2024 ANNUAL BIOSOLIDS NON-AGRICULTURAL SOURCE MATERIAL (NASM) SUMMARY REPORT

Including Biosolids Land Application Program and Biosolids Centralized Storage Facility (BCSF)

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing the Biosolids Land Application Program and performance of the Biosolids Off-site Dedicated Storage. The report details the latest quality testing results, quantity statistics and any non-compliance conditions that may have occurred. It is available for review by the end of March on the County website at http://www.oxfordcounty.ca/waterwastewater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate as possible.

If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at wastewater@oxfordcounty.ca.

The BCSF Facility description is provided below:

Biosolids Off-site Dedicated Storage:	BCSF
Environmental Compliance Approval (ECA):	3816-76HRTS (April 3, 2020)
Reporting Period:	January 1, 2024 – December 31, 2024

BCSF Owner & Contact Information:

Oxford County Public Works Department - Wastewater Services
P.O. Box 1614
21 Reeve Street
Woodstock, ON N4S 7Y3
Telephone: 519-539-9800
Toll Free: 866-537-7778
Email: wastewater@oxfordcounty.ca

The County owns and operates nine wastewater treatment plants (WWTP). They are listed in the table below along with their predominant treatment system and method of biosolids treatment and handling.

Plant Name	Plant Process	Biosolids Processing and Handling
Woodstock WWTP	Conventional Activated Sludge	Anaerobic digestion, centrifuge dewatering, and transported to storage at BCSF prior to land application
Ingersoll WWTP	Conventional Activated Sludge	Anaerobic digestion, centrifuge dewatering, and transported to storage at BCSF prior to land application
Tillsonburg WWTP	Conventional Activated Sludge	Aerobic digestion, centrifuge dewatering, and transported to storage at BCSF prior to land application
Thamesford WWTP	Extended aeration	Aerobic digestion, removed for further treatment at the Ingersoll WWTP
Drumbo WWTP	Membrane Bioreactor (MBR)	No digestion, primary sludge and thickened waste activated sludge removed for further treatment at the Woodstock WWTP
Tavistock WWTP	Lagoon System	Stored in lagoons on site until land applied usually between 15 to 25 years storage
Norwich WWTP	Lagoon System	Stored in lagoons on site until land applied usually between 15 to 25 years storage
Plattsville WWTP	Lagoon System	Stored in lagoons on site until land applied usually between 15 to 25 years storage
Mount Elgin WWTP	Black/Grey Water Recirculation Sand Filter and Common Drainage field	Homeowners have septic tanks maintained by the County requiring septage removal once every 3 to 5 years and transported to the Ingersoll or Woodstock WWTP

1.1 Biosolids Land Application Program Description

The biosolids land application program for the beneficial reuse as a nutrient was developed based on the County Biosolids Management Master Plan (BMMP). The five main elements of the BMMP include: more enforcement of the County Sewer Use By-law, dewatering of stabilized biosolids at each of the major WWTPs, transporting thickened sludge from smaller plants to the nearest major WWTP for processing, land application of all biosolids on farms having a non-agricultural source material (NASM) plan, and centralized storage of biosolids when the material cannot be land applied.

The BCSF houses dewatered biosolids for periods such as winter months when the dewatered product cannot be directly land applied. The storage building is designed to provide a minimum of 240 days storage. It is also designed with segregated storage bays so that should material be determined to be non-compliant, it can be removed and taken to the landfill and not mixed with compliant biosolids destined for land application.

The BCSF has sufficient room to house 7,000 m^3 of material and was built in two phases. The pre-existing building (Phase 1) included 12 bays; and Phase 2 became operational in 2019, with the addition of four more bays. The BCSF has sufficient space to accommodate the 240-day storage requirements for all of the WWTPs. The individual bays are slightly inclined with cement walls to allow for easy piling of the material. The incoming material is segregated by system and month and is deposited in the appropriate bay, after which Oxford County staff push the biosolids into higher piles at the back of the bay using a loader.

The enforcement of the County Sewer Use By-law was an important step in protecting the quality of the biosolids, and to this end, maintains an active monitoring and enforcement group with the goal of improving the quality and reducing the quantity of biosolids produced.

The following table summarizes the quantity of biosolids generated in 2024 by source. In 2024, there was 6,045 wet tonnes of dewatered biosolids land applied.

Facility	2024 Biosolids Land Applied	2024 Liquid Biosolids Generated	2024 Total Biosolids Generated	Biosolids Type	Destination
Woodstock WWTP	3,649 wet tonnes	--	4,219 wet tonnes	Anaerobic dewatered	BCSF & Land Application
Ingersoll WWTP	1,071 wet tonnes	453 m^3 transferred to Woodstock WWTP	1,287 wet tonnes	Anaerobic dewatered	BCSF & Land Application
Tillsonburg WWTP	1,325 wet tonnes	684 m^3 transferred to Ingersoll WWTP 632 m^3 transferred to Woodstock WWTP	1,642 wet tonnes	Aerobic dewatered	BCSF & Land Application
Thamesford WWTP	--	2,173 m^3 transferred to Ingersoll WWTP 1,019 m^3 transferred to Woodstock WWTP	--	Aerobic Liquid	Ingersoll & Woodstock WWTP
Drumbo MBR	--	416 m^3 transferred to Ingersoll WWTP 2,841 m^3 transferred to	--	Primary Sludge/Thickened Waste Activated Sludge	Ingersoll & Woodstock WWTP

Facility	2024 Biosolids Land Applied	2024 Liquid Biosolids Generated	2024 Total Biosolids Generated	Biosolids Type	Destination
		Woodstock WWTP			
Mount Elgin WWTP	--	295 m^3 transferred to Ingersoll WWTP 170 m^3 transferred to Woodstock WWTP	--	Tank maintenance-septage	Ingersoll & Woodstock WWTP

2. SUMMARY AND INTERPRETATION OF MONITORING DATA

2.1 Biosolids Quality Assurance and Control Measures

Sampling Procedure

Sampling is carried out as per the ECA.

Biosolids analysis is provided to the contractor and farmer for their use at the time of land application.

The biosolids are resampled at the time of land application for verification purposes.

Laboratory and Field Testing

The samples are analyzed by SGS Lakefield Research Ltd., a CAEAL certified lab. The results are entered into an Excel spreadsheet and reviewed for compliance with the regulations. The analytical results of the dewatered biosolids are also summarized and used for the calculation of monthly and yearly averages (Appendix ‘A’).

2.2 Biosolids Quality

The table below highlights the analytical results for metals versus the regulated maximum criteria. All sources of biosolids were compliant and were acceptable to be used as a nutrient for the land application program. More information can be found in Appendix ‘A’.

The results of the on-site verification sampling of biosolids prior to land application can be found in Appendix ‘A’. These samples provide a further check on the quality of the material. All 2024 samples complied with the Nutrient Management Act (NMA) criteria.

The Biosolids Contractor provides nutrient reports to individual farmers on each application to aid in the beneficial use of the product as a nutrient. The contractor’s table of NASM plans indicating spreading applications is included in Appendix ‘A’.

In summary, the County's Biosolids Management program provided effective production, transport, storage, and eventual reuse as a nutrient via land application of all biosolids generated under the program. All operation and maintenance activities were performed by Oxford County staff in the WWTPs.

The transportation of the biosolids from the WWTPs to the storage building was done by the County's Wastewater Services staff under ECA # A900939.

Comparison of Generated Biosolids to NMA Criteria for Metals in mg/kg Dry Solids

Parameter Metals (mg/kg dry solids)	Woodstock WWTP 2024 Annual Average	Ingersoll WWTP 2024 Annual Average	Tillsonburg WWTP 2024 Annual Average	Regulatory Limit Maximum
Arsenic	6.4	5.7	5.2	**170**
Cadmium	1.2	0.9	0.7	**34**
Cobalt	3.8	4.1	2.6	**340**
Chromium	80	36	49	**2,800**
Copper	654	521	511	**1,700**
Mercury	0.8	0.6	1.0	**11**
Molybdenum	13.9	32.2	9.2	**94**
Nickel	77.3	49.1	53.4	**420**
Lead	32.7	15.4	16.4	**1,100**
Selenium	5.3	5.0	4.5	**34**
Zinc	1,501	1,463	692	**4,200**

The Biosolids land applied from all facilities were compliant with the NMA regulations governing NASM.

3. NON-COMPLIANCE AND COMPLAINTS

There were no non-compliance events during the year of operation and no complaints were received in 2024.

3.1 Spills, Upsets and Abnormal Conditions

There were no spills, upsets or abnormal events in 2024.

4. INSPECTION OF THE BCSF

The BCSF was cleaned and the annual in-house inspection by staff took place on December 17, 2024. A copy of the inspection is found in Appendix 'A'.

Waste Management Facility staff swept the building prior to inspection. Not all bays were completely empty.

The following is a list of items found during inspection and the actions taken:

Inspection Item	Action Taken
A steel crossmember in bay 14 is slightly bent	No action required at this time
Minor concrete damage in bays 13 and 15, currently being used for recycling	No action required at this time
Roll up doors are heavily worn	No action required at this time

5. SUMMARY

The BCSF provided effective winter storage for the County biosolids land application program and was in excellent overall condition. The BCSF complied with all Conditions of the ECA as well as the inspection and reporting requirements. No complaints were received about the operation of the facility in 2024.