ECA Number: **023-W601**
Wastewater System Number: 120003619

St. Catharines

City of St. Catharines

Wastewater Collection System

2025 Annual Performance Report

For submission to the Ministry of Environment, Conservation and Parks

March 2026

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*Copies of the appendices are available by emailing Engineering Facilities and Environmental Services at efesall@stcatharines.ca.

Glossary

Term	Explanation
CLI-ECA	An approval framework approval that outlines pre-authorized conditions for changes to the sewage works system and ensures standardized operating and reporting conditions to safeguard accountability and oversight, with enhanced requirements for monitoring and system operation.
Combined Sewers	A sewer in which all sanitary and stormwater flows are collected within the same pipe.
CSO Regulators / Overflows	A flow-regulating device / structure that directs dry weather flow to a Wastewater Treatment Plant and diverts wet weather flows in excess of the regulator's capacity to outfalls / receiving waters.
Forcemains	Pipes located downstream of a pump station that convey wastewater under pressure.
Fully Separated Sewer	Sewers that allow only sanitary flows to be collected within the sewer - there are no stormwater connections. All stormwater is collected within a separate sewer.
MECP Procedure F-5-5	Determination of treatment requirements for municipal and private combined and partially separated sewer systems - outlines the rules for treating the wastewater from municipal and private combined and partially separated sewage systems.
Outlets / Outfalls	The point where the system discharges into the natural environment / receiving waters.

Glossary

Term	Explanation
Overflow Events	Events that result in a surcharge of the sanitary sewer system or WWTP, which discharge into the natural environment / receiving waters.
Partially Separated Sewer	Sewers that collect all sanitary flows and some stormwater from weeping tiles and roof leaders. Stormwater from roadways is collected in a separate sewer.
Receiving Water	A natural water body into which treated or untreated wastewater is potentially discharged.
Spill	An accidental, unplanned or unpermitted release of wastewater into the natural environment.
Stormwater	Refers to rainwater runoff, snow melt and surface runoff.
Wastewater Collection System	City-owned sewage works / infrastructure that collects and transmits sanitary wastewater.
Wet Weather Flows	Flows resulting from the combination of sanitary sewage and extraneous flows, resulting from a weather event such as rainfall or snow melt.
Storm Sewer	Collects and transmits stormwater resulting from precipitation and snow melt.
Wet Weather Storage Facility	A facility that provides temporary storage of excess wet weather flows that can later be treated at a WWTP.

Glossary

Acronym	Definition
City	City of St. Catharines
CLI-ECA	Consolidated Linear Infrastructure Environmental Compliance Approval
CSO	Combined Sewer Overflow
CSO Outfall	Combined Sewer Overflow Outfall
GEI	GEI Consultants Canada Ltd.
MECP	Ministry of Environment, Conservation and Parks
Niagara Region or Region	The Regional Municipality of Niagara
SAC	Spills Action Center
WWTP	Wastewater Treatment Plant

Introduction and Purpose

The City of St. Catharines (the City, or St. Catharines) owns and operates the St. Catharines Wastewater Collection System, which is operated under a Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA), issued by the Ministry of the Environment, Conservation, and Parks (MECP). The approval replaces the numerous pipe-by-pipe Environmental Compliance Approvals (ECAs) that were previously issued for components of the municipal sewage collection system. The streamlined CLI-ECA outlines pre-authorized conditions for changes to the sewage works system. The CLI-ECA ensures standardized operating and reporting conditions to safeguard accountability and oversight, with enhanced requirements for monitoring and system operation. One condition of the CLI-ECA is preparing an annual report outlining actions relating to the CLI-ECA.

Unless otherwise noted, this Annual Performance Report covers the period of January 1 to December 31, 2025, and is intended to fulfill CLI-ECA reporting requirements. It is important to note some of the CLI-ECA requirements are phased in; therefore, not all requirements are in place. As additional requirements come into effect and additional information becomes available it will be reflected in future annual reports.

Background

Wastewater Collection System

The City of St. Catharines' wastewater collection system is classified by the MECP as a Class I System (Wastewater System Number: 120003619) and serves a population of approximately 144,800 residents. St. Catharines operates within a two-tier wastewater management structure:

- The Niagara Region is responsible for wastewater treatment, pumping stations, and major trunk sewers
- The City of St. Catharines manages the local collection system, including sanitary and combined sewers

Wastewater flows in St. Catharines are collected and treated at two Wastewater Treatment Plants (WWTPs):

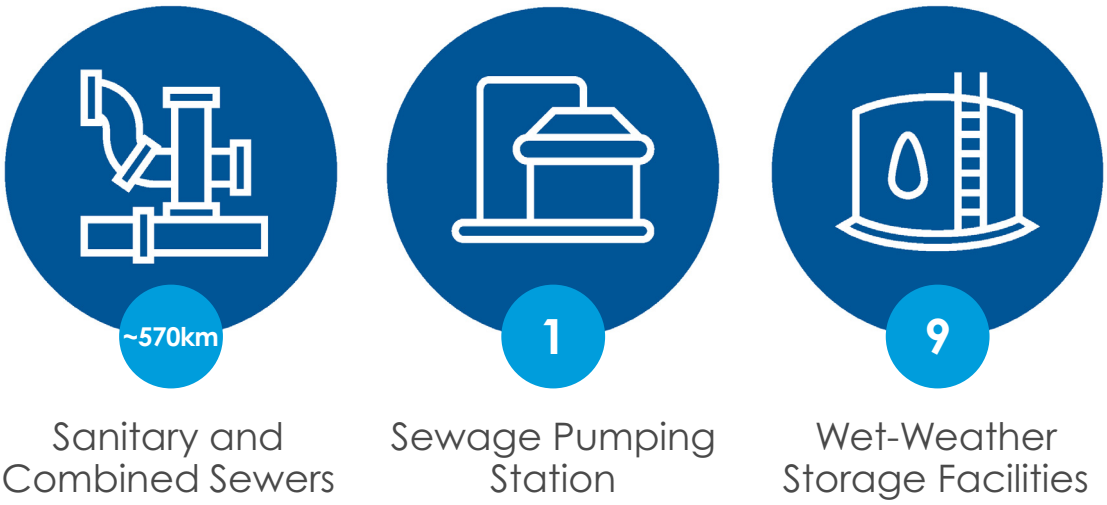
- Port Dalhousie WWTP (serving western St. Catharines and northwest Thorold)
- Port Weller WWTP (serving eastern St. Catharines, northeast Thorold, and parts of Niagara-on-the-Lake)

Both the Port Dalhousie and the Port Weller WWTPs, as well as 15 sewage pumping stations are owned and operated by the Region and are beyond the scope of this report. Appendix A shows the catchment area boundaries for each Wastewater Treatment Plant.

Background

The St. Catharines wastewater collection system is made up of many components and generally consists of approximately 570 kilometres of sanitary and combined sewers, one (1) sewage pumping station, nine (9) wet-weather storage facilities, and associated forcemains.

Figure 1: Wastewater Collection System Components



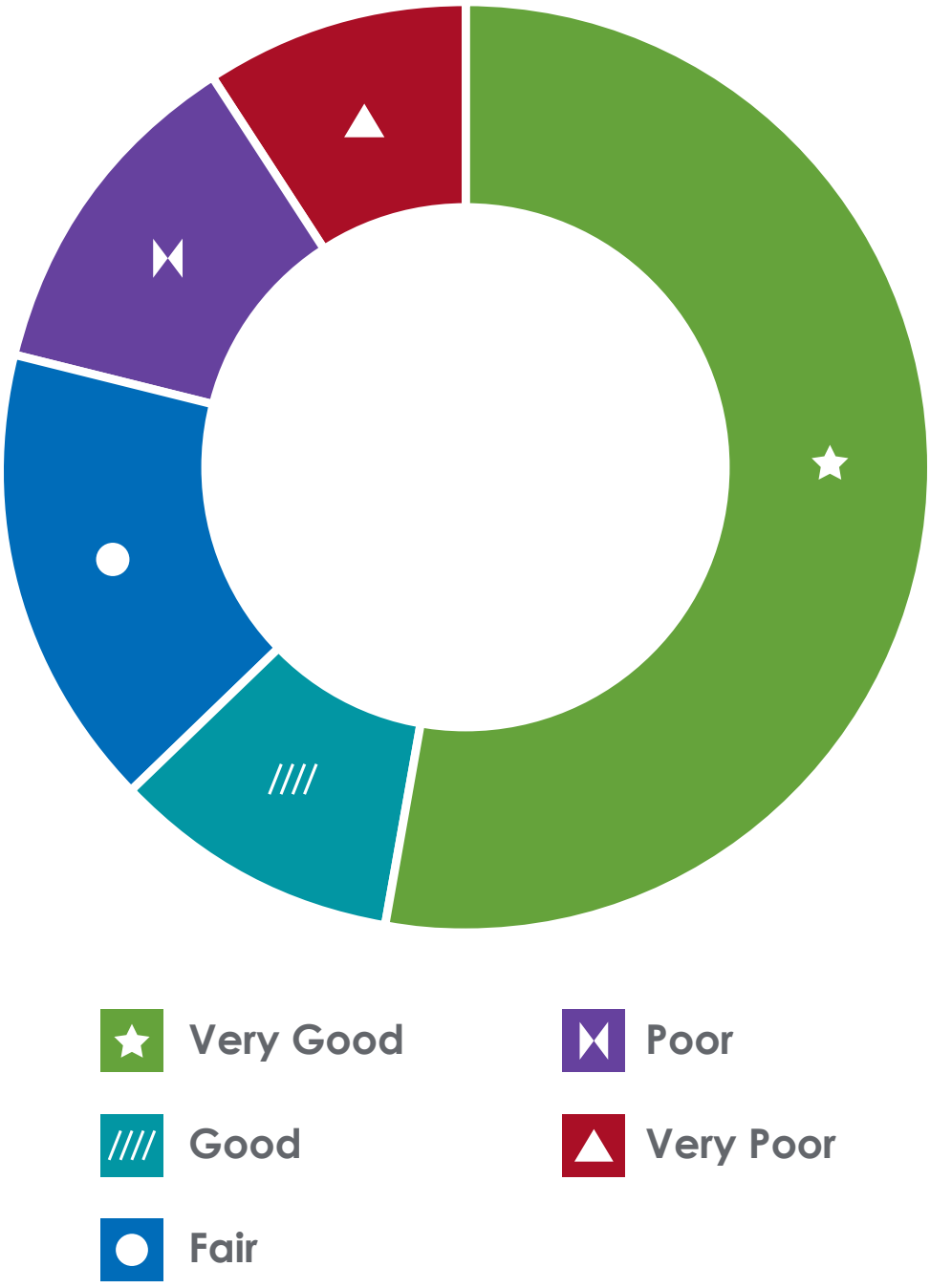
The City actively monitors, operates, and maintains the system to ensure regulatory compliance and system reliability. The City is also responsible for maintaining the system in a state of good repair.

As part of the City's asset management programs, condition assessments are undertaken. Nearly 63 per cent of wastewater assets are in 'Good or Very Good' condition and 16 per cent are in 'Fair' condition. Approximately 19 per cent have been rated in 'Poor or Very Poor' condition. A summary of wastewater assets by their condition rating is shown in Figure 2.

Staff working in the wastewater collection system are required to hold certifications through the Ontario Water and Wastewater Certifications Office (OWWCO) as per O. Reg. 129 / 04 (Licensing of Sewage Works Operators) under the Ontario Water Resources Act. Staff must meet specific testing, education and experience requirements as well as ongoing training to maintain their certifications.

Background

Figure 2: Summary of Wastewater Asset Conditions



Note: Asset condition distribution is based on the asset replacement cost.

Background

Types of Sewers

St. Catharines is serviced through networks of fully separated, partially separated and combined sanitary and storm sewers. These types of sewers are defined as follows:

Fully Separated

Only sanitary flows are collected within the sanitary sewer - there are no stormwater connections. All stormwater is collected within a separate storm sewer. These types of sewers are mandatory for all new developments where no new storm connections to the sanitary sewer are allowed. Figure 3 shows a typical separated sewer system.

Partially Separated

Stormwater from roadways is collected in a separate storm sewer. The partially separated sanitary sewer collects all sanitary flows and some stormwater from weeping tiles and downspouts.

Combined Sewers

All sanitary and storm flows are collected within the same sewer. Figure 4 shows a typical combined sewer system.

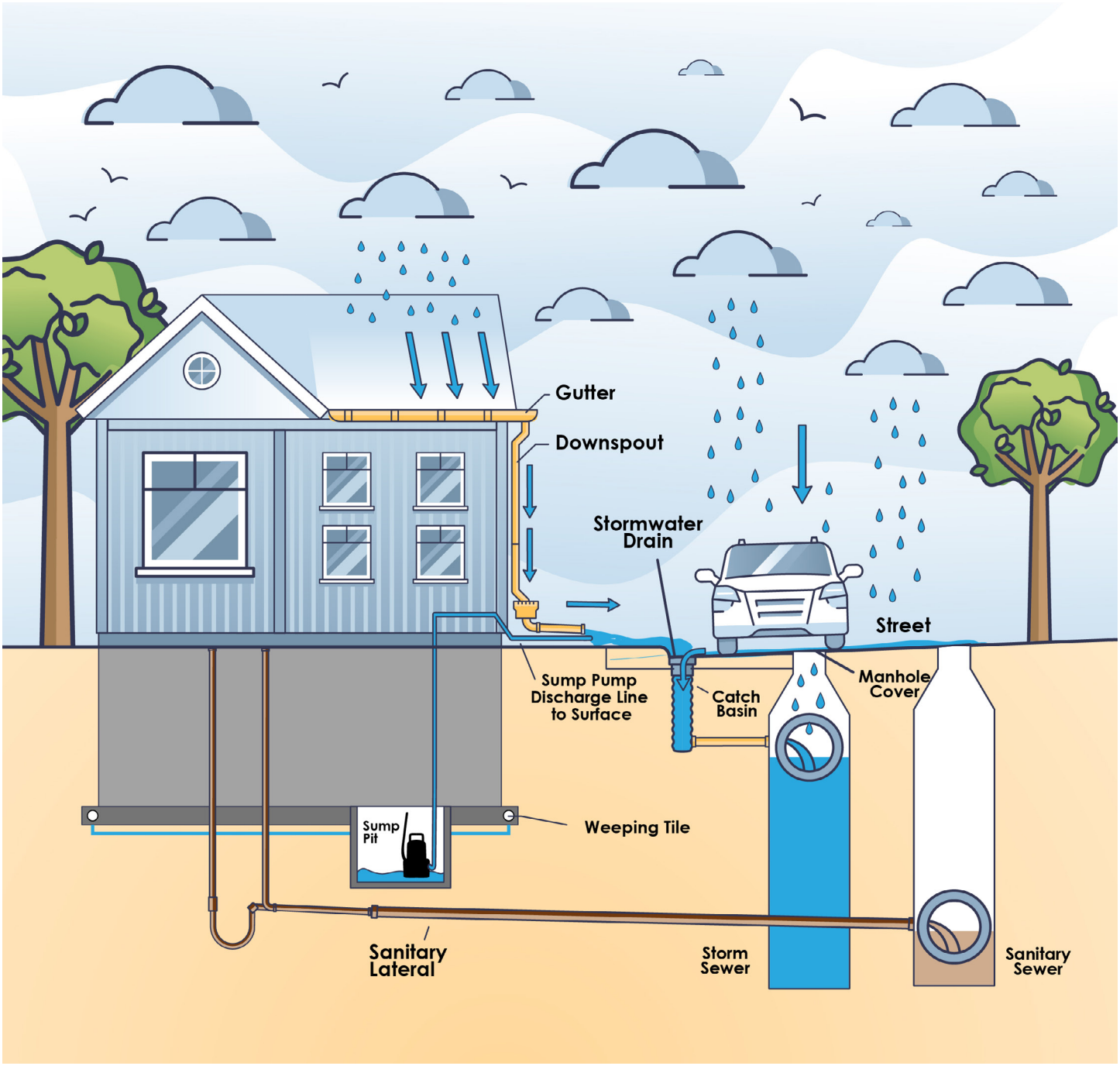
Storm Sewers

Collects and transmits runoff resulting from precipitation and snow melt.

Note: The above sewer system type definitions are slightly different that those defined in the CLI-ECA. The City is working to better align these discrepancies, as part of the ongoing transitional efforts for improved consistency.

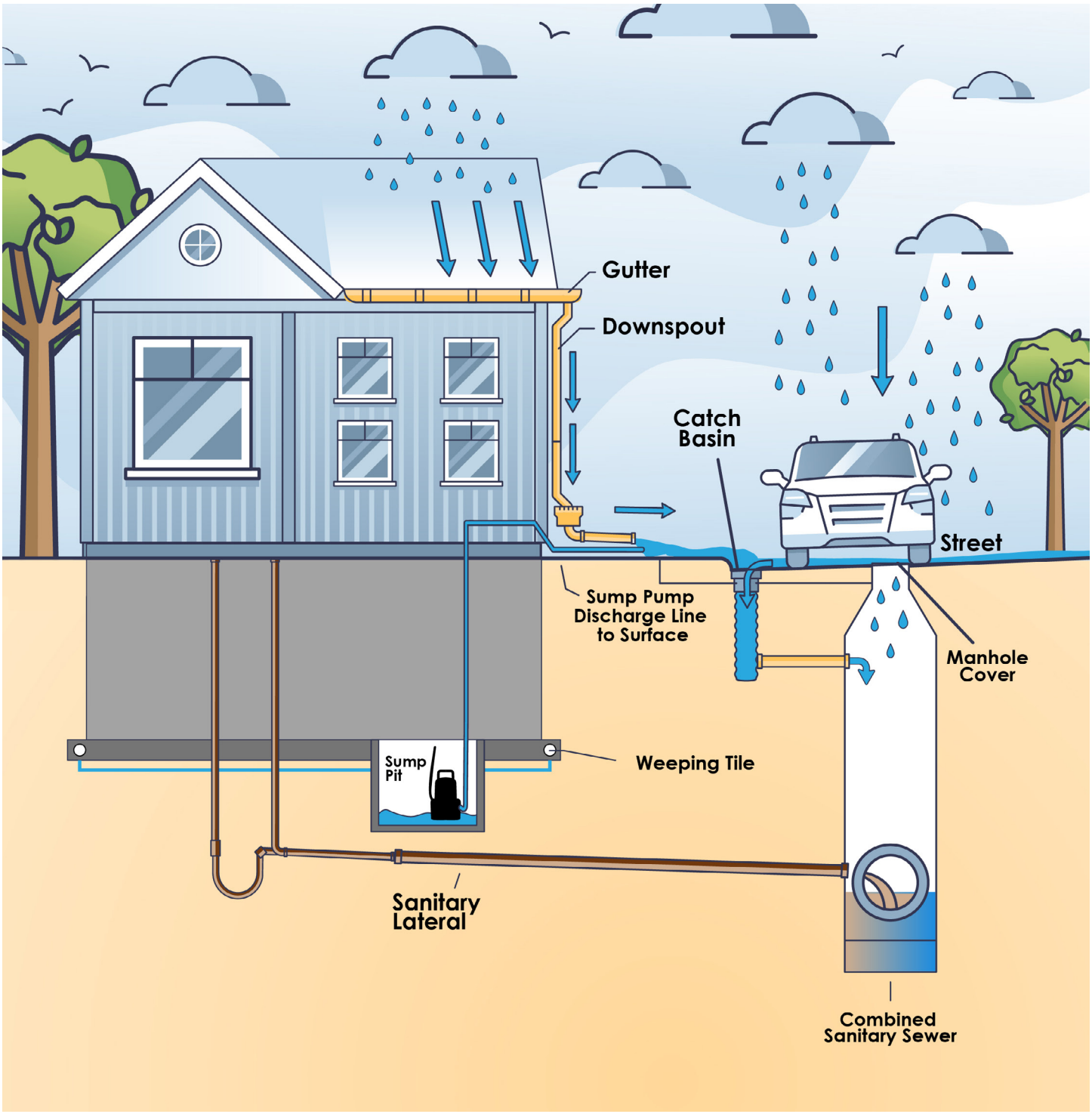
Background

Figure 3: Typical Separated Sewer System



Background

Figure 4: Typical Combined Sewer System



Background

Combined Sewer Overflows

Combined sewers were designed to transport both sanitary sewage and stormwater in the same pipes and were generally installed prior to the mid-1900s. During dry weather these sewers transport all the flow to a wastewater treatment plant. However, during large rainstorms, the volume of flow can exceed the capacity of the sewer system. When this happens, a portion of the flow is diverted away from the wastewater treatment plant and untreated sewage mixed with stormwater is released directly into local receiving waters and ultimately Lake Ontario.

The regulating structures (e.g. weirs) in the wastewater collection system that allow sanitary flows to be diverted to the natural environment, during wet weather events, are called Combined Sewer Overflow (CSO) Regulators / Overflows. When these regulators become active, they discharge into the natural environment and are commonly referred to as CSO Outfalls. Discharge water from CSOs often contain high levels of pollutants such as pathogenic microorganisms, suspended solids, nutrients, oils, and grease. Discharge waters represent a potential health hazard and can have the potential for adverse effects on aquatic life, recreational uses, and water supplies. CSO regulators are generally located in the older neighbourhoods of Port Dalhousie, Merritton and central St. Catharines.

There are 101 CSO regulators in the St. Catharines wastewater collection system and 54 CSO outfalls. Appendix B shows the locations of the CSO regulators.

Sanitary Sewer Overflows

A Sanitary Sewer Overflow (SSO) refers to an overflow within the wastewater collection system that occurs under dry weather flow conditions and is not influenced by wet weather. There are no SSOs located within St. Catharines.

Combined Sewer Separation

The City actively pursues sewer separation opportunities where feasible. Sewer separation may be undertaken as part of regular construction programs, or in specific areas identified through the Pollution Prevention and Control Program, Environmental Assessments, inflow and infiltration investigations or regular operations activities.

Background

Procedure F-5-5

The MECP's Procedure F-5-5, determination of treatment requirements for municipal and private combined and partially separated sewer systems, outlines the rules for treating the wastewater from municipal and private combined and partially separated sewage systems. The goals of Procedure F-5-5 are to:

- Eliminate the occurrence of dry weather overflows;
- Minimize the potential for impacts on human health and aquatic life resulting from CSOs; and
- Achieve as a minimum, compliance with recreational water quality objectives at beaches in the summer months.

2025 Annual Wastewater Activities

Each year the City undertakes a number of projects and programs related to the wastewater collection system. For the purposes of this report the actions are categorized as:

- Environmental Education and Public Outreach
- Operations and Maintenance
- Capital Works Projects
- System Monitoring

These actions were taken, in part, to address the requirements of the City's CLI-ECA and Procedure F-5-5.

Environmental Education

Public education and awareness campaigns have always been an important and highly visible component of the City's wastewater activities. For example, the City is a partner in the Niagara Children's Water Festival held at Brock University. In 2025, the festival was held from April 29 to May 2 and provided engaging presentations and activities focused on water themes, with approximately 3,300 students attending in person.

In addition to public education initiatives, the City has targeted awareness campaigns related to specific topics. In 2025, the City participated in several events throughout the year, targeting different environmental topics such as stormwater, protecting pipes with proper disposal of fats, oils and grease (FOG) and non-flushable wipes, basement protection measures such as the Flood Alleviation Program (FLAP), and an annual rain barrel sale. In 2025, specific events included:

- World Water Day;
- Niagara Home and Garden Show;
- Earth Day (in conjunction with Links for Greener Learning);
- St. Catharines Downtown Block Party (in conjunction with the St. Catharines Downtown Association);
- Hot Summer Nights (in conjunction with St. Catharines Fire Services); and
- Pumpkinville (in conjunction with St. Catharines Community Recreation and Culture Services)

2025 Annual Wastewater Activities

Rain Barrel Subsidy

On June 7, 2025, the City held an annual rain barrel sale for St. Catharines residents. Approximately 325 rain barrels were subsidized for sale, at a cost of $60 each. It is estimated that the installation of each new rain barrel captures 1,200 litres of stormwater annually. Approximately 20 per cent are installed on properties serviced by a combined sewer, with the rest being installed on properties serviced by fully or partially separated sewers. On average, each rain barrel is filled six times per year (Source: Region of Waterloo).

Weeping Tile Disconnection

Weeping tile is a perforated pipe system around a home's foundation to collect and redirect groundwater and stormwater away from the building. Historically, many of these drainage systems were connected directly to combined sewers. Since the mid-1990's, new weeping tile systems have been connected to sump pits that discharge stormwater above grade. In St. Catharines, existing weeping tile connections to the combined and sanitary sewer systems are grandfathered in and remain a significant source of wet weather flows. The adverse effects of these flows can lead to sewer capacity issues, resulting in residential sewage back-ups and unnecessary capacity issues at our sewage treatment plants. Disconnecting weeping tiles from the wastewater system removes these wet weather flows and improves system performance. These disconnections typically happen when properties are re-developed, or have major plumbing renovations.

The Flood Alleviation Program (FLAP) is a grant program that subsidizes the cost of installing flood prevention devices (e.g. a backwater valve) on qualifying residential properties. A requirement of this program is disconnecting weeping tile connections from the home's sanitary sewer lateral. In 2025, 244 homes applied to the FLAP program, with 53 homes having flood prevention devices installed. Grant expenditures on this program were approximately $297,000 not including staff time and other internal resources.

As part of FLAP, the weeping tiles of 26 homes connected to the sanitary sewer system were removed and flows redirected to the surface via sump pump. It is estimated that the installation of each weeping tile disconnection removes 110 m3 annually from the combined sewer system.

Weeping tiles are also disconnected in some infill projects. This includes projects where existing residential houses are demolished, and new units are built. In other cases, existing sewer laterals were repurposed. The current building code does not allow weeping tile connections to sanitary or combined sewers, instead a sump pit and pump are required. While infill developments contribute to dry weather sanitary flows, the wet weather flows from removing the weeping tile connections are significantly reduced.

In 2025, six (6) properties were demolished, and the sewer laterals were removed / capped.

2025 Annual Wastewater Activities

In addition, fourteen (14) other properties had their sewer lateral repurposed (i.e. weeping tile directed to a sump pit).

Operations and Maintenance Activities

Inspection and maintenance activities are critical programs, designed to capture deficiencies, and proactively mitigate issues. The City has a variety of maintenance and inspection activities, to ensure sewer assets are operating as designed. These programs help identify operational issues and keep sewer assets in good working order. A summary of these initiatives can be found in Table 1.

Table 1: Inspections, Maintenance, and Service Requests

Inspections, Maintenance Programs and Service Requests		
Type	**Frequency**	**2025 Comments**
CCTV Sewer Inspections	Inspections based on budget	220 km
Sewer Flushing and Cleaning Program	Flushed once every five years	Flushing by City staff and / or contractors. Annual budget: $265,000
Main Sewer Repairs	As needed, sewers requiring immediate repairs	Repair by City staff and / or contractors. Annual budget: $220,000
Emergency Response - Main Sewer Surcharging	As reported, (e.g. grease and deposit build-up, wet weather events)	36 Service requests

2025 Annual Wastewater Activities

Inspections, Maintenance Programs and Service Requests		
Emergency Response - Sewer Lateral	As needed, includes both private and public sewer laterals	291 Service requests
Sanitary Sewer Related Public Complaints	As reported	23 Complaints
Suspended Sewer Inspections	Visual inspection twice a year	Inspected semi-annually by staff
Sewer Lateral Replacements	As requested	89 Connections
Combined Sewer Overflow Inspection and Maintenance	Visual inspection	Regular inspections by staff
Wet Weather Storage Facilities (WWSF)	Annual Inspection	Inspected / monitored by staff and / or contractors as required
Sewage Pumping Station	Annual Inspection	1 Inspected
Equipment Calibration and Maintenance	Annual Inspection	All equipment inspected / monitored by staff as required

2025 Annual Wastewater Activities

CCTV Sewer Inspections

The City administers a closed-circuit television (CCTV) sewer inspection program for sanitary sewers. The use of CCTV technology allows a thorough examination of the sanitary collection system to ensure early and effective detection of any potential issues such as damaged pipes and potential blockages. The information garnered from the CCTV inspections help inform maintenance, repair and rehabilitation programs.

Sewer Flushing and Cleaning Program

The City has an annual sewer flushing program. Components of this program include cycle flushing, annual flushing, and semi-annual flushing. Cycle flushing is the City's regular flushing program which is intended to clean the entire system. Sewers up to a diameter of 525mm are flushed once every five (5) years, while sewers greater than 525mm are flushed as needed. The annual and semi-annual components of the program are specifically implemented to address areas of the system with known performance concerns which are susceptible to blockages and debris such as grease, stone, and infrastructure issues (e.g. flat sewers). Information from the flushing program is evaluated as needed and reviewed at the end of each program cycle.

Through normal operational activities, as well as a review of the flushing program information, areas of the wastewater system are then identified for enhanced maintenance. This is often the result of hardened grease deposits or calcite in the pipes which cannot be entirely or effectively removed by flushing activities. These locations are then scheduled for reaming activities as required. The 2025 budget for the program was $265,000.

Main Sewer Repairs

Regular operational activities, combined with results from the CCTV program, help identify locations where immediate repairs are required to sections of the sewer system. The 2025 budget expenditure for the program was $220,000.

Emergency Response - Main Sewer Surcharging

In 2025, City staff responded to 36 main sewer surcharge events. These events were generally the result of debris such as grease deposits or stone reducing capacity in the system during wet weather. The City's typical response to these issues is to remove the debris through flushing and vacuuming the impacted sections of sewer to restore the normal flow.

2025 Annual Wastewater Activities

Emergency Response - Sewer Laterals

In 2025 the City responded to 291 requests for service due to blocked sewer laterals (including both public-side and private-side deficiencies). Blocked laterals normally occur when debris or roots affect the ability of residential wastewater to drain properly to the main sewer. This can cause wastewater to backup into the house or building, resulting in basement flooding.

Sanitary Sewer Related Public Complaints

The City receives various service requests and complaints from the public. All complaints are investigated, and corrective actions are performed as required. In 2025 the City received 23 regarding the wastewater system. These included odour complaints and loose manhole covers. These complaints were in addition to the various service requests (e.g. blocked sewer laterals) noted elsewhere in this report.

Suspended Sewer Inspections

The St. Catharines wastewater system has eight (8) elevated or suspended sewers. These sewers cross over sensitive areas such as watercourses. These sewers are visually inspected twice a year to ensure they remain in good working order.

Sewer Lateral Replacements

In 2025 the City repaired or replaced 89 service connections to the wastewater system. These activities were either undertaken by the City or were completed by private contractors. Issues with service connections are most often identified due to blocked lateral calls, inspections due to reported basement flooding and other regular operations activities.

Combined Sewer Overflow Inspections and Maintenance

St. Catharines regulators are regularly inspected by City staff. Any that cannot be safely visually inspected are included on the enhanced flushing list. Operational issues are dealt with on an ongoing basis as they are identified, and as budgetary allocations allow.

Wet Weather Storage Facility Operation and Maintenance

The City owns and operates nine (9) wet weather storage facilities. Seven (7) of these facilities are equipped with pumps, six (6) of which operate in manual mode and one (1) operates in automatic mode. The water levels of these facilities are regularly monitored, and the water is pumped back into the sewer system as needed. A couple of the facilities provide inline storage. This refers to a secondary sewer pipe that holds capacity during a wet weather event. The remainder are offline facilities, that store capacity and return flows to the main sewer when they are no longer surcharged. Additional details for these facilities are shown in Table 2. The location of these facilities is shown in Appendix A.

2025 Annual Wastewater Activities

Table 2: Wet Weather Storage Facilities

Facility Name	Asset ID	Location	Type	Capacity[1]	Year[2]
Corbett Avenue	STOT220	Corbett Avenue Within Road Allowance	Inline	450 m^3	1992
Guy Road	STOT121	Guy Road Park 61A Duncan Dr.	Offline	2,770 m^3	2007
Lakeside Park	STOT180	Lakeside Park Parking Lot	Inline	700 m^3	1994
Walkers Creek	STOT123	Walkers Creek Park 142A Parnell Rd.	Offline	400 m^3	2003
Kernahan Park	STOT122	Kernahan Park 381 Queenston St.	Offline	600 m^3	2004
Welland / Ontario	STOT140	12 Mile Creek Valley 2 Welland Ave.	Offline	7,000 m^3	2006
Lockview	STOT120	Lockview Park 28A Rochelle Dr.	Offline	2,800 m^3	2007
Capner / Oakdale	STOT103	Former Canal Valley 166 Westchester Cres.	Offline	1,000 m^3	2007
Glengarry	STOT240	Glengarry Park 63 Glengarry.	Offline	3,300 m^3	2021

Notes: 1 - Storage Capacity in cubic metres | 2 - Year the facility was commissioned

2025 Annual Wastewater Activities

In 2025, condition assessments were conducted on the pumps in three (3) of the wet weather storage facilities, including those at Kernahan Park , Lockview Park, and Walker's Creek. The pump at Kernahan Park was reported to be in good condition. The pump at Walker's Creek was reported to be in good condition electrically, however, several of the mechanical components were noted as being in fair condition. The pumps at Lockview Park were unable to be removed at the time of inspection as the power cables were strapped to the sump pit wall. The pumps were reported to be operational.

In 2025, the Walkers Creek and Welland / Ontario facilities were manually flushed via each tank's tipping bucket system.

In June 2025, a contractor was on-site at Walker's Creek to update the system controls to provide an accurate water level reading and determine the feasibility of restoring the system to automatic operations.

The facility at Guy Road Park has continued to experience maintenance issues including rags becoming entangled in the pump impeller and electrical issues, which have hindered its operations. The City investigated the option of replacing the existing pump with a Concertor pump, which is specifically designed to prevent clogging. However, the facility does not currently have the capacity to support the electrical requirements of a Concertor pump. A consultant was retained in late 2025 to further investigate options at this site.

Equipment Calibration and Maintenance

All in-house monitoring equipment is calibrated / verified as per manufacturer's recommendations. Staff utilize the Ventis MX4 Gas Meters to conduct atmospheric testing before entering a confined space or opening manholes. These multi-gas monitors are capable of detecting oxygen, carbon monoxide, hydrogen sulphide and combustible gases. All meters are verified prior to daily use, using the bump testing method with methane, according to manufacture specification. These meters are also calibrated by a third party on an annual basis.

The City currently has four Smart Cover sewer monitors. These are level sensors specifically designed for monitoring flows in sanitary sewers. The intent is to use this data to monitor sewer capacity. The covers are calibrated annually by Link Utility Technologies and maintenance is performed as needed.

Preventative maintenance is regularly scheduled for all equipment (frequency depends on the equipment and type of maintenance required).

Several of the City's wet weather storage facilities are outfitted with backflow devices.

These devices protect the drinking water system from contamination and are installed in accordance with the Ontario Building Code and "CAN / CSA-864.1 0-94 Manual for the Selection, Installation, Maintenance and Field Testing of Backflow Prevention Devices". These devices are inspected and tested annually to ensure they are in good working condition by certified City staff.

Figure 5: Glengarry Road CSO Tank

2025 Capital Works Projects

Authorized Alterations

Under the CLI-ECA, the City is pre-authorized for alterations to the existing works including changes, additions and extensions. These pre-authorized alterations are completed in accordance with conditions in the CLI-ECA and guidance materials titled 'Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Pre-authorized'.

Pre-Authorized Requirements

There are various requirements that must be met for pre-authorization, including sewer capacity checks for both City and Regional sewers (if identified), permission if connecting into another system (e.g. connecting to a regional trunk) and works requiring Niagara Peninsula Conservation Authority permits and / or approvals.

Significant Drinking Water Threat Assessment Report

All proposed alterations to the Wastewater Collection System must include a completed Significant Drinking Water Threat (SDWT) Assessment Report. The City must ensure that any alteration to the Authorized System(s) is designed, constructed, and operated in such a way as to be protective of sources of drinking water in vulnerable areas as identified in the Source Protection Plan. A copy of the 2025 SDWT Assessment Report can be found in Appendix C.

Direct Submissions

Activities that alter or modify the City's Wastewater Collection System and have not been included as a pre-authorized condition in the CLI-ECA, require an amendment or direct submission to the Ministry for approval. The City did not require any direct submissions in 2025.

2025 Capital Works Projects

Sanitary Sewer Improvement Projects

In 2025, the City completed a number of sanitary sewer improvements with overall project expenditures of $4.7 million. In addition, the City cost shared one sanitary sewer project in conjunction with Regional roadworks, with the Niagara Region. This information was derived from capital works projects completed in 2025. A summary of budgeted projects is included in Appendix D.

Storm Sewer Projects

In 2025, the City invested $4.2 million into a number of storm sewer projects. These capital investments resulted in improvements to the system specifically to reduce stormwater impacts in local catchments. In addition, the City cost-shared one storm sewer project in conjunction with Regional roadworks, with the Niagara Region. A summary of budgeted projects is included in Appendix D.

2025 System Monitoring Activities

Rainfall and Sewer Flow Monitoring Program

The City uses site-specific flow monitoring data to help characterize system functionality on an as-needed basis for development planning and to validate sewer works. Flow monitoring was conducted at several locations in the wastewater collection system, resulting in a model recalibration in January 2025. The City also operates four SmartCover sewer monitors, which are level sensors specifically designed for monitoring flows in sanitary sewers.

In 2025, the City retained GEI Consultants Canada Ltd. (GEI) to complete an analysis of the wastewater system and included rainfall analysis. For F-5-5 requirements, rainfall data is analyzed for the period of April to November. Table 3 summarizes the total rainfall volume, maximum one-hour volume and maximum 24-hour volume for the seven-month period of April to November (F-5-5 Reporting Period).

2025 System Monitoring Activities

Table 3: Rainfall Summary compared to a Typical Year

		Typical Year (2014)	2025	Difference
St. Catharines – North[1]	Total (mm)	463.5	450.0	-2.9 per cent
	Max 1-hr (mm)	26.5	38.25	+44.3 per cent
	Max 24-hour (mm)	41.75	74.5	+78.4 per cent
St. Catharines – South[2]	Total (mm)	599.0	442.3	-26.2 per cent
	Max 1-hr (mm)	25.5	19.5	-23.5 per cent
	Max 24-hr (mm)	60.0	36.6	-39.6 per cent

Notes:

1 – As measured at the Port Dalhousie WWTP Climate Station

2 – As measured at Niagara Region's Environmental Centre Climate Station

3 – The City uses 2014 as a Typical Year

In North St. Catharines comparing the 2025 rainfall to a Typical Year, the 2025 total precipitation is 5.2 per cent lower, the maximum 1-hr rainfall is 44.3 per cent greater, and the maximum 24-hr rainfall is 78.4 per cent greater.

In South St. Catharines comparing the 2025 rainfall to a Typical Year, the 2025 total precipitation is 27.6 per cent lower, the maximum 1-hr rainfall is 23.5 per cent smaller, and the max 24-hr rainfall is 39.6 per cent smaller.

2025 System Monitoring Activities

Master Servicing Study

The City of St. Catharines has initiated a Sanitary Master Servicing Study. This Study will be a comprehensive assessment of the City's existing sanitary and combined sewer collection system to establish short-term and long-term vision, strategy, and policies to support the management and enhancement of sanitary and combined sewer collection system infrastructure. The Sanitary Master Servicing Study will determine and optimize future sanitary sewer infrastructure needs within the City of St. Catharines through to 2051 and beyond. This Study will be developed to align with Niagara Region's Master Servicing Plan.

Tactical Inflow and Infiltration Study

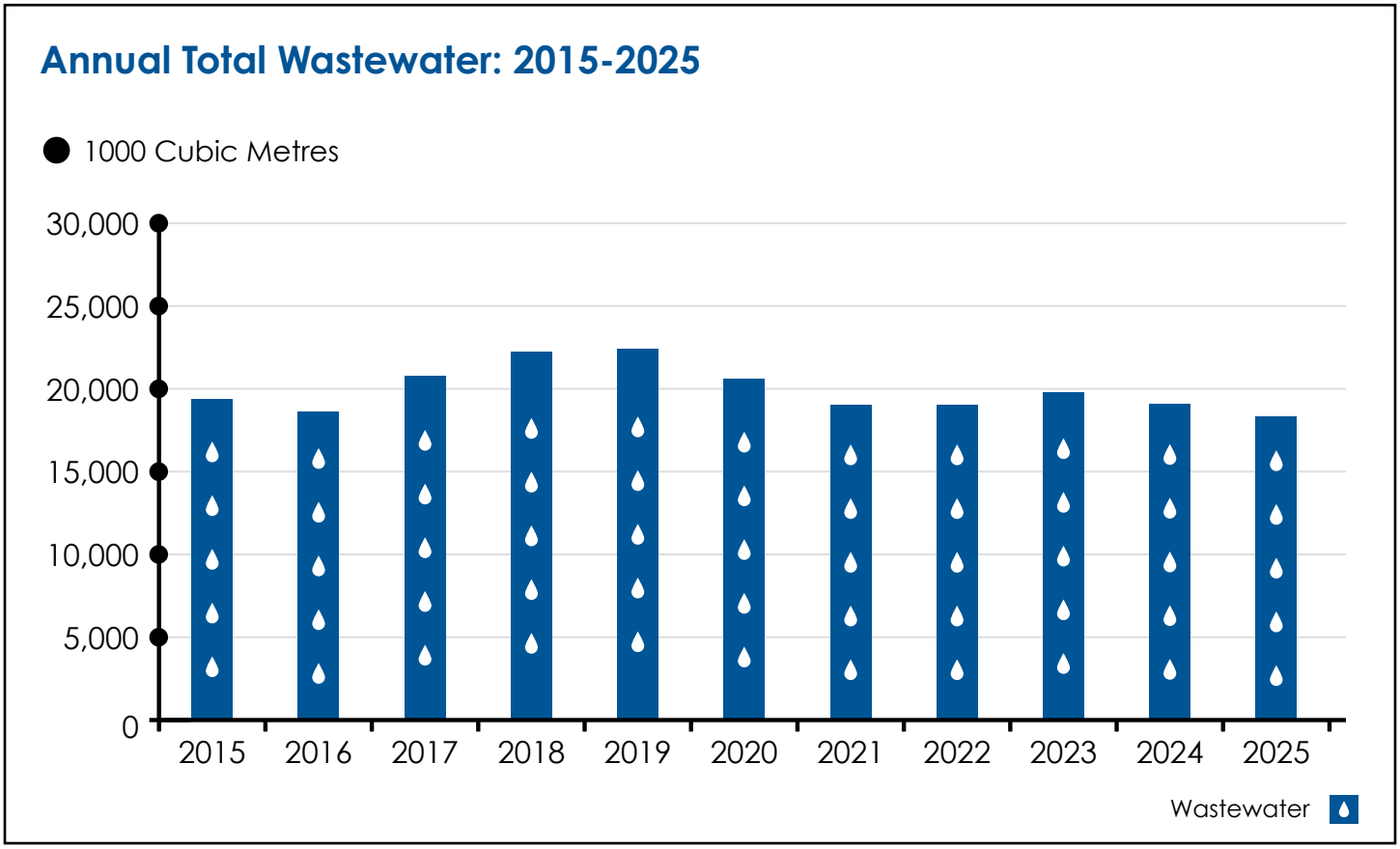
The City has initiated a Tactical Inflow and Infiltration (I/I) Study. This study is aimed at locating and quantifying system I/I and includes a number of actions such as flow monitoring to establish flow characteristics and potential I/I contributors; a prioritized field investigation program (including Drainage Surveys, CCTV, Smoke Testing, and Dye Tests); additional recommendations for data collection to fill specific gaps (e.g., laterals and manhole scans); and the development of a cost-effective Remediation Action Plan. This study was initiated in 2025 and is expected to continue through 2027. This work is funded through the Canada Mortgage and Housing Corporation's (CMHC) Housing Accelerator Fund (HAF).

2025 System Performance

Annual Wastewater Treatment Plant Flows

In 2025, the St. Catharines contribution of annual flow to the wastewater treatment plants was 18,345 Mega Litres (ML). The annual wastewater flows in St. Catharines has slightly decreased over the past decade. These flows vary significantly over time due to a number of factors including annual precipitation. Figure 4 illustrates the annual flows to the wastewater treatment plants from 2015 to 2025.

Figure 6: St. Catharines Annual Wastewater Flows to Treatment Plants



2025 System Performance

Procedure F-5-5 Conformance

MECP Procedure F-5-5 outlines several controls to be implemented in relation to combined sewer overflows which are evaluated to measure combined system performance. The City's implementation status with relation to those controls can be found in Appendix E.

Each CSO location has a static overflow point, which functions automatically in the event of sewer surcharging. Currently, none of the overflows are monitored in real time. Overflow volumes are estimated using an all-pipes hydraulic sewer model. The Province of Ontario is in the process of developing specific guidance on CSO monitoring. Once this guidance is finalized the City's monitoring program will be reviewed to align with it.

In 2025, the City retained a consultant, GEI, to perform a hydraulic sewer model simulation of the wastewater collection system. This included undertaking a continuous simulation of the sewer system for the F-5-5 time period. The annual simulation of the model provides data with regards to the number of combined sewer overflow events, as well as volumes.

Wet weather flows for the City of St. Catharines were analyzed using the model for the F-5-5 period. For 2025, the total CSO overflow volume was 181,561m3 and the total wet weather flow capture rate was 94.0 per cent.

It is important to note that all dry weather sanitary flows are conveyed to a wastewater treatment plant for treatment, and overflows only occur during wet weather events. In 2025, the City captured 99 per cent of all wastewater flows, with one per cent discharged to the environment from combined sewer overflows. Annual CSO volumes can vary significantly from year to year as they are heavily dependent on the magnitude and pattern of rainfall.

Additionally, an assessment of individual overflow activity was done based on historic information for the last six years (2020-2025). This categorized overflow activity ranging from "Inactive" (No overflow events since 2020),"Rare" (One overflow event since 2020) and "Active" (model predicts on average more than one overflow event since 2020). As illustrated in Table 4, over half of the overflows in the City of St. Catharines (52 per cent) are inactive, with only 22 per cent rarely active during wet weather events. Approximately one quarter of overflows in St. Catharines are active during wet weather events.

2025 System Performance

Table 4: St. Catharines CSO Overflow Activity During Wet Weather Events (2020-2025)

Overflow Activity Classification	No. of Overflows	Percentage of Overflows
Inactive	53	52 %
Rare	22	22 %
Active	26	26 %
Total	**101**	**100 %**

Sewage Spills

St. Catharines strives to maintain and operate wastewater infrastructure so that spills to the environment do not occur. However, there are circumstances that arise where a spill

occurs due to equipment malfunction, failure, or other reasons. All spills are reported to the MECP Spills Action Centre upon discovery and to the Region of Niagara's Public Health Department. Spills are investigated and written reports are submitted to the MECP and (when required) Environment and Climate Change Canada, as required by legislation.

In 2025, the City reported seven (7) wastewater spills to the Spills Action Centre. All incidents were resolved promptly with no adverse effects to the natural environment or human health, and no further outstanding issues.

2025 System Performance

Public Reporting

Public reporting is conducted through various social media platforms. Additionally, public reporting is posted on the City's public website at https://www.stcatharines.ca

Information publicly reported includes:

- Annual Performance Reports
- Emergency repairs requiring road closures
- Water – Wastewater Budgets and Financial Plans
- Capital Programs and Asset Management Plans
- Upcoming / Ongoing construction projects (e.g. sewer rehabilitation projects)
- Environmental Assessments and related studies posted publicly on EngageSTC at https://www.engagestc.ca

Planned Activities

Planned Activities and Maintenance

The City will continue to monitor, improve, and eliminate flows to the combined sewer system. Table 5 summarizes the various activities that the City will continue to implement for 2026, which includes system monitoring activities and programs, environmental education and public outreach activities and operations and maintenance activities. The City has approved a multi-year budget for 2024, 2025 and 2026. The 2026 Readoption Capital Budget provides additional investments for projects that will support environmental sustainability such as sanitary and storm sewer projects, which are also supported by the Building Faster Funding (BFF) from the Provincial government. The approved capital budget investment for sanitary sewer is:

- $9.4 million in 2024
- $8.8 million in 2025
- $10.7 million in 2026

A copy of the approved multi-year capital budget can be found on the City of St. Catharines website at https://stcatharines.ca/Budgets.

Planned Activities

Table 5: Planned Programs, Activities and Maintenance

System Monitoring Activities	
Project	**2026 Budget**
Sewer System Update	Ongoing
Rainfall and Sewer Flow Monitoring Program	Ongoing
Sewer Sampling	Ongoing
Extraneous Flow Elimination	$50,000
Pollution Prevention and Control Program	$1 million
Sewershed Analysis	$11,025
Sanitary Sewer Capital Works	$10.7 million

Environmental Education and Outreach Activities	
Project	**2026 Budget**
Environmental Education	Ongoing
2026 Rain Barrel Program	$34,000
Flood Alleviation Program	$155,000

Planned Activities

Operation and Maintenance Activities	
Project	**2026 Budget**
Sewer Flushing – Operations - Contractor	$260,100
Sewer Flushing – Operations - City	$10,870
Sewer Spot Repair – Operations	$61,420
Sewer Replacement – Operations	$49,990
Emergency Cleaning Main Sewer – Operations	$27,250
Sanitary Sewer Spot Repair Program	$500,000
Sanitary Sewer Reaming and Lining	$ 1,653,750
Sewer CCTV Inspections	$300,000

Additional Information: No additional information has been requested by the Niagara District MECP office.

Summary

The City of St. Catharines operates a Class 1 Wastewater Collection System servicing approximately 144,800 residents.

This report details 2025 activities, including system maintenance, capital investments, monitoring, and compliance efforts. A wide variety of activities were undertaken with budget approval and expenditures of over $8.8 million. A copy of the approved Water and Wastewater Budget for 2024 to 2026 can be found posted on the City of St. Catharines website at stcatharines.ca/Budgets. These activities demonstrate the City of St. Catharines is in full compliance with CLI-ECA requirements.

Several metrics were used to assess the wastewater collection system in 2025. Notably, 99.0 per cent of all wastewater flows were captured and treated, with 1.0 per cent of flows being discharged to the environment from combined sewer overflow. While there have been considerable improvements to the wastewater collection system over time, CSOs still occur on a regular basis. This underscores the persistent nature of CSO issues and the long-term challenge they present. Continued efforts are required to fully meet the objectives of Procedure F-5-5 and eliminate the impact of CSOs on the environment.

It is important to note some of the CLI-ECA requirements are phased in and not all the requirements are in place at this time. As additional requirements come into effect and additional information becomes available this will be reflected in future annual reports.

Moving forward, the City will maintain ongoing system improvements, capital investments, and regulatory compliance efforts to ensure the long-term sustainability and efficiency of the wastewater collection system.

For further details, visit

https://www.stcatharines.ca

Notice

Please note that every reasonable effort has been made to ensure the accuracy of this report and it contains the best available information at the time of publication. In the event that errors or omissions occur, the online report will be updated. Please refer to the online report for the most current version.

ECA Number: **023-W601**
Wastewater System Number: 120003619

City of St. Catharines

Wastewater Collection System

March 2026

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