Region of Peel
working with you

2022

Wastewater Collection System Annual Report

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The Regional Municipality of Peel ('the Region') is committed to providing a high level of service in the collection, treatment, and management of wastewater. The Region diligently monitors its sewer network and operates its treatment processes effectively to meet or surpass discharge quality criteria, in order to protect the environment now and into the future.

Our Commitment:

- **Protecting and preserving the environment, including the prevention of pollution, through effective operation and management of the Wastewater Systems that incorporates quality assurance and control practices**
- **Acting promptly and responsibly in addressing incidents or conditions that pose a risk to the public or environment**
- **Complying with applicable legislation and regulatory requirements**
- **Collaborating with internal and external stakeholders to ensure our services consider their environmental and quality concerns**

If you have any questions about this report, please contact the Wastewater Compliance team at 905-791-7800 ext. 4685 or by email.

Executive Summary

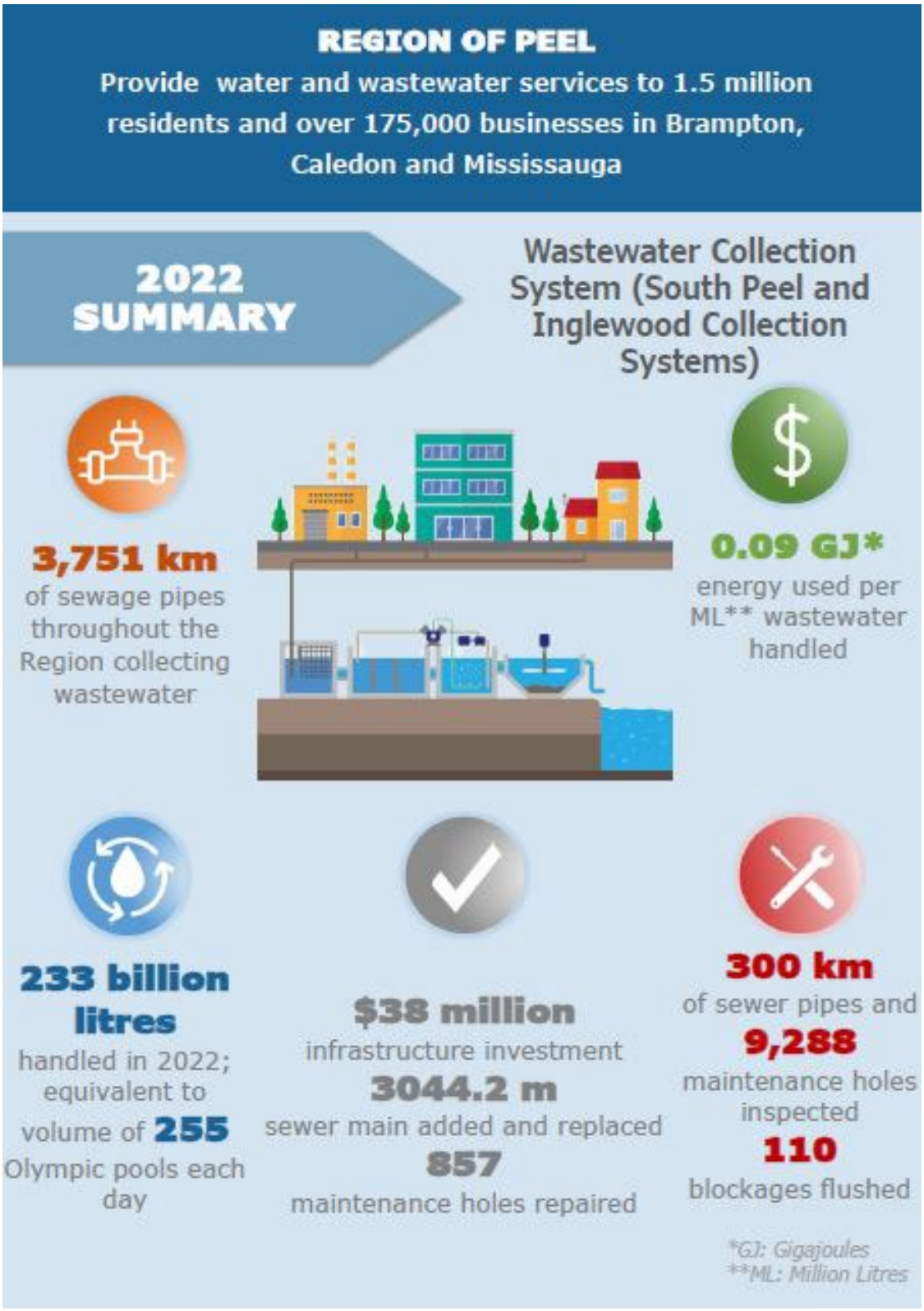
The Wastewater Collection System (collection system) collects wastewater from the customers in the cities of Mississauga, Brampton, and parts of the Town of Caledon. The collection system is owned and operated by the Region of Peel (the Region) and classified by the Ministry of the Environment, Conservation and Parks (the Ministry) as a Class III Wastewater Collection Facility, under Ontario Regulation 129/04. During the reporting period, the collection system was operated under Environmental Compliance Approval (Approval) #2960-ALCLTM (issued June 22, 2017) and Consolidated Linear Infrastructure Environmental Compliance Approval (Approval) #009-W601 (issued October 20, 2022).

This report summarizes the monitoring and maintenance results for the collection system required by the Approval and describes the system's overall operational performance.

In 2022, the Region met all regulatory requirements prescribed in the Approval.

The Region received 695 complaints and requests for information associated with the collection system, of which 121 were associated with sewer back-ups. In addition, there were 8 complaints regarding odour issues, 1 related to noise, and 565 related to maintenance holes. The Region has investigated and satisfactorily addressed the reported concerns, as described in Section 4.5.

There was one spill event within the collection system during the reporting period, as described in Section 4.6.


REGION OF PEEL
Provide water and wastewater services to 1.5 million residents and over 175,000 businesses in Brampton, Caledon and Mississauga
2022 SUMMARY
Wastewater Collection System (South Peel and Inglewood Collection Systems)
3,751 km
of sewage pipes throughout the Region collecting wastewater
0.09 GJ*
energy used per ML** wastewater handled
233 billion litres
handled in 2022; equivalent to volume of 255 Olympic pools each day
$38 million
infrastructure investment
3044.2 m
sewer main added and replaced
857
maintenance holes repaired
300 km
of sewer pipes and
9,288
maintenance holes inspected
110
blockages flushed
*GJ: Gigajoules
**ML: Million Litres

Glossary of Terms and Abbreviations

Chemical Scrubber: a pollution control device that injects chemicals to remove unwanted pollutants from gas

Ferrous Chloride: a chemical compound added to wastewater to control odours

Forcemain: a pipe that conveys wastewater under pressure out of a sewage pumping station

Inflow and infiltration (I/I): Inflow is the water that enters the sewer system through improper connection such as foundation drains, downspouts, manhole covers, etc. Infiltration is the water that enters sewer system through defective (leaky) pipes, joints, connections or manholes.

Lateral Sewer: a smaller sewer that collects wastewater directly from homes and buildings and conveys it to a larger connector sewer

Mainline Sewer: a pipe that collects wastewater from smaller laterals and conveys to a larger trunk sewer

Maintenance Hole (MH): a structure that provides access to a sewer system for inspection, cleaning, maintenance, sampling, or flow monitoring

Overflow: A controlled discharge of wastewater to the environment from a location designed for this purpose

pH: Measure of the alkalinity or acidity in wastewater

Spill: an unplanned discharge of wastewater to the environment from any location that is not specifically designed for this purpose

Total Ammonia Nitrogen (TAN): A measure of the amount of ammonia in wastewater

Total Phosphorus (TP): An essential nutrient used by microorganisms for growth

Total Suspended Solids (TSS): Suspended particles (organic and inorganic material) present in the water sample

Trunk Sewer: a larger sewer that collects wastewater from mainline sewers and conveys it to a pumping station or directly to the wastewater treatment plant

Wastewater: Water that has been used and discharged by homes, businesses and industries. Everything we flush down a toilet or pour down a drain, collectively.

WWTP: Wastewater Treatment Plant

1. Water Management in the Region of Peel

The Region owns and operates the water and wastewater systems that serve its population. This includes water treatment, storage and distribution, and wastewater collection, pumping and treatment. Figure 1, on the next page, shows how these systems interact.

The Region has two drinking water sources: Lake Ontario and groundwater wells in Caledon. The Region retains services of the Ontario Clean Water Agency (OCWA) under a contract to operate, maintain and manage the lake-based drinking water treatment facilities and its water storage and pumping system. The Region operates the groundwater-based water treatment systems and distribution watermain networks. Similarly, on the wastewater side, OCWA is contracted to operate the large wastewater treatment plants on the shore of Lake Ontario, while the Region operates the wastewater collection system, pumping stations, and the treatment facility in the community of Inglewood.

This water cycle starts when source water is pumped into our water treatment plants and undergoes treatment to meet the Ontario Drinking Water Standards. Treated drinking water is distributed through a network of pipes, storage facilities and pumping stations to homes and businesses. Used water goes down the drains into the wastewater collection system, where a series of pipes collect and convey wastewater to the treatment plants. Although majority of the network is gravity-base, pumping stations are needed to move wastewater from low lying areas. Wastewater undergoes multi-stage treatment to comply with the strict provincial and federal standards before release to the environment. The Region is committed to high standards of treated wastewater quality since it gets discharged directly or indirectly into Lake Ontario, which is the source of drinking water for Peel and many neighbouring municipalities.

More information about the water treatment process can be found within the Annual Water Quality Reports, which are available online.

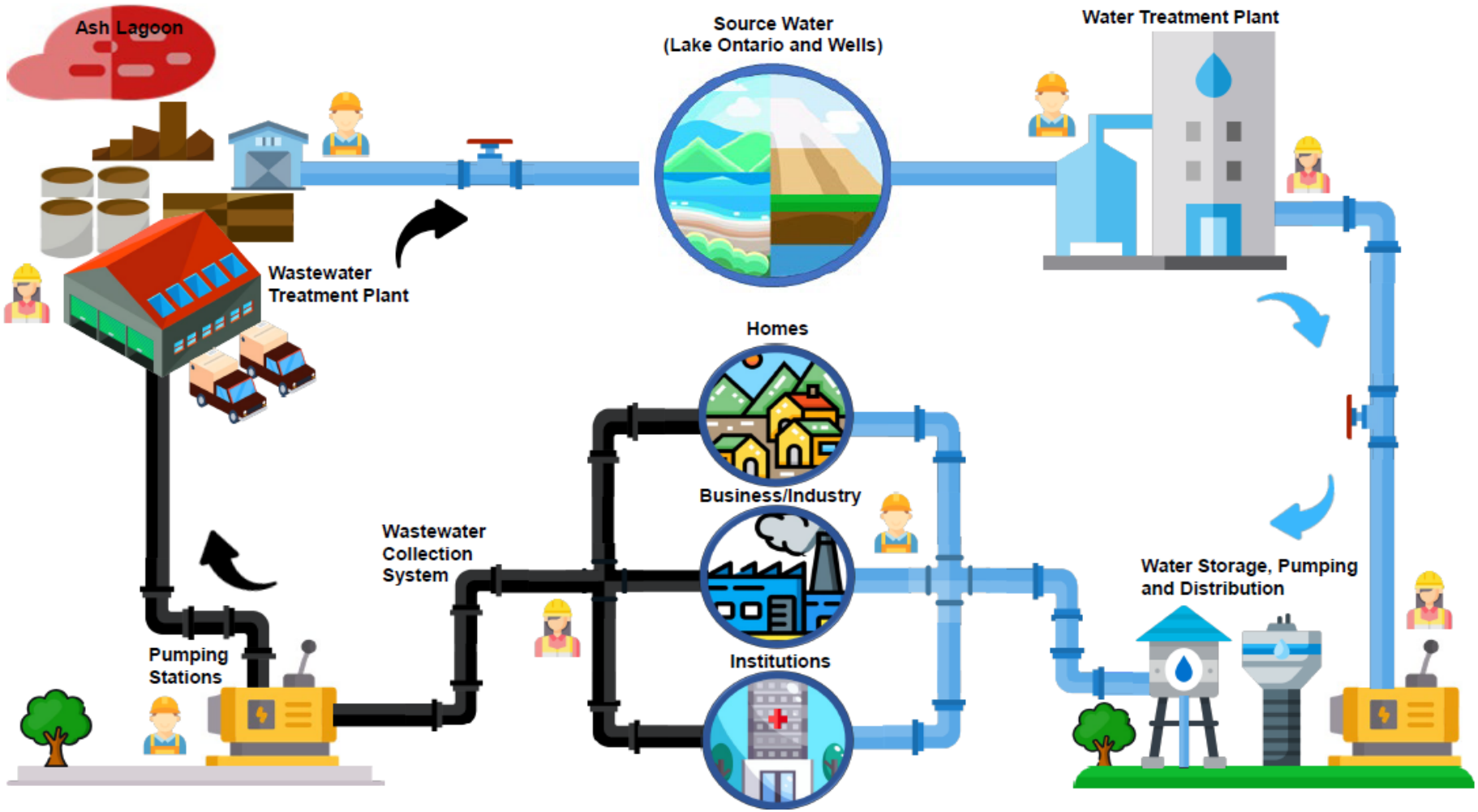


Figure 1 – Water and Wastewater Cycle

2. Introduction

Wastewater systems in Ontario are governed by the Ministry of the Environment, Conservation and Parks (the Ministry) and subject to federal legislation.

The wastewater collection system receives wastewater from residences and businesses that are connected to the municipal sewer pipe network and conveys it to the wastewater treatment plant where it is treated to reduce contaminants, nutrients, and pathogens before its release to the environment. The Environmental Compliance Approval (Approval), issued under the *Environmental Protection Act*, is a system-specific document through which the Ministry sets monitoring and reporting requirements. To comply with the Approval, the Region prepares an annual report covering the operation and overall performance of the wastewater system.

This report provides a performance summary for the period of January 1 to December 31, 2022, for the Region of Peel's Wastewater Collection System, to fulfill the annual reporting requirements set out in the Approval # 2960-ALCLTM (issued June 22, 2017) and Consolidated Linear Infrastructure Environmental Compliance Approval (Approval) # 009-W601 (issued October 20, 2022). This reports also satisfies the reporting requirement of Approval 9779-AF4QDZ issued for Caledon East Sewage Pumping Station (SPS).

The collection system, a Class III Wastewater Facility under Ontario Regulation 129/04, serves over 1.5 million customers across the cities of Mississauga, Brampton, and parts of the Town of Caledon. It is owned and operated by the Region of Peel (the Region). This system collects municipal wastewater from homes and businesses, as well as landfill leachate from the Chinguacousy Landfill and former Britannia Landfill and conveys it to the Region's three wastewater treatment plants (G.E. Booth Wastewater Treatment Plant (WWTP), Clarkson WWTP, or Inglewood WWTP). The Region also receives wastewater from the City of Toronto and York Region through inter-municipal servicing agreements.

All of the Region's wastewater collection system assets are captured within a single Approval. The portion of the collection system that serves the community of Inglewood (in Caledon) directs Inglewood's communal wastewater to the Inglewood WWTP and is not connected to the Region's larger South Peel collection system that directs wastewater south to the G.E. Booth and Clarkson WWTPs on the shore of Lake Ontario. Refer to Figure 2 for a map of the Region's wastewater collection system.

2.1 Compliance

The Approval is a system-specific document and is the main legal instrument that sets the requirements for municipal wastewater system owners and operating agencies with regards to operation and management, level of treatment (when applicable), monitoring and recording, and routine and event reporting. In accordance with the Approval, major changes and expansion of the collection system are communicated to the Ministry.

The Ministry performs periodic inspections on all wastewater systems, comprised of facility visits and review of information and data for the inspection period. Inspection scope generally covers

procedural documentation review, staff competency, process operation and monitoring, and corrective actions to operational events. The Region is committed to ensuring environmental protection and compliance with legislative requirements. We maintain transparency by reporting all findings of potential non-compliance incidents and outcomes of internal assessment to the Ministry District (local) office.

The Ministry assigned the Region a deadline of January 21, 2022, for submitting application for the first Consolidated Linear Infrastructure (CLI) Approval. Region staff collected all necessary information and filed complete application to the Ministry by the deadline. The CLI Approval was issued on October 20, 2022. Future alterations, such as those made by a land developer under an agreement with the Municipality and low-risk pipe-by-pipe modifications, are pre-authorized under this approval, eliminating the need to submit Notice of Modification for minor modifications, Notice of Assumption for works built by developers, and ending the Transfer of Review (TOR) program.

2.2 Water and Wastewater Operations during COVID-19

In 2022, the Region remained flexible in planning for return to normal operation for water and wastewater programs that had been altered in response to COVID-19. While service delivery and emergency response continued throughout the COVID-19 pandemic, with safeguards to protect staff, their families, our business partners, and the public, most of the suspended or altered programs and projects resumed by the end of year.

3. Collection System Overview

The collection system consists of a series of underground pipes that collect wastewater from homes and businesses throughout the Region and, depending on location, convey the wastewater to one of three treatment facilities – G.E. Booth WWTP and Clarkson WWTP located in the City of Mississauga, on the shore of Lake Ontario, or Inglewood WWTP in the Town of Caledon. Figure 2 shows a map of the Region's wastewater collection system.

Table 1A – South Peel Wastewater Collection System Linear Components

System Type	Pipe Diameter (mm)	Length (km)	Total Length (km)
Sanitary Sewers	1 – 300	2,872.9	3,696.2
	301 – 500	313	
	501 – 950	298	
	951 – 1,650	166	
	≥ 1,651	46.4	
Forcemains	1 – 300	24.1	49.7
	301 – 500	8.4	
	501 – 950	17.3	
	951 – 1,650	-	
	≥ 1,651	-	
Total Length			**3,746**

Table 1B – Inglewood Wastewater Collection System Linear Components

System Type	Pipe Diameter (mm)	Length (km)	Total Length (km)
Sanitary Sewers	1 – 300	4.04	4.04
	301 – 500	-	
	501 – 950	-	
	951 – 1,650	-	
	≥ 1,651	-	
Forcemains	1 – 300	0.39	0.39
	301 – 500	-	
	501 – 950	-	
	951 – 1,650	-	
	≥ 1,651	-	
Total Length			**4.43**

Sewage Pumping Stations (SPS) and facilities, listed in Appendix A, are equipped with stand-by power generators to ensure critical equipment can continue to operate in the event of a power failure.

The collection system is comprised of two separate systems:

1. The **South Peel Wastewater Collection System** conveys sewage to G.E. Booth WWTP and Clarkson WWTP for treatment prior to its final discharge to Lake Ontario. The South Peel Wastewater Collection System consists of:
    - 3,746 km of sewers and forcemains (see Table 1A)
    - 56,634 maintenance holes (MH)
    - 32 sewage pumping stations (see Appendix A)
    - One odour/corrosion control facility
    - Two septage receiving station
    - Two leachate pumping stations

2. The **Inglewood Wastewater Collection System** conveys sewage from the community of Inglewood to the Inglewood WWTP for treatment prior to its final discharge to the Credit River. The Inglewood Wastewater Collection System consists of:
    - 4.43 km of sewers and forcemains (see Table 1B)
    - 77 maintenance holes (MH)
    - 1 sewage pumping station (see Appendix A)

The South Peel Wastewater Collection System is further divided into East and West trunk sewer systems.

- The **East trunk** sewer system conveys sewage to the G.E. Booth WWTP for treatment prior to its final discharge to Lake Ontario. The East trunk sewer system services the east side of Mississauga, Brampton, Caledon, and all of Bolton.

- The **West trunk** sewer system conveys sewage to the Clarkson WWTP, discharging its treated effluent to Lake Ontario. The West trunk sewer system services the west side of Mississauga, Brampton, and Caledon.

The East and West trunk sewer systems are partially connected by the West-East diversion trunk sewer. This sewer can divert some flows during wet weather events to utilize available system capacity and reduce potential for overflow. It is also used to divert flows during plant shutdowns, and to balance volumes between G.E. Booth WWTP and Clarkson WWTP. The South Peel Wastewater Collection System also receives wastewater from the City of Toronto and York Region through inter-municipal servicing agreements, as described below:

- **York-Peel Servicing Agreement** – Wastewater from York Region is pumped from the Humber SPS to the Region of Peel's collection system through 14 km twin 900 mm forcemains at Hwy 427 and Steeles Avenue E. The forcemains discharge to Peel's gravity sewer network, which ultimately flows to the G.E. Booth WWTP. As wastewater from York is received in the Region, it passes through the York-Peel Odour Control Facility (see description below). In 2022, the Region received 13,278,000 m^3 of wastewater from York Region.

- **Toronto-Peel Servicing Agreement** – There are currently three locations where wastewater flows across the municipal boundary from the City of Toronto to the Region of Peel's wastewater collection system. In 2022, the Region received 10,104,000 m^3 of wastewater from Toronto.

York-Peel Odour Control Facility

The York-Peel Odour Control Facility, located at Steeles Avenue (between Airport Rd and Torbram Road) in the City of Brampton, treats odours caused by hydrogen sulphide generated in wastewater along the 14 km journey through the forcemains from York Region. There are two odour control technologies used at this facility:

- A counter current packed bed tower wet chemical scrubber is used to remove particles and chemicals from the air. Sodium hydroxide and sodium hypochlorite solutions are sprayed within the scrubber to help eliminate odours.

- An injection system adds a small amount of ferrous chloride into the wastewater stream downstream of the scrubber for hydrogen sulfide control to reduce odours and pipe corrosion as the wastewater continues its journey through the sewer system.

Sampling is performed at this facility to understand the composition of the wastewater coming from York Region. The samples are sent to an accredited laboratory for analysis.

Leachate Pumping Stations

Leachate is a liquid that forms when landfill waste breaks down and water, usually rainwater, runs through the landfill material, possibly picking up chemicals and toxins. There are two

locations from which landfill leachate is discharged into the Region's wastewater collection system.

Britannia Leachate Pumping Station is located at the former Britannia Sanitary Landfill at Terry Fox Way and Britannia Rd E in the City of Mississauga. The landfill was in operation from 1980 until its ultimate capacity was reached and the landfill closed in June 2002. Leachate from the former landfill's underdrains discharges into a leachate collection system, which then flows by gravity to the Britannia Leachate Pumping Station where it is pumped into the wastewater collection system. The Britannia Leachate Pumping Station operates under a separate Approval (# 2185-B8BMW6).

Chinguacousy Leachate Pumping Station is located at the Chinguacousy Landfill at Lot 27 & 28, Concession 3E to 6E, in the Town of Caledon. The leachate is pumped to the sanitary sewer at King Street and Airport Road. The Chinguacousy Leachate Pumping Station operates under a separate Approval (# 1372-7RUUP4).

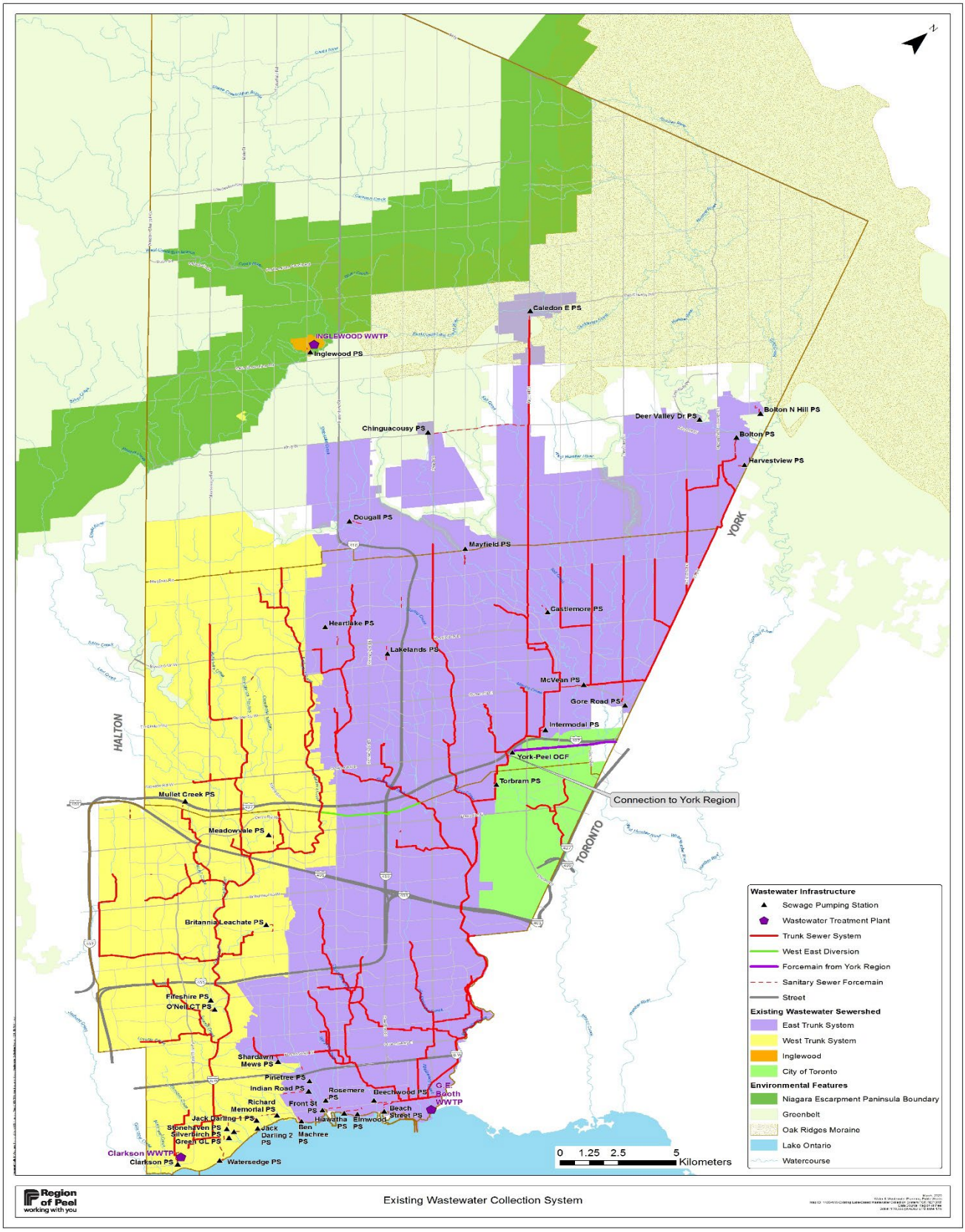


Figure 2 – Wastewater Collection System Map

4. Operational Performance

4.1 Summary and Interpretation of Monitoring Data

The following indicators have been selected to provide an overview of collection system performance:

- The Region's compliance with the Approval requirements, which include emergency response to overflow and spill events, associated monitoring, and reporting
- Temporary/mobile flow monitoring alarms that indicate when sections of the collection system are operating at 75% and 100% full

4.1.1 Compliance with Approval Requirements

In 2022, the Region complied with all Approval requirements. Relevant Approval requirements include:

- Overflow and spill event reporting to the Ministry's Spills Action Centre (SAC) and the Medical Officer of Health, as required
- SPS overflow quarterly reports including details of sampling results (if performed) and corrective actions taken
- Maintenance of the collection system Operations and Maintenance Manual
- Notification of collection system modifications through the provision of Limited Operational Flexibility

4.1.2 Flow Monitoring

The Region has a temporary (mobile) flow monitoring program comprised of approximately 400 flow monitors strategically located throughout the collection system. These flow monitors are moved from one location to another or reduced/increased in numbers to meet operational, construction and development needs. Also, they serve as tools to calibrate the Region's hydraulic model and assist in identifying inflow and infiltration issues.

These flow monitors trigger alarms when sewer pipes are 75% and 100% full. These warnings allow staff to respond accordingly, to mitigate and reduce risk of potential overflows before they occur. The 75% alarms are warnings to alert staff that a full pipe condition might be developing. For every 100% pipe level alarm, an operator is dispatched to investigate.

In 2022, the Region had a total of 365 alarms for 75% pipe level and 94 alarms for 100% full pipes. These numbers do not include false alarms (those dispatched in error). The number of alarms for 75% pipe level in 2022 was lower than in 2021, as Peel experienced a very dry summer, with generally small volume and intensity storm events. However, alarms for 100% pipe level in 2022 were higher than in 2021 because northwest Brampton experienced an extreme but localized 100-year storm event on August 20 and 21 with over 200 mm of rainfall in some locations.

The Region also has several strategically placed flow monitors that will produce 60% pipe level alarms that are used to determine when to divert flows from the West Trunk to the East Trunk. This is necessary to optimize the flows conveyed to G.E. Booth and Clarkson WWTPs.

Some of the flow monitors throughout the system also serve other purposes: to assist construction works, new development, and inflow and infiltration monitoring (see Section 4.2.2).

4.2 Operating Problems Encountered and Corrective Actions Taken

4.2.1 Sewage Pumping Station (SPS) Bypasses

As sewage pumping stations continue to age, temporary bypassing of these stations is necessary for a variety of activities including rehabilitation or upgrade projects.

During an SPS bypass, sewage is temporarily conveyed around the station and back into the collection system (see Figure 3). Pumping station bypasses are operated by third-party contractors, who hold the necessary qualifications and licences to operate within the Region's wastewater collection system. Bypass systems can consist of pumps, piping and equipment capable of diverting the flow of sewage from upstream of the station to sewer lines downstream of the work area. The number of homes that are serviced in the area, the number and types of local businesses, and flow characteristics are just some of the many factors considered in determining the proper pumps and equipment required for a well-designed bypass system to be successful.

Bypassing the station allows for the work activities to occur on the infrastructure without causing environmental discharges and minimizing impacts to the flow of sewage in the immediate or surrounding areas, while maintaining service levels.

Without the use of a bypass system, the large amount of rehabilitation or upgrades needed on the aging systems would not be possible. Table 2 provides a summary of sewage pumping stations bypassed in 2022.

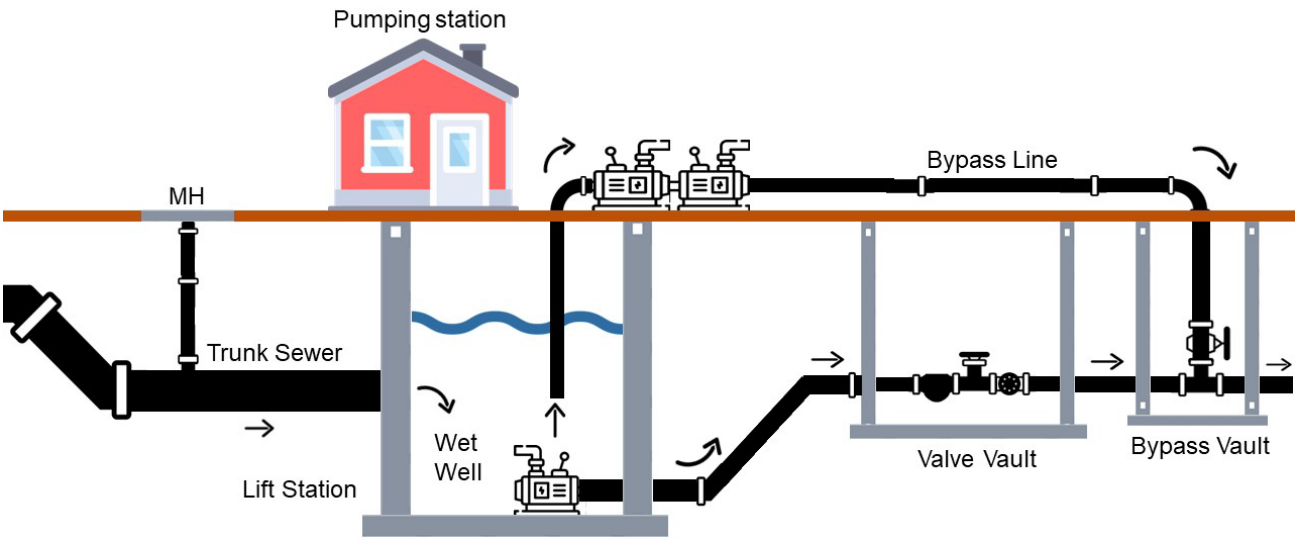


Figure 3 – Sewage Pumping Station Bypass

Table 2 – Summary of Pumping Stations Bypassed

Sewage Pumping Station	Bypass Start Date	Bypass End Date	Reason for Bypass
Richards Memorial	09-Jun-22	15-Aug-22	To replace process piping within the wet well that was at end of life, replace the fiberglass reinforced plastic (FRP), add new bypass connection, and clean the wet well
Bolton North Hill	23-Jul-22	09-Dec-22	To overhaul the wet well for the new station, new pumps, new piping, new hatches, new FRP, new level indicating transmitters, new valve chamber, emergency storage, and new coating on wet well walls
Beach St	07-Nov-22	02-Dec-22	To clean out the wet well to determine what concrete repairs were needed, replace the forcemain shut off valves with new actuated valves, add access points on existing forcemains, replace aging bar screen with a grinder, replace the forcemain shut off valves with new actuated valves

4.2.2 Inflow and Infiltration

The Inflow and Infiltration (I/I) Remediation Strategy divided the Region into 40 distinct sewersheds, also known as Blocks. The Blocks are prioritized based on their likelihood of sewage overflow into the environment, sanitary sewage back up into basements, and capacity constraints for future development. The three Blocks with the highest priority were targeted for I/I work. Much of the investigative work within the first three Blocks is completed; however, the planned work is still outstanding. The focus has now shifted to the next set of Blocks. The I/I work consists of investigative activities, studies, and remedial measures. These remedial measures include downspout disconnection, removing cross connections, sealing maintenance holes, and sewer lining, as well as construction of storage tanks and larger pipes to hold more flow. Remedial measures with the highest return-on-investment are implemented first. Also, to prevent I/I issues down the road, the Region is continuously updating its design and construction guidelines to improve new infrastructure.

4.3 Summary of Maintenance Activities and Expenditures

4.3.1 Maintenance of Linear Infrastructure

Maintenance of the linear infrastructure involves performing inspections, sewer cleaning, and repairs. A summary of the maintenance activities completed in 2022 is provided in Table 3.

Inspections are conducted on both sewers and maintenance holes. The sewers are inspected using closed circuit television (CCTV) units. When a structural issue is identified in the sewer main, sewer lateral or maintenance hole, it is triaged and repaired according to the level of risk and priority.

In 2022, a total of 300 km of sewer pipe, or approximately 10% of the South Peel wastewater collection system, was inspected using CCTV and a total of 9,288 maintenance holes were inspected in 2022. There was 1 lateral repaired in the Inglewood wastewater collection system during the reporting period. A summary of the length of pipe either relined or replaced in 2022 is provided in Table 4.

Table 3 – Linear Maintenance Performed in 2022

Description	Quantity	
	South Peel Wastewater Collection System	Inglewood Wastewater Collection System
Length of Sewer Inspected Using CCTV	300 km	-
Length of Sewer Flushed	550.1 km	-
Minor Sewer Main Repairs	25	-
Laterals Repaired	86	1
Laterals Replaced	8	-
Trouble Spots Cleaned	19821.6 m	-
Maintenance Holes Inspected	9288	-
Maintenance Holes Repaired	857	-

Table 4 – Length of Pipe Relined and Replaced in 2022

Description	Length (m)	
	South Peel Wastewater Collection System	Inglewood Wastewater Collection System
Sewer Main Relining	-	-
Sewer Main Replacement/new construction	3044.2	-

4.3.2 Collection System Facilities

The wastewater collection system facilities under the CLI Approval include:

- York-Peel Odour Control Facility
- 33 Sewage Pumping Stations
- Two Septage Receiving Stations

The Region has the following maintenance programs for these facilities:

1) Preventive Maintenance – conducted on a routine basis to maintain the equipment in good working order and lessen the likelihood of failure
2) Corrective Maintenance – conducted to correct deficiencies discovered during routine inspections or preventive maintenance activities and return equipment to working order
3) Unplanned (Emergency) Maintenance – conducted in response to equipment failure

In 2022, a total of 11,344 staff hours was spent maintaining the South Peel wastewater collection system facilities. The largest amount of time (39%) was spent performing preventive maintenance. The next most significant time-investment activity was general maintenance (20%), which includes meeting with contractors, purchasing supplies and receiving chemical deliveries.

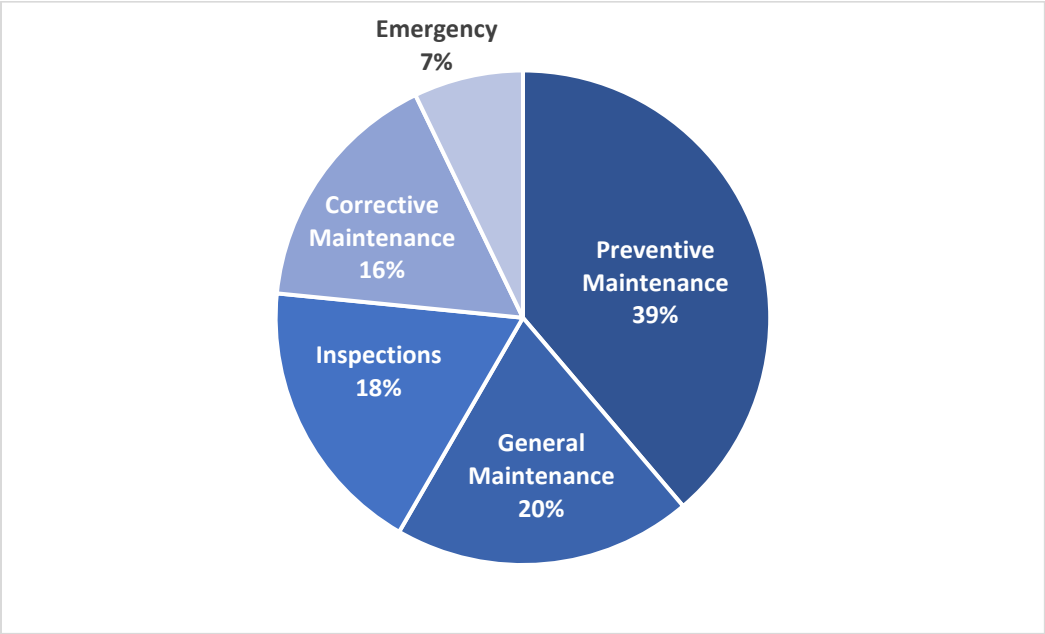


Figure 4 A – Summary of Maintenance Activities at South Peel Wastewater Collection System

A total of 112.6 staff hours was spent maintaining the Inglewood wastewater collection system facilities with most amount of time spent performing preventive maintenance (53%) and general maintenance (17%).

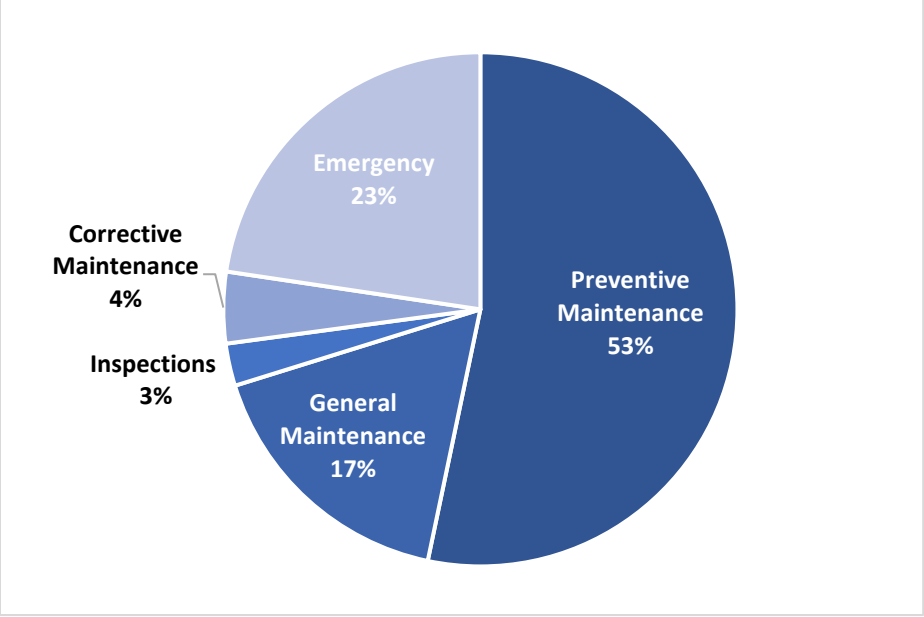


Figure 4 B – Summary of Maintenance Activities at Inglewood Wastewater Collection System

4.3.3 Trouble Spot Maintenance Program

One potential cause of sanitary sewer overflow or odour issues is sewer backup. A sewer backup occurs when the sewer becomes fully or partially blocked by an obstruction. To mitigate issues at locations that regularly become obstructed, the Region has a trouble spot maintenance program. Trouble spots are cleaned using high pressure water spray or mechanical reaming (rotational cutting) on a set schedule to prevent blockages. Mainline sewer pipes that are cleaned as a part of the regular preventive maintenance program are addressed in a prioritized manner. Pipe age and type, and discovery of defects in the sewer pipe are some of the criteria used to determine priority. In 2022, the Region of Peel cleared 110 blockages.

4.3.4 Sanitary Sewer Pipe Replacement Program (State of Good Repair)

The Region's overall infrastructure is aging, requiring more investment in preventive and planned maintenance. In response, Peel has established a comprehensive asset management program, which includes sanitary sewer pipe assessment and renewal. The program includes ongoing upgrades of the Region's sanitary sewer system to ensure long-term integrity and sustainability. The program involves repair or replacement of existing mains and sanitary services to improve flow, minimize potential for spills and overflows to the environment, minimize the risk of backups into homes, and upsize if required to meet future planning needs; all to provide an acceptable level of service to our customers.

The Region determines priority of sanitary sewer pipe replacement and rehabilitation based on the following factors:

- Pipe age
- Pipe size and material type
- Pipe breaks and leak history
- Hydraulic performance of the pipe
- Planned municipal and city projects related to water, wastewater and road assets
- Cost of replacement
- Operational demands

Most sanitary sewer pipe replacement projects are undertaken in partnership and coordination with road re-construction and watermain renewal projects for improved cost effectiveness and to minimize public inconvenience. Using these criteria, the Region plans the sanitary sewer pipe renewal program in a financially responsible manner. For more information about this program, please see the 2022 Enterprise Asset Management Plan.

4.3.5 Sanitary Trunk Sewer Condition Assessment and Rehabilitation

The Region's strategy for offsetting wastewater flows from the east side of Mississauga and Brampton includes several major collection system initiatives, with an overall 10-year capital

budget of approximately $420 million. Twinning of the East Brampton and West sanitary trunk sewer is now complete and operational and will provide additional capacity and allow for condition assessment and rehabilitation of the existing trunk sewer to extend its useful life. The Region recently completed a condition assessment of the existing East Brampton sanitary trunk sewer and is in the process of retaining an engineering consultant to support detailed design and construction of planned rehabilitation work. Several significant wastewater condition assessment and rehabilitation initiatives were initiated or continued in 2022, including condition assessments of portions of the West Trunk Sewer, portions of the East Brampton Trunk Sewer, the Sawmill Creek and Levi Creek Trunk Sewers, the Upper Cooksville Trunk Sewer, and the Erin Mills Trunk Sewer. The Maintenance Hole Rehabilitation Program continued with the completion of Contract 3 and the initiation of rehabilitation work associated with Contract 4.

The goal of these projects is to assess and rehabilitate sanitary infrastructure to meet target levels of service, which in turn improves system resiliency and longevity, and reduces site-specific infiltration, such as leaking pipe joints. The East Trunk Sewer and Energy Dissipation Chamber Rehabilitation Class EA and Detailed Design were completed in 2022, and the project is currently in the early stages of construction. This project was also awarded combined federal and provincial funding.

4.3.6 Quality Assurance and Quality Control (QA/QC)

The Region operates a QA/QC program for Maintenance Holes (MH) Condition Assessment whereby approximately 3% of all MH Condition Assessments are randomly selected to be re-inspected to assess accuracy of the information collected. A 90% accuracy is expected, and those inspections not reaching this threshold are returned for re-assessment and opportunities for staff training are explored.

The Region performs a similar QA/QC program for the sewer main flushing program, with CCTV inspection conducted on 1% of sewer mains flushed over the previous 2-week period by each operator, selected randomly. As with the MH program, a 90% accuracy is expected. This QA/QC program currently applies to sewer mains with a diameter of up to and including 450 mm. In the future, this program is expected to expand to sewer mains with a diameter up to and including 675 mm.

The CCTV Program's QA/QC includes random selection of 10% of the preventative maintenance work per month per operator for review. The inspections are scored based on the details recorded as well as the video portion of the inspection. Any inspections that fall below the 90% expected accuracy will be sent for re-inspection.

4.3.7 Operating Costs

The Approval requires that the system and all equipment used to achieve compliance are properly operated and maintained. This includes providing adequate funding. The Region funds operational activities and process chemicals to maintain daily operation, as well as capital activities to ensure future system performance.

In 2022, $211,500 was spent on process chemicals such as ferrous chloride, sodium hydroxide and sodium hypochlorite used at the York-Peel Odour Control Facility, with an average cost of $0.016 per m^3 of wastewater handled.

Water and wastewater systems are among the highest energy users in the Region. Utilizing the Region's Energy Dashboard electricity numbers (kWh) and volumes of wastewater handled it is possible to calculate how much energy is required to pump wastewater within the collection system to the treatment facilities. In 2022, the wastewater collection facilities accounted for 0.09 GJ of energy per ML of wastewater handled. Energy usage and performance of energy intensive equipment is monitored, and the Region continues to research ways to optimize and reduce energy use, such as identifying energy-saving opportunities during design of capital improvement and construction projects.

4.3.8 Expenditure Information

Staff determine capital spending priorities to eliminate unnecessary expenditures while maintaining infrastructure. Table 5 summarizes the major expenditures in 2022.

Table 5 – Significant Expenses for the South Peel Wastewater Collection System

Activity Type	Description of Work	Expenditure
Repair	SPS rehabilitation works	$494,500
	Sanitary sewer spot repairs	$1,683,000
	MH rehabilitation	$776,900
Replacement /Installation	Sanitary sewer replacement and new construction	$34,375,900
Inspection	Trunk Sewer Inspection	$677,500
	Maintenance Hole Inspection	$303,600

There was no capital expenditure for the Inglewood wastewater collection system during the reporting period.

4.4 Summary of Calibration and Maintenance on Monitoring Equipment

Calibration and maintenance are performed annually, according to manufacturer's recommendations, on monitoring equipment including flow meters, level transmitters and pressure transmitters. Except for the Beach Street SPS, where the flow meter is being replaced, monitoring equipment was satisfactorily verified by a third-party agency in 2022.

4.5 Summary of Complaints

The Approval requires that the Region log all resident complaints, investigate, and resolve them. The Region makes every effort to respond to customers and satisfactorily address their concerns and enquiries. A database is used to record details including information collected from the customer on the nature of the enquiry and action taken by the Region. There were 693 complaints recorded in 2022 related to the operation of the South Peel wastewater collection system and 2 complaints related to Inglewood wastewater collection system, with the vast majority being reports related to condition of maintenance hole covers. These complaints

represent 0.08% of the population serviced by the Region of Peel (approximately 1.5 million people). A breakdown of public complaints received in 2022 can be found in Table 6.

The Region also takes proactive action to reduce odours throughout the collection system through the odour control program. Areas that regularly experience collection system odours are investigated and odour control dishes are placed in the maintenance holes to help stop odourous gases from escaping into the environment. Odour control dishes are replaced three times per year. There are currently 45 maintenance holes with odour control dishes across the Region.

Table 6 – Summary of Complaints Received for the Collection System in 2022

Type of Complaints	Description	Number of Complaints		Corrective Actions Taken
		South Peel Wastewater Collection System	Inglewood Wastewater Collection System	
Mainline Sewer Back-up	Sewage back-ups due to obstructions in mainline sewers	30	0	The operator was sent out to confirm the location and state of the sewer. Flusher Trucks were used to release the backup and flush it.
Sewer Lateral Back-up	Sewage back-ups due to obstructions in sewer laterals	90	1	The operator was sent out to confirm and locate the appropriate service point in the home. Sewer Trucks were used mechanical rodding to release the backup.
Sanitary Odour*	Sewage-like odours associated with the collection system	7	1	The operators were dispatched to check the locations. Assets associated with the collection system were checked and the complaints were resolved.
Noise	Noise associated with ventilation fan running at a collection system facility	1	0	The sewage pumping station's ventilation fan was left on, which was the source of the noise. The complaint was addressed, and the ventilation fan was turned off.
Maintenance Hole Issues	Maintenance hole issues such as dislodged or broken covers	565	0	Operators were dispatched to assess the damage. Depending on the requirements the repairs were performed, ranging from just fixing a lid to an extensive repair with a multi person crew.
	TOTAL	**693**	**2**	

*There were two odour complaints that were not actioned appropriately due to an oversight.

4.6 Summary of Sewage Pumping Station Overflows, Spills or Abnormal Discharge Events

Occasional weather events such as heavy rainfall and spring snow melt can result in flow rates that are higher than those for which the plant was designed and burden the collection system. These challenges, as well as the need for planned maintenance and construction activities, may result in a planned or unplanned discharge to the environment.

An **overflow** is a controlled discharge of wastewater to the environment from a designed location within the collection system. An overflow occurs when rainwater, groundwater intrusion and/or emergency situations result in additional flows entering sanitary sewers that overwhelm the system. Overflows from the sewage pumping stations, while not desirable, are sometimes necessary to help prevent basement and surface flooding and to protect the downstream treatment plants. In 2022, there were no overflows.

A **spill** is an unplanned discharge of wastewater to the environment from any location that is not specifically designed for this purpose. There was one (1) spill in 2022 from the collection system to the environment, as summarized in Table 7.

All overflow and spill events are reported to the Ministry's Spills Action Centre (SAC). Additionally, any SPS overflows are summarized on a quarterly basis and submitted to the Ministry. These quarterly reports include event details including estimates of duration and overflow volume.

When possible, samples must be collected at the beginning and end of an overflow event and tested to characterize wastewater discharge. Parameters tested for overflow events include BOD_5, TSS, TP, TAN, *E. coli* (between April 1 and October 31), and pH.

Table 7 – Summary of Spills from the Collection System in 2022

Date of Event	Location	Description	SAC Reference #
7 July	1110 Kamato Rd, Mississauga	Mainline backup caused sewage to flow out of maintenance hole and into Etobicoke Creek	1-1XN3Y7

4.7 Notice of Modifications

The Approval (# 2960-ALCLTM) that was in place for the majority of 2022 allowed for certain pre-authorized modifications to be made to the system. The Ministry is notified of these modifications via *Notice of Modification to Sewage Works*. There were no *Notice of Modification to Sewage Works* forms submitted to the Ministry in 2022.

Under the new Approval (# 009-W601; issued October 24, 2022) minor modifications are pre-authorized and need only be recorded on the appropriate form and retained. There was one Form SS2 completed for the collection system in 2022.

Repair and maintenance activities are exempt from the documentation requirements and may be performed as needed to maintain the collection system in good working order.

The Region undertakes construction projects to upgrade or enhance the collection system to meet demands related to industrial and commercial growth in the Region that may alter incoming wastewater volume or loading (strength), and to integrate new technologies. Under the new Approval, minor modifications and system extension are preauthorized provided they meet the conditions specified. Major modifications that are not preauthorized require an amendment to the Approval and are listed in the Approval Schedule C – Additional Approved Works. There are currently no approved proposed works for the wastewater collection system.

4.8 Notice of Assumption

The former Approval (# 2960-ALCLTM) required that a *Notice of Assumption* form be sent to the Ministry when a new subdivision is assumed. A *Notice of Assumption* form for all subdivisions assumed in 2022 was submitted on February 28, 2023.

Notice of Assumption is no longer required under the new Approval framework.

4.9 Other Information Required by the Ministry Water Supervisor

There was no other information requested by the Ministry Water Supervisor in 2022.

5. Performance Management Programs

5.1 Ministry Inspections

Wastewater System inspections are performed periodically by the Ministry to ensure systems are operating as required and complying with the terms and conditions of their Approvals. Performance data is reviewed against the compliance objectives and limits. The inspections also verify that the Region meets sampling, testing and treatment standards and staff competency requirements. Additional inspections can be triggered through a variety of factors such as frequency of events or inconsistent system performance (e.g., increased number of spills or reportable incidents), in response to a complaint or concern, or as part of a follow-up from prior non-compliances.

There was no Ministry inspection on the Region’s wastewater collection system in 2022.

5.2 Wastewater Integrated Management System

The Region has developed and implemented Wastewater Integrated Management System (WWIMS) to create a systematic approach towards pollution prevention, adopt quality work and enhance performance thereby fulfilling compliance obligations. Based on the principles of ISO 9001 (Quality Management Systems) and ISO 14001 (Environmental Management Systems), the WWIMS aims to apply best management practices to the operation of the Peel-operated wastewater collection and treatment systems. The scope of the Region’s WWIMS includes the Wastewater Collection System, and the Inglewood Wastewater Treatment Plant.

The WWIMS provides an effective framework for operational excellence, guidance to building and managing policies, procedures, and processes, and fostering a culture of continual improvement within the Wastewater Division.

In early 2022, the Region determined through internal review of its management system self-declaration of conformance to ISO 14001 and ISO 9001 requirements. With organizational changes in the Region's water and wastewater programs in summer 2022, the WWIMS is being updated to align with the new operational framework of the wastewater collection and treatment systems.

A review of risks to the operation of Region's wastewater systems and the natural environment was completed in 2022. Through the assessment of 170 activities and their potential impact, 27 activities were deemed to be significant. Once identified, environmental priorities and control mechanisms were confirmed and/or set to ensure prevention of pollution and to reduce the risk of adverse impacts on the natural environment.

Appendix A – List of Pumping Stations and Facilities

	Sewage Pumping Station	Location
South Peel Wastewater Collection System		
1	Beach Street SPS	City of Mississauga
2	Beechwood SPS	City of Mississauga
3	Ben Machree SPS	City of Mississauga
4	Bolton North Hill SPS	Town of Caledon
5	Bolton SPS	Town of Caledon
6	Caledon East SPS	Town of Caledon
7	Castlemore SPS	City of Brampton
8	Clarkson SPS	City of Mississauga
9	Dougall SPS	Town of Caledon
10	Elmwood SPS	City of Mississauga
11	Fifeshire SPS	City of Mississauga
12	Front Street SPS	City of Mississauga
13	Gore Road SPS	City of Brampton
14	Harvestview SPS	Town of Caledon
15	Hiawatha SPS	City of Mississauga
16	Indian Road SPS	City of Mississauga
17	Intermodal SPS	City of Brampton
18	Jack Darling Memorial Park 1 SPS	City of Mississauga
19	Jack Darling Memorial Park 2 SPS	City of Mississauga
20	Lakelands SPS	City of Brampton
21	Mayfield SPS	City of Brampton
22	McVean SPS	City of Brampton
23	Meadowvale SPS	City of Mississauga
24	Mullet Creek SPS	City of Brampton
25	O'Neil SPS	City of Mississauga
26	Pinetree SPS	City of Mississauga
27	Richards Memorial SPS	City of Mississauga
28	Rosemere SPS	City of Mississauga
29	Shardawn Mews SPS	City of Mississauga
30	Silver Birch Trail SPS	City of Mississauga
31	Stonehaven SPS	City of Mississauga
32	Watersedge SPS	City of Mississauga
Inglewood Wastewater Collection System		
33	Inglewood SPS	Town of Caledon
	Odour Control & Septage Facilities	**Address**
34	Torbram Septage Receiving Station	City of Brampton
35	Mullet Creek Septage Receiving Station	City of Brampton
36	York-Peel Odour Control Facility	City of Brampton

Appendix B – Frequently Asked Questions

1. Where does water go after it is used?

After you use water to wash dishes and clothes, brush your teeth, shower or flush the toilet, the used water (wastewater) that goes down your drains flows through a series of underground sewer pipes to the wastewater treatment plants.

The wastewater is treated to remove contaminants and kill disease-causing microorganisms before being discharged into the environment. The Region of Peel operates three wastewater treatment plants (WWTP): G.E. Booth WWTP and Clarkson WWTP, both discharging into Lake Ontario, and the Inglewood WWTP, discharging into the Credit River. These three plants serve the cities of Mississauga and Brampton and the Town of Caledon.

Click here for more information on how wastewater is treated.

2. Why am I experiencing a sewage odour outside my house?

The sewage odor outside your house could be from a variety of sources. It could be that the sewer is backed up close to your property. If your property is located close to a lake, algal blooms also cause odours. Other sources of odour might include scheduled treatment plant maintenance coupled with prevailing winds, nearby farming activities, or odours from waste management facilities or industries.

If you are noticing odours near your property, please call the Region of Peel at 905-791-7800.

3. Why am I experiencing a sewage odour inside my house?

If you notice an odour of sewage coming from a drain in your house, it is recommended to pour a capful of bleach into the drain, let it sit for 10-15 minutes and then rinse it down with plenty of water. If this does not resolve the odour problem, please call the Region of Peel at 905-791-7800 for further investigation.

4. What is the difference between a storm sewer and sanitary sewer?

Wastewater that goes down drains inside homes and buildings enters the sanitary sewer system, which sends it to a wastewater treatment facility for treatment before it is released to the environment. Sanitary sewer systems in Mississauga, Brampton and Caledon are maintained by the Region of Peel.

Rainwater and melting snow are called storm water. Stormwater enters storm grates on the road and enters the storm sewer pipes that run beneath the roadways. These pipes discharge the storm water to local waterways, like streams, creeks and lakes. The majority of storm sewers are maintained by the local municipality – the cities of Brampton and Mississauga and the Town of Caledon. The Region of Peel maintains storm sewers on Regional roads.
Click here for more information about wastewater and storm water.

5. What happens to industrial wastewater?

Some companies treat their process wastewater and release it directly into the environment or into to Region of Peel sanitary sewer (wastewater collection system). Wastewater released into the sanitary sewer joins all other wastewater collected (from households and building drains) and flows to one of the wastewater treatment plants. Industrial wastewater can be hazardous or contain substances that may damage sewer infrastructure or upset the treatment process. Therefore, all wastewater released and all businesses that release it into Region of Peel sewers must comply with the Region of Peel's Sewer Use Bylaw (Wastewater Bylaw). To ensure compliance, industrial facilities are examined by inspectors from the Region's Environmental Control department. Approximately 6,000 inspections are completed each year.

6. What must not be disposed down the toilet or poured down the drain?

It is important to understand that what goes down the drain or the toilet may have negative impacts on the wastewater system and the environment. Fats, oils, and grease should never be poured down the drain because these materials are known to cling to pipe walls. Over time, their accumulation can build up to such high levels that the sewer can become blocked. Another reason to avoid disposing fats, oils, and grease into drains or toilets is that it is not effectively broken down during the wastewater treatment process. Instead, the Region of Peel recommends that edible household fats, oils and grease should be collected and properly disposed as per the **FOG disposal at home** instructions on this page. Click here to learn more about Peel's Community Recycling Centres.

It is also important not to dispose items down the toilet that could get stuck in or damage the sewer systems. Sticks, rags, paper towels, personal hygiene products, diapers, disposable wipes, household hazardous waste and pharmaceuticals should not be disposed by simply flushing down the toilet. Any unused or expired pharmaceuticals should be returned to your local pharmacy. For more information on how to properly dispose of items that damage the wastewater refer www.idontflush.ca.

7. What causes a sanitary sewer backup?

Most sewer backups occur when sewer pipes get blocked. Sewer pipes can become clogged with excess fats, oils, greases, food wastes, coffee grounds, hair, toilet paper, soap residue or inappropriate materials being flushed down the toilet or drain. Even sanitary wipes that are labelled "flushable", will in fact clog pipes, sewers, and screens at the treatment plants. To help reduce sanitary sewer blockages and prevent backups, it is recommended to properly dispose of these items and other materials that can harden or settle within the sewer pipes.

Sanitary sewer backups can also occur when tree roots grow into or through sewer lines. These roots may be from trees that are outside your property boundaries. The only solution to this problem is to cut away the roots and then replace the pipeline.

If you notice a sewer backup in your home, call the Region of Peel at 905-791-7800 ext. 4409, or 1-888-919-7800 for residents in Caledon. If the problem area is determined to be on private property, there is a flat fee for the service call. Click here for more information.

8. How safe is the treated wastewater that is released into Lake Ontario?

To meet environmental compliance criteria in Ontario, all wastewater must be treated before being returned to the environment. The Region of Peel operates and maintains three wastewater treatment facilities, G.E. Booth, Clarkson, and Inglewood, under strict regulations and the effluent discharged into the environment must meet location-specific, provincial, and federal standards.

9. Which pipes are mine and which are the Region's responsibility?

Click here for more information about homeowner and Regional responsibilities of wastewater infrastructure.

10. What is optional water/sewer line insurance program?

The pipes on the private side of the property line belong to the property owner. Sometimes these pipes may get damaged or blocked, which can result in costly plumbing bills. The Region of Peel endorses a voluntary pipe insurance program. Read more here:

Click here for more information on the water/sewer line insurance program.

Other sources for more information about wastewater and related issues:

Region of Peel working with you **Wastewater-related questions:** **Region of Peel** 10 Peel Centre Drive Brampton ON L6T 4B9 Phone: 905-791-7800 Ext. 4685 Website: https://peelregion.ca/wastewater/ E-mail: Publicworkscustserv@peelregion.ca	Region of Peel working with you **Water and Sanitary Sewer/Septic Protection Plans:** https://www.peelregion.ca/water/your-home/service-line-warranties.asp **Peel Wastewater Bylaw:** https://www.peelregion.ca/council/bylaws/2010s/2010/by-53-2010.htm
Ontario **Ministry of the Environment, Conservation & Parks** Public Information Centre Phone: 416-325-4000 Toll-Free: 1-800-565-4923 Web site: www.ontario.ca/environment	Canada **Environment and Climate Change Canada** Inquiry Centre Phone: 819-997-2800 Toll-Free:1-800-668-6767 Web Site: http://www.ec.gc.ca