

Municipality of Middlesex Centre

Komoka Wastewater Treatment Facility Expansion Municipal Class Environmental Assessment

Public Information Centre 1

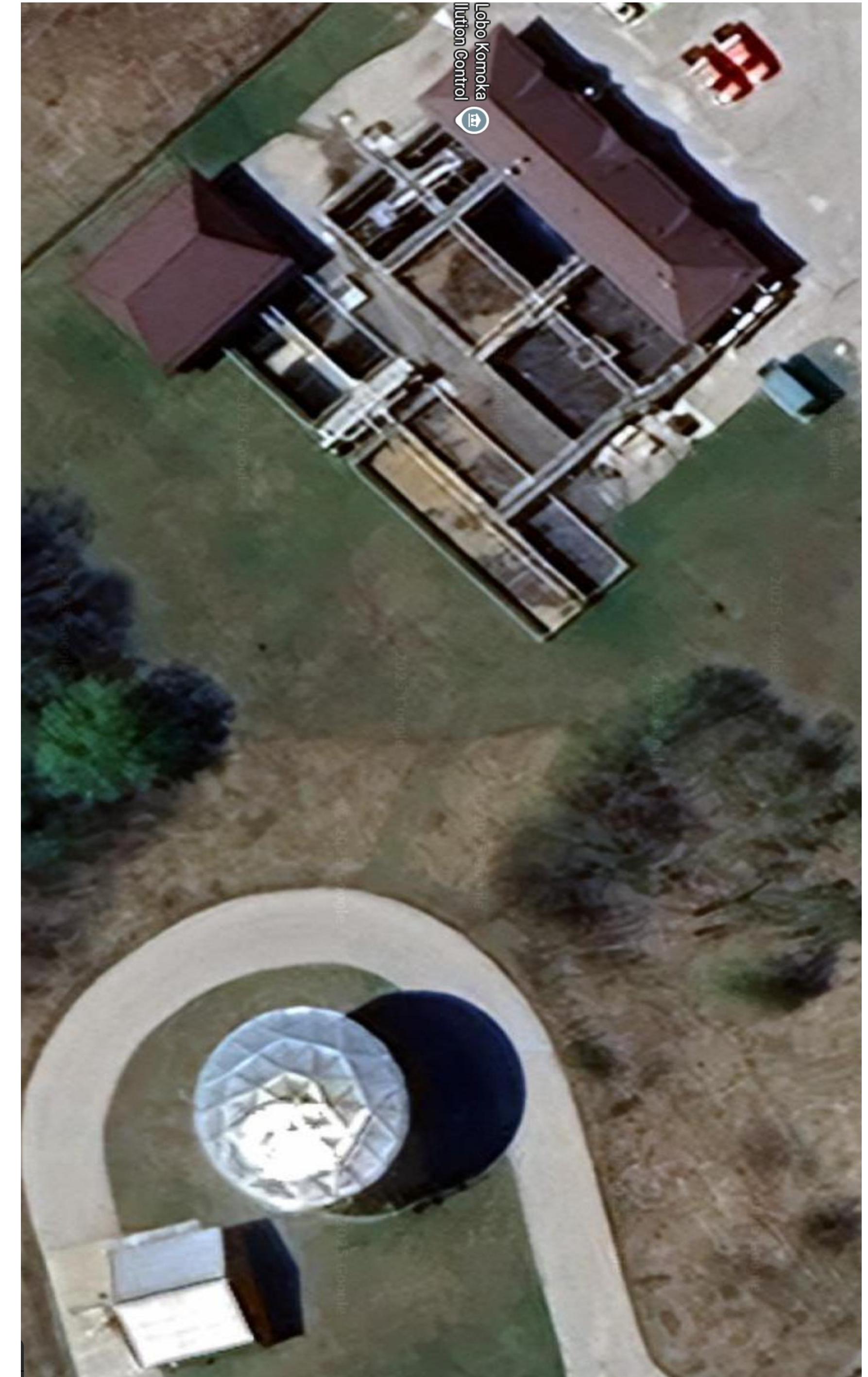
October 22, 2025

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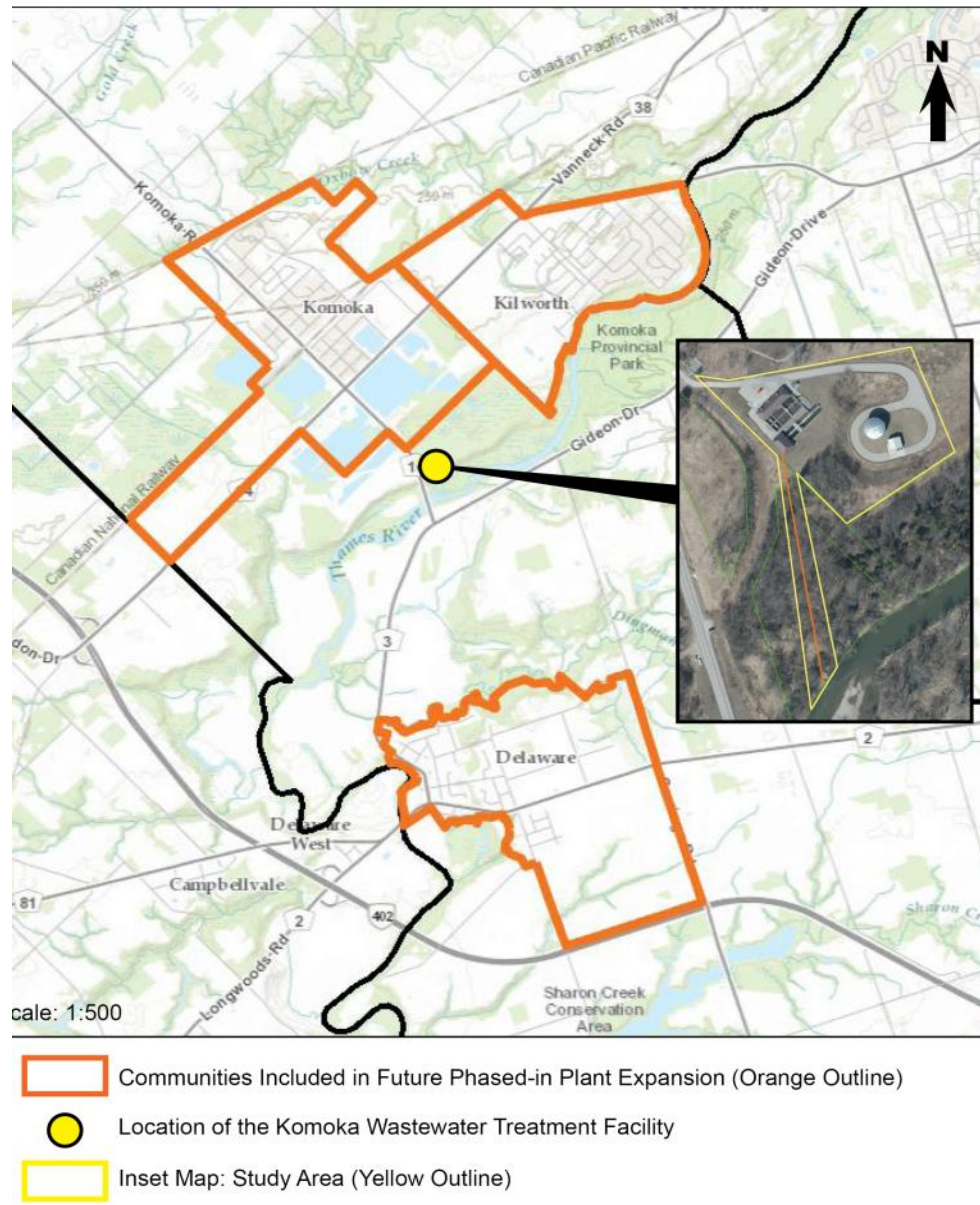
Overview of Servicing Master Plan

- In 2024, the Middlesex Centre Servicing Master Plan recommended Komoka Wastewater Treatment Facility (WWTF) expansion to: 1) accommodate flows from both existing and new development, and 2) to help alleviate current and future demands on existing infrastructure.
- The plan identified a high projected growth rate in the Komoka – Kilworth settlement areas which partially drives the requirement for this expansion.
- Additionally, the Master Plan confirmed previous decisions made by the Municipality to provide sanitary servicing for growth in Delaware by the construction of a sanitary collection and pumping system which discharges to the Komoka WWTF.
- A significant portion of the growth in Delaware is anticipated to be employment land area which is important to the Municipality to diversify its tax base.
- Timing of growth and implementation of the servicing strategy is variable, and flexibility is required.





Purpose of the Project



The Municipality of Middlesex Centre is undertaking a Schedule C Municipal Class Environmental Assessment (EA) study for the expansion of the Komoka Wastewater Treatment Facility.

The purpose of the study is to determine the preferred design concept to upgrade and expand the Komoka Wastewater Treatment Facility (WWTF).

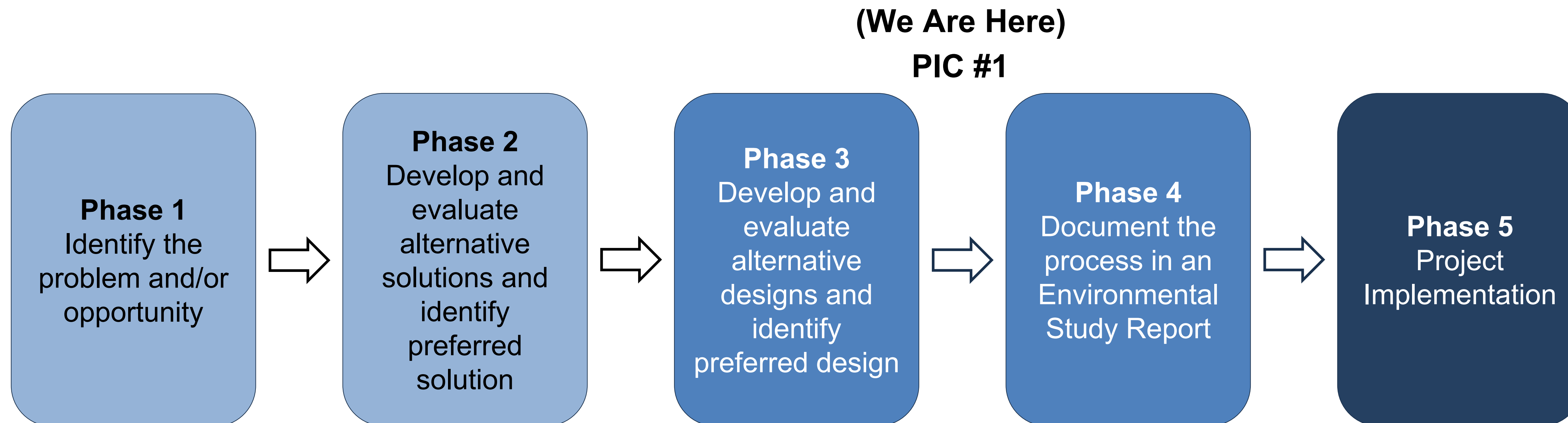
The following information will provide:

- ✓ Project background
- ✓ Overview of the Municipal Class EA study process
- ✓ Summary and evaluation of alternative design concepts
- ✓ Next steps in the study process



Municipal Class EA Process

- In 2024, the Municipality of Middlesex Centre updated its Servicing Master Plan (2010). This Master Plan addresses Phases 1 and 2 of the Class EA process.
- The Komoka WWTF Expansion is a Schedule C project and will complete Phases 3 and 4 of the Municipal Class EA process.
- The project is now in Phase 3 of the Class EA process, which involves examining alternative design concepts for the Komoka WWTF expansion and selection of a preferred design.



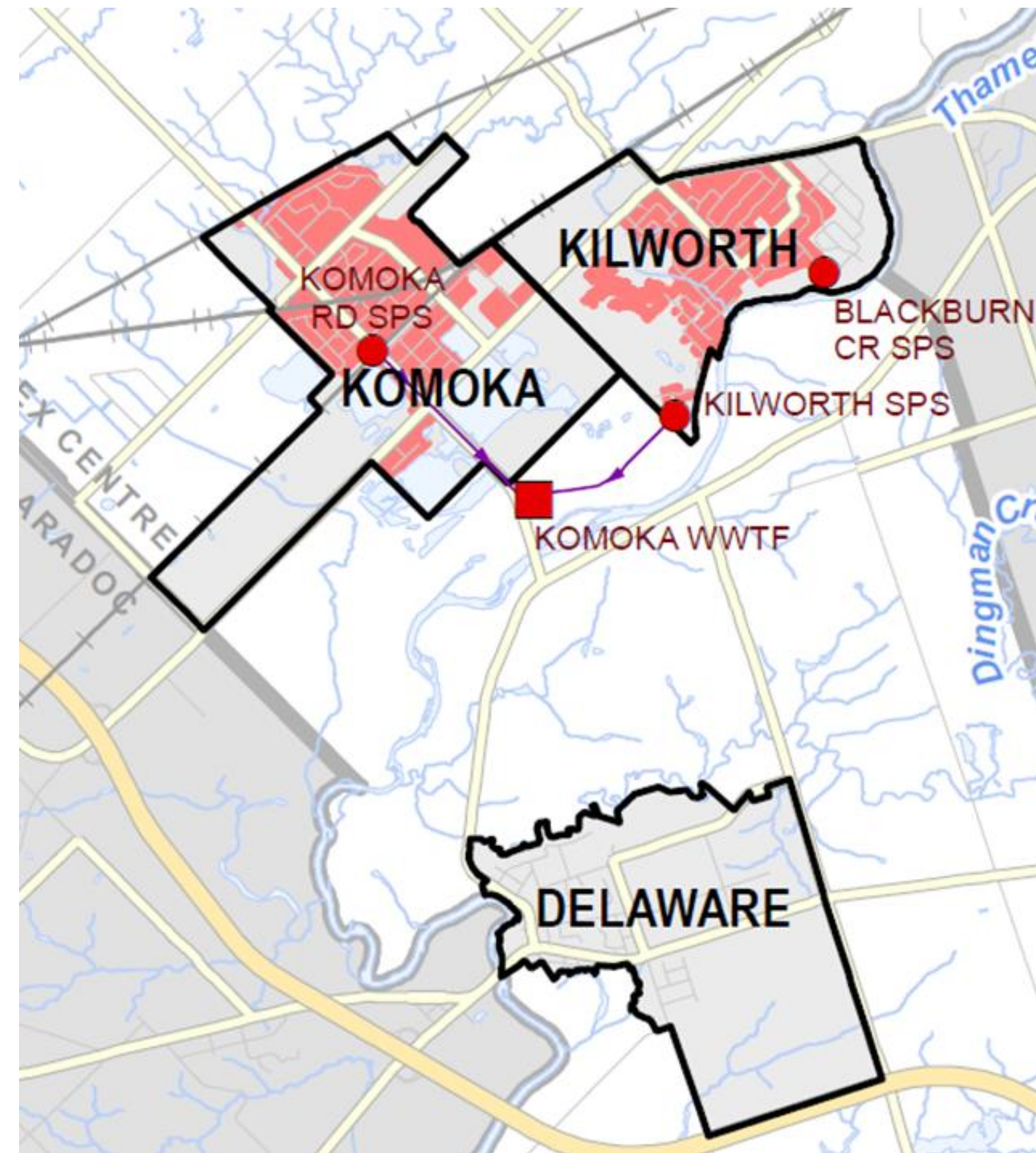


Existing Servicing System

- The Komoka WWTF currently serves the communities of Komoka and Kilworth (highlighted in red).
- Plans are underway to expand the Komoka WWTF service area to include parts of east Kilworth and the community of Delaware, with the latter anticipated to be connected to the facility between 2036 and 2046.
- When sanitary sewer service is extended to Delaware, flows to the Komoka WWTF will increase significantly.

This study will address the following:

- Insufficient capacity of the existing WWTF to accommodate future flows from Komoka-Kilworth and growth in Delaware.
- Additional treatment capacity required to support development and extend service coverage.
- Operational challenges, including inadequate screening, grit removal, and maintenance issues with tertiary filters.





Projected Wastewater Flows to Komoka WWTF

Community	Current Flow (m ³ /day)	Projected Flow in 2036 (m ³ /day)	Projected Flow in 2046 (m ³ /day)
Komoka-Kilworth	1,692	2,535	3,872
Delaware	562	952	1,341
Total Flow to Komoka WWTF	1,692	2,535	5,213

The current rated capacity of the plant is 2,250 m³/day.



Komoka WWTF Process Overview

Wastewater Collection:

- Pumping stations in Komoka and Kilworth transfer wastewater to the facility via forcemain.

Preliminary Treatment:

- Headworks remove large (screens) and small (grit chamber) solids to protect downstream equipment.

Biological Treatment:

- Extended Aeration Activated Sludge (EAAS) system uses aerobic bacteria to break down organic material over 15+ hours.

Solids Management:

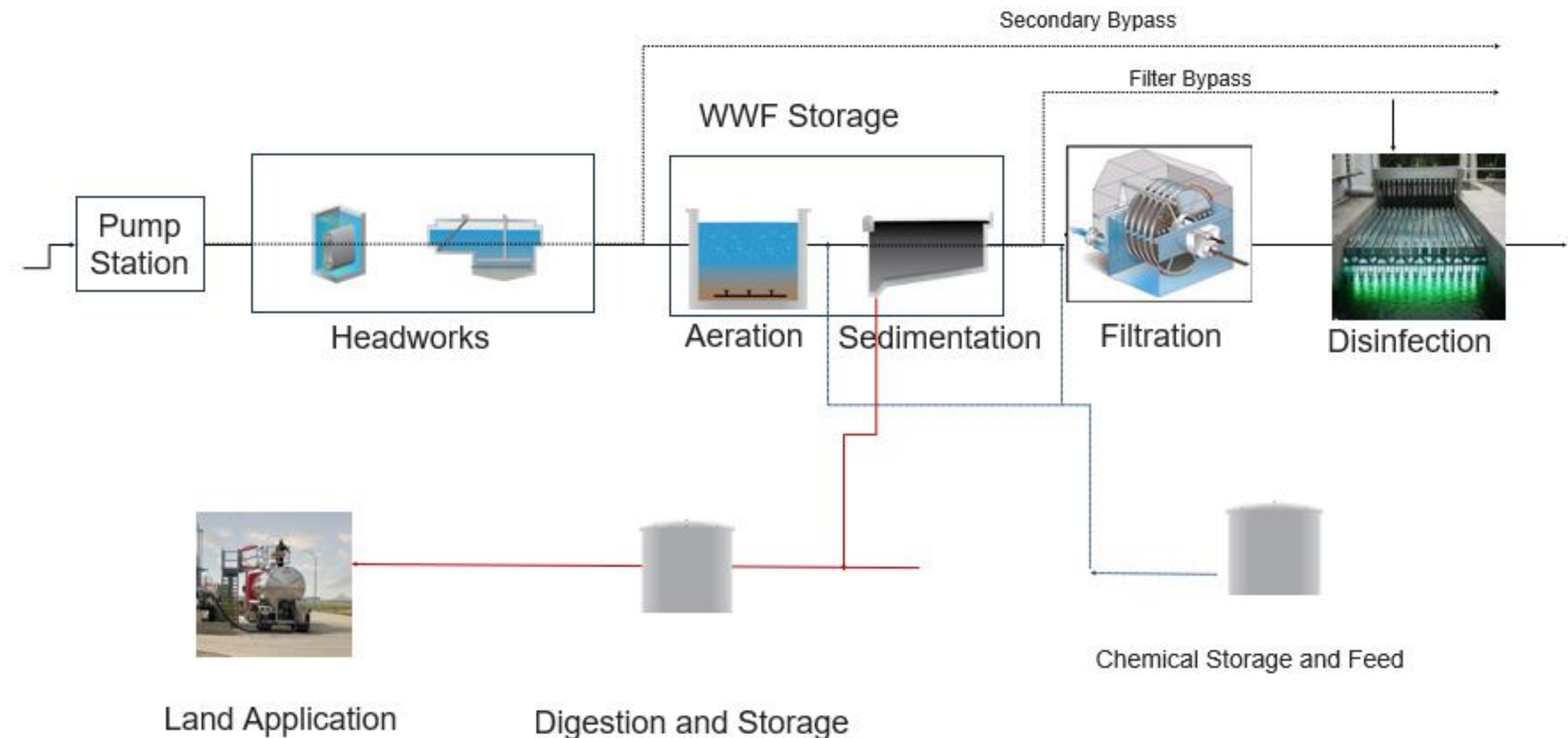
- Sedimentation tanks settle solids; sludge is either recycled or stabilized in aerobic digestion tanks.

Phosphorus Removal:

- Chemicals added before sedimentation help remove phosphorus.

Biosolids Use:

- Stabilized sludge is stored onsite and applied to agricultural land in spring/fall, following regulations.



Tertiary & Disinfection:

- Wastewater passes through tertiary filters and UV disinfection before discharge to the Thames River.

High Flow Management:

- Storage tanks and bypass options prevent flooding; rare partial discharges are reported to MECP.



Preferred Screening, Grit Removal & Filtration Systems

Preferred Screening System:

- Multi-Rake Bar Screens – a proven, durable technology capable of handling fluctuations in flow, with multiple suppliers available in Ontario.

Preferred Grit Removal System:

- Vortex Grit Removal – effective, reliable, and widely used in wastewater treatment across Ontario.

Preferred Filtration System:

- Upgraded Cloth Disc Filters – replacing high-maintenance existing units to reduce costs and improve effluent quality.

Phase 1 of the Komoka WWTF expansion includes construction of a new headworks building to address existing preliminary treatment concerns at the plant and upgrades to the existing filtration system.



Design Alternatives – Wastewater Treatment

Activated Sludge Systems:

- Conventional Activated Sludge (CAS)
- Extended Aeration Activated Sludge (EAAS)
- Sequencing Batch Reactor (SBR)

Activated sludge systems treat wastewater using a combination of aeration and settling tanks. Microorganisms help clean wastewater by breaking down organic matter in oxygen-rich (aerobic) conditions, which begins the process of stabilizing waste and reducing odour. Solids are then removed from the wastewater via settlement.

Activated sludge systems are a proven and widely used technology in Ontario. A key advantage of EAAS and SBR systems is that they do not require a primary settling tank, saving cost and space.

The Komoka WWTF currently operates as an EAAS system, producing good-quality effluent.



Design Alternatives – Wastewater Treatment Cont'd

Attached Growth Systems

- Trickling Filter/Solids Contact (TF/SC)
- Rotating Biological Contactor (RBC)
- Biological Aerated Filter (BAF)

Attached growth systems use a plastic or clay media to “host” microorganisms that break down organic matter under aerobic conditions. In Ontario, RBCs are commonly used in very small treatment facilities, while trickling filters and aerated filters are rarely used.

Trickling and aerated filters require primary settling tanks, but the existing Komoka WWTF site lacks the space to accommodate them. Additionally, current flows at the facility already exceed the typical capacity for RBCs used in Ontario.



Preferred Wastewater Treatment Process

Selected Wastewater Treatment Process

- The existing site has difficulty accommodating any alternatives that require primary settling tanks. EAAS and SBR treatment processes do not require primary settling tanks and are well suited for the site.
- The Municipality of Middlesex Centre has operational experience with the EAAS process. The Komoka WWTF was upgraded in 2011 and currently uses the EAAS system.
- To date, the EAAS system has performed well, supporting its continued use for the plant expansion.
- Using the same process simplifies operator training and allows flexible staff assignment across treatment facilities.

The preferred design for the Komoka WWTF expansion is the EAAS wastewater treatment process.

Phases 2 and 3 of implementation will involve constructing new EAAS treatment trains at the facility.



Biosolids Management System

- No change to the existing biosolids management system at the Komoka WWTF is proposed.
- This process has been successfully used since the facility was commissioned.
- Biosolids are applied to agricultural lands used for animal feed or fuel crops, in accordance with the *Fertilizer Act (1985)* and *Nutrient Management Act (2002)*.

Preferred Biosolids Management System:

Aerobic Digestion → Decanting → Land Application

Phase 2 of the Komoka WWTF expansion will include expansion of the biosolids management system.





Summary of Recommended Design for WWTF Expansion

Phase 1 – 2,800 m ³ /d	Phase 2 – 4,400 m ³ /d	Phase 3 – 6,000 m ³ /d
New Headworks Facility New building with bar screens, vortex grit removal, and flow chamber	Add Additional Treatment Trains Add an additional aeration and settlement tanks, consistent with the previous expansion	Add Additional Treatment Trains Add an additional aeration and settlement tanks, consistent with the previous expansion
Rerate Existing Plant Rerate plant for 2,800 m ³ /d and replace aging blowers	Expand Aerobic Digester Capacity Add digestion capacity and assess repurposing Train 1 for aerobic digestion	Make Necessary Process Improvements Upgrade chemical feed and UV systems; expand headworks as needed
Improve Filters Replace cloth media disc filters with more reliable media	Expand Biosolids Storage Capacity Expand onsite storage to meet minimum 180-day retention time and improve sludge thickening process	Add Additional Outfall Add second outfall pipe to increase capacity

Phasing the expansion allows the Municipality of Middlesex Centre to delay costs until additional capacity is required and avoid building capacity for wastewater flows that may not occur.



Natural Heritage Background Review

The following field and desktop surveys were completed in 2025:

- Ecological Land Classification
- Three Season Botanical Surveys
- Breeding Bird Surveys
- Bat Community Surveys
- Significant Wildlife Habitat Assessment
- Assimilative Capacity Study – Thames River, Aquatic Species at Risk Impact Assessment (desktop assessment)

Species of Conservation Concern identified as potentially found within the Study Area

58 species including:

- 20 plants
- 1 mollusk
- 4 fish
- 11 birds
- 4 reptiles
- 18 insects

Species at Risk identified as potentially found within the Study Area

37 species including:

- 8 plants
- 4 mollusks
- 7 fish
- 7 birds
- 4 reptiles
- 7 mammals

Designated Natural Areas found in the Study Area

- Komoka Provincial Park
- Provincially Significant Wetland
- Provincial Life Science Area of Natural and Scientific Interest (ANSI)
- Woodland



Natural Heritage – Key Findings

Ecological Land Classification

- The project will predominately impact manicured lands. Minor encroachment may occur within a woodland area, dominated by non-native, invasive tree species (Manitoba Maple). Part of this woodlot is connected to the provincial ANSI.

Botanical Surveys

- Black Ash (species at risk) and hairy-fruited sedge (species of conservation concern) were observed but will **not** be impacted by the project.

Breeding Bird Surveys

- 34 species of birds were detected including Eastern Meadowlark (species at risk), and Purple Martin (species of conservation concern).
- No impacts are anticipated to habitat with development of the project.

Bat Community Survey

- 5 bat species were detected, including 4 species at risk (Little Brown Myotis, Eastern Red Bat, Hoary Bat and Silver-haired Bat).
- Foraging habitat is anticipated in and around the site.
- Extensive suitable habitat for foraging and roosting is available for bats in the surrounding lands. Potential bat maternity roost trees are abundant in the study area.





Assimilative Capacity Study

Thames River, Aquatic Species at Risk Impact Assessment

- Determined that the increase of effluent discharge poses a low risk to the aquatic habitat and aquatic species at risk in the Thames River downstream from the outfall.
- Effluent limits for suspended solids and nutrient concentrations will remain unchanged.
- Proposed effluent limits for key threats to aquatic species at risk (i.e., Total Suspended Solids (TSS) and nutrients) are lower than those observed in the receiving environment.
- Total dilution of the effluent is expected within 800 m of the outfall, which is acceptable to the MECP.



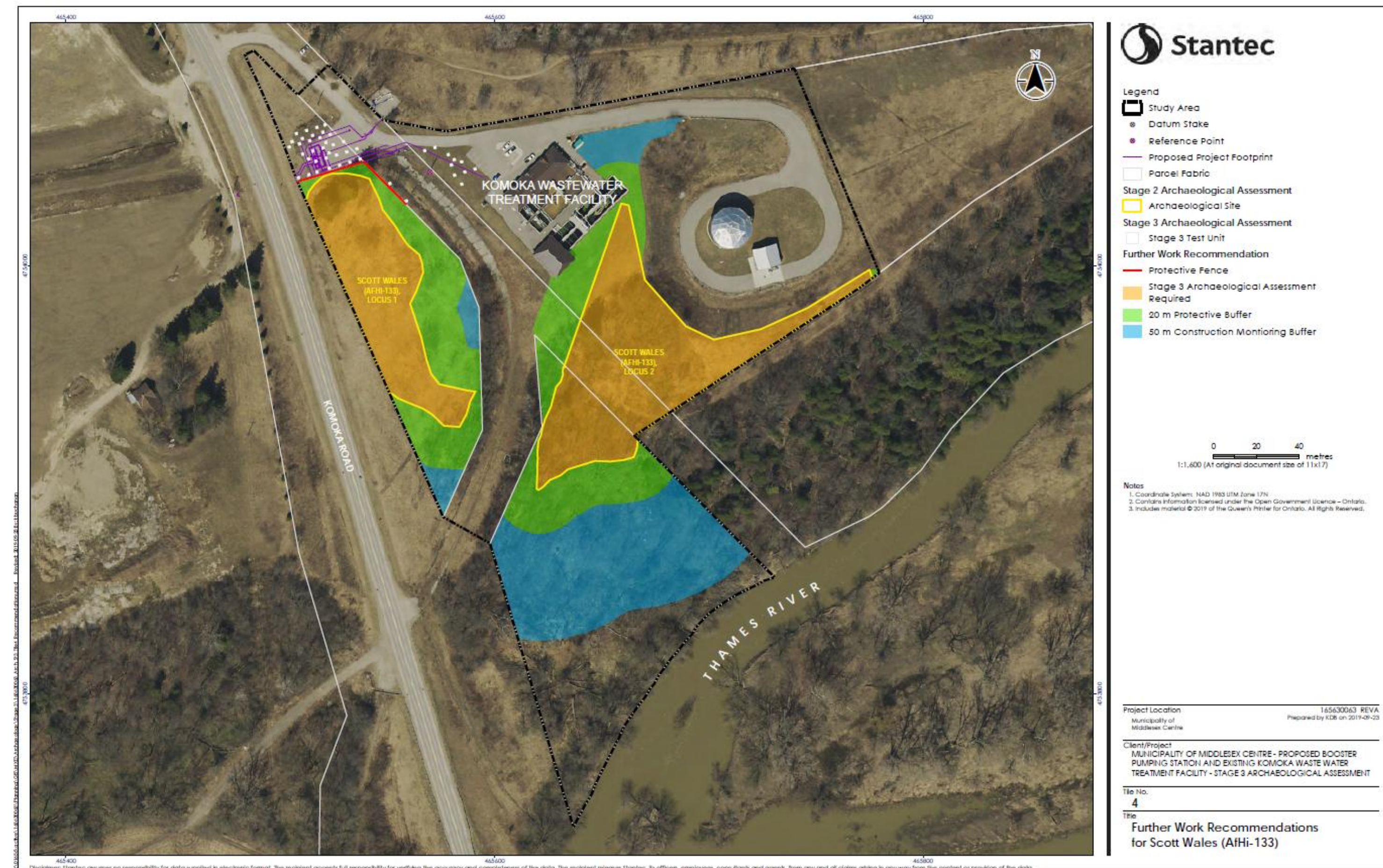
Mitigation Measures

- Potential authorization under the *Endangered Species Act* or *Species Conservation Act* may be required for the removal of trees and shrubs (potential bat maternity roost habitat)
- Install tree protection fencing prior to construction to delineate work areas and reduce impacts to adjacent natural features.
- Develop a clean equipment protocol to prevent the spread of highly invasive species.
- Develop and keep an on-site Spill Management Plan and emergency spill kit.
- Erosion and sediment control measures (i.e., silt fencing) for sediment and erosion control and wildlife exclusion.
- Vegetation clearing should occur from December 1 to March 31 (no vegetation clearing from April 1 to November 30).
- Conduct daily visual wildlife checks before work from April 1 to October 31.
- Pause work if wildlife is encountered and allow animals reasonable time to leave the area naturally.
- Manage spoil piles onsite to prevent Bank Swallow from nesting.
- Follow Best Management Practices (OMNRF 2017).
- Avoid nighttime lighting at the site to reduce impacts to nocturnal wildlife (e.g., bats and insects).



Archaeological Assessment

- Two Stage 1 and 2 Archaeological Assessments were completed under Project Information Form (PIF) numbers P256-0557-2018 and P256-0572-2019.
- During the archaeological survey, Indigenous and Euro-Canadian archaeological resources were identified.
- The archaeological resources were registered with the Ministry of Citizenship and Multiculturalism as archaeological site AfHi-133.
- The archaeological site retains further cultural heritage value or interest, and Stage 3 assessment is planned to be conducted in 2026 in the laydown area for construction of the Komoka WWTF expansion (approximately 0.37 ha).





Next Steps

- Review and consider all feedback and comments received
- Finalize relevant technical studies
- Confirm the Preferred Design for the WWTF expansion
- Prepare the Environmental Study Report (ESR)
- Present ESR to Municipal Council for final approval and adoption
- Issue the Notice of Study Completion commencing the 30-day public review period

Project Component	Milestone Dates
Environmental Study Report (ESR)	November 2025
Council Presentation and Resolution – Preferred Design	December 2025
Notice of Study Completion	January 2026



Thank You for Participating!

Thank you for attending PIC 1 for the Komoka Wastewater Treatment Facility Expansion Municipal Class Environmental Assessment Study.

Please visit the Municipality of Middlesex Centre's project website for additional information and access to the presentation materials:

[Komoka Wastewater Treatment Facility Expansion Schedule C Municipal Class Environmental Assessment \(https://www.middlesexcentre.ca/komoka-wastewater\)](https://www.middlesexcentre.ca/komoka-wastewater)

If you have additional questions or wish to provide feedback, please contact a member of the project team below before **November 21st, 2025**:

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