City of Welland
2025 Annual Performance Report

Sewage Collection System CLI-ECA 076-W601

April 2, 2026

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INFRASTRUCTURE

Submission Details and Version Control

City of Welland
2025 Annual Performance Report
Sewage Collection System CLI-ECA 076-W601
April 2, 2026

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1 Introduction

This report summarizes the performance of the City of Welland's (City) Sewage Collection System from January 1 to December 31, 2025, in accordance with Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) #076-W601, Schedule E, Section 4.6, issued August 1, 2023.

This report is submitted to the Ministry of the Environment, Conservation and Parks (MECP) and will be posted on the City's website by June 1, 2026.

2 Wastewater System Description

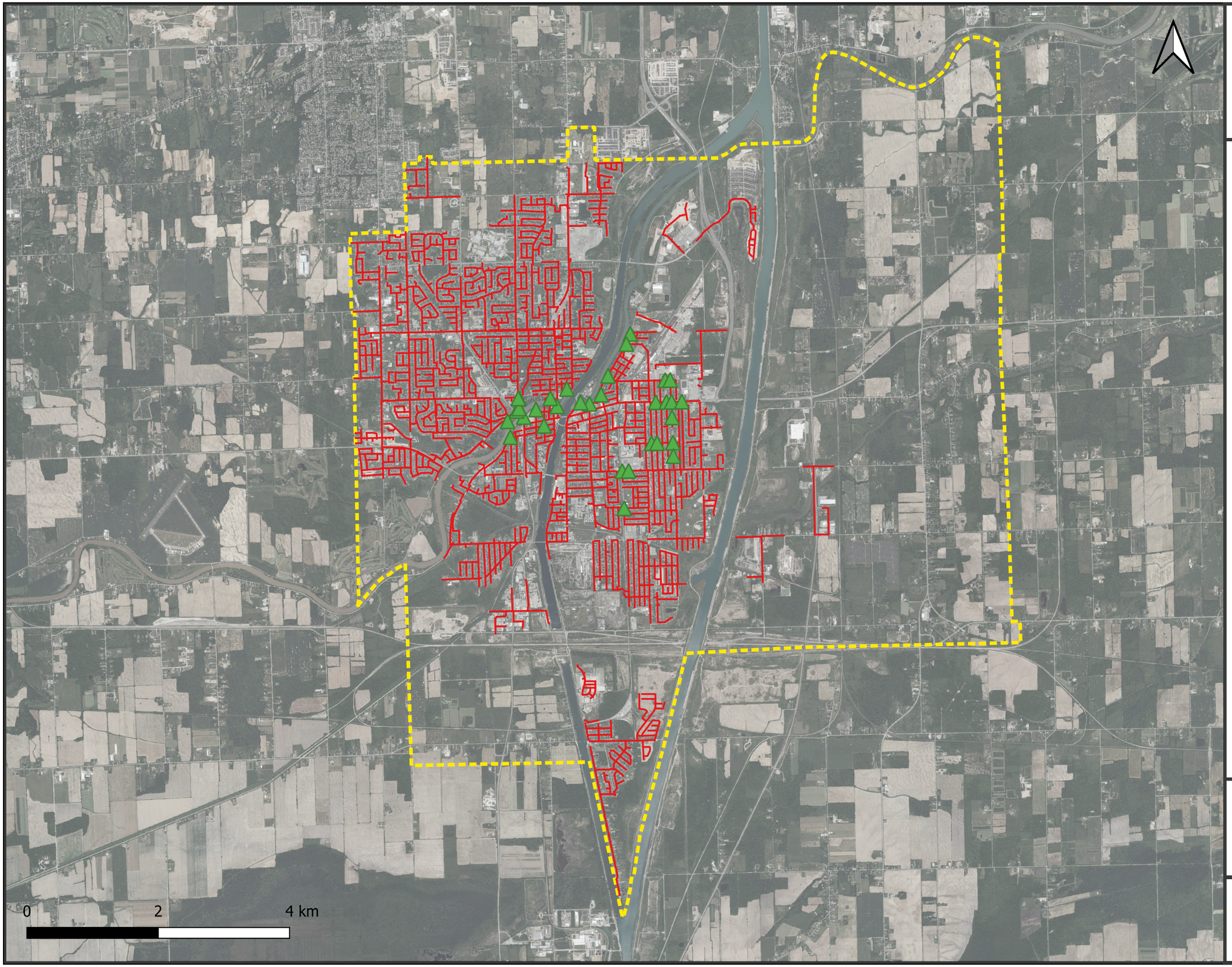
The City's Sewage Collection System included the following infrastructure at the end of 2025:

- 254 km of sanitary sewers;
- 2 sewage pumping stations (Fitch Street and Prince Charles Drive), including 1.1 km of forcemains;
- 3,982 maintenance holes;
- 32 sewage storage structures;
- 11 sewer outfalls;
- 32 collection system overflows.

The sewage collection system is shown in **Figure 2-1**.

The City's sewage system discharges into Niagara Region infrastructure. Flows are then conveyed via trunk sewers and sewage pumping stations to the Region's Welland Wastewater Treatment Plant (WWTP).

The City is continually adding new infrastructure assets to the sewage collection management system as new subdivisions are assumed and as existing infrastructure is replaced. Therefore, the values presented above will not explicitly match those listed in CLI-ECA 076-W601.



City of Welland

Sewage Collection System
Annual Performance Report

Legend

Sewer Overflow

Sanitary Mains

Municipal Boundary

Figure 2-1
Selected Elements of the Sewage Collection Sytem

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3 System Monitoring

There are no ongoing system water quality monitoring programs associated with the City's Sewage Collection System. The City is awaiting the publication of MECP's monitoring guidance document and will use it to develop a monitoring plan for the sewage collection system. As of March 2026, this guidance document has not yet been released.

Six permanent flow monitors are installed on overflows within the sewage collection system. The balance of the overflow sites are not monitored; discharge volumes are estimated for these locations using the City's sanitary system hydraulic model. This information is summarized in Section 5 of this Annual Report.

Pollutant loads discharged to the environment via bypass pumping are estimated in Section 5 of this Annual Report based on lab results taken during bypass events.

4 System Activity Tracking

City staff use a work order (activity tracking) software application to record specific information about the various activities that are completed on the Sewage Collection System. Work order reports include details of the completed activity and the date, time, and location of the work.

Table 4-1 provides the number of work orders completed each month by activity description, and **Figure 4-1** provides a summary by general activity type.

4.1 Operating Problems

Management of wet weather flows is the most significant operating issue in the sewage collection system. The City's Pollution Prevention and Control Plan (PPCP, 2020) included a strategy for reduction of wet weather flows in the system. The City has been systematically executing the plan over the past 5 years. The City is planning to update its PPCP in 2027. Refer to Section 5 for further details on this operating problem.

The City also struggles with sewage collection system surcharging leading to sewage backups into homes and businesses. As shown in **Table 4-1**, there were four (4) work orders related to surcharge events in 2025. Operator logs for each of these events note the following:

- March 21, 2025, Almond Street: Customer reported backup into house whenever water was used. Lateral was filled up to backflow in house. PW used camera to investigate and camera insertion was enough to drain line. Found excessive grease in lateral when removing camera from line.
- May 31, 2025, First Avenue: Surcharge causing sewer backup at 654 First Ave. Flushed First Ave. to clear blockage.
- June 19, 2025, King Street: Surcharge causing sewer backup at restaurant. Flushed from King/Seventh to King/Ontario.
- August 26, 2025, Lincoln Street: Tripped breaker at Prince Charles Drive SPS - SPS pumps and generator stopped working. Manholes in area completely surcharged. Power restored and levels returned to normal.

4.2 Inspection, Maintenance and Repairs

There were 599 inspection, maintenance or repair activities completed on the sewage collection system in 2025, including:

- 207 clearing, cleaning or flushing activities to remove debris from sanitary sewers, maintenance holes or laterals;
- 210 inspection activities to investigate potential system deficiencies;
- 180 repair activities to ensure infrastructure assets are fit for purpose.

In addition to these work-order-based activities, the City also completes an annual sanitary sewer inspection program. Approximately 25 km of sanitary sewers were flushed and inspected in 2025.

4.3 Equipment Calibration

The sewage collection system uses two types of equipment that require calibration:

- Portable gas detectors: These units are calibrated using the testing process which is part of the equipment itself.
- Flow monitors on overflows: The City contracts out flow monitoring service, and the contractor assumes all responsibility for calibration and maintenance of flow monitors installed in the system.

4.4 Community Complaints

Three community complaints were received regarding the sewage collection system in 2025:

- May 19, Maureen Street: Sanitary main blockage causing backup. Flushed from Maureen St. to Wilson Rd.
- August 12, Dunkirk Road: Work order cancelled, related to sinkhole reported at separate location on Dunkirk Road (see below).
- August 14, Dunkirk Road: Small sinkhole reported, cold patch applied.

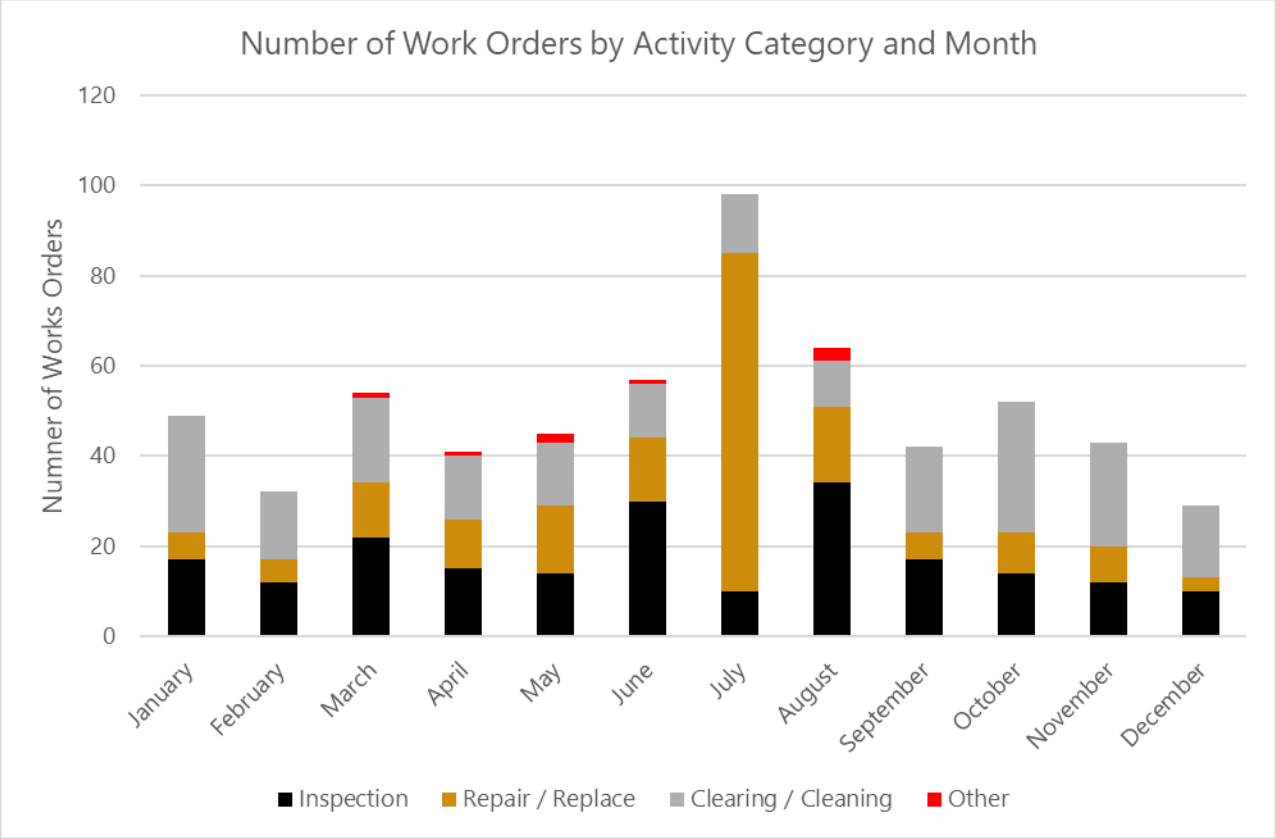

Figure 4-1: Sewage Collection System 2025 Work Order Summary

Table 4-1: Sewage Collection System – 2025 Work Order Count

Activity Category	Inspection	Inspection	Inspection	Inspection	Clearing / Cleaning	Clearing / Cleaning	Clearing / Cleaning	Repair / Replace	Repair / Replace	Repair / Replace	Repair / Replace	Repair / Replace	Repair / Replace	Repair / Replace	Repair / Replace	Complaint	Bypass	Surcharge	
Activity Description	Sanitary Lateral CCTV Inspection	Sanitary Main CCTV Inspection	Sanitary Maintenance Hole Inspection	Sanitary Main Inspection	Sanitary Lateral Flushing & Rodding	Sanitary Maintenance Hole Cleaning	Sanitary Main Flushing	Sanitary Lateral Repair/Replace	Sanitary Main Repair	Sanitary Lateral Clean Out Repair	Sanitary Lateral Installation	Sanitary Lateral Clean Out Repair	Sanitary Maintenance Hole Raise / Lower	Sanitary Maintenance Hole Repair/Replace	Sanitary Sinkhole Investigation	Sanitary Main Complaint	Sanitary Main Bypass	Sanitary Main Surcharge event	Total
January	17				23	1	2	5	1										**49**
February	12				15			4	1										**32**
March	22				19			9	2			1						1	**54**
April	15				13		1	7				2		2			1		**41**
May	12	1		1	12	1	1	6	5			1		3		1		1	**45**
June	29	1			12			2	1			10		1				1	**57**
July	10				12		1	5		7		61	1	1					**98**
August	17		15	2	9		1	6		3	1			7		2		1	**64**
September	15	1		1	11	2	6	2	1	2					1				**42**
October	13			1	24		5	8		1									**52**
November	12				11		12	7	1										**43**
December	10				16			3											**29**
Total	**184**	**3**	**15**	**5**	**177**	**4**	**29**	**64**	**12**	**13**	**1**	**75**	**1**	**14**	**1**	**3**	**1**	**4**	**606**

4.5 System Alterations

Table 4-2 summarizes the alterations made to the sewage collection system in 2025. Each proposed alteration to the system is reviewed to identify whether the proposed changes pose a significant drinking water threat. Following Procedure OM-ALL-WWW_P-042, "Drinking Water Source Protection", City staff reviewed potential risks to drinking water and develop mitigation strategies as appropriate.

Table 4-2: Sewage Collection System Alterations – Completed in 2025

Project Name	Project Description	In Service Year
Capital - ENG2022-303 First Street Phase I & II	**Phase I** Infrastructure renewal of the existing sanitary sewer and installation of new storm sewer on First Street, between Plymouth Road and Dover Road. **Phase II** Infrastructure renewal of the existing sanitary sewer on First Street, between King Street and Plymouth Road.	2025
Capital - ENG2023-303 Maple and Bald	Infrastructure renewal of the existing sanitary sewer on Maple Avenue, between Denistoun Street and Frazer Street, and Bald Street, between Denistoun Street and Frazer Street.	2025

5 System Overflow Analysis

5.1 Collection System Overflow Details

The City's CLI-ECA lists 33 Collection System Overflows, the status of which are as follows:

- 5 of the overflows are abandoned and thus are not included in the overflow analysis.

Table 5-1: Abandoned Overflows

Name	GIS ID	Number
River & McMaster	436129SO01	2
River & Evan (Burgar)	436117SO01	3
Niagara North	426146SO01	8
Cameron Main	446116OS02	E
Cameron	446113OS01	G

- Of the remaining 28 active overflows, 6 are equipped with flow monitors whose data is used in overflow analysis.

Table 5-2: Overflows with Flow Monitors

Name	GIS ID	Number
Hagar McAlpine	436089OS01	I
Hagar Wallace (Site J)	436099OS01	J
Hagar Camrose	446019OS01	L
Lincoln & Coventry (L2)	436045OS01	N
Lincoln & Plaza (L3)	436055OS01	O
Simpson & Coventry (L1)	435949OS01	P

- The remaining 22 overflows are analyzed using a hydraulic model of the system.

5.2 Bypass Pumping Location Details

The City completes bypass pumping at the south end of Commercial Street as per Procedure OM-PW-WW-P-045, "Sanitary Sewer Bypass". Information collected during pumping events is used in the overflow analysis.

5.3 Overflow Analysis Methodology

5.3.1 Monitored Overflows

The City records overflow volumes and durations reported by each flow monitor after each event at the six locations listed in **Table 5-2.** This information is summarized in the overflow analysis.

5.3.2 Modelling of Unmonitored Overflows

The following points describe the process to estimate the overflow volumes at the 22 unmonitored overflows:

- The hydraulic model of the collection system is updated to reflect the latest available information.
- The hydraulic model is used to simulate the collection system behaviour during the actual rainfall events that occurred during the reporting year.
- The hydraulic model results are used to estimate the likely overflow volume at each location for each rainfall event.

5.3.3 Bypass Pumping

Bypass volumes are reported on Form OM-PW-WW-F-047, "Sanitary Sewer Bypass Form" and these volumes are used in the overflow analysis. Bypass pumping is only completed at one location in the system.

5.3.4 Pollutant Loading Analysis

Water quality samples are collected during bypass pumping events and documented on Form OM-PW-WW-F-047, "Sanitary Sewer Bypass". Water quality samples are not collected during system overflow events pending MECP guidance (see Section 3).

5.4 Overflow Analysis Results

5.4.1 Overflows

Tabe 5-3 presents the results of the modeled and monitored overflows. Overflows were measured or modeled at 11 of the 28 active overflows.

It is noted that water quality samples are not collected during overflow events, and therefore the pollutant analysis is not applicable. There was no disinfection used for any overflow event.

5.4.2 Bypass Pumping

The City did not complete any bypass pumping at the south end of Commercial Street in 2025. The single Sanitary Main Bypass work order shown in **Table 4-1** confirms this through the log created by the Operator: "Bypass pumping set up in anticipation of a storm - pumping was never initiated."

Table 5-3: 2025 Modelled Overflow Analysis

Overflow Name	Data Source	GIS ID	Alpha-Numeric ID	Model Conduit ID	Overflow Start Date	Duration (hr)	Volume (ML)
Hellems	Model	426195SO01	4	289017789	2025-04-02	13.8	10.15
Hellems	Model	426195SO01	4	289017789	2025-05-22	4.8	3.76
Hellems	Model	426195SO01	4	289017789	2025-08-17	4.8	6.77
Hellems	Model	426195SO01	4	289017789	2025-10-06	9.3	15.99
King & Court House Ln	Model	426175SO01	5	CSOKINGPIPE	2025-04-02	2.8	0.08
King & Court House Ln	Model	426175SO01	5	CSOKINGPIPE	2025-08-17	1.8	0.07
King & Court House Ln	Model	426175SO01	5	CSOKINGPIPE	2025-10-06	4.0	0.60
Niagara South	Model	426145OS01	9	289010811	2025-04-02	14.0	1.15
Niagara South	Model	426145OS01	9	289010811	2025-05-22	6.0	0.57
Niagara South	Model	426145OS01	9	289010811	2025-08-17	5.0	0.68
Niagara South	Model	426145OS01	9	289010811	2025-10-06	9.5	1.49
Denistoun	Model	426114OS01	10	289009374	2025-04-02	14.0	1.69
Denistoun	Model	426114OS01	10	289009374	2025-05-22	6.0	0.81
Denistoun	Model	426114OS01	10	289009374	2025-08-17	5.0	1.05
Denistoun	Model	426114OS01	10	289009374	2025-10-06	9.5	2.27
Prince Charles S	Model	416193OS01	11	289017694	2025-04-02	13.8	1.65
Prince Charles S	Model	416193OS01	11	289017694	2025-05-22	6.0	0.80
Prince Charles S	Model	416193OS01	11	289017694	2025-08-17	5.2	0.98
Prince Charles S	Model	416193OS01	11	289017694	2025-10-06	9.8	2.02
First Ave East	Model	416185OS01	12	289018307-WEIR	2025-04-02	4.3	1.66
First Ave East	Model	416185OS01	12	289018307-WEIR	2025-05-22	2.2	0.11
First Ave East	Model	416185OS01	12	289018307-WEIR	2025-08-17	3.2	1.23
First Ave East	Model	416185OS01	12	289018307-WEIR	2025-10-06	6.8	4.04
Colbeck	Model	416163OS01	15	289010368	2025-04-02	4.3	2.43
Colbeck	Model	416163OS01	15	289010368	2025-05-22	2.2	0.17
Colbeck	Model	416163OS01	15	289010368	2025-08-17	3.3	1.64
Colbeck	Model	416163OS01	15	289010368	2025-10-06	6.8	5.69
Maple & Riverside	Model	416163OS01	16	416170SL06	2025-10-06	1.0	0.02
Main Golden	Model	446136OS01	F	289008799	2025-04-25	0.5	0.00
Main Golden	Model	446136OS01	F	289008799	2025-05-01	0.5	0.00
Main Golden	Model	446136OS01	F	289008799	2025-06-26	0.5	0.00
Main Golden	Model	446136OS01	F	289008799	2025-07-12	0.3	0.00
Main Golden	Model	446136OS01	F	289008799	2025-08-13	1.0	0.01
Main Golden	Model	446136OS01	F	289008799	2025-08-17	1.7	0.03
Main Golden	Model	446136OS01	F	289008799	2025-10-06	2.2	0.02
Main Golden	Model	446136OS01	F	289008799	2025-10-18	0.2	0.00
Hagar Wallace	Monitor	436099SO01	J	N/A	2025-08-13	0.6	3.12
Hagar Wallace	Monitor	436099SO01	J	N/A	2025-08-17	1.8	36.49
Hagar Wallace	Monitor	436099SO01	J	N/A	2025-10-07	4.0	1.62
Hagar Wallace	Monitor	436099SO01	J	N/A	2025-12-28	0.9	3.41
Hagar Wallace	Monitor	436099SO01	J	N/A	2025-12-29	0.9	4.00
Simpson & Coventry (L1)	Monitor	435949SO01	P	N/A	2025-08-17	1.3	8.89
					Total	**195.7**	**127.1**

5.5 Overflow Summary

The total system overflow volume in 2025 was approximately 127 ML across 8 events. **Figure 5-1** and **Figure 5-2** summarize the overflow patterns. It is apparent that:

- Two (2) of the overflow locations discharged approximately 67% of the total overflow volumes:
  - 426195SO01 – Hellems (Site 4)
  - 436099SO01 – Hagar Wallace (Site J)
- Two (2) of the overflow events discharged approximately 71% of the total overflow volumes (on August 17 and October 6).

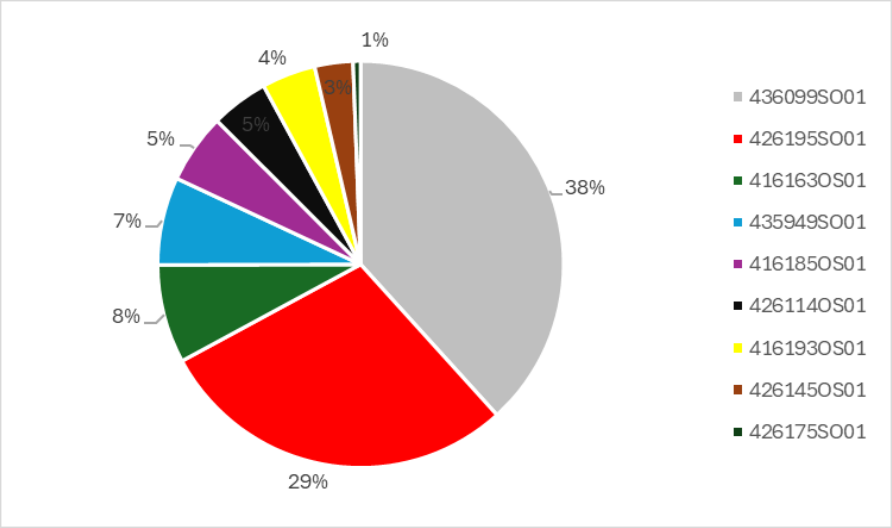

Figure 5-1: Percentage of Total Annual Overflow Volume by Location

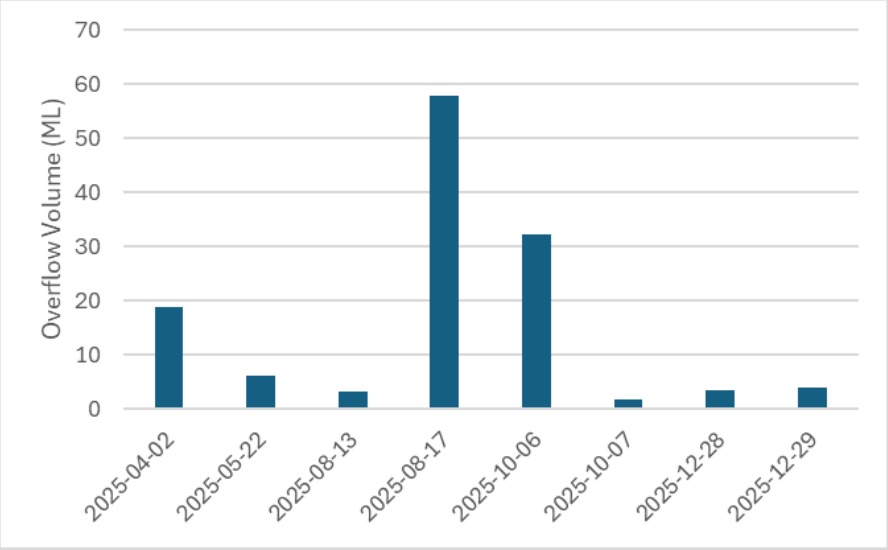

Figure 5-2: Total Overflow Volume by Event

6 Efforts Made to Reduce Overflows

The City has an ongoing commitment to reduce inflow and infiltration (I&I) across the system. Practically, this involves completing the following activities:

- Replacing sewers;
- Rehabilitating sewers using cured-in-place-pipe (CIPP) liners; and
- Repairing maintenance holes.

Table 6-1 provides the details of the I&I reduction works completed in 2025.

In December 2025, the City completed its first Wastewater System I&I Reduction Quantification Analysis (Agile Infrastructure, 2025). This report provides a comprehensive analysis of:

- Priority areas in the City for I&I reduction activities;
- Past work completed to reduce I&I; and
- A beneficial impact analysis to quantify the wet weather flow reduction resulting from the I&I reduction activities.

The I&I Reduction Quantification Analysis Report concluded that the I&I reduction activities completed to the end of the 2025 construction season resulted in a wet weather flow reduction of approximately 1,190 m^3, which represents a reduction of just under 1% of net wet weather flows.

Moving forward, the City plans to continue its I&I reduction activities and update the I&I Reduction Quantification Analysis Report every 2 years. This will increase confidence in the impact of construction activities undertaken in support of the City's I&I reduction objectives.

Table 6-1: Summary of Completed Inflow and Infiltration Reduction Works in 2025

Priority Area	Completed Works
Broadway	• Sanitary sewer replacement along Broadway (removal/abandonment of two 300 mm diameter sewers and a 300 – 525mm trunk and replacement with a 750 mm trunk along Broadway) (2023) • 81 m of relined/replaced sewers (2025) • 12 cleanout and 4 manhole repairs (2025)

Ontario Road	*Lincoln-Coventry*
	• 801 m of relined/replaced sewers (2025)
	• Removal of 5 catchbasin connections (2025)
	  ○ 3 at Corvette Street and Wavell Court
	  ○ 2 at Harrison Avenue and Danforth Avenue
	  ○ 1 at Lincoln Street and Coventry Road
	• Removal of the stormwater overflows at Southworth Street South and at McCabe Avenue
	• 11 cleanout and 7 manhole repairs (2025)
	Ontario Road South
	• 1,334 m of relined/replaced sewers (2021-2025)
	• 11 cleanout and 4 manhole repairs (2025)

Dain City	• Removal of John Deere sanitary sewer north of St Clair Drive (2023) • 412 m of relined/replaced sewers on Forks Road (2022) • 2 cleanout, 1 downspout, and 1 standpipe repairs (2021-2025)
Plymouth Road	• 1,396 m of relined/replaced sewers (2023-2025) • 24 cleanout and 1 manhole repairs (2025)
Prince Charles Drive	• 103 m of relined/replaced sewers (2025) • 3 cleanout, 9 manhole and 1 catch basin repairs (2025)
Feeder Road SPS	• 7 manhole repairs (2025)
Woodlawn	• 5 cleanout repairs (2025)
Clare-Fitch	• 4 cleanout and 1 manhole repairs (2025)
Seaway Heights SPS	• 4 cleanout and 2 manhole repairs (2025)