



Report to Council

Department: Infrastructure Services
Division: Environmental Services
Date: April 22, 2025
Prepared by: Rob Mackie, C. Tech, Manager Environmental Services
Report Number: Environmental Services-2025-01
Subject: Condition and Operational Capacity of Wastewater Treatment Facilities
Number of Pages: 5

Recommendation(s)

That Environmental Services 2025- 01, “Condition and Operational Capacity of Wastewater Treatment Facilities” prepared by Rob Mackie, Manager, Environmental Services dated April 22, 2025, be received.

Purpose

At it’s Regular Meeting of Council on February 18th, 2025, Council Resolved the following:

R-25-02-074

That Council direct Administration to provide a high-level report on the condition and operational capacity of the Town’s sanitary treatment facilities.

Moved by Mayor Bondy

Seconded By Councillor McGuire-Blais

Background and Discussion

The Town of Essex owns four (4) Wastewater Treatment Facilities, the Essex Pollution Control Plant, Essex Northeast Lagoon Facility, Harrow Lagoon Facility, and Colchester Lagoon Facility. These facilities are operated under contract by the Ontario Clean Water Agency (OCWA).

Each facility has its own Environmental Compliance Approval (ECA) issued by the Ministry of Environment, Conservation and Parks (MECP). An ECA is a permission that allows a business to operate their facility or site with environmental controls that protect human health and the natural environment. It also sets out the specific criteria and conditions in which the business is permitted to operate these facilities.

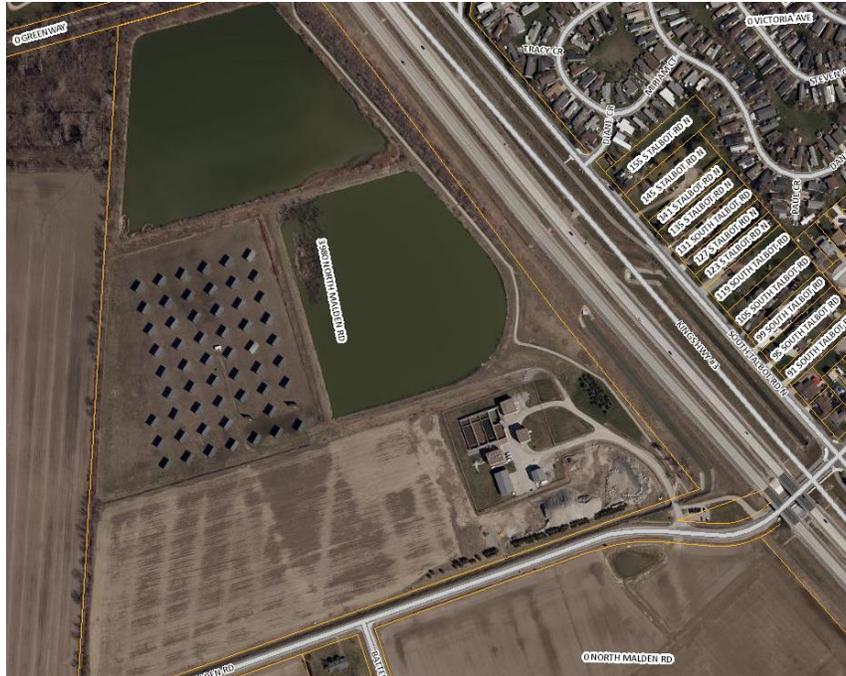
Each treatment facility has its own ECA, unique operating conditions and different levels of treatment capacity available. Below is a breakdown of each facility.

Essex Pollution Control Plant (PCP)

The Essex Pollution Control Plant is located on North Malden Road and has been in service since 2005. This treatment facility is a Sequential Batch Reactor (SBR), consisting of screening, grit removal, phosphorus removal, nitrification, UV disinfection, a centrifuge and temporary wet weather lagoon storage system. An aerial image of the facility is included below.

As per ECA number 8528-A7VK6D, the current rated capacity of the Essex PCP is 4,590 m³/day. In 2024, the average daily flow to the facility was **1,984 m³ or 43% of its rated capacity**.

The Essex PCP is currently estimated to require approximately \$1,214,000 in capital expenses between 2025-2030. The majority of these projects are replacing equipment that is at the end of its life cycle and ongoing maintenance within the facility.

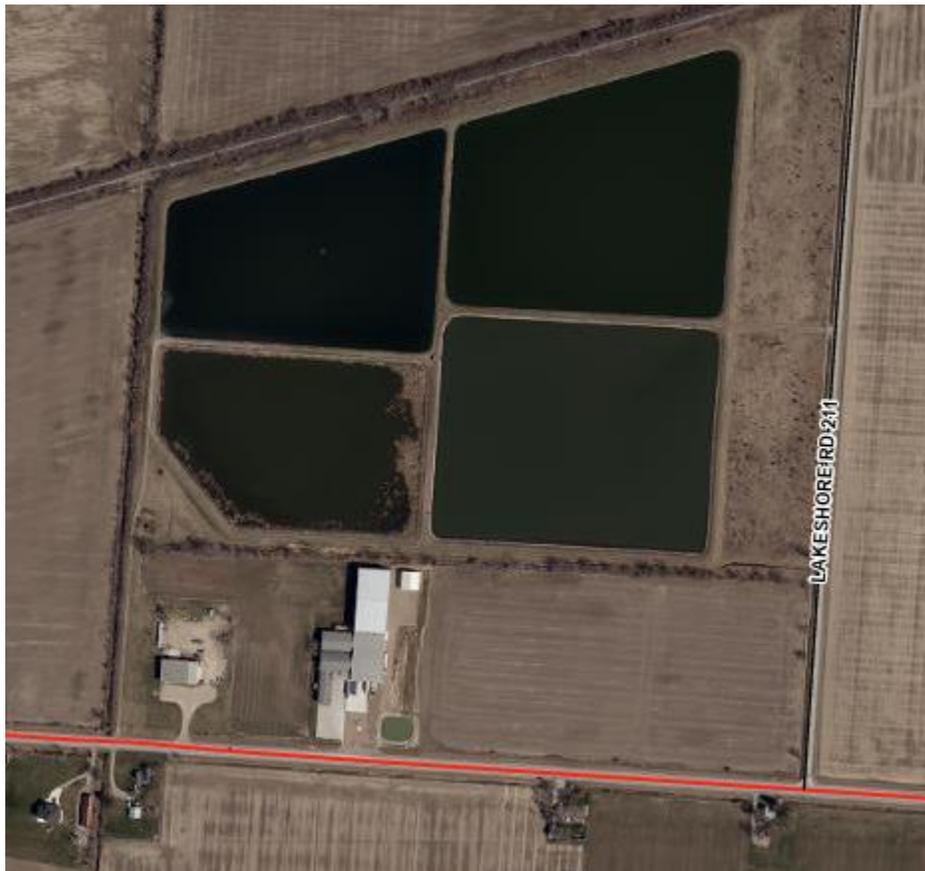


In the past 10 years the Essex PCP has experienced two non-compliance events and zero overflow/bypass events. In the case of each non-compliance event, the MECP was notified, and corrective controls were put in place to rectify the event. Please see the table below.

Year	Month	Facility	Parameter	Sample Result	Limit
2016	June	Essex SBR	TSS (Total Suspended Solids)	49.8 mg/L	10 mg/L
2021	October	Essex SBR	E.coli	214.263	200

Northeast Lagoon (NE Lagoon)

The Northeast Lagoon is located on County Road 8 in the Municipality of Lakeshore and has been in service since 1963. This treatment facility is a lagoon, consisting of four cells that require batch alum dosing prior to the discharge periods for phosphorous removal. The effluent outfall consists of a box structure and a sewer pipe outfall discharging to the Puce Drain. An aerial image of the facility is included below.



As per ECA number 8528-A7VK6D the current rated capacity of the NE Lagoon is 2,910 m³/day. In 2024, the average daily flow to the facility was **1,304 m³/day or 44% of its rated capacity.**

The NE lagoon is currently estimated to require \$6,789,500 in capital expenses between 2025-2030. The majority of these expenses are due to the lagoon cells requiring dredging to allow them to function as designed.

In the past 10 years the NE Lagoon has experienced zero non-compliance and zero overflow/bypass events.

Harrow Lagoon

The Harrow Lagoon is located off Roseborough Dr and has been in service since 1974. This treatment facility is a lagoon, consisting of 5 cells, one cell having 6 floating aerators and 4 facultative cells. There is a filtration building containing two sand filters as well as a phosphorus removal system, which ultimately discharges to the Richmond Drain. An aerial image of the facility is included below.



As per ECA number 6365-A4RQ5X, the current rated capacity of the Harrow Lagoon is 2,106 m³/day. In 2024, the average daily flow to the facility was **1,034 m³/day or 49% of its rated capacity.**

The Harrow Lagoon is currently estimated to require \$1,730,000 in capital expenses between 2025-2030. The majority of these expenses are due to a pump station upgrades to accommodate the Harrow Highschool development, wet weather flows, and replacing equipment that is at the end of its life cycle.

In the past 10 years the Harrow Lagoon has experienced zero non-compliance and zero overflow/bypass events.

Colchester Lagoon

The Colchester Lagoon is located on Cornwall Road and has been in service since 1988. This treatment facility is a lagoon, consisting of 3 sequentially operated cells, with an aeration system, phosphorus removal system and a continuous discharge pipe into Lake Erie. An aerial image of the facility has been included below.



As per ECA number 9096-7SFHHG, the current rated capacity of the Colchester Lagoon is 1,861 m³/day. The 2024 average was **953 m³/day, or 51% of its rated capacity.**

The Colchester lagoon is currently estimated to require approximately \$1,135,000 in capital expenses between 2025-2030. A large majority of these projects are contingent on the upgrade of the Colchester Lagoons into a Sequential Batch Reactor treatment plant. On April 2, 2024,

Council committed \$2,453,433.60 (including non-refundable HST) to complete the detailed design of the treatment plant which is currently approximately 60% complete.

In the past 10 years the Colchester Lagoon has experienced two non-compliance and one overflow/bypass events. In the case of each non-compliance event, the MECP was notified, and corrective controls were put in place to rectify the event Please see the table below.

Year	Month	Facility	Parameter	Sample Result	Limit
2023	August	Colchester Lagoons	Bypass Event	7,207 m ³ Bypassed	N/A
2024	April	Colchester Lagoons	TSS (Total Suspended Solids)	32.5 mg/L	30 mg/L
2024	June	Colchester Lagoons	TSS (Total Suspended Solids)	33.75 mg/L	30 mg/L

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Summary of Facility Capacities

Facility	Rated Capacity (m ³ /day)	Calculated Average Daily Flow (m ³ /day)	% of Rated Capacity
Essex Pollution Control Plant	4,590	1,984	43%
North East Lagoons	2,910	1,304	44%
Harrow Lagoons	2,106	1,034	49%
Colchester Lagoons	1,861	953	51%

Financial Impact

There is no financial impact as a result of this report.

Consultations

Kevin Girard, Director, Infrastructure Services

Link to Strategic Priorities

- Embrace asset management best practices to build, maintain, and continuously improve our municipally owned infrastructure.
- Leverage our Town's competitive advantages to promote jobs and economic investment.
- Take care of our natural environment and strengthen the sense of belonging to everyone who makes Essex "home".
- Deliver friendly customer service in an efficient, effective, and transparent manner while providing an exceptional working environment for our employees.
- Build corporate-level and community-level climate resilience through community engagement and partnership and corporate objectives.

Report Approval Details

Document Title:	Condition of Wastewater Treatment Facilities - Environmental Services-2025-01.docx
Attachments:	
Final Approval Date:	Apr 7, 2025

This report and all of its attachments were approved and signed as outlined below:



Kevin Girard, Director, Infrastructure Services - Apr 7, 2025 - 5:14 PM



Doug Sweet, Chief Administrative Officer - Apr 7, 2025 - 5:43 PM