	570,406	524,460	583,249	497,946	528,824	635,221	712,646	694,907	557,485	508,816	496,234	542,724
Average	18,400	18,731	18,814	16,598	17,059	21,174	22,989	22,416	18,583	16,413	16,541	17,507
Min	14,532	13,218	15,018	13,825	12,701	15,405	17,590	17,634	13,152	11,466	11,905	11,947
Max	22,047	28,033	24,142	20,484	22,593	26,067	28,882	28,215	23,510	20,216	21,952	24,286

Municipal Drinking Water Licence Max (m3/day)	80,000
Yearly Average (m3)	18,769
Yearly Min (m3)	11,466
Yearly Max (m3)	28,882

Table 4 – Peak Treated Water Flow Daily Totals

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	25,433	29,865	26,959	29,248	22,254	25,547	28,560	28,581	29,443	19,547	18,041	19,459
2	25,411	29,601	26,510	29,386	22,404	34,057	36,148	29,098	28,622	25,583	29,319	23,091
3	25,454	29,139	30,491	25,884	23,325	30,114	32,670	29,545	24,671	26,544	30,256	34,413
4	29,280	25,769	30,732	26,457	25,377	30,451	32,630	29,135	25,389	26,459	29,189	13,275
5	25,428	25,573	30,144	29,146	26,544	32,592	29,648	33,405	20,793	26,276	26,031	34,051
6	25,616	25,636	30,003	30,469	25,895	28,940	33,514	32,917	22,259	26,627	26,376	26,551
7	24,912	30,273	28,722	30,460	27,054	25,530	30,302	33,722	26,403	26,365	24,515	24,483
8	30,014	32,479	29,635	28,722	24,517	25,694	26,167	33,999	29,735	24,557	25,775	17,372
9	29,047	30,261	29,050	25,473	22,687	26,162	34,364	33,220	30,833	21,815	24,503	28,573
10	30,552	29,562	25,656	23,024	28,927	29,732	34,045	32,737	30,447	25,709	23,124	24,527
11	29,329	26,265	21,137	22,558	25,563	33,925	32,509	31,488	29,965	22,126	23,366	26,366
12	29,399	26,287	29,884	24,951	30,557	33,865	30,061	30,351	28,595	22,290	20,528	25,473
13	29,757	30,313	30,418	24,489	28,588	32,501	26,530	28,776	30,310	21,816	16,053	29,220
14	28,820	28,812	29,368	30,184	26,475	29,551	30,361	28,876	30,300	26,258	25,936	25,588
15	33,337	24,523	30,821	30,136	24,409	29,656	34,157	30,329	30,430	28,953	29,576	23,408
16	32,229	29,227	30,828	47,752	26,290	33,987	33,800	33,140	29,544	28,869	26,545	26,538
17	28,911	28,780	28,489	24,521	26,259	33,218	33,737	30,239	30,228	26,439	29,793	25,314
18	23,064	29,725	25,608	23,370	20,655	29,157	28,777	28,663	30,116	24,667	26,568	28,574
19	26,328	28,726	30,299	23,221	22,924	25,472	22,442	25,720	28,724	26,491	25,229	28,415
20	26,512	22,921	29,730	25,092	22,724	25,851	30,136	26,484	19,312	26,355	26,630	22,357
21	26,187	24,812	28,441	22,239	30,388	25,609	30,256	26,613	26,776	29,580	26,278	26,401
22	24,448	21,239	26,540	18,091	28,490	26,420	34,115	30,352	25,757	28,784	25,328	24,472
23	22,846	30,363	30,379	22,931	26,386	34,155	33,495	28,671	25,695	22,264	26,698	18,163
24	30,610	28,476	28,792	22,445	30,351	32,778	33,253	28,877	24,630	22,084	26,272	30,338
25	30,467	30,734	26,014	23,093	29,928	30,332	32,679	28,485	19,250	19,238	29,998	28,594
26	30,076	29,957	24,510	20,666	29,797	29,473	25,509	26,261	26,114	26,467	25,751	24,464
27	24,548	26,620	25,896	22,557	30,318	30,530	28,985	28,805	24,585	29,508	23,083	26,653
28	26,494	24,487	29,920	27,029	28,535	30,297	33,373	26,284	25,141	28,520	18,664	25,153
29	25,715	N/A	30,017	26,420	30,272	30,439	29,784	25,590	24,596	30,109	22,433	24,541
30	29,982	N/A	30,096	30,142	25,405	30,406	35,318	23,173	21,296	28,546	22,222	23,376
31	29,310	N/A	29,180	N/A	20,570	N/A	32,653	26,435	N/A	29,572	N/A	22,274
Monthly Max	33,337	32,479	30,828	47,752	30,557	34,155	36,148	33,999	30,833	30,109	30,256	34,413

Municipal Drinking Water Licence Max (m3/day)	80,000
Yearly Max (m3)	47,752

Table 5 – Net to Distribution System Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	18,801	18,233	22,462	18,894	15,483	16,260	10,140	19,620	13,566	14,365	15,492	14,594
2	19,433	17,975	18,379	17,313	12,836	23,245	27,620	18,341	21,733	14,768	22,540	17,108
3	17,140	20,828	19,379	15,036	13,317	15,838	23,799	17,716	18,643	18,875	21,610	17,080
4	20,307	12,159	20,734	19,839	17,669	22,154	23,612	23,064	19,396	15,592	19,843	23,530
5	17,008	22,062	15,335	14,583	18,047	22,845	20,359	26,243	15,971	19,961	20,187	17,781
6	18,211	16,769	16,236	18,635	18,430	23,154	20,394	24,508	13,695	18,854	15,821	19,201
7	15,923	17,269	17,674	17,521	19,291	21,163	22,990	27,326	16,333	14,913	14,330	15,209
8	16,166	28,143	23,387	16,083	14,212	19,036	21,652	27,707	18,996	16,552	15,732	12,925
9	17,879	23,020	18,209	17,817	14,900	18,187	21,356	27,309	22,055	16,615	16,196	17,335
10	21,525	20,296	19,839	16,873	17,110	20,571	28,433	27,004	20,112	16,626	16,175	18,145
11	17,454	19,470	14,970	15,790	19,302	24,812	24,241	25,846	19,271	14,787	12,934	19,746
12	17,718	19,179	18,510	15,784	16,254	26,188	22,980	25,059	19,973	11,867	13,763	21,217
13	17,300	15,635	22,196	15,865	15,920	18,951	22,325	22,663	21,555	14,698	11,616	17,590
14	16,926	18,879	19,774	17,811	19,337	22,429	24,491	22,707	21,226	16,145	17,002	18,701
15	17,817	15,397	19,925	17,199	13,021	21,877	24,879	25,561	23,052	17,756	15,497	15,566
16	18,140	15,465	19,223	15,869	15,150	25,306	31,352	26,751	21,201	14,075	16,688	16,626
17	16,416	16,861	15,690	13,708	16,962	24,421	21,680	20,113	21,644	16,023	18,930	16,749
18	15,977	15,629	18,891	16,745	11,932	21,807	23,889	21,120	23,323	14,733	14,659	24,503
19	17,810	16,709	16,254	15,059	15,527	17,640	18,038	20,015	19,891	18,169	17,496	12,000
20	18,693	17,946	17,718	15,123	16,298	15,403	18,746	19,461	12,966	19,155	16,757	17,873
21	11,344	18,461	17,401	15,314	18,139	18,705	26,135	20,322	15,676	19,477	13,507	18,309
22	14,097	15,682	16,586	13,465	18,802	19,607	26,301	20,288	23,826	14,708	19,480	14,786
23	19,556	20,460	15,851	13,991	16,871	24,171	26,943	25,397	17,865	16,506	12,058	14,442
24	19,110	19,030	16,008	15,476	18,621	24,361	26,215	18,465	15,072	14,687	16,451	18,271
25	21,065	16,774	18,392	13,499	20,498	22,400	24,301	22,098	15,115	14,591	15,994	17,040
26	17,764	15,286	15,035	14,019	21,515	21,206	22,044	20,984	15,481	15,236	17,806	12,593
27	15,297	16,737	17,969	14,218	19,375	21,035	19,643	22,693	13,620	18,863	15,295	16,655
28	20,518	14,045	17,668	16,343	22,484	22,133	25,648	20,883	15,713	19,422	14,692	17,414
29	17,299	N/A	19,970	15,369	16,543	19,292	23,782	18,313	15,084	18,126	15,493	17,705
30	13,042	N/A	16,668	18,177	10,952	21,260	25,133	21,513	16,657	16,927	14,733	16,671
31	18,689	N/A	19,930	N/A	12,468	N/A	18,034	18,800	N/A	15,119	N/A	16,617
Total	544,425	504,402	566,263	481,417	517,262	635,455	717,154	697,888	548,713	508,190	488,779	533,981
Average	17,562	18,014	18,267	16,047	16,686	21,182	23,134	22,513	18,290	16,393	16,293	17,225
Min	11,344	12,159	14,970	13,465	10,952	15,403	10,140	17,716	12,966	11,867	11,616	12,000
Max	21,525	28,143	23,387	19,839	22,484	26,188	31,352	27,707	23,826	19,961	22,540	24,503

Yearly Average (m3)	18,467
Yearly Min (m3)	10,140
Yearly Max (m3)	31,352

CANA WATER TREATMENT PLANT

2025 ANNUAL SUMMARY REPORT

Drinking Water System Number: 220006053
Drinking Water System Owner: City of Kingston
Drinking Water System Category: Small Municipal Residential

Submitted by:
Heather Roberts
Director, Water & Wastewater Services

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1 INTRODUCTION

This annual summary report has been prepared as required under Ontario Regulation 170/03 of the Safe Drinking Water Act (SDWA) to acknowledge compliance with the terms and conditions of the Drinking Water Works Permit (DWWP) and the Municipal Drinking Water License (MDWL) issued for the Cana Drinking Water System, comment on any incidents of non-compliance during the reporting period, summarize the quantities of the water supplied, and compare those quantities to the rated capacity and flow rates approved in the system's permits and MDWL during the reporting period.

This report is specific to the Cana Water Treatment Plant (WTP) located in the Cana Subdivision, and its associated distribution system serving customers on Marian Crescent, Cana Boulevard, and Rochdale Crescent. The groundwater well and its associated distribution system are owned by the City of Kingston, with Utilities Kingston acting as operating authority.

2 NON COMPLIANCE

There were no issues of non-compliance with the terms and conditions of the DWWP or MDWL during this reporting period.

3 COMPLIANCE

The Treatment Operations department of Utilities Kingston, for the City of Kingston, operates and maintains the Cana Well System and complies with the terms and conditions of the DWWP and MDWL for the Cana Water Treatment System. The Utilities Kingston Systems Operations department and the Treatment Operations department of Utilities Kingston operate and maintain the associated distribution system. Staffing is maintained at levels to ensure adequate numbers of trained and licensed personnel are available for proper operations during emergency or upset conditions, vacation/sick relief, or to respond to equipment breakdown.

The Quality Management System (QMS), response plans, and operation manuals are established and are located in the appropriate facilities and available to appropriate staff.

A QMS for the City of Kingston's drinking water supply systems has been developed and implemented by Utilities Kingston management and staff to ensure the continued safety and security of the community's drinking water by meeting or exceeding the requirements of all relevant legislation and regulations, and the Drinking Water Quality Management Standard (DWQMS). Operation manuals include information necessary for the day to day operations and maintenance of the WTP and distribution system as well as information that may not be regularly used but that might be required to be accessed quickly for various purposes. Response plans include information that may be required for proper operation of the WTP or distribution system during emergency or upset conditions and contain items such as emergency plans and contact lists, alternate materials supply sources and notification lists.

The operations strategy of Utilities Kingston includes ensuring that permits and approvals are in place, that efficient maintenance and operations ensure the quality of water supplied to its customers meets or exceeds the minimum requirements as set out in the SDWA, and that permissible flow rates are not exceeded. The City of Kingston, as a means of source water protection, considers the impact of decisions made within its authority on the drinking water supply source for the Cana Water Treatment System.

Flow measuring devices for measuring the amount of water taken from the well, and the amount of water supplied to the distribution system, are calibrated annually. Accuracy in these measurements ensures that treatment chemicals are precisely applied and that flows do not exceed the capacity at which the system is designed to be effective. These flows are recorded to provide current and

historical information, which is used for operational decision making, and to allow both the public and the Ministry of the Environment, Conservation and Parks (MECP) the ability to review treatment operations.

Water quality analyzers that monitor chlorine residual, turbidity, and conductivity of the water directed to the distribution system are remotely monitored, alarm equipped, and maintained in accordance with the manufacturer's recommendations as well as the conditions of the DWWP and MDWL.

A water sampling program is conducted to exceed the minimum requirements of schedule 13 of Ontario Regulation 170/03 under the Safe Drinking water Act, and includes additional sampling as well as sampling recommended in the first Engineers Report for the Water Treatment System. Raw water sampling is conducted to give operational staff information required to determine the level of treatment required to make the water potable. In-plant process stream samples provide monitoring of treatment processes. Treated and distribution system sampling provides information regarding the quality of water delivered to customers. All of these samples are analyzed by either licensed staff, or by laboratories accredited by the Standards Council of Canada through the Canadian Association for Environmental Analytical Laboratories.

All sampling information, Annual Reports, and all other documentation required by the DWWP/MDWL and regulations in force during this reporting period is available for public viewing through Utilities Kingston during normal business hours. As the treatment building is typically unstaffed and local access to the information is limited, Utilities Kingston has made an effort to ensure residents supplied by this system receive copies of this information. Annual Reports are also available on the Utilities Kingston website as well as at the Utilities Kingston and City of Kingston offices. Residents of the City of Kingston are encouraged to review this information, the availability of which is advertised through various local media.

4 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 incident 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 the sample is 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.

4.1 EVENTS REQUIRING NOTIFICATIONS

- The groundwater supply for the Cana Water Treatment System contains a sodium concentration greater than 20 mg/l which requires a notification to the Medical Officer of Health and to the Spills Action Center if a report under subsection 18 (1) of the Safe Drinking Water Act has not been made in respect of sodium in the preceding 57 months. This notification was last completed in **July of 2022**.
- An adverse water quality incident notification was provided to the Medical Officer of Health and Spills Action Centre on **October 22nd**, **2025.** As part of the annual equipment calibration program for the water treatment plant, equipment was placed into calibration mode. Upon completion of the testing, the system was not returned to regular mode and resulted in a loss of pressure to the system. Utilities Kingston staff responded immediately to a "no water" call and within 5-10 minutes water was restored to the system. Utilities Kingston reported the adverse observation immediately and were directed by the Medical Officer of Health to issue a Boil Water Advisory.

Staff hand delivered notices to all properties to advise all users. Two sets of bacteriological samples were also collected and tested for E. coli and total coliform. Upon receipt of clear test results and consultation with the Medical Officer of Health, the boil water advisory was rescinded on **October 24th, 2025**.

5 QUANTITY OF WATER SUPPLIED

Listed in Table 2 following this report are the treated water flows for the Cana Water Treatment System.

With an annual average daily use of 20.14 m^3/day, the estimated per capita use is 243 L/day. The typical Canadian average is 250 – 350 litres per person per day (source: Environment Canada). As customer usage is not metered, system losses are typically estimated based on normal day flows. Known losses include sample flows to water quality analyzers. High flows, occurring typically during summer months, are usually attributed to excessive lawn watering.

6 FLOW RATE EXCEEDANCES

There were no instances during this reporting period where flows exceeded the maximum allowable flow rate of 108 m^3/day. Listed in Table 1 following this report are the raw water flows (water taken from the well) and Table 2 are the treated water flows (water entering the distribution system from the pump-house) for the Cana Water Treatment System.

7 TREATMENT CHEMICALS USED

The only treatment chemical in use in this system is Chlorine, in the form of 12% sodium hypochlorite, which disinfects the water. The sodium hypochlorite is diluted to a 2- 3% solution at the well house prior to the point of injection. The average chlorine dosage for this treatment plant is approximately 3.28 mg/L. Chlorine is dosed at the well at a rate which ensures an adequate residual is maintained at those points in the distribution system that are farthest from the point of entry of treated water to the system and that adequate chlorine Contact Time (CT) is maintained for the rate of flow. Residuals are routinely measured in the distribution system, and the treatment plant chlorine dosage is adjusted as required to ensure the chlorine residual stays above the critical control limit of 0.20 mg/L. The critical control limit is chosen to ensure operators have ample time to respond and correct issues before the chlorine residual reaches the regulatory limit of 0.05 mg/L.

8 SUMMARY

The Cana Water Treatment System supplied water to residents of the Cana subdivision at rates which allowed adequate treatment. Water of acceptable quality which is safe to drink was produced by this treatment system during this reporting period.

Further information is available for this system and is included in the annual reports which can be accessed from the Utilities Kingston Website at http://www.utilitieskingston.com or is available at Kingston City Hall, or the Utilities Kingston offices. For further information about this report or any questions regarding accessibility, contact Robert Cooney at rcooney@utilitieskingston.com, or call 613-546-1181 Ext 2291.

9 FLOWS

Raw and Treated flows are summarized in the following tables.

Table 1 – Raw Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	17.33	18.33	20.67	16.50	19.50	24.00	33.50	31.00	19.50	25.00	23.00	18.00
2	17.33	18.33	20.67	16.50	22.00	19.50	18.50	31.00	17.00	25.00	23.00	18.00
3	18.00	13.00	17.00	16.50	22.00	19.50	18.50	31.00	16.50	24.33	23.50	30.50
4	18.00	13.00	17.00	19.67	22.00	17.50	22.00	21.00	16.50	24.33	23.50	30.50
5	18.00	16.50	14.50	19.67	22.00	17.50	22.00	21.00	24.00	24.33	22.40	35.67
6	15.50	16.50	14.50	19.67	22.00	23.33	22.00	30.00	24.00	17.25	22.40	35.67
7	15.50	19.67	20.00	15.00	20.60	23.33	22.50	30.00	24.00	17.25	22.40	35.67
8	20.00	19.67	20.00	15.00	20.60	23.33	22.50	25.00	20.00	17.25	22.40	25.50
9	20.00	19.67	20.00	17.50	20.60	22.00	24.50	25.00	20.00	17.25	22.40	25.50
10	18.33	17.50	13.00	17.50	20.60	22.00	24.50	25.00	19.50	23.50	21.50	22.00
11	18.33	17.50	13.00	19.60	20.60	22.50	29.33	26.00	19.50	23.50	21.50	22.00
12	18.33	17.00	20.20	19.60	27.00	22.50	29.33	26.00	22.67	23.50	26.50	25.67
13	14.50	17.00	20.20	19.60	27.00	21.67	29.33	23.50	22.67	23.50	26.50	25.67
14	14.50	19.25	20.20	19.60	21.00	21.67	27.00	23.50	22.67	17.00	31.67	25.67
15	17.00	19.25	20.20	19.60	21.00	21.67	27.00	25.00	18.00	25.50	31.67	29.00
16	17.00	19.25	20.20	21.50	22.50	20.50	20.50	25.00	18.00	25.50	31.67	29.00
17	17.00	19.25	15.50	21.50	22.50	20.50	20.50	25.00	38.50	22.00	36.00	25.20
18	17.00	12.00	15.50	17.33	22.50	17.00	25.00	20.50	38.50	22.00	40.83	25.20
19	17.00	14.00	21.00	17.33	22.50	17.00	25.00	20.50	48.00	22.00	40.83	25.20
20	19.00	14.00	21.00	17.33	23.00	21.33	25.00	15.00	48.00	27.00	40.83	25.20
21	19.00	19.33	20.67	23.00	15.50	21.33	28.00	15.00	48.00	27.00	40.83	25.20
22	17.40	19.33	20.67	29.00	15.50	21.33	28.00	23.33	44.00	27.00	40.83	22.50
23	17.40	19.33	20.67	20.00	23.00	20.50	22.00	23.33	44.00	27.00	40.83	22.50
24	17.40	14.50	14.50	20.00	23.00	20.50	22.00	23.33	29.00	17.00	56.50	23.00
25	17.40	14.50	14.50	20.00	23.00	20.00	31.33	17.50	29.00	17.00	56.50	23.00
26	17.40	17.00	19.60	20.00	19.50	20.00	31.33	17.50	19.67	17.00	45.00	26.33
27	17.00	17.00	19.60	20.00	19.50	26.33	31.33	17.00	19.67	21.00	45.00	26.33
28	17.00	20.67	19.60	17.00	22.00	26.33	26.00	17.00	19.67	21.00	20.67	26.33
29	15.00	N/A	19.60	17.00	22.00	26.33	26.00	19.50	19.50	21.00	20.67	26.00
30	15.00	N/A	19.60	19.50	24.00	33.50	21.00	19.50	19.50	21.00	20.67	26.00
31	18.33	N/A	16.50	N/A	24.00	N/A	21.00	19.50	N/A	23.00	N/A	29.00
Total	535.98	482.33	569.85	572.00	672.50	654.48	776.48	712.49	789.52	685.99	942.00	811.01
Average	17.29	17.34	18.38	19.07	21.69	21.82	25.05	22.98	26.32	22.13	31.40	26.16
Min	14.50	12.00	13.00	15.00	15.50	17.00	18.50	15.00	16.50	17.00	20.67	18.00
Max	20.00	20.67	21.00	29.00	27.00	33.50	33.50	31.00	48.00	27.00	56.50	35.67

Permit To Take Water (m3/day)	108.00
Yearly Total (m3)	8,204.63
Yearly Average (m3)	22.46
Yearly Min (m3)	12.00
Yearly Max (m3)	56.50

Table 2 – Treated Water Flow Daily Totals (m3)

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	16.67	17.00	17.00	15.00	16.50	21.33	28.50	28.67	17.00	22.50	23.67	19.50
2	16.67	17.00	17.00	13.00	19.80	19.50	17.50	28.67	19.00	22.50	23.67	19.50
3	18.00	12.00	14.00	13.00	19.80	19.50	17.50	28.67	14.50	21.67	20.50	26.50
4	18.00	12.00	14.00	19.33	19.80	19.50	20.00	17.00	14.50	21.67	20.50	26.50
5	18.00	14.50	13.00	19.33	19.80	19.50	20.00	17.00	21.33	21.67	22.80	30.33
6	16.00	14.50	13.00	19.33	19.80	18.67	20.00	28.50	21.33	17.50	22.80	30.33
7	16.00	18.33	16.33	13.50	20.00	18.67	20.50	28.50	21.33	17.50	22.80	30.33
8	16.50	18.33	16.33	13.50	20.00	18.67	20.50	28.67	19.50	17.50	22.80	20.00
9	16.50	18.33	16.33	15.00	20.00	19.50	21.50	28.67	19.50	17.50	22.80	20.00
10	16.67	15.00	14.50	15.00	20.00	19.50	21.50	28.67	19.50	22.75	21.00	19.50
11	16.67	15.00	14.50	17.20	20.00	20.00	26.67	18.50	19.50	22.75	21.00	19.50
12	16.67	14.50	16.40	17.20	22.00	20.00	26.67	18.50	22.33	22.75	27.00	22.33
13	14.50	14.50	16.40	17.20	22.00	19.67	26.67	21.50	22.33	22.75	27.00	22.33
14	14.50	16.25	16.40	17.20	17.50	19.67	23.00	21.50	22.33	14.00	31.00	22.33
15	15.80	16.25	16.40	17.20	17.50	19.67	23.00	23.00	17.50	20.00	31.00	23.50
16	15.80	16.25	16.40	18.00	22.00	17.50	20.00	23.00	17.50	20.00	31.00	23.50
17	15.80	16.25	16.50	18.00	22.00	17.50	20.00	23.00	23.00	21.33	33.00	20.60
18	15.80	12.00	16.50	17.00	22.00	15.50	21.00	18.50	23.00	21.33	42.67	20.60
19	15.80	13.50	17.00	17.00	22.00	15.50	21.00	18.50	20.33	21.33	42.67	20.60
20	14.50	13.50	17.00	17.00	15.00	19.00	21.00	14.50	20.33	20.25	42.67	20.60
21	14.50	14.67	17.00	24.00	17.00	19.00	25.00	14.50	20.33	20.25	42.67	20.60
22	16.60	14.67	17.00	20.00	17.00	19.00	25.00	23.00	15.50	20.25	42.67	18.50
23	16.60	14.67	17.00	19.20	17.00	18.50	24.50	23.00	15.50	20.25	42.67	18.50
24	16.60	13.00	16.50	19.20	17.00	18.50	24.50	23.00	18.50	23.67	59.50	20.00
25	16.60	13.00	16.50	19.20	17.00	18.50	29.33	15.50	18.50	23.67	59.50	20.00
26	16.60	15.50	15.60	19.20	19.00	18.50	29.33	15.50	19.67	23.67	44.00	22.00
27	14.50	15.50	15.60	19.20	19.00	23.67	29.33	16.00	19.67	20.00	44.00	22.00
28	14.50	17.00	15.60	17.00	21.00	23.67	22.50	16.00	19.67	20.00	21.67	22.00
29	13.00	N/A	15.60	17.00	21.00	23.67	22.50	17.00	18.50	21.00	21.67	19.50
30	13.00	N/A	15.60	16.50	21.33	28.50	19.50	17.00	18.50	21.00	21.67	19.50
31	17.00	N/A	15.00	N/A	21.33	N/A	19.50	17.00	N/A	23.67	N/A	25.50
Total	794.50	423.00	819.50	780.01	832.68	763.11	550.24	473.48	498.00	510.47	489.35	512.32
Average	25.63	15.11	26.44	26.00	26.86	25.44	17.75	15.27	16.60	16.47	16.31	16.53
Min	22.00	12.00	22.50	22.50	23.00	20.25	13.50	13.00	14.00	13.00	14.50	11.00
Max	27.67	18.33	38.50	29.67	35.00	29.67	23.00	17.50	20.33	18.33	18.50	20.00

Municipal Drinking Water License (m3/day)	118.00
Yearly Total (m3)	7,357.88
Yearly Average (m3)	613.16
Yearly Min (m3)	12.00
Yearly Max (m3)	59.50

RAVENSVIEW
WATER POLLUTION CONTROL PLANT
2025 ANNUAL REPORT

Environmental Compliance Approval Number: 5556-BZFGZL
Water Collection System Owner: City of Kingston
Wastewater Treatment Facility Classification: Class IV

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

Ravensview Water Pollution Control Plant (WPCP) operates under Ministry of the Environment, Conservation and Parks, Environmental Compliance Approval (ECA) number 5556-BZFGZL, issued to the owner, the Corporation of the City of Kingston. This report is to satisfy the requirements of condition 45 of the terms and conditions of the aforementioned ECA. The facility was compliant with all but one of the conditions outlined in Schedule C of the above-mentioned ECA. The non-compliant month and effluent parameter is described in the following sections of this report.

The sewage works has a rated capacity of 95,000 m^3/d, and a peak daily design flow rate of 193,000 m^3/d. The average daily raw influent flow into the plant was 52,788 m3/d, the maximum daily flow into the plant was 139,893 m^3/d, and the total flow received by the plant was 19,267,737 m3 in 2025.

There were two bypass events at Ravensview WPCP in 2025. There were two spills of unburnt digester gas in 2025.

2 PLANT DESCRIPTION AND TREATMENT PROCESS

The following is a process overview and description of the treatment steps taken at Ravensview WPCP.

2.1 RAW WASTEWATER RECEIVING

Raw wastewater from the central and east portions of Kingston is conveyed to the influent works. A Parshall flume metering device continuously measures the flow of raw wastewater into the plant. The septage receiving station is located in the northeast corner of the property. The septage receiving station gives approved septic truck haulers a place to discharge the contents of their tanks. The septage receiving station monitors the quantity, and origin, of the contents being unloaded and provides some pre-treatment before the contents enter the treatment plant at the influent works.

2.2 SCREENING

Three large mechanical screens remove larger materials from the incoming wastewater stream. Screened material is conveyed to a screening press where the material is compacted and stored for offsite disposal.

2.3 GRIT REMOVAL

Grit settles out of the sewage as the water flows through the tanks which are covered to keep the odours in. Air is bubbled into the tank to speed up the settling of the sand, gravel, and other heavier, and inorganic materials. In the bottom of the tank, a screw system pushes the settled grit into a hopper at the end of the tank. A pump lifts the grit and a small amount of water up into a separator where the grit is rinsed and then placed into a dumpster where it awaits disposal at a landfill.

2.4 PRIMARY CLARIFIERS

After removing the screenings and grit, the only material left in the wastewater is organic material and dissolved contaminants. The wastewater flows very slowly from one end of the tank to the other. As this happens, the solids, which are high in organic material, settle to the bottom. Large scrapers draw the material to one end of the tank where it is pumped across to the digesters for further processing. At the end of the primary clarifiers, the primary effluent flows into troughs which then direct it to the secondary treatment process. In the primary clarifiers, any grease, fats, or oils that are suspended are skimmed off by rakes and are pumped to the digesters. Any floatable materials that may have slipped through the bars in the screening process will be ground up before entering the digester.

2.5 BIOLOGICAL AERATED FILTERS

The primary effluent flows to a pumping facility which lifts the wastewater up to a channel running along the centre of the Biological Aerated Filters (BAF) facility. In each of the 11 available cells, the wastewater flows from the central channel to the bottom of the filters, and up through the filter. In the filter the wastewater is aerated, this encourages growth of microorganisms which consume carbon dissolved in the wastewater, as well as reducing ammonia and phosphorus. These microscopic organisms, referred to as biomass, stick onto the Bio Styrene media (4 mm diameter polystyrene beads), which also act to filter any suspended materials. The beads are held in place under a concrete floor with nozzles which let the clean water flow out on the surface. Like other filters, these are backwashed periodically to remove excess biomass growth and filtered particles. This helps to restore the filters' ability to process wastewater efficiently.

2.6 DISINFECTION

Disinfection is accomplished by adding sodium hypochlorite to the BAF facility effluent. The effluent flows by gravity to a chlorine contact chamber where ample time is provided for the chlorine to disinfect the BAF effluent. Just prior to exiting the chlorine contact tank, the wastewater is dosed with sodium bisulphite. This process de-chlorinates the water entering the receiving stream.

2.7 OUTFALL

After de-chlorination, the disinfected effluent from the chlorine contact tanks is discharged to the St. Lawrence River through a 1500 mm diameter outfall sewer with fourteen 250 mm elbow diffusers, approximately 240 m offshore.

2.8 BAF BACKWASH RESIDUAL TREATMENT

As wastewater is filtered through the BAF filter beds, the media becomes increasingly clogged and requires backwashing to remove excess contaminants and biomass. After leaving the BAF cell, the backwash residual water follows the backwash channel to two backwash residual tanks, each large enough to accommodate the volume of backwash residual from a backwash. The water is pumped back to the head of the plant using one of two submersible backwash residual pumps.

2.9 ANAEROBIC DIGESTERS

Raw sludge and grease and scum are pumped to the primary digester in regular intervals throughout the day. The digester facility consists of three primary digesters and one secondary digester. Inside, the mixture is heated to allow microorganisms to grow and consume carbon, this produces methane gas and carbon dioxide. The first primary digester, digester 3, is heated to 55 °C (thermophilic), which further assists in the destruction of harmful bacteria in the solids. After approximately 15 days, the solids are transferred in series to two other primary digesters, digesters 1 and 2, which are heated to 36 °C (mesophilic), where they remain for an additional 15 days before being stored in the secondary digester, digester 4, before being sent to the dewatering facility.

Sludge in digesters 1 and 2 is mixed using four mechanical mixers mounted on each of the digester's roofs. The sludge from digesters 1 and 2 is recirculated through two sludge heat exchangers, this helps the digester maintain the correct temperature. Mixing in digester 3 is accomplished using only a mixing pump. The sludge from digester 3 is also recirculated through a heat exchanger to maintain the correct temperature as well. Digester 4 sludge is pumped to holding tanks in the dewatering building where it is recirculated until ready to be dewatered.

The methane gas produced is used as fuel for the boiler system which in turn provides heat for the digestion process through the sludge heat exchangers. If more gas is being generated than can be used

in the boiler, the excess gas can be used in a combined heat and power generation system, Co-gen, to help offset the power purchased from the grid, or burned using a flare stack.

2.10 DEWATERING

Liquid biosolids, which are about 2% solid and 98% water, are pumped from the secondary digester into 2 centrifuges. Polymer is added to the biosolids before it enters the centrifuge, this helps the solids stick together, aiding the dewatering process. The centrifuge spins at a high-speed, forcing solids to the outer drum. This separates the solids, referred to as cake, from the liquid, called centrate. The cake, which now has a solids content of about 30%, is conveyed to a hopper. When enough material is in the hopper, a piston pump pushes the solid cake to the biosolids storage building. Alternatively, the cake materials can be loaded directly into a dump truck in a separate loading bay. The centrate, which contains many nutrients and some microorganisms, is returned to the headworks for treatment.

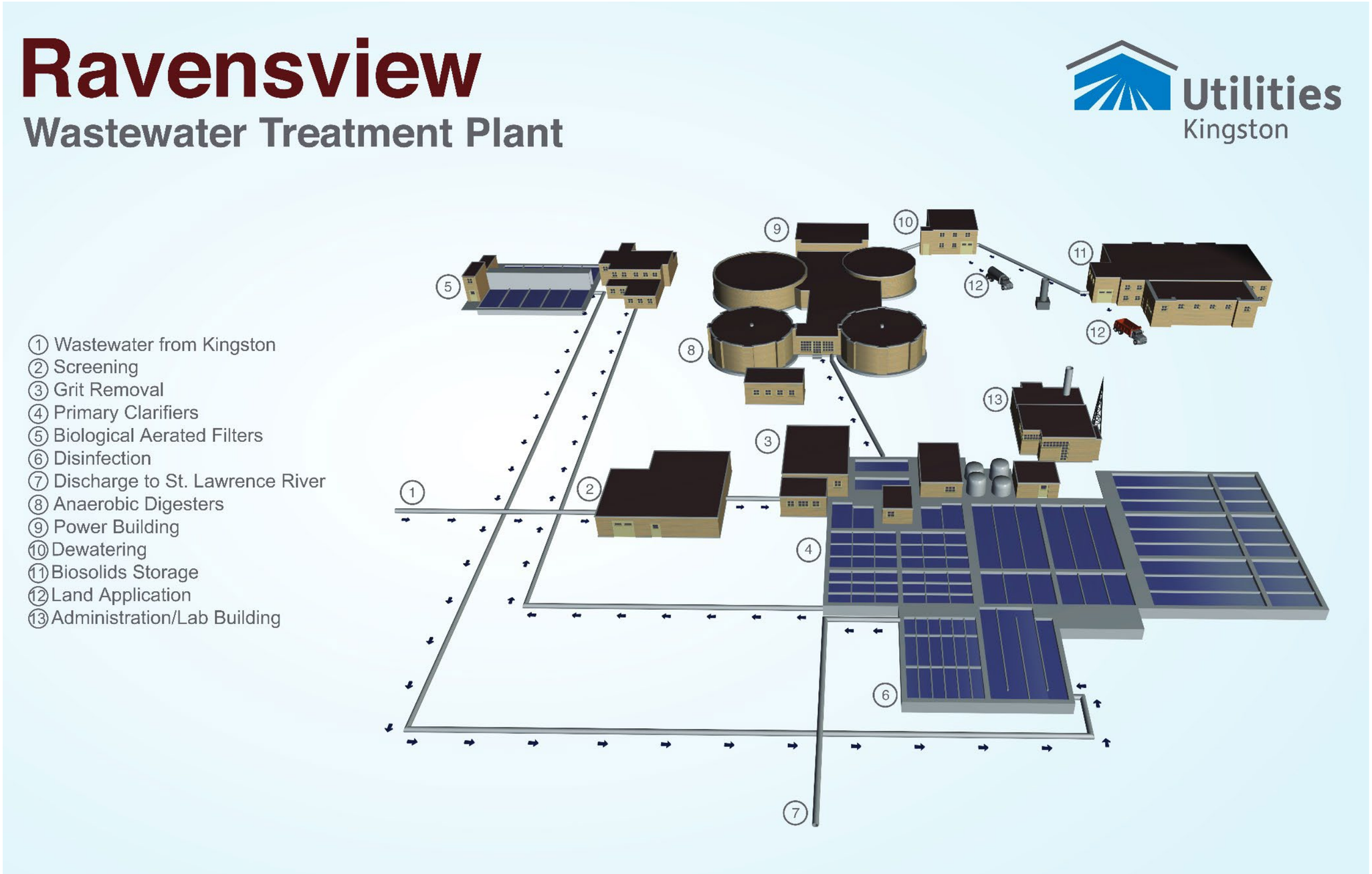
2.11 BIOSOLIDS STORAGE

The dry product, cake, that results from the treatment process is stored on site. The cake is then hauled by a third-party contractor and used on agricultural lands as a nutrient and soil conditioner when weather and crop conditions permit.

2.12 STANDBY EQUIPMENT

The power building houses two 575 Kilowatt (kW) electric back-up generators that are designed to run the water pollution control plant in the event of a power outage. These units are powered by 12-cylinder, low emission natural gas engines that will start automatically in the event of a power failure. The aforementioned Co-gen is a combined heat and power generator. This 8-cylinder engine is designed to work on natural gas, digester gas which has been cleaned and the moisture removed, or a blend of these two fuels. The Co-gen unit is designed to run continuously and produce 375 kW of electric power and 500 kW of heat reducing the amount of gas required to heat the digesters.

Figure 1 - Ravensview Water Pollution Control Plant General Layout



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3 OPERATION

Preventative maintenance and regular equipment inspections reduced equipment down time, and allowed operational problems to be diagnosed quickly and corrective actions to be taken immediately. Non flushable materials such as wipes, and grease continue to be prominent in the sewer system resulting in operational and maintenance challenges. Utilities Kingston continues to implement a public education program to educate customers and bring awareness to types of materials that should not be flushed down drains and toilets, and then into the sewers. This program included radio and newspaper campaigns, social media campaigns, bill stuffers, information on back of parking tickets, and bus information signs. This has been an ongoing campaign for many years with positive results.

Some of the larger operational challenges through 2025 are listed below.

In the winter, the coagulant supplier for Ravensview WPCP notified Utilities Kingston of an upcoming supply chain interruption for an unknown amount of time. The supplier provided alternate coagulant options, and staff performed testing to identify a suitable replacement. The test results revealed that the switch Ferric Sulphate was unlikely to impact plant performance, and the plant successfully switched from Ferric Chloride to Ferric Sulphate in late March.

Following routine maintenance on the coagulant system, the plant experienced lower than normal dosing of coagulant into the influent flow for 15 days. This occurred through the middle of November, leading to an exceedance of the monthly average effluent concentration limit of Total Phosphorous. To rectify the issue, safeguards have been put in place, including dosage calculations in the daily rounds sheet, to ensure a similar issue of this nature does not occur again or dramatically impact the performance of the plant.

4 INFLUENT AND SEPTAGE

Utilities Kingston monitors the raw influent sewage, as well as the imported sewage from the septage receiving station for several parameters throughout the year.

The concentration of the monitored parameters, biochemical oxygen demand (BOD), Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS), and Total Phosphorous (TP), in the sewage being received at the septage station has been increasing over the past several years. These higher concentrations lead to frequent operational challenges, including maintenance on the influent screening equipment, and increased costs associated with treating the wastewater. In the next calendar year there will be an increase in sampling frequencies, and verification of septage loads. This will ensure the treatment system is not impacted by the increasing concentrations of these parameters.

The concentration of the monitored parameters in the raw sewage has also been increasing over the past several years. Utilities Kingston, in keeping with the City of Kingston’s sewer separation plan, has been working towards separating the combined storm/sanitary sewers to reduce stormwater flows into the sanitary sewer system, and it’s possible that the reduced stormwater in the sanitary system could have an influence on the increased concentrations of these parameters. The average temperature of the sewage being received at the facility is also increasing and could also be an indicator of the reduced stormwater inputs which are typically colder than the raw sewage.

Annual average sample results for Septage Receiving from the past six years, and the 2025 annual average sample results for Raw Influent are shown in Tables 3 and 4 respectively.

5 PLANT PERFORMANCE

The ECA number 5556-BZFGZL lists the limits and objectives for the concentrations of certain effluent parameters, this is shown in Table 2. The effluent objectives listed in this table are the

concentrations Utilities Kingston are expected to be below. The effluent concentration limits listed in the table are the concentrations Utilities Kingston is required to be below. Ravensview WPCP exceeded one of the limits set out in the ECA in 2025. The issue with coagulant dosing mentioned above led to a monthly average effluent concentration of TP of 1.03 mg/l, exceeding the limit of 1.00 mg/l.

The tables below include several parameters that are monitored to satisfy ECA requirements, even though they do not have limits or objectives assigned to them. These metrics are essential for operational oversight and process control. This includes Nitrate Nitrogen which is produced during nitrification of Total Ammonia Nitrogen. Higher Nitrate Nitrogen concentrations are an indicator of complete nitrification occurring within the plant.

There were four samples throughout the year where plant effluent was below the pH objective of 6.50, but above the limit of 6.00. The annual average Final Effluent results can be seen in Table 5 and 6.

The average daily influent flow for the year was 55.6% of the rated capacity of the facility (95,000 m^3/day), this is below the average influent flow rates from the past 8 years. The monthly average chlorine residual in the final effluent did not exceed 0.01 mg/L for any month of the year, and the highest single measurement was 0.02 mg/l. All monthly effluent loading rates were below the limits set out in the ECA, the loading results can be found in Table 7 below. Raw Influent, Septage, Final Effluent, and Sludge/Biosolids samples were collected and submitted to a third-party laboratory at or above the required frequencies based on the ECA.

6 BIO-SOLIDS MANAGEMENT

Ravensview WPCP processed 62,655.60 m^3 of liquid sludge through the centrifuge. Approximately 3,536.58 Metric Tonnes of sludge cake was stored on site until GFL Environmental, contractor hired by Utilities Kingston, hauled the material off-site for land application. Ravensview WPCP produced less liquid sludge in 2025 than in 2024, however, almost the same amount of sludge cake was produced. Operational setpoints, digester performance, and centrifuge performance all factor into how much liquid and cake sludge is produced. A similar amount of sludge cake is expected to be produced next year.

The location and date of land application of the Bio-solids produced largely depends on weather, and the crops being grown on the receiving lands. Table 1 contains active spreading locations and their appropriate Non-Agricultural Source Materials (NASM) Plan.

7 MAINTENANCE

Staff continue to follow a preventative maintenance program in accordance with manufacturer's recommendations.

Additional Maintenance completed this year:

- Infrared scans of high voltage electrical was performed across the plant.
- Equipment and motors had routine vibration monitoring conducted.
- Backwash tanks were cleaned.
- Two digester transfer pumps were rebuilt.
- Inspection and maintenance of flare stack.
- Chain, flights, and sprocket replacement on four primary clarifier scum collectors.
- Final effluent water lines to septage were repaired.
- Septage screening auger maintenance.

8 CAPITAL WORKS

The major highlights for capital works were:

- A large bus duct between Motor Control Centre (MCC) 300 and 900 was replaced with cable.
- Two new BAF air compressors were installed.
- BAF blower Programmable Logic Controllers (PLC), and Human Machine Interfaces (HMI) were replaced.
- Two BAF blower cores were rebuilt.
- 11 digester gas valves were replaced.

9 EQUIPMENT CALIBRATION

Third party contractors calibrated all plant flow meters, online analyzers, and lab equipment. As a result, the facility saw limited downtime of major equipment and saw very few mechanical or electrical failures this year. Calibration records are available upon request.

10 COMPLAINTS

In the 2025 reporting year, the Ravensview WPCP received one complaint regarding odours from the facility. Staff had taken a primary clarifier offline and were beginning to clean the tank on the day of the complaint, and we believe this is the source of the odours. The tank was cleaned later that day, and no further complaints were received.

11 BYPASS & OVERFLOW SUMMARY

Ravensview WPCP had two secondary bypass events during the reporting year. A secondary bypass is when wastewater receives primary treatment but skips secondary treatment before returning to the process stream (disinfection in this case). The plant is designed to allow bypasses, to protect infrastructure and flooding. One event occurred during a heavy rain combined with snow melt. The second bypass occurred following an equipment failure. Staff quickly reset the equipment, and replaced a faulty piece of the system. There was a total volume of 1,809 m3 bypassed during these two events.

There were two spill events of unburnt digester gas to the environment totaling 557 m^3. The spills were reported to and/or planned with the Ministry of the Environment, Conservation and Parks (MECP).

The first event was a planned release of digester gas to facilitate the safe replacement of digester gas valves. Utilities Kingston notified and sent the plan to the MECP to receive approval for the release, and monitored the process closely.

The second event was a spill of unburnt digester gas to the atmosphere following a flare stack failure due to a failed pilot light during a power outage. The spill was reported to the MECP. Staff were able to reignite the flare stack, and a contractor was hired to service the flare stack to avoid future issues with the unit.

For further information about this report or any questions regarding accessibility, contact Tim Bourne at tbourne@utilitieskingston.com or call 613-546-1181 Ext 2190.

12 BIOSOLIDS RECIPIENTS

Table 1 – Biosolids Recipients

Non-Agricultural Source Materials Plan (NASM)	Address
25097	Lot 17-19 Concession 3 South Town of Greater Napanee
25097	Lot 14-15 Concession 4 South Town of Greater Napanee
62736	Lot 26-31 Concession 1 Stone Mills Township
25196	Lot 8-12 Concession 2 South Town of Greater Napanee
25209	Lot 50 Concession 4 Stone Mills Township
60616	Lot 13-14 Concession 2 Town of Greater Napanee

13 EFFLUENT OBJECTIVES AND LIMITS

Table 2 – Effluent Objectives and Limits

Effluent Parameter	Objective	Limits
CBOD5	15.00 mg/L (Monthly Average)	25.00 mg/L (Monthly Average)
Total Suspended Solids	15.00 mg/L (Monthly Average)	25.00 mg/L (Monthly Average)
Total Phosphorus	0.8 mg/L (Monthly Average)	1.00 mg/L
Total Ammonia Nitrate (Winter)	12.00 mg/L (October to May)	N/A
Total Ammonia Nitrate (Summer)	7.00 mg/L (June and September)	N/A
Total Ammonia Nitrate (Fall)	5.00 mg/L (July to August)	N/A
E. Coli	100 CFU/100mL	200 CFU/100mL
CBOD5 Monthly Average Daily Effluent Loading	N/A	2,375 kg/d
Total Suspended Solids Monthly Average Daily Effluent Loading	N/A	2,375 kg/d
Total Phosphorous Monthly Average Daily Effluent Loading	N/A	95 kg/d
Total Residual Chlorine	Non-detectable	0.02 mg/L (Single Sample Result)
pH	6.5-9.0	6.0-9.5

14 SEPTAGE RECEIVING

Table 3 – Septage Receiving

Parameter	2019	2020	2021	2022	2023	2024	2025
BOD5 (mg/L)	204	804	565	790	1476	1072	704
TP (mg/L)	360	29	22	53	99	30	39
TKN (mg/L)	7	548	227	299	564	287	322
TSS (mg/L)	114	1975	1213	995	3658	2334	2147

15 PLANT PERFORMANCE RESULTS

Table 4 – Raw Influent Results

(Monthly Average)

Month	BOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	pH	Temp (°C)
January	42	47	2.30	20.24	26.34	7.74	9.3
February	45	57	2.40	20.43	26.28	7.69	6.33
March	30	48	2.10	17.53	21.2	7.57	13.1
April	40	49	1.70	13.6	16.62	7.54	14.72
May	10	25	1.20	11.1	13.15	7.6	15.68
June	23	38	1.60	12.25	14.58	7.64	18.9
July	27	21	1.80	14.1	17.34	7.62	21.06
August	45	82	2.50	15.58	24.73	7.65	20.13
September	41	74	2.80	18.8	27.38	7.69	18.18
October	44	84	3.20	22.56	29.9	7.77	18.14
November	52	72	2.80	18.35	29.25	7.64	15.73
December	40	52	2.20	13.65	20.66	7.71	13.66
Annual Average	37	54	2.22	16.52	22.29	7.66	15.41

Table 5 – Final Effluent Results (Part 1)

(Monthly Average)

Month	CBOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Un-ionized Ammonia (mg/L)
January	1.90	4.50	0.47	3.82	0.02
February	2.70	5.70	0.66	5.41	0.03
March	2.90	5.90	0.39	3.47	0.01
April	1.80	4.70	0.32	1.6	0.01
May	1.70	3.90	0.32	1.78	0.01
June	3.00	3.40	0.39	1.49	0.01
July	2.60	5.00	0.57	3.57	0.02
August	1.90	6.20	0.58	2.91	0.02
September	2.30	11.50	0.61	6.94	0.03
October	2.70	8.90	0.59	5.83	0.03
November	3.00	8.50	1.03*	3.59	0.02
December	2.50	6.40	0.43	3.48	0.01
Annual Average	2.42	6.22	0.53	3.66	0.02

*Indicates an exceedance of the Monthly Average Effluent Concentration limit

Table 6 – Final Effluent Results (Part 2)

Month	pH	Temperature (°C)	E Coli (CFU/100mL)	Acute Lethality (Pass or Fail)	Total Residual Chlorine (mg/L)
January	7.16	13.68	2	Pass	0.00
February	7.05	10.03	2	N/A	0.00
March	6.96	14.65	11	N/A	0.00
April	6.93	15.8	9	Pass	0.01
May	7.05	16.78	13	N/A	0.00
June	7.24	18.69	48	N/A	0.01
July	7.12	20.94	71	Pass	0.01
August	7.08	20.69	24	N/A	0.01

Month	pH	Temperature (°C)	E Coli (CFU/100mL)	Acute Lethality (Pass or Fail)	Total Residual Chlorine (mg/L)
September	7	20.56	5	N/A	0.00
October	6.99	18.7	14	Pass	0.00
November	7.16	16.89	12	N/A	0.00
December	7.18	14.74	5	N/A	0.00
Annual Average	7.08	16.85	18.00	PASS	0.00

Table 7 – Effluent Loading Limits

Month	CBOD5 (kg/d)	Total Suspended Solids (kg/d)	Total Phosphorous (kg/d)
January	88.82	210	22
February	116.66	246	29
March	229.77	467	31
April	139.12	363	25
May	143.79	330	27
June	237.32	269	31
July	163.57	315	36
August	96.51	315	29
September	114.48	572	30
October	127.32	420	28
November	146.84	416	50
December	140.40	359	24
Annual Average	145	357	30

Table 8 – Monthly Plant Influent Flows

Month	Rated Capacity Average Daily Flow (m3/day)	Average Daily Flow (m3/day)	Approved Peak Daily Flow (m3/day)	Peak Daily Flow (m3/day)
January	95,000	44,074	193,000	62,441
February	95,000	41,102	193,000	48,934
March	95,000	70,624	193,000	134,325
April	95,000	65,745	193,000	119,342
May	95,000	71,219	193,000	139,893
June	95,000	63,765	193,000	90,000
July	95,000	50,819	193,000	59,939
August	95,000	43,315	193,000	54,909
September	95,000	41,880	193,000	49,052
October	95,000	40,295	193,000	76,606
November	95,000	49,021	193,000	68,778
December	95,000	50,770	193,000	106,987

Table 9 – Annual Plant Influent Flows

Parameter	2019	2020	2021	2022	2023	2024	2025
Average (m3/day)	77,265	59,435	57,278	68,505	61,303	52,292	52,788
Max (m3/day)	160,459	141,016	146,486	153,434	148,549	129,380	139,893
Design (m3/day)	95,000	95,000	95,000	95,000	95,000	95,000	95,000
Design Peak (m3/day)	193,000	193,000	193,000	193,000	193,000	193,000	193,000
Daily/Design (%)	81.3	62.6	60.3	72.1	64.5	55.0	55.6
Max/Peak (%)	83.1	73.1	75.9	79.5	77.0	67.0	72.5

CATARAQUI BAY
WATER POLLUTION CONTROL PLANT
2025 ANNUAL REPORT

Environmental Compliance Approval Number: 2497-CYPPUP
Wastewater Collection System Owner: City of Kingston
Wastewater Treatment Facility Classification: Class IV

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

Cataraqui Bay Water Pollution Control Plant (WPCP) operates under Ministry of the Environment, Conservation and Parks, Environmental Compliance Approval (ECA) number 2497-CYPPUP, issued to the owner, the Corporation of the City of Kingston. This report is to satisfy the requirements outlined in condition 11 of the aforementioned ECA. The facility was compliant with all conditions outlined in condition 7 of the above-mentioned ECA during 2025.

The sewage works has a rated capacity for an average daily flow of 55,000 m^3/d, and a peak daily flow of 141,600 m^3/d. The average daily raw influent flow into the plant was 25,483 m3/d, the maximum daily flow into the plant was 74,650 m^3/d, and the total flow received by the plant was 9,317,209.06 m^3 in 2025.

There were no bypass events at Cataraqui Bay WPCP.

There was a spill of digested sludge from a digester, and two spills of unburnt digester gas in 2025.

Planned and reactive maintenance as well as planned and unplanned capital works at the facility were undertaken throughout the year.

2 PLANT DESCRIPTION AND TREATMENT PROCESS

The following is a process overview and description of the treatment steps taken at the Cataraqui Bay WPCP.

2.1 SCREENING

The first step in the treatment process is screening, where large particles and floating debris such as wood, rags and plastics are removed from the raw wastewater. There are two active 6 mm diameter perforated plate fine screens each in a 2 m wide channel. Screenings are conveyed to a common wash/compactor prior to being discharged in a screening disposal bin. A coarse bar screen is located in a third manual bypass channel, as well as a fourth channel containing an overflow weir (hydraulic bypass of the screens) for emergency purposes only.

2.2 GRIT REMOVAL

The second step of preliminary treatment is grit removal. During this process, heavier solids in the wastewater settle, while the organics that require treatment stay in suspension and move on to the next step of the treatment process. The system is made up of two vortex grit removal tanks equipped with a paddle mixer, and a slurry pump in each tank. The grit is pumped to two grit classifiers used to de-water the grit slurry and discharge the grit into grit disposal bins.

2.3 PRIMARY TREATMENT CHEMICAL FEED

Immediately after the grit vortex tanks, the coagulant Ferric Chloride is added to the stream of wastewater. Chemically assisted coagulation is used to improve the removal of Phosphorous and Suspended Solids in the wastewater. Two chemical storage tanks feed two chemical feed pumps used to dose Ferric Chloride paced to the flow of liquid.

2.4 FLOW SPLITTING

The screened and de-gritted wastewater discharges into a channel where the flow is divided into two parshall flume flow meter channels. The flow is then split into a primary inlet channel leading to four identical primary clarifiers. Centrifugal blowers provide aeration to the primary influent channel to prevent settling in the channels.

2.5 PRIMARY CLARIFIERS

Four primary clarifiers make up the primary treatment system. Heavier organics settle by gravity to the bottom of the primary clarifiers. This forms a sludge blanket on the bottom of the tank. The settled sludge is collected by collector flights and scraped into a hopper at the end of the tank. Floating scum and grease is removed by surface skimmers located near the end of each clarifier. The settled sludge, and scum and grease, is then pumped to digestion facilities for further treatment.

2.6 BIOLOGICAL AERATED FILTERS

Primary effluent flows down a channel to a Primary Effluent Pumping Station (PEPS) composed of two wet wells and four submersible pumps. Primary effluent is pumped to the Biological Aerated Filter (BAF) Influent Channel. A supplemental alkalinity feed system is required to ensure adequate nitrification while maintaining an acceptable pH in the BAF effluent water. The alkalinity feed system is made up of four storage tanks, and two chemical feed pumps, and is dosed just after the discharge from the PEPS. The BAF is made up of six available cells with a common influent channel which then runs down to the bottom of each cell and filters upwards through two unique sets of media. The two types of media are: polystyrene beads, and K5 hard plastic honeycomb disks. The media is held in place below the top deck of the filter with nozzles which let filtered water out and hold the floating media in. In the filter the wastewater is aerated, this encourages growth of microorganisms which consume carbon dissolved in the wastewater, as well as reducing ammonia and phosphorus. The media is meant to provide a location for microorganisms, referred to as biomass, to grow, the media also helps to filter any suspended materials.

2.7 BACKWASH

The Biological Aerated Filters require regular backwashes to remove excess biomass from the media. Backwash residuals from the filters flows into two backwash residual tanks for temporary storage of the backwash water. The facility has the option to either co-thicken the backwash residuals by adding the backwash water to the primary inlet channel, or to feed the backwash residuals to two gravity thickeners. Alum is added to the backwash water as it is pumped out of the backwash residual tanks. The gravity thickeners are two clarifiers designed to allow solids to settle out and allow the supernatant to flow back and mix with the primary effluent ahead of the primary effluent pumping station. The solids from the gravity thickeners are pumped to a sludge thickening facility. The sludge thickening facility consists of two rectangular holding tanks, two Rotating Drum Thickeners (RDT's), and a polymer system. The thickening system increases the solids concentration of the residuals prior to being pumped to the primary digester. The filtrate from the RDT's is pumped back to the primary inlet channel.

2.8 DISINFECTION

Effluent from the BAF facility flows through a parshall flume to calculate the flow of water into the chlorine contact tank. A chlorine gas system provides chlorine for disinfection prior to entering the chlorine contact tank. The chlorine system is composed of two sets of large and small chlorinators dosing a chlorinated water solution to the BAF effluent stream. Two chlorine contact tanks provide contact time to adequately disinfect the effluent water.

2.9 DECHLORINATION SYSTEM

An effluent dechlorination system using Calcium Thiosulphate removes chlorine from the water prior to discharge into Lake Ontario. The system is made up of two metering pumps, and one chemical

storage tank. The Calcium Thiosulphate is dosed into the effluent in the outfall chamber immediately after the final effluent flow meter.

2.10 OUTFALL

After de-chlorination, the disinfected effluent from the chlorine contact tank is discharged back to Lake Ontario through a 1500 mm and a 900 mm outfall. 17 diffusers are installed at the end of each of the outfall pipes and are located 25 m offshore and 16 m below water surface level.

2.11 SLUDGE DIGESTION

Raw sludge, grease and scum, and thickened backwash residuals are pumped to the primary digester in regular intervals throughout the day. The sludge digestion facilities are composed of two anaerobic digesters with an interconnected digester gas system, one digested sludge holding tank, transfer, and mixing pumps, and a heat exchanger. Inside the digesters, the mixture is heated to approximately 36 °C to allow microorganisms to grow and consume carbon, producing methane gas and carbon dioxide. The digesters use recirculated digester gas and sludge, which has been heated through the heat exchanger, for mixing and to maintain optimal temperatures. The anaerobic digestion process produces gas and biosolids. The gas produced is rich in methane, which is used as fuel for the boiler system which in turn provides heat for the digestion process, and buildings within the facility. The biosolids produced through sludge digestion are dewatered and used on agricultural lands as a nutrient and soil conditioner when weather and crop conditions permit.

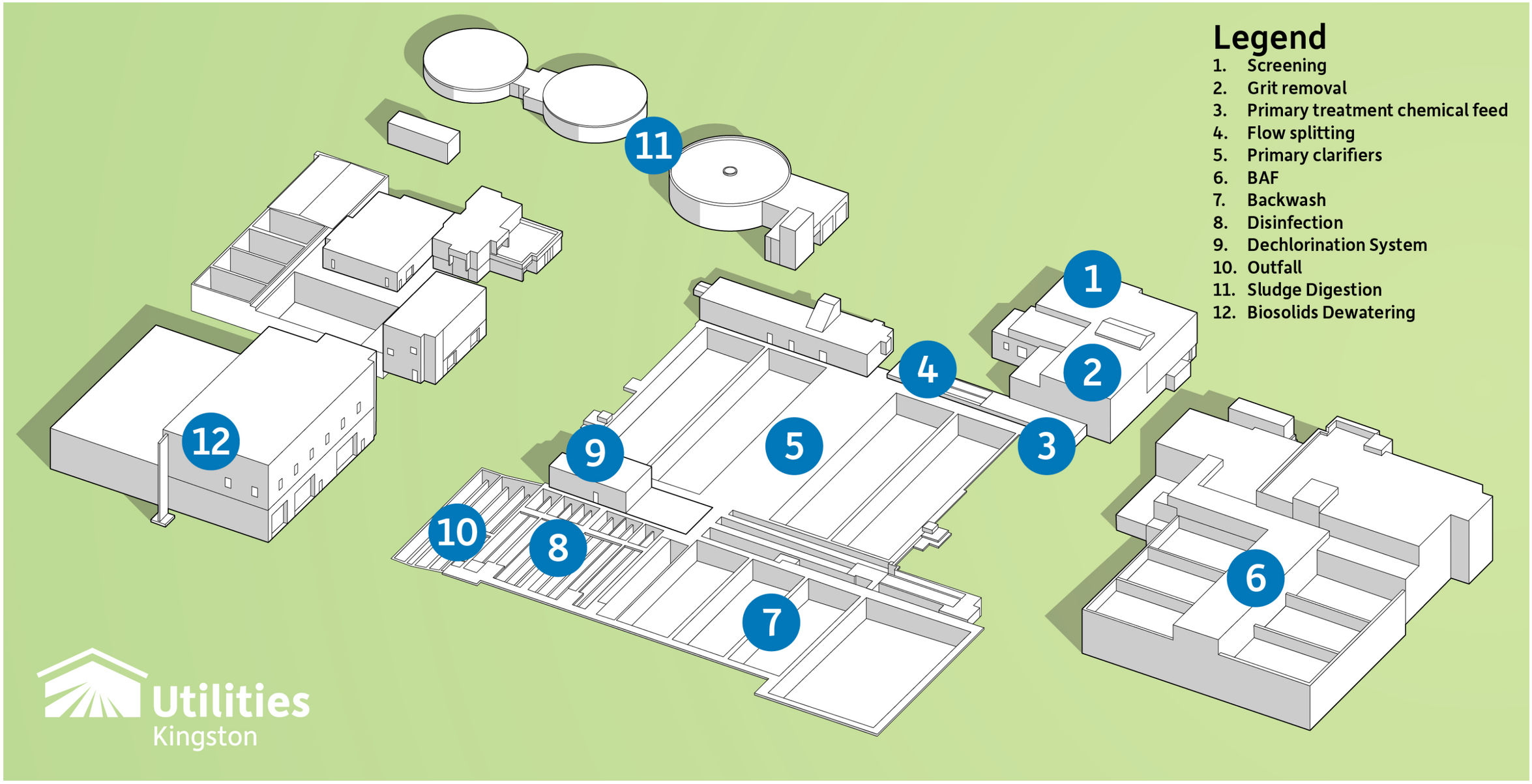
2.12 BIOSOLIDS DEWATERING

The dewatering facility is made up of two sludge feed pumps, a polymer preparation and feed system, two centrifuges with a capacity of dewatering 50 m^3/hour, two screw conveyors, two biosolids storage bunkers, a centrate pumping station, two centrate equalization tanks with two centrate pumps. Liquid biosolids, which are about 1.5-2% solids, are pumped from the holding tank into 2 centrifuges. Polymer is added to the biosolids before it enters the centrifuge, this helps the solids stick together, aiding the dewatering process. The centrifuge spins at a high-speed, forcing solids to the outer drum. This separates the solids, referred to as cake, from the liquid, called centrate. The cake, which now has a solids content of about 24%, is conveyed to a shoot and dropped into the storage bunkers. The centrate, which contains many nutrients and some microorganisms, is returned to the headworks for treatment.

2.13 MISCELLANEOUS

The Cataraqui Bay WPCP has miscellaneous infrastructure required to support continued effective treatment of incoming Wastewater. This includes many controls, electrical power equipment, instrumentation, boilers, and emergency power generation for the entire facility.

Figure 1 – Cataraqui Bay Water Pollution Control Plant General Layout



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3 OPERATION

Adequate staffing as well as preventative maintenance, and regular equipment inspections resulted in minimal disruptions to the operation of the plant. Non flushable materials such as wipes, and grease continue to be prominent in the sewer system resulting in operational and maintenance challenges. Utilities Kingston continues to implement a public education program to educate customers and bring awareness to types of materials that should not be flushed down drains and toilets, and then into the sewers. This program included radio and newspaper campaigns, social media campaigns, bill stuffers, information on back of parking tickets, and bus information signs. This has been an ongoing campaign for many years with positive results.

The pilot headworks polymer system continued through 2025 to investigate the effectiveness of the system through each of the four seasons, see Figure 2 for the Notice of Modification to Sewage Works. This polymer system was implemented as a response to the operational difficulties and increased effluent concentrations experienced in 2023. The system has been online since May 2024, and operators have noted improved effluent concentrations during this time. Laboratory data and observations have been monitored closely during the pilot period. A permanent polymer system has been budgeted for 2026.

Operational challenges of significance experienced in 2025 are listed below:

In May 2025, Digester 2 had an entry hatch fail at the base of the digester. This resulted in the uncontrolled draining of the entire digester. Upon discovery of the spill and associated failure of the hatch, staff set up an emergency pumping system to pump the incoming sludge out of the hatch area and into the holding tank beside the digester. This limited the volume of spilled sludge to 56 m^3. Following this event, the digester was cleaned and prepped for work to bring the digester back online. The wash water from the cleanout process was returned to the head of the primary clarifiers which greatly increased the concentration of Total Suspended Solids (TSS) received by the primary clarifiers, and resulted in elevated TSS in the plant effluent. The gas production in the remaining digester dropped following this process, likely due to the introduction of old biomass from the cleanout as well as reduced digestion with digester 2 offline. The issues were addressed with ongoing, careful monitoring of chemical dosages, and proactive maintenance on the digester gas system.

Following maintenance on the nozzle deck of BAF cell number 4, biomass was re-established in the cell which ensured adequate nitrification could be achieved when the cell was brought back online. The efforts resulted in minimal impacts to the treatment process and final effluent quality upon startup.

Through the summer and fall of 2025, Cataraqui Bay WPCP experienced extremely low influent flows. Operators made many process adjustments including taking two primary clarifiers offline, and reducing backwash frequencies to ensure plant effluent met the required limits.

The digester gas flare stack continued to encounter operational difficulties during high wind weather events. Staff proactively redistribute gas usage throughout the plant to ensure the flare stack receives a strong flow of gas and remains lit during these weather events. The facility did not see any digester gas spills from the flare stack in 2025.

4 PLANT PERFORMANCE

The ECA number 2497-CYPPUP lists the limits and objectives for the concentrations of certain effluent parameters, this is shown in Table 2. The effluent objectives listed in this table are the concentrations Utilities Kingston are expected to be below. The effluent concentration limits listed in the table are the concentrations Utilities Kingston are required to be below. The Cataraqui Bay WPCP

was compliant with all monthly average effluent limits. The 2025 monthly average effluent monitoring results can be found on Tables 4 and 5.

The plant exceeded the average monthly concentration objective of TSS, Total Phosphorous (TP), and the E. Coli parameters once each, in different months through 2025 (Tables 4 and 5). Operational adjustments were made and each of those objective exceedances were corrected for the following month.

The tables below include several parameters that are monitored to satisfy ECA requirements, even though they do not have limits or objectives assigned to them. These metrics are essential for operational oversight and process control. This includes Nitrate Nitrogen which is produced during nitrification of Total Ammonia Nitrogen. Higher Nitrate Nitrogen concentrations are an indicator of complete nitrification occurring within the plant.

The chlorine residual in the final effluent did not exceed the monthly average limit of 0.04 mg/L for any month of the year.

No other parameters were above their limit or objective.

The treatment process is monitored through in-house laboratory work on a regular basis throughout each week. This allows operations staff to react to any issues quickly and effectively.

The concentration of raw influent into the plant remains consistent throughout the year, however during the wet seasons concentrations are somewhat reduced. This increase indicates some infiltration of ground water, or potentially illegal sump pump connections to the sanitary collection system. Annual raw influent monitoring results can be seen in Table 3. Raw Influent, and Final Effluent samples were collected and submitted to a third-party laboratory at or above the required frequencies based on the ECA. The average daily flow into the treatment plant was 46.3% of the design capacity (55,000 m3/day). Table 8 shows the average annual plant flows for the past 7 years. The monthly flows as well as the peak daily flow from each month are displayed in Table 6.

5 BIO-SOLIDS MANAGEMENT

Cataraqui Bay WPCP processed 57,904 m^3 of liquid sludge through the centrifuge. Approximately 2,988 Metric Tonnes of sludge cake was stored on site until GFL Environmental, contractor hired by Utilities Kingston, hauled the material off-site for land application.

The location and date of land application of the bio-solids produced largely depends on weather, and the crops being grown on the receiving lands. Table 1 contains the Non-Agricultural Source Materials (NASM) Plan numbers and addresses of receiving lands for bio-solids produced by the City of Kingston.

6 MAINTENANCE

Staff continue to follow a preventative maintenance program in accordance with the manufacturer's recommendations.

Additional Maintenance completed this year:

- Infrared scans of HV electrical were performed across the plant.
- Equipment and motors had routine vibration monitoring conducted.
- The onsite diesel generator was serviced and received routine maintenance.
- Two new influent pH probes installed.
- Inspection of BAF Cell 4 nozzle deck, and replacement of broken nozzles.
- Heat trace installed on scum pump discharges.
- Primary clarifier tanks 1, 3, and 4 inspections and repairs.
- Installation of a new primary digester heat exchanger.

- The drive end bearing was replaced on a centrifuge.
- A new chlorine regulator for chlorine gas system was installed.
- Completed all digester gas system equipment inspections and testing in accordance with Technical Standards and Safety Authority (TSSA) requirements.

7 CAPITAL WORKS

Capital works on the Cataraqui Bay WPCP in 2025 include:

- Digester 2 cleanout, roof rehab, and inspection.
- New refrigerant dryer installed for BAF compressor system.
- One of the primary effluent pumps was rebuilt.
- BAF blower 3 was serviced and rebuilt.
- Purchase of emergency standby 6” portable pump.
- Motor Control Centre (MCC) and Programmable Logic Controller (PLC) battery replacements.
- A failed centrate mixer was replaced.

8 EQUIPMENT CALIBRATIONS

Third party contractors calibrated all plant flow meters, online analyzers, and lab equipment. As a result, the facility saw limited downtime of major equipment and saw very few mechanical or electrical failures this year. Calibration records are available upon request.

9 COMPLAINTS

In the 2025 reporting year, the Cataraqui Bay WPCP received no official complaints regarding the facility or treatment process.

10 BYPASS AND SPILL SUMMARY

There were no secondary treatment bypasses at the Cataraqui Bay WPCP in 2025.

The failure of an entryway hatch resulted in the spill of 56 m^3 of liquid sludge from Digester 2. The spill was contained and a contractor was hired to clean up the spilled sludge and restore the surrounding area. Digester 2 remains offline and Utilities Kingston has begun the process of rehabilitating the digester to put it back into service. In addition to the spill of liquid sludge, during the same event there was a spill of unburnt digester gas.

There were two spill events of unburnt digester gas to the environment totaling 360 m^3. Both spills were reported to the MECP. One as detailed above occurred that the same time as the spill of liquid sludge from Digester 2, and the other release was experienced during a routine maintenance procedure. Condensation was being released from the gas system, and a drain valve was left open, which led to the release of digester gas. The leak was identified and the valve was closed within 1 hour.

11 BYPASS RESULT INTERPRETATIONS

As noted above there were no bypasses at the Cataraqui Bay WPCP in 2025. However, it should be noted that bypass discharges have a high bacteria count due to the lack of disinfection. $CBOD_5$, TP, and TSS results are typical raw sewage influent levels. When bypasses occur, best efforts are made to capture the debris contained in any discharges to the lake. After each bypass event, shoreline inspections near discharge points are done to monitor any debris that may come ashore, and clean-up is done if debris is found.

For further information about this report or any questions regarding accessibility, contact Tim Bourne at tbourne@utilitieskingston.com or call 613-546-1181 Ext 2190.

12 BIOSOLIDS RECIPIENTS

Table 1 – Biosolids Recipients

Non-Agricultural Source Materials (NASM) Plan	Address
60616	Lot 13-14 Concession 2 Town of Greater Napanee
60616	Lot 13 Concession 3 Town of Greater Napanee
25209	Lot 50 Concession 4 Stone Mills Township
60611	Lot 37-38 Concession 4 Stone Mills Township

13 EFFLUENT OBJECTIVES AND LIMITS

Table 2 – Effluent Objectives and Limits

Effluent Parameter	Objective	Limits
CBOD5	15.00 mg/L (Monthly Average)	25.00 mg/L (Monthly Average)
Total Suspended Solids	15.00 mg/L (Monthly Average)	25.00 mg/L (Monthly Average)
Total Phosphorus	0.80 mg/L (Monthly Average)	1.00 mg/L (Monthly Average)
Total Ammonia Nitrogen (TAN) Summer (June 1 to November 30)	6.0 mg/L	8.0 mg/L
Total Ammonia Nitrogen (TAN) Winter (December 1 - May 31)	12.0 mg/L	15.0 mg/L
Total Chorine Residual	Non Detectable	0.04 mg/L
E. Coli	100 CFU/100mL	200 CFU/100mL
pH	6.5 - 8.5	6.0 - 9.0

14 PLANT PERFORMANCE RESULTS

Table 3 – Raw Influent Results

(Monthly Average)

Month	BOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	pH
January	234.00	140.00	3.20	23.54	37.74	7.32
February	232.00	219.00	4.00	28.25	43.60	7.33
March	229.00	226.00	4.10	17.50	30.35	7.31
April	144.00	139.00	2.50	16.23	26.00	7.52
May	141.00	139.00	3.10	15.60	28.13	7.45
June	149.00	156.00	3.60	20.53	33.15	7.33
July	233.00	368.00	7.90	25.80	50.50	7.21
August	227.00	238.00	4.70	26.98	48.28	6.98
September	247.00	225.00	4.40	26.90	47.13	7.15
October	241.00	215.00	5.40	29.72	50.88	7.25
November	173.00	254.00	3.60	18.28	33.25	7.38
December	172.00	189.00	3.30	17.94	31.52	7.49
Annual Average	201.83	209.00	4.15	22.27	38.38	7.31

Table 4 – Monthly Effluent Concentrations (Part 1)

(Monthly Average)

Month	CBOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorous (mg/L)	Total Ammonia Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)
January	5.00	11.80	0.57	6.15	7.84
February	8.00	22.80*	0.77	7.43	11.38
March	2.80	7.00	0.31	1.03	3.05
April	2.10	6.40	0.36	1.80	3.54
May	2.10	5.90	0.53	0.87	2.65
June	1.90	6.80	0.62	1.59	3.10
July	2.00	4.20	0.58	1.54	3.78
August	5.30	14.80	0.90*	6.88	9.35
September	2.60	10.00	0.57	3.38	5.80
October	4.30	13.00	0.71	3.53	7.82
November	3.00	6.50	0.52	1.72	3.73
December	2.90	8.40	0.61	1.78	3.72
Annual Average	3.50	9.80	0.59	3.14	5.48

*Indicates an exceedance of the Monthly Average Effluent Concentration objective

Table 5 – Monthly Effluent Concentrations (Part 2)

(Monthly Average)

Month	Nitrate	Nitrite	E. Coli	pH	Total Residual Chlorine (mg/L)	Acute Lethality (Pass or Fail)
January	22.46	0.15	4	7.29	0.01	PASS
February	20.03	0.11	12	7.25	0.01	N/A
March	17.63	0.04	11	7.35	0.01	N/A
April	18.42	0.21	18	7.42	0.00	PASS
May	18.83	0.20	17	7.31	0.01	N/A
June	20.45	0.32	16	7.32	0.01	N/A
July	26.02	0.29	13	7.18	0.01	PASS
August	25.40	0.33	72	7.23	0.01	N/A
September	28.28	0.51	15	7.43	0.01	N/A
October	26.16	0.48	16	7.41	0.01	PASS
November	21.33	0.24	23	7.50	0.01	N/A
December	16.28	0.38	111*	7.28	0.01	N/A
Annual Average	21.77	0.27	27	7.33	0.01	N/A

*Indicates an exceedance of the Monthly Average Effluent Concentration objective

Table 6 – Monthly Flows

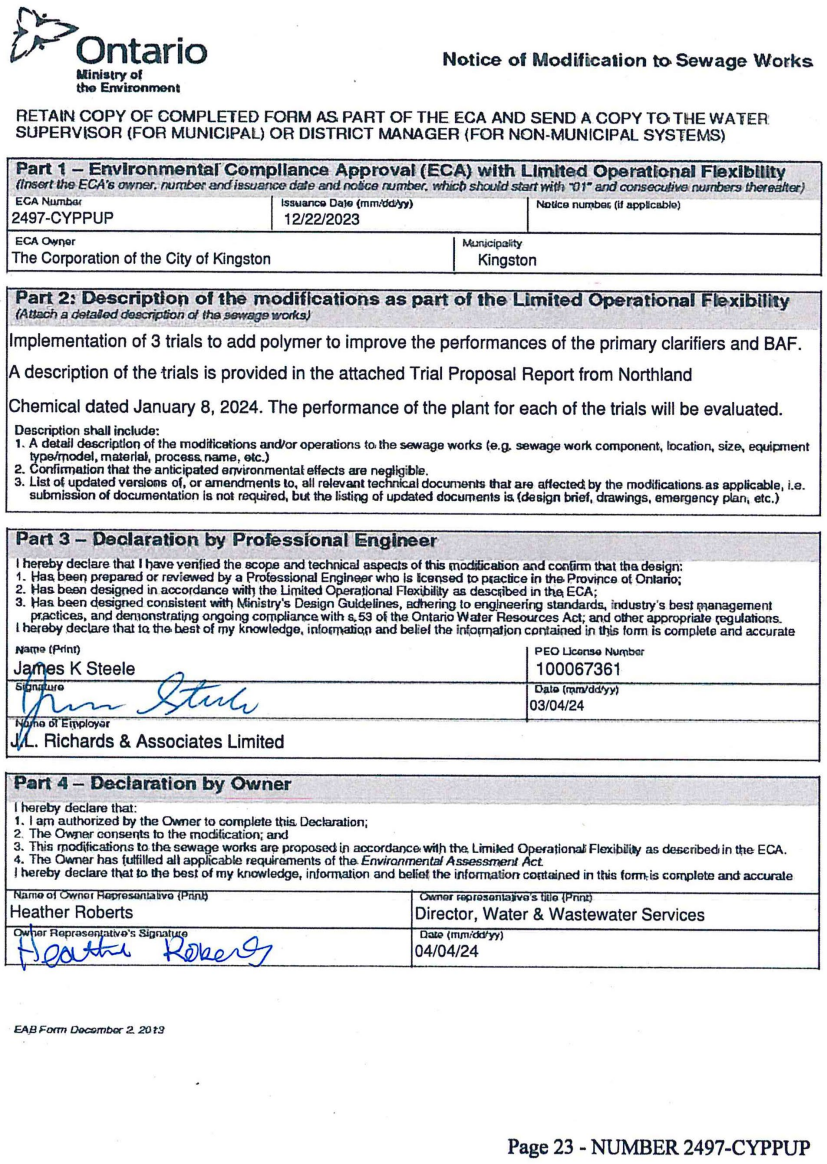
Month	Rated Capacity (m3/day)	Average Flow (m3/day)	Approved Peak Flow (m3/day)	Peak Flow (m3/day)
January	55,000	23,362	141,600	37,191
February	55,000	19,016	141,600	21,792
March	55,000	37,812	141,600	74,650
April	55,000	33,618	141,600	62,996
May	55,000	32,724	141,600	61,228
June	55,000	26,050	141,600	35,580
July	55,000	20,141	141,600	26,574
August	55,000	18,407	141,600	21,595
September	55,000	18,334	141,600	20,055
October	55,000	20,451	141,600	37,067
November	55,000	26,487	141,600	37,498
December	55,000	28,855	141,600	58,011

Table 7 – Annual Plant Flows

Parameter	2019	2020	2021	2022	2023	2024	2025
Average (m3/day)	29,251	27,189	27,225	29,381	28,707	25,890	25,483
Max (m3/day)	91,976	82,297	51,566	88,225	108,514	80,178	74,650
Design (m3/day)	38,800	38,800	38,800	38,800	38,800	55,000	55,000
Design Peak (m3/day)	134,400	134,400	134,400	134,400	134,400	141,600	141,600
Daily/Design (%)	75.4	70.1	70.2	75.7	74.0	47.1	46.3
Max/Peak (%)	68.4	61.2	38.4	65.6	80.7	56.6	52.7

15 NOTICE OF MODIFICATIONS TO SEWAGE WORKS

Figure 2 – Notice of Modification to Sewage Works



Ontario
Ministry of the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility
(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
2497-CYPPUP	12/22/2023	

ECA Owner	Municipality
The Corporation of the City of Kingston	Kingston

Part 2: Description of the modifications as part of the Limited Operational Flexibility
(Attach a detailed description of the sewage works)

Implementation of 3 trials to add polymer to improve the performances of the primary clarifiers and BAF.

A description of the trials is provided in the attached Trial Proposal Report from Northland

Chemical dated January 8, 2024. The performance of the plant for each of the trials will be evaluated.

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
James K Steele	100067361
Signature	Date (mm/dd/yy)
	03/04/24
Name of Employer	
J.L. Richards & Associates Limited	

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Heather Roberts	Director, Water & Wastewater Services
Owner Representative's Signature	Date (mm/dd/yy)
	04/04/24

EAB Form December 2, 2013

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CANA WATER POLLUTION CONTROL PLANT
2025 ANNUAL REPORT

Environmental Compliance Approval Number: 4021-9WUKDE
Wastewater Collection System Owner: City of Kingston
Wastewater Treatment Facility Classification: Class II

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1 EXECUTIVE SUMMARY

Cana Water Pollution Control Plant (WPCP) operates under Ministry of the Environment, Conservation and Parks, Environmental Compliance Approval (ECA) number 4021-9WUKDE, issued to the owner, the Corporation of the City of Kingston. This report is to satisfy the requirements of condition 11 of the aforementioned ECA. The facility did not exceed any of the effluent limits outlined in condition 7 of the above-mentioned ECA during 2025.

The sewage works has a rated capacity of 125 m^3/d, and a maximum day design flow of 200 m^3/d. The average flow through the plant was 50.15 m^3/d, the maximum daily flow through the plant was 189 m^3/d, and the total flow through the plant was 18,303 m^3 in 2025.

2 PLANT OVERVIEW

The following is a process overview and description of the treatment steps taken at the Cana WPCP.

2.1 RAW SEWAGE PUMPING STATION

A pre-cast concrete wet well accepts sewage flows from the existing sewer system for the Cana Subdivision. The wet well has two pumps which discharge into the preliminary treatment unit.

2.2 PRELIMINARY TREATMENT UNIT

Preliminary treatment involves the removal of large particles and floating debris such as wood, rags, and plastics from the raw sewage. This is accomplished with a manual bar screen installed inside a splitter box.

2.3 SECONDARY TREATMENT UNIT

The sewage flows through the splitter box and bar screen and then discharges into the two Sequencing Batch Reactors (SBR). Each reactor is essentially an activated sludge process with aeration and settling taking place in the same tank. The decanted effluent from the SBR is then stabilized in a Post Equalization Tank. The sludge that settles out in the SBR is then pumped directly to the Digester.

2.4 POST EQUALIZATION TANK

The Post Equalization Tank collects the decanted water from the Sequencing Batch Reactors and discharges to the tertiary filter system.

2.5 CHEMICAL DOSING SYSTEMS

Phosphorus removal is accomplished using Aluminum Sulfate, which is injected directly into the splitter box during pump cycles.

2.6 TERTIARY FILTRATION UNIT

The discharge of the post equalization tanks goes into a continuous backwash up-flow sand filter to polish the water before going through the ultraviolet disinfection system. Filtrate then passes through one of the two Ultraviolet (UV) disinfection units.

2.7 UV DISINFECTION

The filtrate then passes through one of the two UV disinfection units. Each unit can handle the maximum flow of 200 m^3/day.

2.8 OUTFALL

The treated effluent from the plant is discharged into a 27.9 m long pipe into an existing creek which flows into Colonel By Lake.

2.9 BUILDING AND CONTROL ROOM

There is one building that houses the tertiary filtration unit, chemical dosing systems, blowers, and all associated electrical equipment.

2.10 DIGESTER UNIT

The waste sludge generated from the SBRs is pumped into the digester for stabilization and storage. The digester supernatant is returned to the influent manhole, and the sludge is hauled as required to Ravensview WPCP in the City of Kingston for further treatment.

2.11 STANDBY EQUIPMENT

A diesel generator on the property of the Cana WPCP provides backup electrical supply in case of power outages. This generator is directly connected to both the Cana Water and Cana Wastewater facilities and is capable of fully powering both systems in the event of a power outage.

3 MONITORING DATA

All required samples were collected and sent to a third-party laboratory for testing. The semiannual upstream surface water monitoring sample could not be collected in October due to a lack of flow in the existing water course. The downstream sample was collected in October, and both the upstream and downstream samples were collected in April, and the results are shown in Tables 5 and 6.

Monthly plant flows can be found in Table 10. Flows into all the WPCP's being operated by Utilities Kingston were below average in 2025. These low flows most likely are a result of the very low amounts of rainfall through the end of the summer and fall. Flow data over the past several years (Table 9) indicate that the system has been experiencing significantly elevated flows during rain events. A large project to reline pipes (a trenchless pipe repair) in the Cana WPCP collection system was completed at the end of the spring. This has shown to have significantly reduced the amount of groundwater infiltration into the collection system.

Raw influent laboratory results (Table 2) were monitored throughout the year and were used to help make operational decisions.

The ECA number 4021-9WUKDE lists the limits and objectives for the concentrations of certain effluent parameters, this is shown in Table 1. The effluent objectives listed in this table are the concentrations Utilities Kingston is expected to be below. The effluent concentration limits listed in the table are the concentrations Utilities Kingston are required to be below. There were no exceedances of the limits set out in the ECA in 2025. Monthly average effluent concentrations for all required sampling parameters are listed in Tables 3 and 4. There were several months when the Total Suspended Solids (TSS), and Total Phosphorous (TP) concentrations exceeded the effluent objectives. All other effluent parameters with objectives set out in the ECA maintained monthly average concentrations below the objectives. Staff regularly perform in-house laboratory sampling to optimize the treatment process, and continue to work to maintain limits and objectives for effluent concentrations.

The tables below include several parameters that are monitored to satisfy ECA requirements, even though they do not have limits or objectives assigned to them. These metrics are essential for operational oversight and process control. This includes Nitrate Nitrogen which is produced during

nitrification of Total Ammonia Nitrogen. Higher Nitrate Nitrogen concentrations are an indicator of complete nitrification occurring within the plant.

4 OPERATION

Staff continued to optimize the plant process to ensure continuous and reliable operations at the Cana WPCP. The raw sewage pumping station is regularly cleaned out to reduce the loading to the plant and improve the effluent quality.

In January, operators discovered the lines to the sludge tanks to be frozen which caused operational difficulties. However, operators responded and were able to thaw the lines and bring the system back online. In addition, a project was undertaken to heat trace and insulate all of the sludge lines following this incident.

In the spring, the plant saw significant flows during a high rain event. The facility was unable to keep up with the flows, and vacuum trucks were contracted to haul excess influent to the Ravensview WPCP for treatment. This contingency activity avoided a sewage bypass of the treatment system.

The sand in the tertiary treatment system was replaced in October, which will improve flow rates through the media and filter performance. However, the replacement initially resulted in elevated TSS in the effluent as the filter matured, leading to an exceedance of the monthly average effluent TSS concentration objective. After 3 weeks, the monthly average effluent concentration of TSS returned to results being below the limit.

5 BIOSOLIDS MANAGEMENT

There were 11 loads, totaling 120 m^3 in volume, of sludge collected and brought to the Ravensview WPCP septage receiving facility. The volume of sludge hauled in 2025 increased significantly compared to 2024. The difference was primarily driven by ongoing plant maintenance, which required sludge to be hauled immediately rather than undergoing the standard supernate cycles. As a result, the sludge could not be reduced in volume prior to transport. Staff anticipate a reduced amount of sludge to be generated and transported to Ravensview in 2026.

6 MAINTENANCE

Staff continue to use a preventative maintenance program in accordance with manufacturer's recommendations.

Additional Maintenance completed this year:

- Infrared scans of high voltage electrical was performed across the plant.
- Equipment and motors had routine vibration monitoring conducted.
- Sand filter media replacement.
- Post Equalization Tank Cleanouts following high flows.

7 CAPITAL WORKS

There was no capital work required for the plant this year.

- Sludge lines to the digester had heat trace and insulation installed.

8 EQUIPMENT CALIBRATIONS

All of the treatment facility flow meters are calibrated annually by third party contractors. Calibration records are available upon request.

9 COMPLAINTS

In the 2025 reporting year, the Cana WPCP received no official complaints regarding the facility or treatment process.

10 BYPASS SUMMARY

There were no bypass events in the system this year. However, it should be noted that bypass discharges have a high bacteria count due to the lack of disinfection. $CBOD_5$, TP, and TSS results are typical raw sewage influent levels. When bypasses occur, best efforts are made to capture the debris contained in any discharges to the lake. After each bypass event, shoreline inspections near discharge points are done to monitor any debris that may come ashore, and clean-up is done if debris is found.

For further information about this report or any questions regarding accessibility, contact Tim Bourne at tbourne@utilitieskingston.com or call 613-546-1181 Ext 2190.

11 EFFLUENT OBJECTIVES AND LIMITS

Table 1 – Effluent Objectives and Limits

Effluent Parameter	Objective	Limits
CBOD5	5.00 mg/L (Monthly Average)	10.00 mg/L (Monthly Average)
Total Suspended Solids	5.00 mg/L (Monthly Average)	10.00 mg/L (Monthly Average)
Total Phosphorus	0.10 mg/L (Monthly Average)	0.20 mg/L
Total Ammonia Nitrate (Winter)	2.00 mg/L (October to March)	3.00 mg/L
Total Ammonia Nitrate (Summer)	1.00 mg/L (April to September)	2.00 mg/L
E. Coli	100 CFU/100mL	200 CFU/100mL

Note: pH maintained between 6.5 to 8.5 at all times

12 PLANT PERFORMANCE RESULTS

Table 2 – Raw Influent Results

(Monthly Average)

Month	BOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	pH	Total Kjeldahl Nitrogen (mg/L)
January	125	112	2.50	17.27	7.64	23.94
February	154	584	6.20	19.58	7.70	46.80
March	74	136	2.80	11.55	7.49	19.95
April	66	80	1.70	11.71	7.52	15.12
May	57	237	1.70	12.08	7.48	16.88
June	60	150	2.80	13.85	7.64	19.85
July	238	1142	9.80	27.42	7.47	86.10
August	86	100	3.00	21.43	7.47	30.20
September	150	240	4.60	30.38	7.54	49.20
October	99	139	3.20	24.86	7.48	36.88
November	186	643	5.40	13.97	7.36	42.55
December	125	564	5.80	11.73	7.70	39.76
Annual Average	118	344	4.13	17.99	7.54	35.60

Table 3 – Final Effluent Results (Part 1)

(Monthly Average)

Month	CBOD5 (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorous (mg/L)	Total Ammonia Nitrogen (mg/L)
January	3.00	5.10*	0.09	0.24
February	3.00	5.80*	0.09	0.15
March	3.10	3.80	0.12*	0.18
April	3.00	4.70	0.07	0.64
May	3.00	3.40	0.06	0.44
June	3.00	3.90	0.06	0.05
July	3.00	3.00	0.10	0.08
August	3.00	3.10	0.14*	0.07
September	3.00	4.80	0.07	0.06
October	3.00	8.30*	0.11*	0.10
November	3.00	5.80*	0.09	0.06
December	3.00	5.40*	0.09	0.05
Annual Average	3.01	4.76	0.09	0.18

*Indicates an exceedance of the Monthly Average Effluent Concentration objective

Table 4 – Final Effluent Results (Part 2)

Month	Nitrate Nitrogen (mg/L)	pH	E Coli (CFU/100mL)	Acute Lethality (Pass or Fail)
January	4.28	7.75	1	N/A
February	6.74	7.82	1	N/A
March	3.43	7.57	2	N/A
April	2.71	7.61	1	PASS
May	2.83	7.51	1	N/A
June	2.91	7.73	1	N/A
July	6.3	7.94	1	N/A
August	9.06	7.93	1	N/A
September	10.51	8.02	1	N/A
October	9.95	7.97	1	PASS
November	5.92	7.98	2	N/A
December	4.36	7.94	2	N/A
Annual Average	5.75	7.81	1.25	PASS

Table 5 – Upstream Surface Water Monitoring

Date	CBOD (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Nitrate Nitrogen (mg/L)	E. Coli (CFU/100 mL)	pH
April 23 2025	3.00	20.00	0.09	0.12	0.18	10	8.22
October 3 2024	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 6 – Downstream Surface Water Monitoring

Date	CBOD (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Nitrate Nitrogen (mg/L)	E. Coli (CFU/100 mL)	pH
April 23 2025	3.00	4.00	0.06	0.52	1.32	0	8.27
Oct 20 2025	3.00	26.00	0.16	0.05	5.90	49	8.05

Table 7 – Reportable Bypasses

Date	Start Time	Duration (hours)	Volume (m3)	Reason	Precipitation (mm)

No bypass events to report for 2025

Table 8 – Reportable Bypass Sampling

Date	Start Time	Duration (hours)	Volume (m3)	Reason	Precipitation (mm)

No bypass events to report for 2025

Table 9 – Annual Plant Flows

Parameter	2020	2021	2022	2023	2024	2025
Average (m3/day)	70.10	60.00	62.70	62.70	57.70	50.15
Max (m3/day)	110.50	97.00	160.00	180.00	116.00	189.00
Design (m3/day)	125.00	125.00	125.00	125.00	125.00	125.00
Design Peak (m3/day)	200.00	200.00	200.00	200.00	200.00	200.00
Daily/Design (%)	56.08	48.00	50.16	50.16	46.16	40.12

Table 10 – Monthly Flows

Month	Rated Capacity Flow (m3/day)	Minimum Flow (m3/day)	Maximum Flow (m3/day)	Average Flow (m3/day)	Total Flow (m3/month)
January	25.8	125	104.6	52.3	1,674
February	23.7	125	56.6	36.3	981
March	44.0	125	189.0	109.4	3,391
April	62.8	125	143.1	89.9	2,697
May	60.0	125	118.0	81.5	2,526
June	38.1	125	87.2	59.4	1,782
July	19.9	125	44.1	27.9	864
August	16.4	125	25.1	21.2	659
September	5.7	125	26.7	19.2	577
October	12.0	125	52.1	22.3	691
November	27.0	125	55.8	39.1	1,172
December	18.5	125	80.4	41.6	1,289
Annual Average	29.5	125	81.9	50.0	1,525

City of Kingston
Wastewater Collection System
2025 ANNUAL REPORT

Environmental Compliance Approval Number: 018-W601
Wastewater Collection System Owner: City of Kingston
Wastewater Collection System Classification: Class III

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1 EXECUTIVE SUMMARY

The City of Kingston Wastewater Collection System operates under Ministry of the Environment, Conservation and Parks (MECP), Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA) number 018-W601, issued to the Corporation of the City of Kingston.

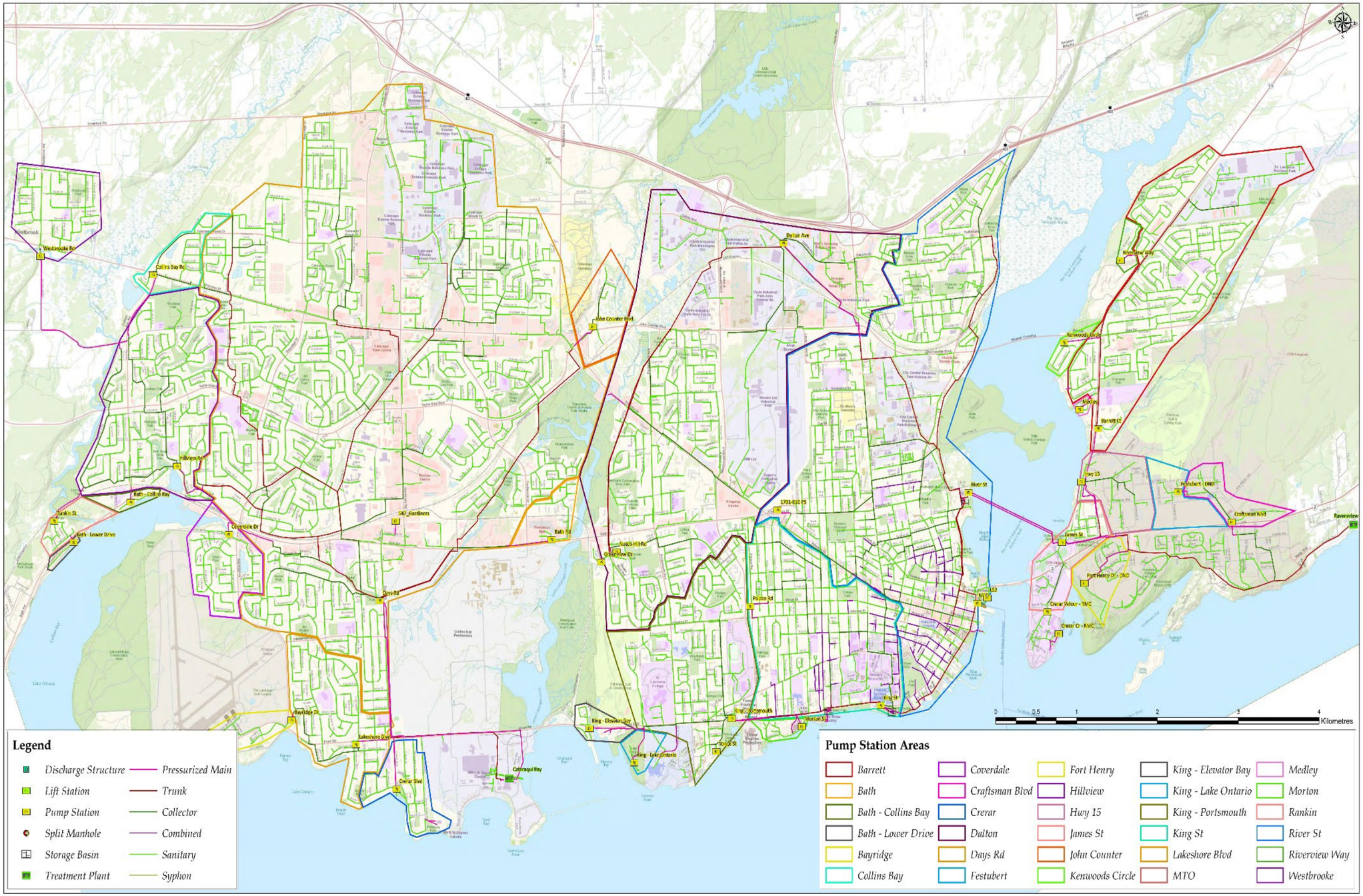
In 2025, the West Collection system received and conveyed 9,317,209.06 m^3 of wastewater to the Cataraqui Bay Water Pollution Control Plant (WPCP). The Central and East Collection system received and conveyed 19,267,737 m3 of wastewater to the Ravensview WPCP. The Cana Collection system received and conveyed 18,303.70 m^3 of wastewater to the Cana WPCP.

The collection system had several wet weather overflow events which totaled 21,013 m^3. The collection system had several spills to the environment from Sanitary Sewage Pumping Stations and from breaks in the collection system totaling 1,266.8 m^3. The overflow and spill locations are listed in Tables 1 and 2 respectively.

2 SYSTEM DESCRIPTION

The City of Kingston Wastewater Collection System collects and transmits sewage to one of three WPCPs, depending on the pump station area. The collection system consists of 474 km of gravity sewers (including 42.8 km of trunk sewers, 50.7 km of collector sewers and 381.0 km of local sewers) and includes 18 km of combined sewers but excludes the approximately 38,384 active service laterals to the property line. The collection system comprises of 30 sewage Pumping Stations (PS), three Combined Sewer Overflow (CSO) tanks, six combined sewage retention tanks, and 29.0 km of forcemains. All flow is discharged into one of three Water Pollution Control Plants: Ravensview, Cataraqui Bay, and Cana.

Figure 1 – City of Kingston Collection System Major Infrastructure



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3 OPERATION

Adequate staffing as well as preventative maintenance and regular equipment inspections allowed operational issues to be diagnosed quickly and corrective actions to be taken immediately. Non-flushable materials such as wipes, and grease continue to be more prominent in the sewer system resulting in some operational and maintenance challenges. Utilities Kingston continues to implement a public education program to educate customers and bring awareness to types of materials that should not be flushed down drains and toilets, and then into the sewers. This program included radio and newspaper campaigns, social media campaigns, bill stuffers, information on back of parking tickets, and bus information signs. This has been an ongoing campaign for many years with positive results.

Throughout the collection system, there are 43 known sections that can easily become clogged with non-flushable materials, and grease. They are monitored regularly and proactively cleaned when required. During 2025, crews inspected these sections a total of 580 times, 335 of those times flushing and cleaning were required.

Staff encountered operational problems at several pumping stations across the system that were a result of grease build up. These problems ranged from grease interfering with level instruments, to floats being caught up in the grease. Third party contractors were hired several times throughout the year to clean wet wells and remove the grease along with other non-flushable items as required.

During 2023, there were several spills of sewage from the Barrett Court PS. In response to this, a large project to replace the pumps and associated valving was started in 2024. The third and final pump was installed in 2025, and the pumping station has not seen any disruptions since.

CSOs located in the collection system, both inline overflows and dedicated tanks, are inspected regularly throughout the year. There was a total of 80 inspections on the 12 active CSOs in 2025.

4 SYSTEM FLOWS

The City of Kingston wastewater collection system transported 28,584,946.06 m^3 of sewage to the Ravensview and Cataraqui Bay WPCPs. The Cana system collected and transported 18,303.7 m^3 of sewage to the Cana WPCP. The concentration of the raw influent into the three WPCP's increases as the volume of flow decreases. The flow into each plant also increases as the number of wet weather events increase. The increased flow during the wet season, as well as the elevated concentrations during dry periods, indicate there is ground water infiltration and/or illegal sump or roof leader connections in the systems.

5 SPILLS, & OVERFLOW SUMMARY

The collection system had several wet weather overflow events which totaled 21,013 m^3 for 2025. The locations and total volumes of overflows can be found in Table 1. Many of the CSO overflow points in the collection system are in locations that pose significant safety concerns (i.e., confined spaces, traffic, unstable ground, etc.) for staff when collecting samples during wet weather events. Utilities Kingston has been granted permission to use a surrogate sampling plan where the loading rates are calculated based on an average of all of the overflow samples collected over the past 5 years. The surrogate loading rates from these overflow events are listed in Table 3. There were six spills to the environment from the collection system, totaling 1,266.8 m^3. The locations and details of the spills are located in Table 2. The loading rates for the spills are in Table 4. None of the collection system overflows or spills were disinfected, and no adverse impacts were noted. Staff checked for, and cleaned up, any debris and garbage after each event.

During 2025, there were three sewage pumping station spills that occurred during wet weather events. These pumping stations do not have combined sewers connected to them, however

infiltration, and/or illegal connections from sump pumps and roof leaders add to the flow of sewage during these wet weather events.

There were three spills in 2025 along Bath Rd just West of Centennial Dr. These spills occurred between May and June. A sewage pumping station is located just east of that intersection, and this station has no provision for an overflow. Immediately downstream of the forcemain that leaves the pumping station there were several sections of pipe that failed. This led to three different spills of raw sewage. Crews attended the spills and made every effort with contractors to stop and contain the spills, clean up the spill, and repair the infrastructure. To complete the repairs, stop the spill of sewage to the environment, and protect upstream users from backups, multiple vacuum trucks and crews were hired to shuttle sewage from the pumping station to a downstream manhole for several days while work was being completed. These breaks were quite complex and required many resources to complete the repairs/replacement of the broken infrastructure. Staff were able to complete a temporary fix on the pipe that failed and caused the spill that occurred on May 30th, 2025. It should be noted, for most of the 7 days that the spill occurred there was only a small amount of wastewater that was leaking past the temporary fix, this allowed for the equipment and resources required to fix the infrastructure to be sourced. Following an inspection of the downstream infrastructure, Utilities Kingston identified a 140 meter section of pipe that needed an emergency replacement to avoid any further pipe failures and spills. A third party company installed bypass pumping around a large section of broken pipe, which allowed for the complete replacement of the failing pipe.

The rainfall events in 2025 were more severe than in 2024, however less frequent, as seen in Figure 4 below. The wet weather flow capture rate is calculated by Utilities Kingston each year, and data going back to 2010 is shown in Figure 2 – Wet-weather Flow Capture. In 2017, Utilities Kingston released a real-time overflow map that displays overflow locations and lets you know if an overflow has occurred within the past 48 hours.

6 OVERFLOW REDUCTION EFFORTS

The City of Kingston and Utilities Kingston have been working to reduce the number of combined sewers, both sanitary and storm water in the same pipe, within the collection system. These combined sewers are the primary source of overflows in the system during wet weather. Several large, combined sewer separation projects are expected in 2026.

In 2025, a large sewer separation project in the Sydenham district was completed. Completed over two years, the project resulted in the separation of 1,250 meters of combined sewer. This took place on Victoria Street, Collingwood St, Cooper St, Earl St, and Union Street. This was a cooperative project between the City of Kingston and Utilities Kingston with total costs of $10.6 million. This project will result in reductions in overflow volume frequency and duration particularly at the Collingwood CSO tank (PCP#56) as well as at downstream infrastructure such as the O'Kill/George St CSO tank (PCP#55) and further downstream along the Harbourfront Trunk sewer, including overflows at West St (PCP#26) and others.

The 2026 overflow reduction projects are:

- Princess St (Alfred St to Division St) - 409m of combined sewer to be removed,
- Garrett St (University to Division St) - 165m of combined sewer to be removed, and
- Vine/Ellice/Main/Ann Streets. - 195m of combined sewer removed.

These 2026 projects have a total budget of $27.1 Million with the Princess St. and Garrett St projects expected to extend into 2027.

The proposed 2026 projects are all aimed at reducing and working towards separating and ultimately eliminating sewage overflows from the combined system.

7 POLLUTION PREVENTION CONTROL PROGRAM

The Utilities Kingston Pollution Prevention and Control Plan (PPCP) was developed in 2017 and is set to be updated by late 2026. The PPCP focuses on combined sewer separation to reduce the number of overflows from the facilities in the future. The 2025 combined sewer separation projects reduced a large section of combined sewers that lead to a CSO tank that regularly overflows during rain events.

There were no specific timelines produced for the 2017 version of the PPCP. The City of Kingston and Utilities Kingston remain dedicated to completing sewer separations within the collection system in preparation for future population growth. More funds are being directed to PPCP work, following several years of other larger City of Kingston Infrastructure projects that are now complete.

Utilities Kingston completed inspections including collecting Closed-Circuit Television (CCTV) footage of large sections of sanitary sewers throughout the year. These inspections help to build our asset management inventory and identify any potential issues before they cause problems.

Utilities Kingston is working towards meeting the objectives set out in procedures F-5-1, and F-5-5, which describe the treatment requirements for municipal sanitary, and combined sewage systems. The City of Kingston Wastewater Collection System meets all of the minimum controls required by these procedures. Many projects have been completed, bringing the City's system closer to meeting the objectives. These projects have reduced the frequency and quantity of system overflows over the past several years. The proposed future combined sewer separation projects and targeted sanitary sewer upgrades will continue to bring the system closer to meeting the objectives set out in these procedures. In 2025, the volumetric criterion for the April to October period for wet weather flow capture was calculated at 98.1%. This meets this volumetric criteria which requires capture of 90% or greater. The frequency criterion for the June to September period, based on recreational water usage, was not met, with the occurrence of 4 events. These can be visualized in Figure 3 – Number of CSO Events during June-September, which indicates Utilities Kingston is getting closer to meeting this objective. All of the above-mentioned work will have a direct impact on the number and severity of overflows in the future. It appears the sewer separation and other overflow reduction projects are having the desired impact, although the weather has been less severe over the past several years as well. These results and the correlation to weather severity are shown in Figure 4 – Annual Overflow Volumes and Storm Severity Index.

8 CALIBRATIONS

Many of the pumping stations have flow meters installed which helps to investigate inflow and infiltration, as well as any operational problems that may occur. Third party contractors calibrated all facility flow meters. Calibration records are available upon request.

CSO overflow points have methods of recording volumes of sewage that overflow the sanitary system and discharge into the lake, or the storm water system. There are 15 flow monitoring devices used for these measurements. All accessible flow monitors were calibrated in 2025. Two locations were unavailable to staff due to security concerns, and two were unable to be calibrated due to conditions.

9 MAINTENANCE

Staff continued to use a preventative maintenance program in accordance with manufacturer's recommendations.

Additional Major Maintenance completed this year:

- Infrared scans of high voltage electrical at pumping stations throughout the City.

- Routine vibration monitoring conducted on equipment and motors.
- Two pumps at King St. PS were rebuilt.
- River St. PS degritting chamber was cleaned and inspected.
- Six air relief valves in the system were cleaned and had maintenance completed on them.
- Collins Bay PS. level sensor replaced and a pump rebuilt.
- Bath Rd. PS and Lakeshore PS new flow meters installed.

10 CAPITAL WORKS AND ALTERATIONS

The major highlights for capital works were:

- Construction of the Dockside PS was completed, and the station has been brought into service.
- King St. PS piping in the CSO tank relined.
- Barrett Ct. PS remaining three pumps and associated piping and valves replaced.
- Lakeshore PS both pumps rebuilt.
- Hillview PS both pumps rebuilt.
- Bath Lower PS new control cabinet, and a new level sensor installed.
- Rankin PS isolation and check valves replaced.

11 COMPLAINTS

In the 2025 reporting year, there were 13 odour complaints from residents regarding the sewage collection system.

Three of these complaints were related to the Days Rd. PS. Staff have been proactive in changing pre-filters on the odour control unit. Several modifications to the unit have been made including changing to a new type of carbon media in the filter. Staff are monitoring these modifications and hope it will further reduce any noticeable odours from the site.

Staff responded and investigated all of these complaints. Responses to these complaints included inspecting infrastructure upstream and downstream of the complaint, installing dishes in manholes to reduce the chance of sewer gasses being released, jetting and cleaning pipes, inspecting lines with a camera, some visits to residences and businesses, and sewage sampling.

Staff responded to 159 complaints about lateral and main collection system backups. Operations staff worked with property owners and tenants at each site to locate and confirm the source of the backup. The majority of the sewer backups were caused by non-flushable materials, tree root growth, or deformed or degraded pipes. 69 of the 159 complaints were related to private infrastructure (i.e., the homeowner or business owner's sewer lateral on their property). Staff worked to relieve these backups using different methods. Crews rodded lines, performed camera work to identify and locate the issue, used jet trucks to clear blockages to return the collection system to good working order. Operators also proactively flush known problem sewers, in order to maintain the integrity of the collection system.

For further information about this report or any questions regarding accessibility, contact Tim Bourne at tbourne@utilitieskingston.com or call 613-546-1181 Ext 2190.

12 ANNUAL OVERFLOW SUMMARY

Table 1 – Annual Overflow Summary

PCP #	Location	Number of Events	Volume (m3)
1	Orchard-Emma Martin CSO	0	0.0
2	535 Rideau Belle Park Trunk	0	0.0
5	Dalton Ave PS	0	0.0
14	Barrack St E of King St	0	0.0
22	William St W of Ontario St	1	16.1
23	Earl St W of Ontario St	6	192.7
24	Gore St W of Ontario St	0	0.0
25	Lower Union W of Ontario St	4	584.0
26	West St S of King St	2	1,878.7
28	King St (O'Kill) PS	0	0.0
34	Helen St at Mack St	0	0.0
35	Palace Rd PS	0	0.0
41	Morton St PS	0	0.0
43	King-Portsmouth PS	0	0.0
48	West end of Sherwood Dr	0	0.0
50	South end of Parkway	0	0.0
51	Clarence St W of King St	2	812.1
52	Raglan Rd at Rideau St	2	124.3
53	Union St at Division St	1	55.4
55	King-George CSO	1	2,249.3
56	King-Collingwood CSO	2	12,893.4
57	Crerar PS	0	0.0
65	535 Rideau Belle Park Local	5	2,024.8
68	Quebec St at Barrie St	1	182.3
69	Greenview Dr PS	0	0.0
70	Carlisle St at Chestnut St	0	0.0
74	Barrett Court	0	0.0
79	Riverview Way PS	0	0.0
N/A	Total	27	21,013.0

13 ANNUAL SPILL SUMMARY

Table 2 – Annual Spill Summary

PCP #	Location	Number of Events	Volume (m3)
1	Orchard-Emma Martin CSO	0	0.00
2	535 Rideau Belle Park Trunk	0	0.00
5	Dalton Ave PS	0	0.00
14	Barrack St E of King St	0	0.00
22	William St W of Ontario St	0	0.00
23	Earl St W of Ontario St	0	0.00
24	Gore St W of Ontario St	0	0.00
25	Lower Union W of Ontario St	0	0.00
26	West St S of King St	0	0.00
28	King St (O'Kill) PS	0	0.00
34	Helen St at Mack St	0	0.00
35	Palace Rd PS	0	0.00
41	Morton St PS	1	90.00
43	King-Portsmouth PS	1	360.00
48	West end of Sherwood Dr	0	0.00
50	South end of Parkway	0	0.00
51	Clarence St W of King St	0	0.00
52	Raglan Rd at Rideau St	0	0.00

PCP #	Location	Number of Events	Volume (m3)
53	Union St at Division St	0	0.00
55	King-George CSO	0	0.00
56	King-Collingwood CSO	0	0.00
57	Crerar PS	1	548.00
65	535 Rideau Belle Park Local	0	0.00
68	Quebec St at Barrie St	0	0.00
69	Greenview Dr PS	0	0.00
70	Carlisle St at Chestnut St	0	0.00
74	Barrett Court	0	0.00
76	Ravensview Wastewater Treatment Plant	0	0.00
79	Riverview Way PS	0	0.00
	Collection System	4	268.80
N/A	Total	7	1,266.80

14 OVERFLOW LOADING RATE

Table 3 – Overflow Loading Rate

Date	Location	Duration (mm:ss)	Volume (m3)	BOD (kg)	TP (kg)	TSS (kg)	TKN (kg)
April 3rd, 2025	PCP 23 - Earl St W of Ontario St	00:05	2.258	0.04	0.00	0.12	0.01
April 19th, 2025	PCP 23 - Earl St W of Ontario St	00:00	1.000	0.02	0.00	0.12	0.01
May 6th, 2025	PCP 55 - King-George CSO	23:33	2,249.3	55.11	174.32	1.28	5.40
May 6th, 2025	PCP 23 - Earl St W of Ontario St	01:53	168.364	2.98	0.00	0.12	0.01
May 6th, 2025	PCP 25 - Lower Union W of Ontario St	01:56	442.115	7.83	0.00	0.12	0.01
May 6th, 2025	PCP 22 - William St W of Ontario St	00:14	16.054	0.28	0.00	0.12	0.01
May 6th, 2025	PCP 52 - Raglan Rd at Rideau ST	00:32	105.802	1.87	0.00	0.12	0.01
May 6th, 2025	PCP 53 - Union St at Division St	01:22	55.387	0.98	0.00	0.12	0.01
May 6th, 2025	PCP 51 - Clarence St W of King St	00:54	569.479	10.08	0.00	0.12	0.01
May 6th, 2025	PCP 26 - West St S of King St	07:52	1,874.7	33.20	0.00	0.12	0.01
May 6th, 2025	PCP 65 - 535 Rideau Belle Park Local	07:18	1,131.458	20.04	0.00	0.12	0.01
May 6th, 2025	PCP 68 - Quebec St at Barrie St	01:27	182.332	3.23	0.00	0.12	0.01
May 7th, 2025	PCP 56 - King-Collingwood CSO	12:24	12,891	228.28	0.00	0.12	0.01
May 17th, 2025	PCP 23 - Earl St W of Ontario St	00:17	9.283	0.16	0.00	0.12	0.01
May 17th, 2025	PCP 25 - Lower Union W of Ontario St	00:16	35.077	0.62	0.00	0.12	0.01
May 17th, 2025	PCP 65 - 535 Rideau Belle Park Local	00:13	143.551	2.54	0.00	0.12	0.01
June 9th, 2025	PCP 23 - Earl St W of Ontario St	00:02	0.723	0.01	0.00	0.12	0.01
June 9th, 2025	PCP 25 - Lower Union W of Ontario St	00:00	0.001	0.00	0.00	0.12	0.01
June 22nd, 2025	PCP 23 - Earl St W of Ontario St	00:09	11.086	0.20	0.00	0.12	0.01

Date	Location	Duration (mm:ss)	Volume (m3)	BOD (kg)	TP (kg)	TSS (kg)	TKN (kg)
June 22nd, 2025	PCP 25 - Lower Union W of Ontario St	00:47	106.813	1.89	0.00	0.12	0.01
June 22nd, 2025	PCP 52 - Raglan Rd at Rideau ST	00:11	18.463	0.33	0.00	0.12	0.01
June 22nd, 2025	PCP 65 - 535 Rideau Belle Park Local	00:55	721.551	12.78	0.00	0.12	0.01
June 22nd, 2025	PCP 51 - Clarence St W of King St	00:36	242.656	4.30	0.00	0.12	0.01
June 22nd, 2025	PCP 26 - West St S of King St	00:04	4.000	0.07	0.00	0.12	0.01
June 22nd, 2025	PCP 56 - King-Collingwood CSO	00:00	2.375	0.03	0.01	0.02	0.06
August 13th, 2025	PCP 65 - 535 Rideau Belle Park Local	00:03	0.157	0.00	0.00	0.12	0.01
August 28th, 2025	PCP 65 - 535 Rideau Belle Park Local	00:15	28.037	0.50	0.00	0.12	0.01

The average E.coli concentration used for surrogate sampling in 2025 was 285,929 CFU/100mL

15 SPILL LOADING RATES

Table 4 – Spill Loading Rates

Date	Location	Duration (Hours)	Volume (m3)	BOD (kg)	TP (kg)	TSS (kg)	TKN (kg)	E.coli
May 6th, 2025	PCP 57 - Crerar Blvd PS	17	548	5.21	0.10	9.59	0.52	29,500
May 6th, 2025	PCP 43 - King-Portsmouth PS	7.5	360	17.64	0.32	35.28	1.40	123,000
May 6th, 2025	PCP 41 - Morton St PS	8.25	90	0.36	0.02	6.03	0.08	3,700
May 10th, 2025	Sydenham Rd a nd Princess St	5.25	0.005	0.00	0.00	0.00	0.00	200
May 13th, 2025	1404 Bath Rd	6.75	140	25.90	0.57	15.40	5.46	0
May 30th, 2025	1452 Bath Rd	168	100	7.70	0.36	16.40	2.76	102,000
June 13th, 2025	1452 Bath Rd	1.25	28.8	4.75	0.16	4.75	1.17	900,0000

16 OVERFLOW AND BYPASS EVENT AND VOLUME GRAPHS

Figure 2 – Wet-Weather Flow Capture

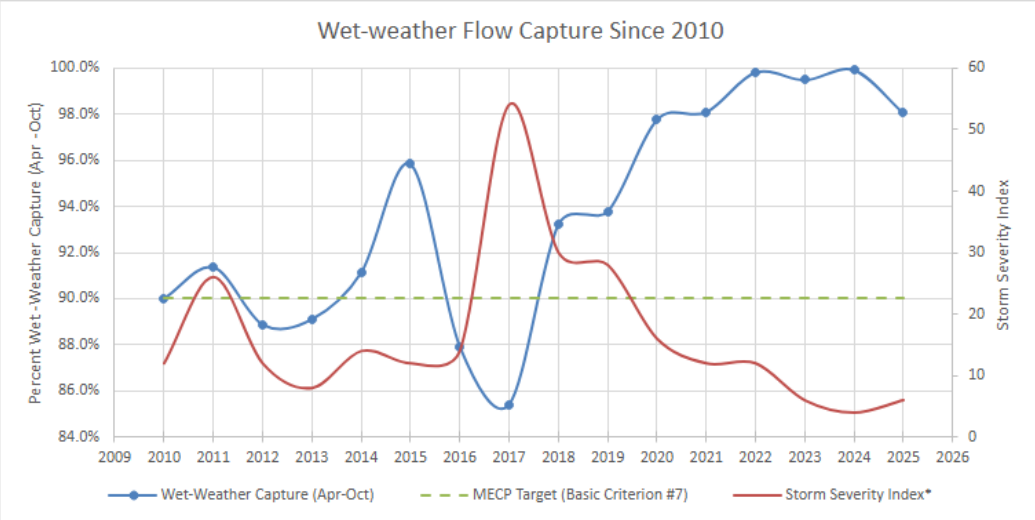

Figure 3 – Number of CSO Events During June-September

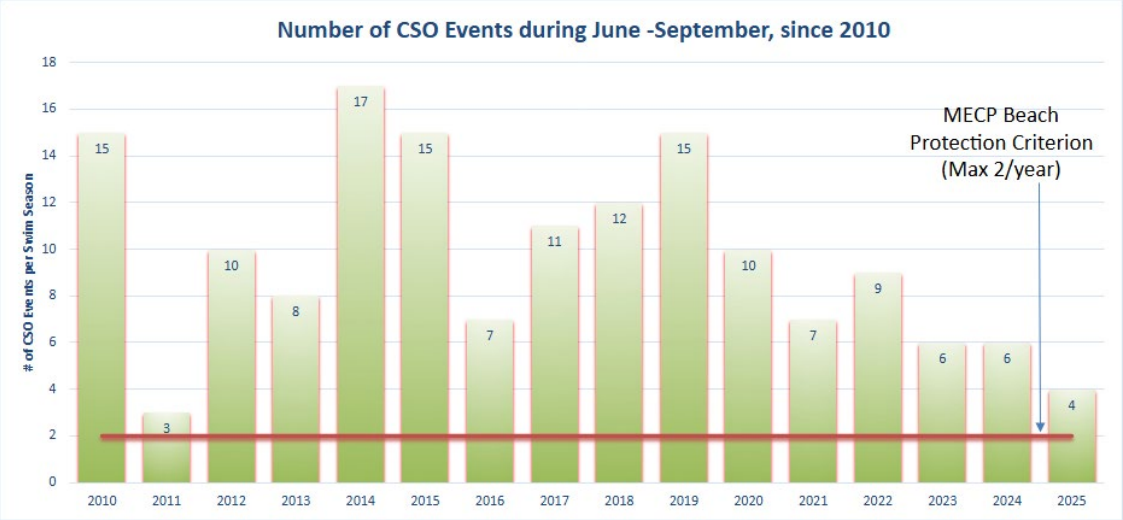

Figure 4 – Annual Overflow Volumes and Storm Severity Index