REPORT TO COUNTY COUNCIL

2023 Annual Wastewater System Performance

To: **Warden and Members of County Council**

From: **Director of Public Works**

RECOMMENDATIONS

1. **That County Council receive Report PW 2024-16 entitled "2023 Annual Wastewater System Performance", including the individual 2023 Annual Wastewater Treatment Plant Summary Reports;**

2. **And further, that County Council receive the 2023 Annual Biosolids (Non-Agricultural Source Material) Summary Report, including the performance summary of the County's wastewater treatment plant biosolids processing, land application program and biosolids centralized storage facility.**

REPORT HIGHLIGHTS

- This report summarizes the annual performance of Oxford County's nine wastewater treatment plants, 11 municipal wastewater collection systems and biosolids processing program in 2023.

- Of note, the County's nine wastewater treatment plants (WWTPs) provided effective treatment and demonstrated continued exceptional performance in 2023. Based on approximately 4,829 WWTP effluent samples collected and analyzed in 2023, three of the nine County municipal WWTPs achieved 100% compliance ratings (with the remaining six receiving the following compliance ratings: Thamesford 99%, Tillsonburg 98%, Woodstock 98%, Norwich 96%, Plattsville 96%, Drumbo 93%,).

- A summary of annual wastewater system capital investments and an overview of key maintenance activities that were completed on the wastewater infrastructure assets is also noted.

- Consistent with the County's direction of innovative and green technology, a study to maximize resource recovery continued into 2023 (Woodstock WWTP) and equipment improvements were completed (Woodstock WWTP) to further offset facility non-renewable energy consumption and reduce greenhouse gas emissions.

IMPLEMENTATION POINTS

Following Council adoption of this report, the 2023 Annual WWTP Reports, Biosolids Report and Wastewater Collection System Consolidated Linear Infrastructure Report will be submitted to the Ministry of the Environment, Conservation and Parks (MECP) in accordance with regulatory requirements by March 31, 2024. These reports will also be posted on the County's website for public access.

Financial Impact

There are no financial impacts as a result of this report. Any required actions that will result in expenditures have been accounted for in the 2024 Operating and Capital Budgets of the respective wastewater systems.

Communications

As indicated, the 2023 Annual Wastewater System Performance Report, the 2023 Biosolids Summary Report and the new 2023 Wastewater Collection System Consolidated Linear Infrastructure Report will be posted to the Oxford County website by March 31, 2024 at https://www.oxfordcounty.ca/wastewater-reports. The results of each system's performance report will also be shared directly with Area Municipality CAOs and Public Works senior management respectively.

In addition, the County will communicate 2023 performance highlights of key Public Works systems (Water, Wastewater and Waste Management) to the public through an annual social media campaign after the last performance report has been submitted to Council later this year. As well, highlights will be further promoted through social media during National Public Works Week (May 19-25).

2023-2026 STRATEGIC PLAN

Oxford County Council approved the 2023-2026 Strategic Plan on September 13, 2023. The Plan outlines 39 goals across three strategic pillars that advance Council's vision of "Working together for a healthy, vibrant, and sustainable future." These pillars are: *(1) Promoting community vitality, (2) Enhancing environmental sustainability, and (3) Fostering progressive government*.

The recommendations in this report supports the following Strategic Plan pillars and goals:

		
Promoting community vitality	**Enhancing environmental sustainability**	**Fostering progressive government**
Goal 1.2 – Sustainable infrastructure and development Goal 1.3 – Community health, safety and well-being	Goal 2.2 – Preserve and enhance our natural environment	Goal 3.1 – Continuous improvement and results-driven solutions Goal 3.2 – Collaborate with our partners and communities Goal 3.4 – Financial sustainability

See: Oxford County 2023-2026 Strategic Plan

DISCUSSION

Background

The County's wastewater treatment, biosolids management and wastewater collection systems are all supervised by an appropriately licensed Overall Responsible Operator (ORO) and designated Operators in Charge (OIC) as required by Ontario Regulation (O.Reg.) 129/04.

Wastewater Treatment, Wastewater Collections, and Biosolids Processing Systems

The County operates and maintains:

- 11 Wastewater collection systems;
- Three conventional activated sludge mechanical WWTPs (Woodstock, Ingersoll, Tillsonburg);
- One extended air WWTP (Thamesford);
- One wastewater Sequencing Batch Reactor (SBR) plant (Drumbo);
- Three wastewater lagoon-based systems (Norwich, Plattsville, Tavistock); and
- One Recirculating Sand Filter (RSF) wastewater system (Mount Elgin).

Wastewater from the communities of Embro and Innerkip is transferred via sewage forcemains to the Woodstock WWTP for treatment.

At the three conventional WWTPs, waste sludge generated during wastewater treatment is stabilized and dewatered through either aerobic or anaerobic digestion. The remaining product, known as biosolids, is a valuable and beneficial fertilizer-like soil nutrient which can be land applied in the agricultural sector (i.e. farms having a non-agricultural source material plan) as per the County Biosolids Management Master Plan. When the material cannot be directly land applied during the winter months, biosolids are stored at the County's Biosolids Centralized Storage Facility (BCSF), located adjacent to the County Waste Management Facility.

Wastewater Collection Systems

The wastewater collection system includes the wastewater collection mains, sewage pumping stations, and odour control facilities that transfer wastewater to a WWTP. The County owns and maintains all 11 sewage collection systems. Portions of the collection system in the City of Woodstock and the Town of Tillsonburg are under service contracts with the County. In the Town of Tillsonburg and City of Woodstock, the sewage pumping stations, odour control facilities, sanitary trunk sewers and forcemains are operated by Oxford County. The County also operates two privately owned sewage pump stations (401 Service Centre and Verspeeten Cartage). All components of the wastewater collection systems in the remaining communities are operated by Oxford County staff.

The wastewater collection systems include approximately 629 kilometers of sanitary sewers and forcemains, 8,380 manholes, 133 grinder pump systems, 2 odour control facilities and 38 sewage pumping stations (including the two privately owned sewage pumping stations).

Wastewater Reporting Requirements

The annual reporting requirements are set out in each wastewater facility's Environmental Compliance Approval (ECA) or Certificate of Approval (CofA) and are generally outlined as follows:

- Preparation and submission of the report to the District Manager of the MECP within 90 days following the end of the period being reported on (which is March 31 since December 31 is the County's year-end);
- Summary and interpretation of all monitoring data and a comparison to the effluent limits set out in the ECA;
- Description of any operating problems encountered and corrective actions taken;
- Summary of all maintenance carried out on any major structure or equipment;
- Summary of any effluent quality assurance or control measures undertaken;
- Summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- Tabulation of all generated biosolids and a summary of all disposal locations;
- Summary of any complaints, abnormal events, upset conditions, by-passes or spills; and
- Any other information specifically required by the District Manager.

In 2023, Oxford County worked with the MECP to develop a Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA) for its sanitary sewer system which serves to streamline infrastructure approvals, while imposing a consistent set of conditions intended to improve environmental protection in relation to the wastewater collection system. A single CLI ECA is now held by Oxford County for all of its wastewater collection systems. The MECP issued the CLI ECA to Oxford County on February 14, 2023.

An annual report summarizing the performance of the County's CLI ECA and implementation progress has been prepared for the period of January 1, 2023 - December 31, 2023. New reporting requirements for the County's CLI ECA include:

- Preparation and submission of the report to the MECP District Manager within 90 days (March 31) following the end of the annual operational period (January 1, 2023 – December 31, 2023);
- Summary of any required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations;
- Summary of any operating problems encountered and corrective actions taken;
- Summary of all calibration, maintenance, and repairs carried out;
- Summary of complaints related to the sewage works and steps taken to address the complaints;
- Summary of authorized alterations to the system including a list of alterations that pose a Significant Drinking Water Threat;
- Summary of all collection system Overflows and Spills; and
- Summary of efforts made to reduce Collection System Spills, Overflows, and By-passes.

Comments

2023 Annual WWTP System Summary Reports

The individual annual WWTP system reports will be available for review by the public on the County's website at https://www.oxfordcounty.ca/wastewater-reports by March 31, 2024.

Highlights include:

- 11 communities were served by the County's municipal wastewater systems.
- Approximately 15.1 million cubic metres of wastewater was responsibly treated.
- Approximately 4,829 WWTP effluent samples were collected and analyzed, from which an overall facility ECA compliance of 98% (120 failed samples) was achieved.
- WWTP facilities were also largely compliant with the MECP Final Design Objectives (objectives *) and Final Effluent Compliance Limits (compliance limits **).

NOTES:

* Objectives are non-enforceable effluent quality values which the Owner is obligated to use best efforts to strive towards achieving on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively, and voluntarily, before environmental impairment occurs and before the compliance limits are exceeded.

** Compliance limits are maximum acceptable concentration for an effluent parameter permitted by the MECP, as detailed within each WWTP ECA. The limits are determined to prevent impairment to the quality of the receiving water body. The Owner is legally obligated to operate and maintain the treatment system to ensure the compliance limits are achieved

Drumbo WWTP

In 2023, the Drumbo WWTP achieved 93% compliance to its regulatory compliance limits for all parameters in the effluent (55 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In April, extreme precipitation caused the WWTP to experience high influent flows for most of the month that led to a non-compliance for Total Ammonia Nitrogen (TAN) loading.
- In May, influent flows continued to exceed the rated WWTP capacity, combined with unseasonably cold temperatures which led to non-compliance for TAN and TAN loading.
- Non-compliance on several parameters occurred in June – TAN, TAN loading, Total Suspended Solids (TSS), and TSS loading. The WWTP was in recovery from the high flows experienced during the previous two months. The bacteriological population was increased to provide better treatment.
- In September and October, Operations staff struggled to maintain the optimum biology for treatment which resulted in non-compliance for TAN/TSS (September) and TAN/TAN loading (October).
- The WWTP failed to meet monthly average effluent objectives on 20 occurrences for TSS, Flow, TAN, Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) and Total Phosphorous (TP).

To address and potentially eliminate these types of operational issues, Phase 1 construction began in 2021 to expand the WWTP capacity, using a new membrane bioreactor technology. The Phase 1 upgrade is anticipated to be completed in April 2024.

A Class Environmental Assessment (EA) Study for the Phase 2 Expansion of the Drumbo WWTP was initiated in June 2023 to increase WWTP rated capacity from 450 m^3/day to 660 $m^{3/}$day. The Class EA Study includes an Assimilative Capacity Study of the receiver and is expected to be completed in 2024. The Phase 2 expansion will include the installation of another set of membrane filters to provide additional capacity to service growth as well as allow for the continued delivery of effective, safe and dependable services.

Ingersoll WWTP

In 2023, the Ingersoll WWTP achieved 100% compliance to its regulatory compliance limits. Specific exceedances of effluent objectives are as follows:

- The WWTP failed to meet single sample effluent objectives on 10 occurrences for TSS, TP and E. coli.
- All monthly average effluent objectives were met in 2023.

Mount Elgin WWTP

The Mount Elgin WWTP has no effluent compliance limits for the system; however, the CofA requires the County to use best efforts to operate the WWTP with annual average $CBOD_5$ and TSS concentration objectives < 10 mg/L, both of which were met in 2023.

As per Report PW 2022-39, Public Works has initiated design work for the Phase 3 and 4 capacity expansion of the Mount Elgin WWTP in order to service future growth in the community. Pending MECP approvals, design is to be completed this year with construction planned for 2025.

Norwich WWTP

In 2023, the Norwich WWTP achieved 96% compliance to its regulatory compliance limits for all parameters in the effluent (17 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In March, the lagoons were full and discharge had to be initiated due to lack of storage capacity resulting in non-compliance for TSS, TSS loading, Biochemical Oxygen Demand (BOD_5), and BOD_5 loading.
- In April, a large rain event occurred, which caused very high influent flows to the WWTP. Non-compliance occurred on several parameters – TAN, TAN loading and peak flow limit.
- A sample was mistakenly discarded and not shipped for laboratory analysis on May 5, 2023. This resulted in a non-compliance for failure to adhere to the effluent sampling program frequency.
- The WWTP failed to meet monthly average effluent objectives on eight occurrences for TSS, TSS loading, BOD_5, BOD_5 loading, TAN and TAN loading.

To address and potentially eliminate these types of operational issues, a Municipal Class (EA) Study continues for the Norwich WWTP into 2024, which will determine the most cost-effective, environmentally sound and sustainable approach to expand the WWTP capacity and service growth in Norwich over the next 25 years. An Assimilative Capacity Study of the receiver is expected to be completed in 2024 which is the initial step in the Class EA Study.

Plattsville WWTP

In 2023, the Plattsville WWTP achieved 96% compliance to its regulatory compliance limits for all parameters in the effluent (12 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In October, above average ambient temperatures led to excessive algae growth, which resulted in non-compliance for TSS, TSS loading and E. coli.
- The WWTP failed to meet monthly average effluent objectives on four occurrences for TSS, $CBOD_5$ and E. coli.
- The WWTP failed to meet the single sample effluent objectives for TSS (26), $CBOD_5$ (5), E. coli (3) and TAN (1).

Tavistock WWTP

In 2023, the Tavistock WWTP achieved 100% compliance to its regulatory compliance limits. Specific exceedances of effluent objectives are as follows:

- The WWTP failed to meet single sample effluent objectives on 4 occurrences for TSS and TAN.
- All monthly average effluent objectives were met in 2023.

In response to planned future growth in the Village of Tavistock, the County has commenced a Municipal Class EA Study in 2024 for capacity expansion of the Tavistock WWTP. The Class EA Study will determine the most cost-effective, environmentally sound, and sustainable approach to expand the Tavistock WWTP to meet the wastewater servicing needs of the community. The Class EA Study is underway and is expected to be completed in 2025.

Thamesford WWTP

In 2023, the Thamesford WWTP achieved 99% compliance to its regulatory compliance limits for all parameters in the effluent (2 exceptions). Specific exceedances of the compliance limit and/or effluent objectives are as follows:

- On May 15, 2023, routine repairs were completed on a chemical pump, after which a valve was mistakenly not opened, resulting in a non-compliance for Total Residual Chlorine (TRC).
- The WWTP failed to meet single sample effluent objectives on 19 occurrences for TSS, TRC and TP.
- The WWTP failed to meet the monthly average effluent TP objectives on one occurrence.

Construction is planned to start later this year to undertake upgrades to the WWTP Headworks and Aeration Upgrade to improve plant performance and reduce operational challenges. Improvements include a new headworks facility with fine screening and grit removal, and the replacement of the plug flow reactor process train aeration course bubble diffusers with fine bubble diffusers to improve the oxygen transfer rate efficiency and reduce power consumption.

Tillsonburg WWTP

In 2023, the Tillsonburg WWTP achieved 98% compliance to its regulatory compliance limits for all parameters in the effluent (12 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- During March, the WWTP experienced frequent incidences of oil in the WWTP influent, leading to poor settling and a non-compliance for TSS. Sewer use by-law enforcement staff are investigating the source which to date has proved to be elusive.
- On August 9, 2023, an unexpected delay with the laboratory contracted courier, resulted in a non-compliance for failing to adhere to the ECA weekly Final Effluent Monitoring Program sampling frequency.
- The WWTP failed to meet single sample effluent objectives on 26 occurrences for TSS, E. coli, TP, pH and $CBOD_5$.
- The WWTP failed to meet monthly average effluent objectives on two occurrences for TSS and once for E. coli.

In 2021, Phase 1 construction upgrades were initiated which will include new headworks, primary clarifiers, secondary clarifier, blower, waste activated sludge (WAS) thickening, and various piping and control upgrades. As detailed in Report PW 2020-54, the upgrades will strategically address WWTP system bottlenecks to improve operational performance, plant resiliency and servicing capacity. Construction is expected to be completed later this year.

Woodstock WWTP

In 2023, the Woodstock WWTP achieved 98% compliance to its regulatory compliance limits for all parameters in the effluent (16 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In October, the Woodstock WWTP experienced very high organic loading for 25% of the month (three to five times stronger than typically received), due to operational issues at a local food industry, which resulted in a non-compliance for TSS. Sewer use by-law staff investigated and over strength charges were collected.
- The WWTP failed to meet monthly average effluent objectives on three occurrences for TSS, TAN and TP.
- The WWTP failed to meet single sample effluent objectives on 24 occurrences for TSS, TAN, $CBOD_5$, TP and E. coli.

As part of the County's Renewable Energy Action Plan (REAP) (2022-2032) and consistent with the 100% Renewable Energy Plan (2018), design for a biogas fueled, internal combustion Combined Heat and Power (CHP) system at the WWTP is underway to significantly increase renewable energy utilization and reduce greenhouse gas (GHG) emissions, energy consumption and operational costs at the WWTP.

A CHP system is capable of utilizing renewable energy from the biogas to cogenerate on-site heat and power, where the generated electricity can be used at the WWTP to offset electrical consumption required for internal electrical usage and thermal energy would be directed to the WWTP's radiant heating system to offset natural gas consumption required for both process and building heat usage as follows:

- **Future Potential Biogas Conversion to Energy** – The biogas CHP is expected to increase renewable energy utilization by approximately 2,800,000 ekWh/year which will be used on-site to reduce costs associated with consumption of energy from the electrical and natural gas distribution networks. This would improve the WWTP's renewable energy consumption mix from 23% to 62%.

- **Future Potential GHG Emission Reduction** – Optimization of the WWTP biogas production for on-site plant utilization by the CHP system is anticipated to reduce carbon dioxide emissions by approximately 254 tCO2e/year.

As per the County's 2022 REAP multi-year implementation plan, detailed design and Renewable Energy Approval (REA) studies for the CHP system were initiated in 2023, with final approvals and design work expected to be completed by Q3 of 2025.

Capital Improvement Projects completed at the Woodstock WWTP in 2023 will result in additional energy and cost savings. The replacement of older equipment in 2023, with more efficient units has resulted in an annual electrical avoidance of 62,752 kWh per year, resulting in avoidances of 1.6 tCO2e per year in GHG emissions and $8,156 per year in energy costs.

2023 Wastewater System Infrastructure Investments

As per the 2023 Capital Forecasts noted in Attachment 3 of CS 2023-37 Business Plan and Budget Review - 3rd Quarter, the County invested over $14.3 M in rate supported wastewater infrastructure which includes, but is not limited to, several notable capital projects as follows (project costs are rounded):

- Wastewater SCADA Master Plan ($1,800,000);
- Water and Wastewater Master Plan - wastewater servicing portion ($70,000);
- Development Charges Technical Study ($38,000);
- Wastewater Facility Improvements ($310,000);
- Woodstock Pattullo Industrial Park Servicing ($2,935,000);
- Woodstock North Trunk Sewer inflow and infiltration Study ($110,000);
- Woodstock City Projects ($2,460,000);
- Tillsonburg WWTP Phase 1 Upgrade ($6,100,000);
- Tillsonburg Cranberry Road Sewer Extension ($70,000);
- Ingersoll Sewer Relining ($80,000);
- Ingersoll Town Projects ($790,000);
- Norwich Lagoon Expansion ($130,000);
- Norwich Sanitary Sewer Replacements ($310,000);
- Tavistock WWTP Expansion/Upgrade ($250,000);
- Tavistock William Street SPS Rehab ($200,000);
- Plattsville Biosolids Clean-out ($30,000);
- Thamesford WWTP Pretreatment/screening ($270,000);
- Drumbo WWTP Capacity Expansion ($1,800,000); and
- Mount Elgin WWTP Capacity Expansion ($340,000).

2023 Wastewater Service Agreements

As per the resolution from Report PW 2023-26, staff received direction from Oxford County Council in May 2023 to update the Water Distribution and Wastewater Collection Service Agreements with the Town of Tillsonburg (Town) and the City of Woodstock (City). Updated service agreements were effectively negotiated to have the Town and City perform, under contract to the County, operation and maintenance (O&M) of a limited portion of the County's water distribution (and wastewater collection) systems as well as for specific engineering and construction services performed within the same.

Staff received Council direction to then execute the agreements as per Report PW (CS) 2023-39, which were similarly endorsed by local Town and City Councils for execution. Both agreements were subsequently executed on November 16, 2023 with an effective date of January 1, 2024.

2024 Water and Wastewater Master Plan

Oxford County communities are growing and so is our water and wastewater infrastructure. Properly collecting and treating wastewater has a direct impact on the health of our community.

The 2024 Water and Wastewater Master Plan (W/WW MP) details long-term wastewater servicing strategies to support existing needs and accommodate future growth in population and employment through to the year 2046. County Council endorsed, in principle, the draft 2024 Water and Wastewater Master Plan (Report PW 2023-41) following an extended public consultation period. The Master Plan was finalized December 2023 and can be found on the County website (www.oxfordcounty.ca/wwwmp).

The 2024 W/WW MP will guide the County's annual capital and operational budgets, become an input to the 2024 Water and Wastewater Development Charges Technical Study, and will further inform the upcoming 2024 Development Charges Background Study. County Council will consider future implementation of projects identified in the 2024 W/WW MP through the annual budgeting process. Approved projects will be integrated within the County's 2022 Asset Management Plan, which focuses on lifecycle needs of existing projects and incorporates the needs of growth projects identified in the Development Charges Background Study.

Water and Wastewater Supervisory Control and Data Acquisition (SCADA) Master Plan

As per Report PW 2019-43, the County's SCADA Master Plan envisioned the implementation of a modern County-wide SCADA system by a multi-disciplinary team of staff from Water and Wastewater Services, Engineering, Facilities and Corporate Services, along with facilitated support from engineering consultants who possess specialized SCADA expertise.

A total of 55 projects were recommended to be implemented over a ten-year period. The SCADA Master Plan will enhance operations by: (1) replacing and standardizing aging/obsolete hardware and software SCADA systems to increase network reliability, (2) allowing for inter-connection of remote water/wastewater sites to reduce travel time and manual operator intervention, (3) improving cyber-security and (4) improving data collection, storage and reporting.

The Thamesford WWTP was the pilot site for implementation of the County-wide SCADA system (December 2023). Insights and lessons learned from the Thamesford WWTP installation will be applied to all other sites as they transition to the County-wide SCADA system over the next few years.

2023 Maintenance of Wastewater System Infrastructure

In addition to the wastewater system capital investments noted above, several planned preventative maintenance activities are carried out annually to help optimize the useful service life and efficiency of wastewater infrastructure assets. A number of key maintenance activities are noted below for wastewater collection and wastewater treatment infrastructure respectively.

Table 1: Wastewater Collection Infrastructure Maintenance (2023)

Preventative Maintenance Activity	Quantity
Sanitary Sewer Flushing	104,572 m
Sanitary Sewer CCTV Inspection	51,330 m
# of Grinder Pump Inspections	68
# of Sanitary Manhole Inspections	1,720
# of Sanitary Manholes Repaired/Replaced/Adjusted	100
# of Sewer Blockages Cleaned	71
# of Septic Tank Inspections	216
Forcemain Cleaning (Swabbing)	171,000 m
Standby Power Generator Inspection and Maintenance	48
Sewage Pump Station Clean-outs	62

In terms of corrective maintenance, Public Works resolved 67 customer complaints (odour, sewage blockage, damaged manhole covers, etc.) that were received from within the various wastewater systems across the County. Public Works experienced no wastewater forcemain breaks in 2023.

Table 2**:** Wastewater Treatment Infrastructure Maintenance (2023)

Preventative Maintenance Activity	Quantity
Equipment Lubrications	128
Equipment Inspections	51
Minor Equipment Maintenance and Repairs	97
Instrumentation and Flowmeter Calibrations	7
Standby Power Generator Maintenance	87
Maintenance Service	314
Equipment Installs and Retires	25

Overall, Oxford wastewater operators performed over 800 maintenance tasks in 2023 to support the efficient and reliable operation of its wastewater treatment plant assets.

Wastewater Overflow/Spill Incidents

As summarized in the table below, in 2023, there were three wastewater spill incidents involving the collection system and four wastewater spill incidents involving a treatment plant. All incidents were reported to the MECP at the time of the occurrence and corrective actions were taken to contain the occurrences.

Table 3: Wastewater Overflow/Spill Incidents (2023)

Overflow/Spill Incident	Corrective Action Taken	System Affected	Volume (m^3)
Collection System			
Blockage of a sanitary sewer caused a spill from a manhole.	Vac Truck Service was contracted to clear the blockage and clean up the spill.	Tillsonburg	0.2
Operable valve was not fully shut, resulting in spill.	Leak was reported and the valve was fully closed.	Mount Elgin	0.2
A heavy rain event overloaded the pumping capacity of a sewage pumping station, resulting in an overflow event.	Operational changes were made to increase the pumping capacity of the sewage pumping station. Future implementation of a new Inflow and Infiltration (I&I) Reduction Program will aim to reduce overflow events.	Norwich	25
WWTP			
A heavy rain event overloaded the pumping capacity of a sewage pumping station, resulting in an overflow event.	On-call Operator responded to the high level alarm at the sewage pumping station to monitor conditions and equipment. Ongoing Phase I upgrades and the planned Phase II capacity expansion of the Tillsonburg WWTP, in combination with the implementation of a new I&I Reduction Program, will aim to reduce future overflow events.	Tillsonburg	2,000

Overflow/Spill Incident	Corrective Action Taken	System Affected	Volume (m^3)
WWTP			
Heavy rainfall in the area resulted in extremely high flow entering the WWTP, resulting in an overflow event.	Vac Truck Service was used to provide hydraulic relief and clean up spillage. Influent was trucked to neighbouring WWTPs. The planned Phase II capacity expansion of the Drumbo WWTP, in combination with the implementation of a new I&I Reduction Program, will aim to reduce future overflow events.	Drumbo	1
Heavy precipitation in the area resulted in extremely high flow entering the WWTP, resulting in an overflow event.	WWTP discharge was increased to lower the lagoon levels. A large portable pump was brought to site and used to transfer contents from one lagoon to another. The planned capacity expansion of the Norwich WWTP, in combination with the implementation of a new I&I Reduction Program, will aim to reduce future overflow events.	Norwich	2,150
Heavy precipitation in the area resulted in extremely high flow entering the WWTP, resulting in an overflow event.	Vac Truck Service was used to clean up spillage. Influent was trucked to a neighbouring WWTP. The planned Phase III and Phase IV capacity expansions of the Mount Elgin WWTP, in combination with the implementation of a new I&I Reduction Program, will aim to reduce future overflow events.	Mount Elgin	0.05

Several of the County wastewater collection systems experience high extraneous flows through *inflow* of stormwater and *infiltration* of groundwater (I&I) as confirmed in the 2024 Water and Wastewater Master Plan. Additional flow enters the systems through a variety of sources (i.e. cracks in sewer pipes, improper sewer pipe joint seals, pervious sewer manhole covers, stormwater/downspout/weeping tile connections) and detracts from the available capacity needed to convey sewage through the collection system and treat sewage at the WWTPs. Accordingly, staff brought forward a new program in the 2024 Budget and Business Plan to systematically combat I&I. The multi-year I&I Reduction Program will be commenced in 2024.

2023 Annual Biosolids (Non-Agricultural Source Material) Summary Reports

The Annual Biosolids (Non-Agricultural Source Material) Report provides the required detail for the biosolids program to the MECP regarding the amounts of biosolids generated at each WWTP, the quantities transported, the quantities stored at the County's BCSF and the quality and quantities of biosolids reused beneficially as a nutrient on agricultural land.

Biosolids Generation

In 2023, there were approximately 6,800 wet tonnes of processed dewatered biosolids generated by the Woodstock, Ingersoll and Tillsonburg WWTPs which were taken for storage at the County BCSF.

The Woodstock and Ingersoll WWTPs received and further processed liquid biosolids from other County WWTP systems as follows:

- Thamesford WWTP transferred approximately 2,800 m^3 of partially digested biosolids to the Woodstock and Ingersoll WWTPs for primary co-thickening;
- Drumbo WWTP transferred approximately 2,700 m^3 of raw sludge to the Woodstock WWTP for primary sludge co-thickening; and
- Mount Elgin WWTP transferred approximately 500 m^3 of septage sludge (tank maintenance cleanout material) to the Woodstock and Ingersoll WWTPs for processing.

Land Application Program

In 2023, there were approximately 7,400 wet tonnes of dewatered biosolids applied to agricultural land. The quality of biosolids from all facilities were compliant with the *Nutrient Management Act, 2002*.

Biosolids Centralized Storage Facility

When the biosolids material cannot be directly land applied during the winter months, biosolids are stored at the County's BCSF which is designed to provide a minimum of 240 days' storage. The capacity that the BCSF can store is approximately 7,000 m^3 of biosolids material. There were no upsets or spills during operation in 2023 and no complaints (i.e. odour) were received in connection with the BCSF.

The continued enforcement of the Oxford County Sewer Use By-law serves to help protect the quality of the biosolids. Oxford maintains an active monitoring and enforcement group with the goal of maintaining the quality and reducing the quantity of biosolids produced.

CONCLUSIONS

The 2023 Annual Wastewater Systems Summary Reports demonstrate Public Works' continued oversight of the County's municipal wastewater systems in order to effectively service Oxford residents and businesses, while providing responsible environmental stewardship and support to public health.

The County continues to institute industry best management standards to annually monitor the levels of service and financial performance of its wastewater infrastructure and to ensure wastewater infrastructure assets are maintained in optimal condition through effective preventative maintenance and optimized infrastructure decision-making.

SIGNATURES

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