2024 Annual Sewage Collection System Summary Report

Oxford County Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA)

1 GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing operation and performance status of the sewage collection systems in Oxford County annually. The report details information required for the Annual Performance Report specified in the County's Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA). The report contains a summary of; alterations to the system, maintenance and capital work, operational problems, a summary of any spills, bypasses, overflows or abnormal conditions in the system, as well as complaints received in the previous year. The report is available for review by the end of March on the County website at www.oxfordcounty.ca/wastewater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning this report, please contact the County at the address and phone number listed below or by email at wastewater@oxfordcounty.ca.

Environmental Compliance Approval (ECA): 071-W601 (February 8, 2023)
Reporting Period: January 1, 2024 – December 31, 2024

Sewage Collection System Owner & Contact Information:

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1.1 System Description

The Oxford County Sewage Collection Systems comprises 11 sewage collection systems, including trunk sewers, separate sewers, sewage pumping stations, odour control units, forcemains and low-pressure sewers. These systems discharge into nine (9) respective Wastewater Treatment Plants (WWTPs). Each WWTP has a separate ECA that outlines its annual reporting requirements. The Embro and Innerkip Sewage Collection Systems discharge to the Woodstock Collection System for treatment at the Woodstock Wastewater Treatment Plant (WWTP).

Chemical addition is performed at select facilities for odour control and coagulation. Odour control facilities are present in the Embro and Innerkip sewage collection systems. Bioxide is added at Embro Main sewage pumping station (SPS), Innerkip Main SPS and Woodstock East SPS to aid in odour control. Alum is added at Norwich Sutton Street SPS for coagulation.

Each SPS has wet well(s), and pumps complete with control systems, alarms, level transmitters, discharge piping, ventilation system, valves and other appurtenances. Onsite generators are in place, or a manual transfer switch and a portable generator are available to run the SPS in the event of a power failure.

The sewage collection system and SPSs are operated by licensed wastewater system operators in accordance with the Ontario Water Resources Act, Section 53 (Sewage Works). Alarms are automatically sent to notify operators in the event of critical operational condition failures.

Private sewage works and equipment or sewage pumping stations are not included on the County's CLI ECA or as part of the reporting requirements below. The County also provides annual systems reports for each WWTP which are also available at the end of March each year.

Collection System	*Length of Sanitary Collection*	*Sewage Pumping Stations and Rated Capacities (L/s)*
Drumbo Sewage Collection System	6.9 km of gravity 2.7 km of forcemain	3 pumping stations: Drumbo North SPS 7.5 L/s Drumbo East SPS 5.4 L/s Drumbo Main SPS 11.7 L/s
Embro Sewage Collection System	8.5 km of gravity 14.8 km of forcemain 0.4 km of low pressure	4 pumping stations: Embro Main SPS 25.5 L/s Embro West SPS 9.2 L/s Embro East SPS 7.8 L/s Embro South SPS 0.87 L/s
Ingersoll Sewage Collection System	86.7 km of gravity 14.3 km of forcemain 0.8 km of low pressure	2 pumping stations: Ingersoll Carnegie Street SPS 35.7 L/s Ingersoll Culloden Road SPS 20.0 L/s
Innerkip Sewage Collection System	11.0 km of gravity 7.6 km of forcemain 0.4 km of low pressure	3 pumping stations: Innerkip Main Street SPS 28.0 L/s Innerkip Queen Street SPS 3.15 L/s Innerkip Young Street SPS 1.1 L/s

Collection System	*Length of Sanitary Collection*	*Sewage Pumping Stations and Rated Capacities (L/s)*	
Mount Elgin Sewage Collection System	5.7 km of gravity 0.2 km of forcemain 1.3 km of low pressure	1 pumping station: Mount Elgin Peggy Avenue SPS	 2.2 L/s
Norwich Sewage Collection System	27.4 km of gravity 4.5 km of forcemain 0.6 km of low pressure	4 pumping stations: Norwich Sutton Street SPS Norwich Herb Street SPS Norwich Lossing Drive SPS Norwich Dufferin Street SPS	 88.0 L/s 7.3 L/s 9.0 L/s 20.5 L/s
Plattsville Sewage Collection System	12.8 km of gravity 3.1 km of forcemain	1 pumping station: Plattsville Fennell Street SPS	 34.5 L/s
Tavistock Sewage Collection System	23.2 km of gravity 2.0 km of forcemain	3 pumping stations: Tavistock Hope Street SPS Tavistock William Street SPS Tavistock Wellington Street SPS	 48.0 L/s 98.0 L/s 54.0 L/s
Thamesford Sewage Collection System	18.7 km of gravity 1.0 km of forcemain 0.6 km of low pressure	2 pumping stations: Thamesford Allen Street SPS Thamesford Stanley Street SPS	 15.1 L/s 6.2 L/s
Tillsonburg Sewage Collection System	124.5 km of gravity 2.8 km of forcemain	2 pumping stations: Tillsonburg Rouse Street SPS Tillsonburg North Street SPS	 39.0 L/s 69.7 L/s
Woodstock Sewage Collection System	251.4 km of gravity 7.8 km of forcemain 1.5 km of low pressure	5 pumping stations: Woodstock Brick Pond SPS Woodstock Commerce Way SPS Woodstock East SPS Woodstock Trillium Woods SPS Woodstock Meadows SPS Woodstock Pattullo SPS	 7.0 L/s 35.0 L/s 160.0 L/s 21.0 L/s 48.8 L/s 41.5 L/s
Oxford County Sewage Collection Systems Total	576.6 km of gravity * 60.9 km of forcemain * 5.6 km of low pressure *	30 pumping stations	

** Values may not add due to rounding.*

1.2 Projects and Major Expenses

Planning for major sewage collection system expenses is included within Oxford County's Water and Wastewater Master Plan and managed according to the Asset Management and Capital Replacement Program.

The specific capital projects, as well as operations and maintenance expenses for each sewage collection system are detailed in each individual Wastewater Treatment Systems Summary Report. Information on inflow and infiltration and hydraulic modeling projects can be found in Section 0.

2 OPERATIONAL MONITORING

In 2024, all SPSs were monitored for sewage level and flow (where required) to ensure they functioned properly and per the design and ECA conditions during the reporting period. Overflows, bypassing, upsets, spills and abnormal conditions occurring within the reporting period are summarized in Section 6. Where flow meters are in place, flows

are summarized in the following table. There may be occasional instantaneous exceedance of the rated capacity of the pumps (L/s) due to high wet well levels, variance in forcemain efficiencies, or other operational conditions.

Facility	*Pumping Station Capacity (L/s)*	*Max Daily Flow (m^3/day)*	*Average Daily Flow (m^3/day)*	*Total Flow (m^3/year)*
Drumbo Main SPS *	11.7	253	155	22,405
Drumbo North SPS *	7.5	99	58	7,191
Embro Main SPS	25.5	637	266	97,262
Ingersoll Carnegie Street SPS	35.7	406	240	87,857
Ingersoll Culloden Road SPS	20.0	144	48	17,464
Innerkip Main SPS	28.0	647	299	109,367
Mount Elgin Peggy Avenue SPS	2.2	142	28	10,221
Norwich Dufferin Street SPS	20.5	269	64	23,250
Norwich Herb Street SPS	7.3	21	7	2,422
Norwich Sutton Street SPS	88	6,707	1,125	411,690
Plattsville Fennell Street North SPS	34.5	775	439	160,500
Tavistock Hope Street SPS	48.0	1,430	305	111,588
Tavistock Wellington Street SPS	54.0	1,903	439	160,552
Tavistock William Street SPS	98.0	3,131	1,223	447,476
Thamesford Stanley Street SPS	6.2	168	52	19,173
Tillsonburg North Street SPS	69.7	1,156	397	145,175
Tillsonburg Rouse Street SPS	39.0	89	52	18,931
Woodstock Brick Pond SPS *	83.0	31	21	2,593
Woodstock Commerce Way SPS	35.0	380	138	50,646
Woodstock East SPS	160.0	2,403	1,269	464,569
Woodstock Pattullo SPS	41.5	366	51	8,409
Woodstock Trillium Woods SPS	21.0	180	99	36,070

** Flow Meter Installed in 2024*

3 MAINTENANCE

Operation and maintenance staff conduct regularly scheduled maintenance of the sewage collection system equipment including annual inspection of overflows and routine wet well inspections. Records for inspections, maintenance, and repair are recorded in Geographic Information System (GIS), Asset Management Software or on controlled forms.

Several planned preventative maintenance activities are carried out annually to help optimize the useful service life and efficiency of sewage infrastructure assets. A number of key maintenance activities are noted below for sewage collection infrastructure. Public Works experienced no sanitary forcemain breaks in 2024.

Preventative Maintenance Activity	*Quantity*
Sanitary Sewer Flushing	120,077 m
Sanitary Sewer CCTV Inspection	52,729 m
# of Sanitary Manhole Inspections	2,266
# of Sanitary Manholes Repaired/Replaced/Adjusted	53

Preventative Maintenance Activity	*Quantity*
# of Sewer Blockages Cleaned	15
# of Septic Tank Inspections	284
Forcemain Cleaning (Swabbing)	205,000 m
Standby Power Generator Inspection and Maintenance	232
Sewage Pump Station Clean-outs	62

3.1 Monitoring Equipment Maintenance and Calibration

Calibrations and verifications of monitoring equipment are completed by County Staff or qualified contractors and recorded in each facility's logbook. Calibration records are scanned and maintained at the Oxford County administration building, or within a County-approved Asset Management Software. The frequency for calibration and maintenance needs in the sewage collection system is documented in the Operations and Maintenance Manual.

4 COMPLAINTS

Records for complaints received and corrective actions taken are recorded in GIS or Asset Management Software or on controlled forms.

In terms of corrective maintenance, Public Works resolved 82 customer complaints (odour, sewage blockage, damaged manhole covers, pump alarms etc.) that were received from within the various sewage systems across the County.

5 ALTERATIONS

This section details all authorized alterations to the existing sewage collection system in the reporting period including extensions of new sewage collection mains. Alterations that pose a significant drinking water threat are noted and a source water protection threat assessment was completed.

Description	*System*	*Within Wellhead Protection Area A or B(10)?*	*Source Water Protection Threat Assessment Complete*
Replacement of sanitary sewer on Rathbourne Avenue between Huron Street and Blanford Street.	Woodstock	No	N/A
Replacement of sanitary sewer and laterals on Reglan Street between Thames Street North and George Street.	Ingersoll	No	N/A
Replacement of sanitary sewer on Brant Street between Riddell Street and Wellington Street North.	Woodstock	No	N/A
Replacement of sanitary sewer on Leinster Street between Devonshire Avenue and Durham Crescent.	Woodstock	No	N/A
Replacement of sanitary sewer on Cambridge Street between Hughson Street and Warwick Street.	Woodstock	No	N/A
Partial replacement of elevated sanitary sewer within ravine between Baldwin Street and Segal Drive.	Tillsonburg	No	N/A

Description	*System*	*Within Wellhead Protection Area A or B(10)?*	*Source Water Protection Threat Assessment Complete*
Installation of sanitary sewers to service Woodstock Meadows subdivision Phase 1.	Woodstock	No	N/A
Replacement of sanitary sewer on Walter Street between Victoria Street and East Park Drive.	Woodstock	No	N/A
Replacement of sanitary sewer on Beale Street between Canterbury Street and Adelaide Street.	Woodstock	No	N/A
Extension of sanitary sewers from Phase 5 to Phase 6 within the Harrisview subdivision.	Ingersoll	No	N/A
Amendment application for the Lansdowne Sewage Pumping Station	Woodstock	No	N/A
Replacement and capacity adjustments of/to sanitary sewer on Oxford Road 9 (Ingersoll Road) between Anderson Street and Park Row.	Woodstock	No	N/A
Installation of sanitary sewers to service Karn Road subdivision Phase 1.	Woodstock	No	N/A
Installation of sanitary sewers to service Rolling Meadows subdivision Phase 1.	Tillsonburg	No	N/A
Installation of sanitary sewers to service Havelock Corners Phase 6.	Woodstock	No	N/A
Installation of sanitary sewers to service proposed West Oxford Industrial Park (on Carson Way)	Ingersoll	No	N/A
Installation of sanitary sewers to service Harvest Heights subdivision Phase 1.	Tillsonburg	No	N/A
Installation of sanitary grey water sewers and septic holding tanks for solids to service Mount Elgin Heights subdivision Phase 1.	Mount Elgin	No	N/A
Replacement of Drumbo North SPS check valves and installation of a bypass.	Drumbo	Yes	Yes
Installation of Mount Elgin Peggy Avenue SPS storm water check valve.	Mount Elgin	No	N/A
Installation of an air relief at Norwich Sutton Street SPS	Norwich	No	N/A
Installation of an emergency natural gas generator at Drumbo Main SPS	Drumbo	No	N/A
Installation of an emergency natural gas generator at Norwich Lossing Drive SPS	Norwich	No	N/A
Installation of level monitoring probes for Bioxide chemical storage tanks at Embro Main SPS, Innerkip Main SPS and East Woodstock SPS.	Embro, Innerkip, Woodstock	No	N/A
Installation of a flow meter and upgrading of pipework from PVC to stainless at Woodstock Brick Pond SPS.	Woodstock	No	N/A
Installation of a flow meter, upgrading of pipework from PVC to stainless, installation of knife gate valves, check valves and a swabbing flange at Drumbo Main SPS.	Drumbo	No	N/A
Installation of a flow meter at the Drumbo North SPS.	Drumbo	Yes	Yes

6 OVERFLOWS, BYPASSSING, UPSETS, SPILLS, AND ABNORMAL CONDITIONS

All spills and overflows are reported to Spills Action Centre and a written report is provided to Southwestern Public Health and the Local Ministry of the Environment, Conservation and Parks (MECP) office. A quarterly spills and overflows report is provided to the MECP Regional Director. Spills greater than 10m^3 are posted on the County website to provide notification to the public. There were six (6) reports of spills, bypasses or overflows in the Oxford County collection systems, the table below is a summary of all collection system overflows and spills of sewage in 2024.

Spills, bypasses and overflows are sampled in the volume and frequency required by the CLI ECA for biological oxygen demand (BOD), total suspended solids (TSS), total phosphorus (TP), total Kjeldahl nitrogen (TKN) and *E. coli.* The event volume and the sample result concentrations for BOD, TSS, TP and TKN are used to calculate the loading to the natural environment in Kg for each parameter. Where a sample result is received below the reporting limit for a parameter, the parameter minimum reporting limit is used as the concentration and the calculated loading is expressed as < the calculated loading in Kg. *E. coli* is reported in colony forming units (CFU) per 100ml of sample.

Overflow/Spill Event	*Corrective Action Taken*	*Date Estimated Volume Duration*	*Estimated Loading*
Norwich Sutton Street SPS overflow during heavy rain event to Otter Creek	Operational changes were made to increase the pumping capacity of the sewage pumping station. Samples were collected and reporting and notification procedures were followed. No adverse impacts were observed.	January 26, 2024, 15 m^3 3 hours	BOD <0.18 kg TSS 0.54 kg TP 0.006 kg TKN 0.06 kg *E. coli* 92,000 CFU/100mL
Mount Elgin Peggy Avenue SPS overflow during heavy rain event to the stormwater facility	Samples were collected and reporting and notification procedures were followed. No adverse impacts were observed.	January 26, 2024, 17m^3 0.5 hours	BOD 0.73 kg TSS 2.11 kg TP 0.022 kg TKN 0.22 kg *E. coli* 20,0000 CFU/100mL
Drumbo Main SPS overflow during heavy rain event to the stormwater pond**	Samples were collected and reporting and notification procedures were followed. No adverse impacts were observed.	July 16, 2024, 60 m^3 6 hours	BOD 2.16 kg* TSS 1.88 kg* TP 0.016 kg* TKN 0.03 kg* *E. coli* 45,000 CFU/100mL* ** results are the average of two sets of samples.*
Woodstock Maintenance Hole 2889 overflowed	There were three overflows in 2024. For each event samples were collected and reporting and notification procedures	January 26, 2024, 2,193 m^3 24 hours (intermittently)	BOD <26.32 kg TSS 133.773 kg TP 1.47 kg TKN 15.13 kg

Overflow/Spill Event	*Corrective Action Taken*	*Date Estimated Volume Duration*	*Estimated Loading*	
during heavy rain events to the Thames River	were followed. No adverse impacts were observed. Oxford County Staff cleaned up the area of the overflow. A bypass pump was made available to increase the volume of sewage treated by the WWTP in future high-flow events. Additionally, a continuous monitoring device was installed to alert staff of high-flow conditions, and a response procedure was developed to enhance preparedness and mitigate potential impacts.		*E. coli*	840,000 CFU/100mL
		July 16, 2024, 4,120 m^3 6.33 hours	BOD TSS TP TKN *E. coli*	131.84 kg 498.52 kg 1.895 kg 14.01 kg 620,000 CFU/100mL
		August 9, 2024, 1,374 m^3 1.5 hours	BOD TSS TP TKN *E. coli*	53.59 kg 59.08 kg 0.838 kg 4.12 kg 1,590,000 CFU/100mL

**During the Drumbo heavy rain event that led to the Main SPS overflow, the overflow check valve failed to open causing the collection system to back up into nearby property basements. Corrective actions can be found in Section 7.

7 EFFORTS TO REDUCE OVERFLOWS, BYPASSES AND SPILLS

Efforts to reduce sewage collection system overflows are listed below and details on the County's inflow and infiltration reduction strategy and wastewater hydraulic models are included in the following sections. WWTP overflows and/or bypasses and corrective actions are found within each Wastewater Treatment System Summary report.

- Mount Elgin Peggy Avenue SPS:
  A new check valve was installed to prevent backflow of storm water into the wet well. No further overflows occurred in 2024.
- Drumbo Sewage Collection System, Drumbo Main SPS:
  A new duckbill overflow check valve was installed which will prevent stormwater from entering the sanitary collection system. No further overflows occurred in 2024. Additionally, the 2025 budget includes funding to increase the pumping flow rate from the SPS, which should help minimize sanitary backups.
- Woodstock Maintenance Hole 2889:
  A bypass pump was made available to increase the volume of sewage treated by the WWTP in future high-flow events following the January overflow. Additionally, a continuous monitoring device was installed to alert staff of high-flow conditions, and a response procedure was developed to enhance preparedness and mitigate potential impacts. These measures were effective at reducing overflow volumes.

7.1 Inflow and Infiltration (I/I) Reduction

The County is implementing a strategy to reduce Inflow and Infiltration (I/I) across its sewage collection systems to enhance long-term sustainability and efficiency. I/I occurs when excess water enters the sanitary sewer system through direct connections (inflow) or seeps in through cracks and leaks (infiltration), straining infrastructure, increasing treatment costs, and potentially exceeding system capacity, leading to spills or overflows.

In 2024, Oxford County engaged Municipal VU Consulting to assist in the early stages of developing a long-term I/I reduction strategy. The consultants conducted a high-level assessment of I/I impacts across the County systems using available data to evaluate system vulnerabilities. They prioritized 20 key activities based on project complexity, operational savings, and overall impact. Additionally, they provided recommendations for updating engineering design guidelines to prevent new infrastructure from prematurely becoming susceptible to I/I. In 2025, the County will integrate these recommendations into updated engineering design guidelines and begin developing a GIS-based database for flow monitoring, enhancing data-driven decision-making in I/I management.

In 2024, the County also completed various repairs specifically for the reduction of I/I, including: 12 repairs to sanitary manholes (various systems), 10 spot liner repairs in the Norwich collection system, and one (1) large infiltration repair at the Thamesford Wastewater Treatment Facility pumping station.

7.2 Wastewater Hydraulic Models

Oxford County has initiated the development of wastewater hydraulic models to enhance system analysis and planning as required by our CLI ECA. The pilot project began with the Ingersoll sewage collection system, providing valuable insights into flow hydraulics, capacity constraints, and potential areas for improvement. These models will support data-driven decision-making, optimize infrastructure investments, and improve the County’s ability to forecast and aim to mitigate issues such as inflow and infiltration, surcharges, and system overflows. As the program expands, these tools will play a key role in long-term asset management, operational efficiency, and climate resiliency.

8 IMPLEMENTATION

Oxford County is committed to the continual improvement and refinement of the existing Operations and Maintenance Manuals for sewage collection systems which was established in 2023. The manual will be refined through a similar continual improvement process as the existing water quality management system (QMS).

By July 2025, signage will be installed at required sanitary overflow points to notify the public of sewage collection system overflows. Signs will be placed at the nearest publicly accessible points downstream of outfalls to the natural environment, as mandated by the CLI ECA.

The CLI ECA requires the establishment of a sanitary sewer model for systems that service more than 10,000 people by December 31, 2028. Progress on the County's Wastewater Hydraulic Models is detailed in Section 7.2.

The County's implementation strategy to reduce Inflow and Infiltration (I/I) across its sewage collection systems to enhance long-term sustainability and efficiency is discussed in Section 7.1.