

To: Warden and Members of County Council

From: Director of Public Works

2022 Annual Wastewater System Performance

RECOMMENDATIONS

1. That County Council receive Report No. PW 2023-11 entitled “2022 Annual Wastewater System Performance”, including the individual 2022 Annual Wastewater Treatment Plant Summary Reports;
2. And further, that County Council receive the 2022 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 (the County) 11 municipal wastewater systems and biosolids processing program in 2022.
- Of note, the County’s nine wastewater treatment plants (WWTPs) provided effective treatment and demonstrated continued exceptional performance in 2022. Based on approximately 4,844 WWTP effluent samples collected and analyzed in 2022, four of the nine County municipal WWTPs achieved 100% compliance ratings (with the remaining five receiving the following compliance ratings: Drumbo 94%, Norwich 99%, Plattsville 97%, Tillsburg 98% and Woodstock 99%).
- 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, various optimization projects/studies (Ingersoll WWTP, Woodstock WWTP) and equipment upgrades (Plattsville WWTP) were completed in 2022 to further offset facility non-renewable energy consumption and reduce greenhouse gas emissions.

Implementation Points

Following Council adoption of this report, the 2022 Annual WWTP Reports (Attachment 1) and Biosolids Report (Attachment 2) will be submitted to the Ministry of the Environment, Conservation and Parks (MECP) in accordance with regulatory requirements by March 31, 2023. 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 2023 Operating and Capital Budgets of the respective wastewater systems.

Communications

As indicated, the 2022 Annual Wastewater System Performance Report and the 2022 Biosolids Summary Report will be posted to the County website by March 31, 2023 at <http://www.oxfordcounty.ca/waterwastewater>. The results of each system’s performance report will also be shared directly with Area Municipality CAO and Public Works senior management respectively.

The County communicates the performance of key Public Works systems (Water, Wastewater, and Waste Management) annually to the public through an annual social media campaign after the last performance report has been submitted to Council later this year.

Strategic Plan (2020-2022)

					
WORKS WELL TOGETHER	WELL CONNECTED	SHAPES THE FUTURE	INFORMS & ENGAGES	PERFORMS & DELIVERS	POSITIVE IMPACT
1.ii.				5.ii.	

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 and Biosolids Processing Systems

The County operates and maintains:

- 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, and sanitary 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 658 kilometers of sanitary sewers and forcemains, 8,326 manholes, 127 grinder pump systems, 2 odour control facilities and 37 sewage pumping stations (including the two privately owned sewage pumping stations).

In 2022, Oxford County applied for a Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA). As noted in the 2023 Business Plan and Budget, the CLI ECA is a new regulatory initiative by the MECP which aims to reduce the burden on municipalities, developers and the MECP, while imposing a consistent set of conditions intended to improve environmental protection in relation to the wastewater collection system. A single CLI ECA will be held by Oxford County for all communities' wastewater collection systems. The MECP issued the CLI ECA to Oxford County on February 14, 2023.

Wastewater Reporting Requirements

The annual reporting requirements are set out in each wastewater facility's Environmental Compliance Approval (ECA) 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).
- A summary and interpretation of all monitoring data and a comparison to the effluent limits set out in the ECA.
- A description of any operating problems encountered and corrective actions taken.
- A summary of all maintenance carried out on any major structure or equipment.
- A summary of any effluent quality assurance or control measures undertaken.
- A summary of the calibration and maintenance carried out on all effluent monitoring equipment.
- A tabulation of all generated biosolids and a summary of all disposal locations.
- A summary of any complaints, abnormal events, upset conditions, by-passes or spills.
- Any other information specifically required by the District Manager.

Comments

2022 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 <http://www.oxfordcounty.ca/waterwastewater> by March 31, 2023. Highlights include:

- 11 communities were served by the County's municipal wastewater systems.
- Approximately 13.6 million cubic metres of wastewater was responsibly treated.
- Approximately 4,844 WWTP effluent samples were collected and analyzed, from which an overall facility ECA compliance of 98.5% (74 failed samples) was achieved.
- WWTP facilities were also largely compliant with the MECP Final Design Objectives (objectives) and Final Effluent Compliance Limits (compliance limits):
 - 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.
 - 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.

Drumbo WWTP

In 2022, the Drumbo WWTP was 94% compliant with all its regulatory compliance limits (44 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In August and October, the WWTP experienced incoming dark, high strength influent that led to non-compliance with several parameters - Total Ammonia Nitrogen (TAN), TAN loading, Total Suspended Solids (TSS) and Total Phosphorus (TP).
- In December, the influent to the WWTP contained abnormally high concentrations of Ammonia that led to a non-compliance of TAN.
- The WWTP failed to meet monthly average effluent objectives on 18 occurrences for TSS, Flow, TAN, and TP.

To address these types of operational issues, Phase I construction began in 2021 to expand the WWTP capacity, using a new membrane bioreactor technology, with a target in-service date near the end of 2023. Phase II capacity expansion planning will be initiated in 2023 with additional capacity (additional membrane cassette installation) targeted to be in-service by 2025. These WWTP capacity expansions will also provide additional capacity to service growth as well as allow for the continued delivery of effective, safe and dependable services.

In 2021, a Feasibility Study was also commenced to investigate further potential wastewater system servicing opportunities that may support additional growth in Drumbo. The Feasibility Study was completed in 2022 and will provide input to the servicing strategies under consideration as part of the County-wide Water and Wastewater Master Plan to be finalized in 2023.

Ingersoll WWTP

In 2022, 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 seven occurrences for TSS, TP and E. coli.
- All monthly average effluent objectives were met in 2022.

In the fall of 2021, the County initiated a pilot co-digestion project which was consistent with the County's direction of Innovative and Green Technology. The project explored the potential benefits of co-digesting FOG (fats, oils, and grease) with municipal sludge in the Ingersoll WWTP anaerobic digester in order to optimize digester operation and provide increased renewable biogas production which can be used to offset WWTP energy demands derived from fossil fuels. The project was completed in 2022, and it concluded that the FOG addition increased digester biogas production by approximately 80% along with greater volatile solids reduction through increased biological activity.

FOG co-digestion should be explored further on a larger scale to quantify the potential for renewable energy generation and waste diversion based on the following estimations:

- **Future Potential Biogas Conversion to Energy** – The current average biogas production without FOG is approximately 500 m³/d, which based on the current trends shown by the FOG co-digestion is projected to increase by 80% at the maximum FOG loading to the digester. 80% increase from the current production translates into additional 400 m³/d with a heat value of approximately 11 GJ/day. Biogas applications may include inputting biogas to off-site RNG pipeline or on-site WWTP utilization via combustion Combined Heat and Power (CHP) units or gas powered equipment to offset plant energy requirements.
- **Future Potential GHG Emission Reduction** – FOG co-digestion is anticipated to reduce the production of dewatered biosolids by 10% (due to increased solids destruction within the anaerobic digester). This equates to reduced amount of trucking of this biosolids end-product to the Biosolids Centralized Storage Facility in Salford and an approximate reduction of 84 tCO₂e of carbon dioxide emissions annually. In addition, the WWTP currently flares approximately 25% of its produced biogas (methane) production as off-gas. An opportunity exists to review the potential capture and utilization of this biogas amount which would further reduce carbon dioxide emissions by approximately 84 tCO₂e of GHG per year.

Mount Elgin WWTP

The Mount Elgin WWTP had no effluent compliance limits for the system; however, the ECA requires the County to use best efforts to operate the WWTP with CBOD₅ and TSS objectives < 10 mg/L, both of which were met in 2022.

As per Report No. [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. Construction is expected to commence in 2023.

Norwich WWTP

In 2022, the Norwich WWTP achieved 99% compliance to its regulatory compliance limits for all parameters in the effluent (1 exception). Specific exceedances of compliance limit and/or effluent objectives are as follows:

- In February, daily influent flow to the plant exceeded the ECA peak flow limit resulting in a non-compliance.
- The WWTP failed to meet monthly average effluent objectives on two occurrences for TSS and TSS loading.

A Municipal Class Environmental Assessment (EA) Study continues for the Norwich WWTP into 2023, 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. The Class EA Study is anticipated to be completed in 2023.

Plattsville WWTP

In 2022, the Plattsville WWTP achieved 97% of its regulatory compliance limits for all parameters in the effluent (5 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In November, excessive wind and low pond levels caused previously settled solids to be entrained in the WWTP effluent, which resulted in a non-compliance for TSS.
- The WWTP failed to meet the single sample effluent objectives on 12 occurrences for TSS.
- The WWTP failed to meet the monthly average effluent objective for TSS in November. County Staff have implemented various operational strategies in an attempt to meet ECA objectives.

Various capital improvements were also completed at the Plattsville WWTP in 2022, which will result in notable energy and cost savings. The replacement of older diffusers in aeration cell 2 with more efficient units is anticipated to realize the following results:

- **Future Potential Energy Demand Reduction** – These capital upgrades are anticipated to achieve an annual electrical consumption avoidance of approximately 31,135 kWh which will reduce costs (~ \$5,100 annually) associated with consumption of energy from the electrical grid or fossil fuel generated power.
- **Future Potential GHG Emission Reduction** - The annual electrical avoidance noted above relates to an equivalent carbon dioxide gas emission reduction of approximately 1.2 tCO₂e per year.

Tavistock WWTP

In 2022, the Tavistock WWTP achieved 100% compliance to its regulatory effluent limits. Specific exceedances of effluent objectives are as follows:

- The WWTP failed to meet single sample effluent objectives on three occurrences for TSS and TAN.

An application to increase the rated capacity of the Tavistock WWTP was submitted to the MECP in 2021 based on strong historical performance, recent aeration upgrades to enhance treatment, and alignment with the rated capacity of the Tavistock water system. The re-rating was approved by the MECP in March of 2022, increasing the WWTP rated capacity from 2,525 m³/day to 2,935 m³/day.

In response to planned future growth in the Village of Tavistock, the County will initiate a Municipal Class Environmental Assessment (EA) Study for capacity expansion of the Tavistock WWTP in 2023. The 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.

Thamesford WWTP

In 2022, the Thamesford WWTP met 100% of its regulatory compliance limits for all parameters in the effluent. Specific exceedances of effluent objectives are as follows:

- The WWTP failed to meet single sample effluent objectives on 24 occurrences for TSS, E. coli, TAN, TP, CBOD₅ and pH.
- The WWTP failed to meet monthly average effluent TSS objectives on 3 occurrences.

Design work began in 2022 on the Thamesford WWTP Headworks and Aeration Upgrade to improve Thamesford WWTP performance and reduce operational challenges. Improvements include a new headworks facility with fine screening and grit removal, and the replacement of all aeration course bubble diffusers to fine bubble diffusers to improve the oxygen transfer rate efficiency and reduce power consumption. Construction is planned for 2024.

Tillsonburg WWTP

In 2022, the Tillsonburg WWTP achieved 98% compliance to its regulatory effluent limits (10 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- In November, the WWTP experienced frequent incidences of oil in the WWTP influent, leading to poor settling and a non-compliance for TSS.
- The WWTP failed to meet single sample effluent objectives on 28 occurrences for TSS, E. coli, TP and CBOD₅.
- The WWTP failed to meet monthly average effluent objectives on 5 occurrences for CBOD₅ and TSS.

In 2021, Phase 1 construction upgrades were initiated which will include new headworks, primary clarifiers, secondary clarifier, blowers, waste activated sludge (WAS) thickening, and various piping and control upgrades. As detailed in Report No. [PW 2020-54](#), the upgrades will strategically address WWTP system bottlenecks to improve operational performance, plant resiliency and servicing capacity. Construction is targeted for completion in December, 2023.

Woodstock WWTP

In 2022, the Woodstock WWTP achieved 99% compliance with its regulatory effluent limits (5 exceptions). Specific exceedances of compliance limits and/or effluent objectives are as follows:

- On June 15 and August 6, de-chlorination equipment failures caused the Total Residual Chlorine (TRC) concentration to exceed < 0.05 mg/L, resulting in non-compliance for TRC in June and August.
- The WWTP failed to meet single sample effluent objectives on eight occurrences for TSS, TAN, E. coli and TRC.

In 2022, the Woodstock WWTP continued participation with the Ontario Wastewater Surveillance Initiative; a collaboration which includes 13 institutions, 34 Public Health Units (PHUs) and 117 Communities. The initiative involves the detection of the COVID-19 virus in wastewater and provides PHUs with another tool to aide in tracing infection. Influent samples are collected at the WWTP, analyzed by Western University and results are provided to Southwestern Public Health in an attempt to predict virus location and spread in the community.

In 2021, an inflow and infiltration (I&I) study was initiated to locate and reduce I&I in Woodstock's North Trunk Sewer catchment area, and this study continued throughout 2022. The County is actively pursuing ways of sustainably reducing I&I flow into its wastewater collection system to allow for increased wastewater capacity both within the collection system and the WWTP. Potential capacity gained through I&I reduction will serve to support future development while minimizing or deferring future wastewater infrastructure capital upgrades and energy requirements. The study is to be completed in 2023.

A primary anaerobic digester was cleaned out at the Woodstock WWTP in 2022, allowing for a structural visual condition assessment to be completed by an engineering consultant, which determined the digester to be in good condition. Digestion treatment capacity was restored and a refurbishment of the gas mixing system was completed to optimize the digestion process and biogas production. The digester was brought back online in January of 2023 with the initial resulting biogas production volume increasing by approximately 300 percent when compared to the January 2022 biogas production volume.

As part of the County's Renewable Energy Action Plan (REAP) (2022-2032) and consistent with the 100% Renewable Energy Plan (2018), a Preliminary Engineering Study was completed at the Woodstock WWTP in 2022, looking at opportunities to more efficiently use biogas produced at the WWTP to significantly reduce GHG emissions, energy consumption and operational costs. The PES evaluated several options and concluded that CHP system was the preferred option. A CHP system is capable of the cogenerating of on-site heat and power, where the generated electricity would be used at the WWTP to offset internal electrical consumption and generated thermal energy would be directed to the WWTP radiant heating system to provide both process and building heat as follows:

- **Future Potential Biogas Conversion to Energy** – The CHP is expected to produce approximately 1,248,000 kWh/year of new electrical and thermal renewable energy generation which can be utilized on-site and reduce costs associated with consumption of energy from the electrical grid or fossil fuel generated power.
- **Future Potential GHG Emission Reduction** – Optimization of WWTP biogas production for on-site plant utilization is anticipated to reduce carbon dioxide emissions by approximately 91 tCO₂e/year.

As per the 2022 REAP multi-year implementation plan, the design work for this CHP system will begin in 2023 with implementation planned for 2024.

2022 Wastewater System Infrastructure Investments

As per the revised 2022 Forecast in the 2023 Business Plan and Budget, the County invested almost \$18 million in rate supported wastewater infrastructure which included, but is not limited to, several notable capital projects as follows:

- Phase 1 Capacity Expansion of Drumbo WWTP (\$6,000,000)
- Norwich Sanitary Sewer Replacements (\$1,100,000)
- Phase 1 Upgrades of Tillsonburg WWTP (\$9,700,000)
- Water and Wastewater SCADA Master Plan (\$1,250,000)
- Woodstock Pattullo Industrial Park servicing (\$3,360,000)

- Water and Wastewater Servicing Master Plan (\$300,000)
- Ingersoll Sanitary Sewer Projects (\$980,000)
- Ingersoll Sewer Re-lining (\$120,000)
- Phase 3 and 4 Capacity Expansion Design of Mount Elgin WWTP (\$220,000)
- Tavistock Williams Street Sewage Pump Station Rehabilitation (\$120,000)
- Headworks, Screening and Aeration Upgrade Design of the Thamesford WWTP (\$150,000)
- Plattsville WWTP Equipment Upgrades (\$60,000)

2022 Wastewater System Asset Management Plan Update

In addition to the above noted capital investments, Oxford continues to prioritize the long term sustainability of its wastewater systems. The County maintains a diverse portfolio of assets necessary to provide the safe collection and treatment of wastewater. In 2022, as part of the update to the County's Asset Management Plan, the current asset condition and lifecycle needs for each of the County's wastewater systems were documented.

This information continues to be used as a primary source for setting water and wastewater rates, capital requirements, and to determine appropriate target reserve balances. The summary of these findings were detailed in the County's 2022 Asset Management Plan (Report No. [CS 2022-20](#)).

A quick summary of the overall condition of wastewater infrastructure and related assets is detailed in Figure 1.

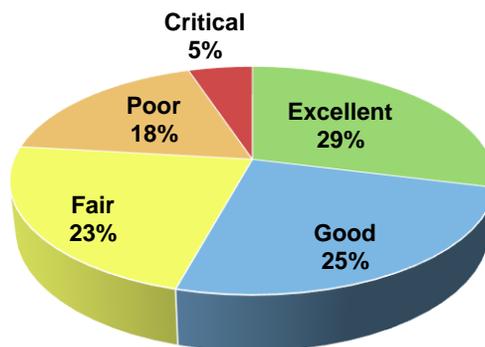


Figure 1 - County Wastewater System Asset Condition (2022)

Oxford County continues to manage its wastewater asset inventory and asset maintenance work orders using a digital asset management system. Through proactive asset management, the County strives to optimize the service life of its wastewater assets and promote the overall long term sustainability of its wastewater system. The County continues to integrate its wastewater infrastructure, among other assets, within the corporate Asset Management Systems Enhancement project as part of overall compliance to O. Reg. 588/17 – Asset Management Planning for Municipal Infrastructure, under the *Infrastructure for Jobs and Prosperity Act, 2015*.

Oxford County continues to incorporate industry best management practices to monitor the levels of service and financial performance of its wastewater infrastructure and ensure that our wastewater infrastructure assets are maintained in good condition through effective preventative maintenance, optimized infrastructure decision-making and strategic capital planning (replacement, repair, expansion).

2022 Water and Wastewater Service Delivery Review

As per Report No. [CS 2021-14](#), staff received direction from Oxford County Council in March 2021 to seek Municipal Modernization funding to collectively undertake a joint Water Distribution and Wastewater Collection Operations and Maintenance standardized delivery review with Tillsonburg and Woodstock to identify potential opportunities to modernize service delivery and reduce future operating costs. The outcomes and recommendations of the review were presented to Council (Reports No. [PW 2022-19](#) and [PW 2022-32](#)). Staff received Council direction to continue with the status quo service wastewater service delivery model with consideration for continuous improvement relating to the implementation of industry best management practices including, but not limited to, the following:

- Service Level Alignment to Standards (in progress to achieve consistent LOS);
- Sanitary Sewer Inflow and Infiltration Reduction (reduction of extraneous flows);
- Full Cost Recovery (in progress as per 2023 County Fees & Charges By-law updates);
- Joint Procurement (seeking opportunities with contracted service providers); and
- Streamlining Responsibilities in Right-Of-Way Capital Coordination (seeking GIS and Cartegraph work order system enhancements required for integrated asset management).

2023 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 Water and Wastewater Master Plan will set out the long-term wastewater servicing strategies to support existing needs and accommodate future growth in population and employment through to the year 2046. Through this Master Plan, the long term ability of Oxford's wastewater system to collect and responsibly treat existing wastewater flows, as well as future growth needs, is being assessed in detail in terms of sustainable, affordable and reliable infrastructure.

Project milestones for 2022 included detailed site visits of all County water and wastewater systems and the first round of public consultation related to the project. A summary of the consultation process to date was shared with County Council through Report No. [PW-2022-47](#). The project is expected to come to completion in 2023 and the findings will be shared with County Council at that time.

2022 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 (2022)

Preventative Maintenance Activity	Quantity
Sanitary Sewer Flushing	92,674 m
Sanitary Sewer CCTV inspection	54,985 m
# of Grinder Pump Inspections	7
# of Sanitary Manhole Inspections	1,732
# of Sanitary Manholes Repaired/Replaced/Adjustments *	72
# of Sewer Blockages Cleaned	6
# of Septic Tank Inspections	273
Forcemain Cleaning (Swabbing)	148,000 m
Standby Power Generator Maintenance	47
Sewage Pump Station Clean-outs	72

* excludes Woodstock & Tillsonburg manhole activities

In terms of corrective maintenance, Public Works repaired no forcemain breaks in 2022 and resolved 29 customer complaints (odour, sewage blockage, damaged manhole covers, etc.) that were received from within the various wastewater systems across the County.

Table 2: Wastewater Treatment Infrastructure Maintenance (2022)

Preventative Maintenance Activity	Quantity
Equipment Lubrications	139
Equipment Inspections	52
Minor Equipment Maintenance and Repairs	185
Instrumentation and Flowmeter Calibrations	91
Standby Power Generator Maintenance	75
Maintenance Service	82
Digester Clean-outs	1

Overall, Oxford wastewater operators performed over 720 maintenance tasks in 2022 to support the efficient and reliable operation of its wastewater treatment plant assets.

Wastewater Overflow/Spill Incidents

As summarized in the table below, in 2022, there were two wastewater spill incidents involving the collection system and one wastewater spill incident 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 (2022)

Overflow/Spill Incident	Corrective Action Taken	System Affected	Volume (m ³)
Collection System			
Inlet valve was left open during commissioning at a new Sewage Pumping Station (SPS).	A precautionary spills report was submitted to the MECP detailing the event, indicating the overflow had no volume or duration (development service area not yet completed).	Norwich	0
Faulty level sensor and failure of a backup float control caused overflow to the William Street SPS.	The overflow was reported at the time to the Spills Action Center and MECP. Repairs performed on the level sensor equipment in wet well.	Tavistock	35
WWTP			
Contractor discharge hose became disconnected from truck during sewage offloading at Woodstock WWTP causing a spill on to the pavement and storm water drain to Thames River.	Spill containment booms were placed in the Thames River. Pavement and storm sewer flushed to collect spill materials. Environment spill sampling performed and reported to MECP. Future contractor offloading will be performed away from the stormwater drain catch basin at another location within the WWTP (grading towards the headworks). Additional spills kits and signage were added to reduce the chances of spills.	Woodstock	0.7

2022 Annual Biosolids (Non-Agricultural Source Material) Summary Reports

The Annual Biosolids (Non-Agricultural Source Material) Report (Attachment 2) 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 2022, there were approximately 6,500 wet tonnes of 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 2,600 m³ of partially digested biosolids to the Woodstock and Ingersoll WWTPs for primary co-thickening.
- Drumbo WWTP transferred approximately 1,800 m³ of raw sludge to the Woodstock WWTP for primary sludge co-thickening.
- Mount Elgin WWTP transferred 175 m³ of septage sludge (tank maintenance cleanout material) to the Woodstock and Ingersoll WWTPs for processing.

The cleanout of a primary digester at the Woodstock WWTP also generated another 4,500 m³ of liquid biosolids that was required to be further processed on-site.

Land Application Program

In 2022, there were approximately 5,500 wet tonnes of dewatered biosolids and approximately 3,600 m³ of liquid biosolids applied to agricultural land. The quality of biosolids from all facilities were compliant with the Nutrient Management Act

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 m³ of biosolids material. There were no upsets or spills during operation in 2022 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 improving the quality and reducing the quantity of biosolids produced.

Conclusions

The 2022 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, optimized infrastructure decision-making.

SIGNATURES

Report Author:

Original signed by

Don Ford, BA, CMM III, C.Tech.
Manager of Water and Wastewater Services

Departmental Approval:

Original signed by

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by

Benjamin R. Addley
Interim Chief Administrative Officer

ATTACHMENTS

Attachment 1: 2022 Annual Wastewater Treatment Plant (WWTP) Reports
Attachment 2: 2022 Year-End Biosolids Annual Report