MOVING WATER FORWARD

CONNECTING MORE PEOPLE TO MORE POSSIBILITIES

Public Information Centre No. 2

Grimsby Water Treatment Plant Expansion Class Environmental Assessment

First Published:

September 10, 2025

Previously presented PIC No. 1 information is available on the Region's project webpage
https://niagararegion.ca/projects/grimsby-water-treatment-plant/

Land Acknowledgement

We would like to start with an acknowledgement that the Grimsby Water Treatment Plant is situated on treaty land. This land is steeped in the rich history of the First Nations such as the Hatiwendaronk, the Haudenosaunee, and the Anishinaabe, including the Mississaugas of the Credit First Nation. There are many First Nations, Métis, and Inuit people from across Turtle Island that live and work in Niagara today. The Regional Municipality of Niagara stands with all Indigenous peoples, past and present, in promoting the wise stewardship of the lands on which we live.

Welcome!

Goals of this Public Information Centre

- Provide background information on the Grimsby Water Treatment Plant EA Study
- Review the recommended solution from PIC #1
- Provide the criteria for the screening and evaluation of the treatment train and residue management alternative design concepts
- Summarize the evaluation of alternative design concepts and present an overall recommended solution
- Provide an opportunity to get involved in the project

Project Overview

What are we doing?

Niagara Region is considering different ways to provide additional water supply for the Grimsby Water Treatment Plant (WTP) service area to support growth of the Towns of Grimsby and Lincoln, and the Township of West Lincoln. This study will look at the best way to accomplish this.

Why are we doing it?

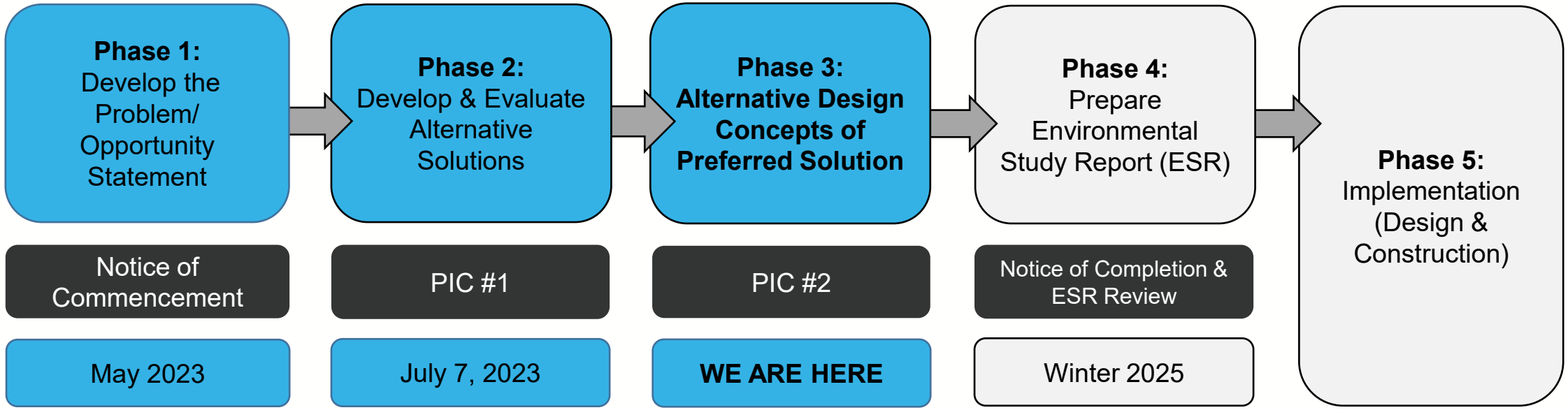
The Grimsby WTP has been identified as requiring expansion or upgrade to meet the anticipated water demands of the growing population serviced by this plant. We are taking steps now to confirm that this is the right solution, and to ensure we are ready to meet these future demands.

What does it mean to you?

Providing more water supply capacity can be done in different ways and could mean expanding the Grimsby WTP, building a new treatment facility, or making other investments in the water system. It is expected that any construction will likely be limited to the Grimsby WTP property and more information about potential impacts will be provided as the study progresses.

Municipal Class EA Process

This project is classified as a **Schedule 'C' Municipal Class EA** and is subject to **Phases 1 through 4** of Municipal Class EA process.



Upon completion of Phase 4 of the study, an Environmental Study Report (ESR) will be prepared to document the Municipal Class EA planning and decision-making process and made available for a 30-day public review period. A Notice of Completion will be issued at that stage.

Problem and Opportunity Statement

Niagara Region is completing this study to identify a preferred solution for expansion of the Grimsby WTP to service future growth of the Towns of Grimsby and Lincoln, and the Township of West Lincoln. The preferred solution will:

- Support service area growth while considering opportunities for operational flexibility and redundancy;
- Provide resiliency to potential future changes to regulatory, climatic, and raw water quality conditions;
- Balance environmental, social, technical, and economic considerations.

Work Completed to Date

EA Phase 1

- Identified the Problem and Opportunity

EA Phase 2

- Developed alternative and recommended solutions to accommodate growth and provide additional water supply
- Public Information Centre #1
- EA Phase 2 Recommendation was to Expand the Grimsby Water Treatment Plant from a capacity of 44 MLD to 67 MLD

EA Phase 3

- Confirmed the recommended solution from Phase 2
- Developed and evaluated design alternatives for the recommended solution including the treatment train and residue management
- Completed studies and investigations
- Public Information Centre #2

Key Studies

- Stage 1 Archaeological Assessment (completed)
- Cultural Heritage Assessment (completed)
- Natural Environmental Assessment (completed)
- Desktop Geotechnical and Hydrogeological Investigations (completed)
- Stage 2 Archaeological Assessment (completed)
- Additional Geotechnical and Hydrogeological Investigations (future)
- Topographic Survey (future)

Archaeological Potential

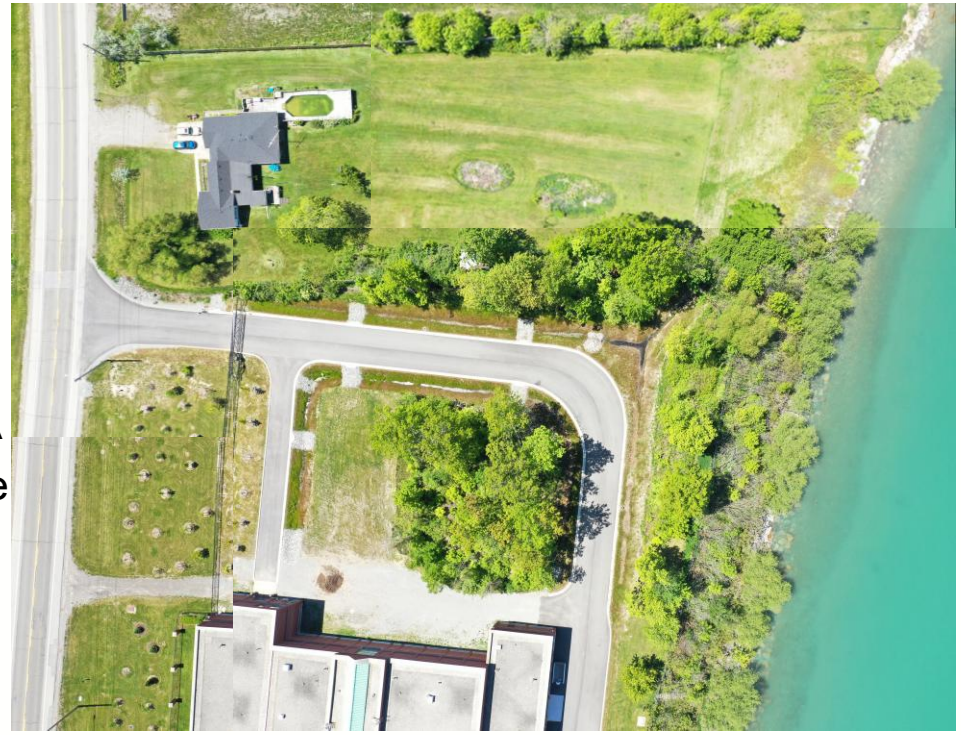
- Stage 1 and 2 Archaeological Assessment (AA) were completed on the existing Grimsby WTP property and 320 North Service Road property
- The studies concluded that both properties do not retain archaeological potential, and no further AA is required

Cultural Heritage Assessment

- Cultural Heritage Assessment was completed for the study area (300 and 320 North Service Road)
- Study concluded no Built Heritage Resources or Cultural Heritage Landscapes were identified in the study area
- No mitigation measure are required

Natural Environmental Assessment

- Natural Environmental Assessment was completed for the study area (300 and 320 North Service Road), including around the raw water intake.
- Natural Environmental Assessment findings include:
  - Common Reed, a restricted species on the Invasive Species Act
  - Barn Swallows, a species of Special Concern was encountered foraging within the study area, but no breeding evidence
  - Honey Locust, rare floral species was confirmed within the study area
  - Lake Ontario is habitat for Shortnose Cisco. Endangered under the ESA and the federal Species at Risk Act (though the species is believed to be extinct)
- Previous study in 2020 determined the presence of two at-risk bat species. It is believed both species were forging along the lake, and potentially roosting in the woodland. A red-headed woodpecker was also observed during migration.



Natural Environmental Assessment (continued)

- Minor impacts are anticipated, however, the overall function of the larger system is not expected to be significantly impacted by the proposed work
- No Floral Species At Risk were identified. No provincially rare vegetation communities were observed
- No additional candidates or confirmed point-source areas of wildlife concentration/specialized habitats were observed
- Trees provide Significant Wildlife Habitat for bat maternity colonies as well as habitat for at-risk species
- No anticipated changes to fish habitat or fish processes
- Shoreline adjacent to the WTP represents Lake Ontario Critical (type 1) Fish Habitat. Shore area is also noted as a Walleye Spawning Area
- Mitigation measures should prevent impacts to at-risk species that may occasionally utilize the study area
    - Mitigation measures include erosion and sediment controls, appropriate timing of activities, and restoration of disturbed areas utilizing salvaged materials and native species

EA Phase 3: Design Concepts Treatment Train Alternatives

	Pre-Treatment	Filtration	Taste & Odour	Disinfection
1	Direct Filtration	Membrane Gravity Filters	AOP (H_2O_2+UV)	UV and chlorine with additional reservoir
2	Conventional Treatment	Dual Media Filters (GAC + sand)	Dual Media Filters (GAC + sand)	Chlorine with additional reservoir
3	Dissolved Air Flotation	Dual Media Filters (GAC + sand)	Dual Media Filters (GAC + sand)	Chlorine with additional reservoir
4	Ballasted Flocculation	Dual Media Filters (GAC + sand)	Dual Media Filters (GAC + sand)	Chlorine with additional reservoir

Alternative 1: Direct Filtration, Membrane Gravity Filters, AOP, UV and Chlorine Disinfection

Advantages:

- Minimal impacts to WTP during construction
- Smallest expansion footprint
- Minimal impacts to wildlife, wildlife habitat, vegetation
- Minor air quality impacts associated with trucking

Disadvantages:

- Higher energy costs to operate UV/AOP
- Less resilient to algal blooms
- Increased complexity of operations
- Significant shutdowns required to connect and upgrade infrastructure

Estimated Comparative Lifecycle Cost: $$

Alternative 2: Conventional Treatment, Dual Media Filters, Chlorine Disinfection

Advantages:

- Minimal impacts to WTP during construction
- Minimal impacts to wildlife, wildlife habitat, vegetation
- Minor air quality impacts associated with trucking
- Lowest energy consumption
- Moderate annual maintenance
- Minor social impacts during construction
- Consideration for future UV/AOP

Disadvantages:

- Less resilient to algal blooms

Estimated Comparative Lifecycle Cost: $$

Alternative 3: Dissolved Air Flotation, Dual Media Filters, Chlorine Disinfection

Advantages:

- Minimal impacts to WTP during construction
- Minimal impacts on wildlife, wildlife habitat, vegetation
- Minor air quality impacts associated with trucking
- Moderate energy consumption
- Moderate annual maintenance
- Good resiliency to algal blooms
- Consideration for future UV/AOP

Disadvantages:

- Increased operational risk and complexity of operation
- Moderate impact to Operations during construction
- Additional process equipment and components

Estimated Comparative Lifecycle Cost: $$$

Alternative 4: Ballasted Flocculation, Dual Media Filters, Chlorine Disinfection

Advantages:

- Minimal impacts to WTP during construction
- Minimal impacts to wildlife, wildlife habitat, vegetation
- Minor air quality impacts associated with trucking
- Moderate energy consumption
- Good resiliency to algal blooms
- Consideration for future UV/AOP

Disadvantages:

- Few suppliers for equipment
- Increased complexity of operation
- Moderate impact on Operations during construction
- Major shutdowns required for maintenance
- Additional process equipment and components

Estimated Comparative Lifecycle Cost: $$

Evaluation Approach and Criteria

The alternative solutions were evaluated with respect to their impact on the following:

Criteria	Considerations	
Technical Scoring Weight: 30%	• Regulatory approvals • Operational complexity and flexibility • Maintenance	• Construction impacts on Operations • Treatment resiliency • Future expansion
Environmental Scoring Weight: 20%	• Wildlife and vegetation • Air quality • Climate Change	• Greenhouse Gas generation • Effects on receiving water body and source water protection
Social Scoring Weight: 20%	• Social construction impacts • Health and safety • Effects on Indigenous Communities	• Social operating impacts • Cultural heritage an archaeological resources
Relative Cost and Financial Risk Scoring Weight: 30%	• Life cycle cost • Financial risk	

Evaluation of Treatment Train Alternative Solutions

Evaluation Category	Alternative 1 Conventional (existing) + MGF + UV+AOP + Chlorine + New Storage Tank	Alternative 2 Conventional (expanded) + GAC + Chlorine + New Storage Tank	Alternative 3 DAF + GAC + Chlorine + New Storage Tank	Alternative 4 Ballasted Flocculation + GAC + Chlorine
Technical	18.0	23.0	19.5	17.0
Natural Environment	14.4	15.2	15.2	15.2
Social	16.0	20.0	14.4	16.8
Financial	25.0	30.0	23.0	25.0
Total Weighted Score	73.4	88.2	72.1	74.0
Overall Conclusion	✗	✓	✗	✗

Scoring Legend:

1	2	3	4	5
Low Alignment with Criteria	Not Well Alignment with Criteria	Somewhat Alignment with Criteria	Well Alignment with Criteria	Very Well Alignment with Criteria

EA Phase 3: Design Concepts
Alternative Reservoir Expansion

- Alternative 1: Expand Existing Reservoir
  - Existing reservoir was designed to be expanded
  - Limited space to expand the existing reservoir
  - Existing reservoir would require a shutdown longer than the Facility can handle
  - Not a viable option
- Alternative 2: New Reservoir
  - Build a new reservoir on the west side of the 320 North Service Road property
  - Once the new reservoir is constructed, the existing reservoir can be taken offline for maintenance or upgrades

EA Phase 3: Design Concepts Alternative Residue Management

Alternatives

1. Gravity Thickening and Trucking (current process)
2. Gravity Thickening and Non-Mechanical Dewatering (Geotube)
3. Gravity Thickening and Conveyance to Wastewater Treatment Plant

All three alternatives supernatant from the gravity thickening process will be dechlorinated and discharged to the environment, following the practice of the existing plant.

Alternative 1: Gravity Thickening and Trucking (current process)

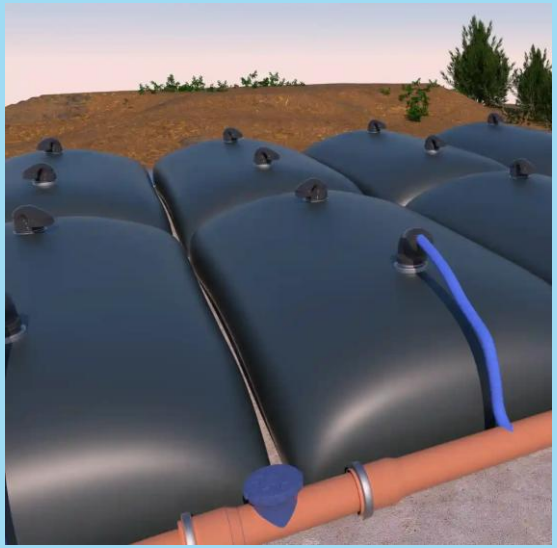
Description: Residuals stream is thickened, supernatant discharges back to lake, and thickened residuals are hauled by truck to the local Wastewater Treatment Plant or Biosolids Facility for treatment. Matches the current residuals management approach.

Advantages:

- Smallest footprint
- Low impact to Operations during construction
- Low impact on wildlife, wildlife habitat, and vegetation
- Minor annual maintenance
- **Disadvantages:**
- Highest vehicle emissions
- Highest truck traffic

Estimated Comparative Lifecycle Cost: $$$

Alternative 2: Gravity Thickening and Non-Mechanical Dewatering (geotube)



Description: Residuals stream is thickened, supernatant discharges back to lake, and thickened residuals are pumped to a non-mechanical dewatering process. Thickened sludge is pumped to a large geotextile filter bag (geotube). The membrane allows water to pass through, but retains the solids inside the bag. Solids that remain in the geotube are removed and disposed of at a landfill.

Advantages:

- Minor Operations risks
- Moderate annual maintenance
- Minor increase in energy

Disadvantages:

- Large footprint and visual disturbance
- Larger potential impact on wildlife, wildlife habitat, vegetation

Estimated Comparative Lifecycle Cost: $$$

Alternative 3: Gravity Thickening and Conveyance to Wastewater Treatment Plant

Description: Residuals stream is thickened, supernatant discharges back to lake, and thickened residuals are pumped to the gravity sewer. Gravity sewer drains to a pumping station where the sludge is pumped along with other sewage to the local Wastewater Treatment Plant.

Advantages:

- Least impacts on wildlife, wildlife habitat, and vegetation
- Least amount of air quality impacts related to trucking
- Minor annual maintenance
- Minor operational risks

Disadvantages:

- Does not meet Niagara Region residual management standards. Sludge cannot be pumped to the sewer.

Estimated Comparative Lifecycle Cost: $

Evaluation of Residue Management Alternative Solutions

Same criteria as the Treatment Train Alternatives was applied to the Residue Management Alternatives.

Evaluation Category	Alternative 1 Gravity Thickening + Trucking	Alternative 2 Gravity Thickening + Non-Mechanical Dewatering (Geotube)	Alternative 3 Gravity Thickening + Conveyance to WWTP
Technical	23.0	18.0	0.0
Natural Environment	14.4	14.4	16.8
Social	16.8	16.0	19.2
Financial	7.0	6.0	8.0
Total Score	61.2	54.4	44.0
Overall Conclusion	✓	✗	✗

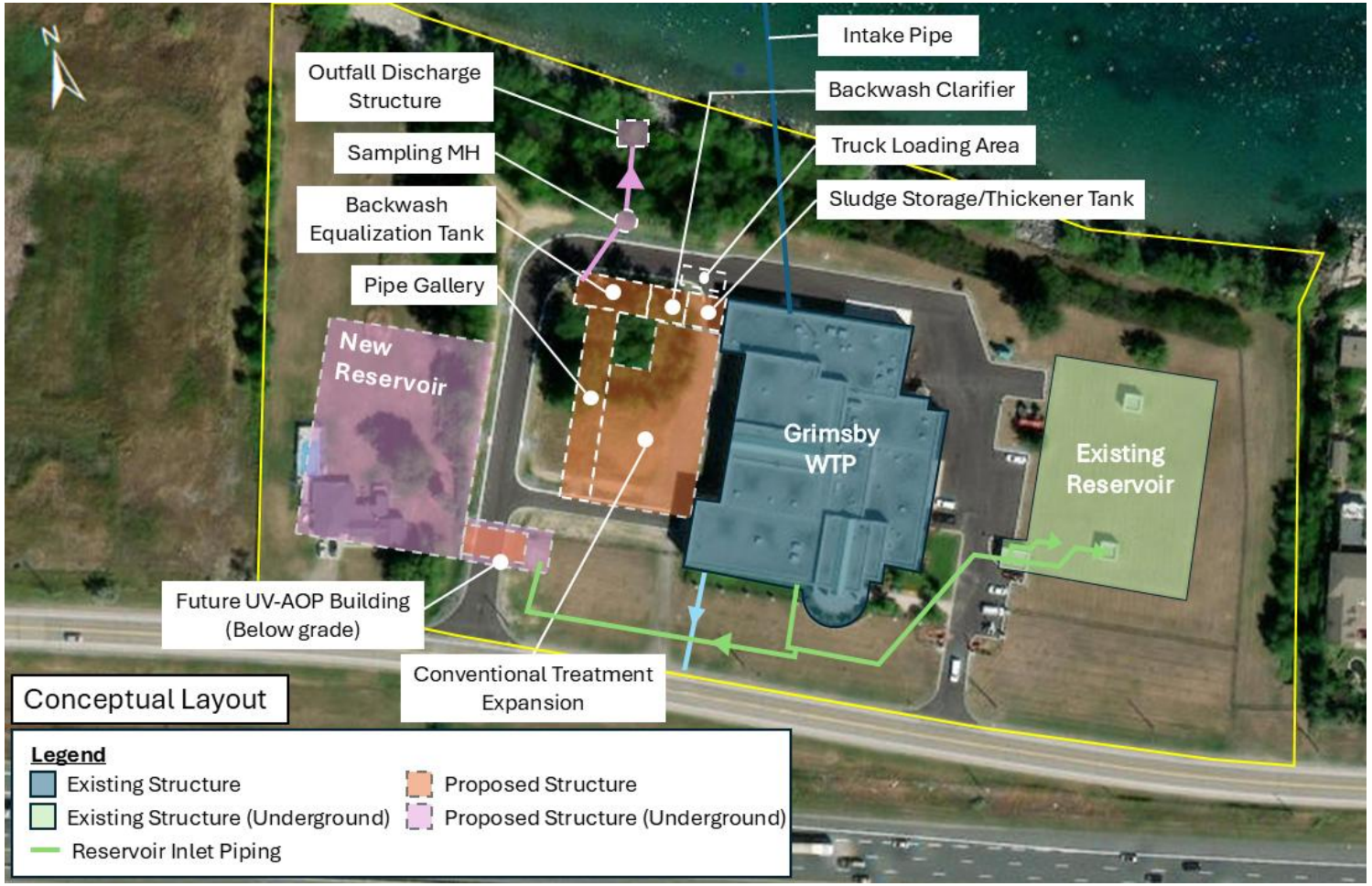
Scoring Legend:

1	2	3	4	5
Low Alignment with Criteria	Not Well Alignment with Criteria	Somewhat Alignment with Criteria	Well Alignment with Criteria	Very Well Alignment with Criteria

Overall Recommended Solution

Expand the Grimsby WTP:

- Conventional pre-treatment system and dual media gravity filters (GAC + sand)
- Reservoir water storage with chlorine disinfection and reserved space for future UV/AOP addition
- Backwash holding tank, gravity thickening with supernatant discharging to the environment and trucking thickened sludge to the WWTP
- New outfall discharge structure on shoreline of Lake Ontario
- Existing intake structure and pipe in Lake Ontario will be re-used to achieve the higher flows.



Mitigation Measures of Environmental Impacts based on Preferred Alternative (vegetation)

Vegetation

- Salvage and replanting of woodland species within the Study Area as part of the restoration activities
- Restrict clearing of unmaintained and/or woody vegetation to outside of migratory bird nesting and bat maternity seasons (April 1 through September 30)
- Herbicidal application and/or cutting of invasive species prior to construction to reduce the potential for movement of viable plant parts. Disposal of soils excavated in the vicinity of invasive plants.
- Employ Clean Equipment Protocols to prevent movement of exotic invasive species

Tree Resources

- Complete a Tree Preservation and Removals Plan
- Pruning of trees should be conducted by an ISA certified arborist, professional forester, or other professional
- Exposed roots should be covered with moistened mulch, topsoil, burlap, or other method to prevent roots from desiccating
- Tree Protection Zone should be protected with hoarding

Mitigation Measures of Environmental Impacts based on Preferred Alternative (wildlife)

Excavation, Grading, Filling

- Limit the area and length of time soils are vulnerable to erosion
- Topsoil from natural vegetation communities should be stockpiled separately and re-used in post construction efforts
- Use erosion and sediment controls surrounding areas of exposed soils and stockpiles
- Design and Implement Erosion and Sediment Controls (ESC)
- All ESC measures, including erosion control blankets, fibre rolls and sediment fence should be ‘netless’ meaning they do not contain nylon or other fine, open-weave synthetic mesh/netting components

Wildlife and Wildlife Habitat

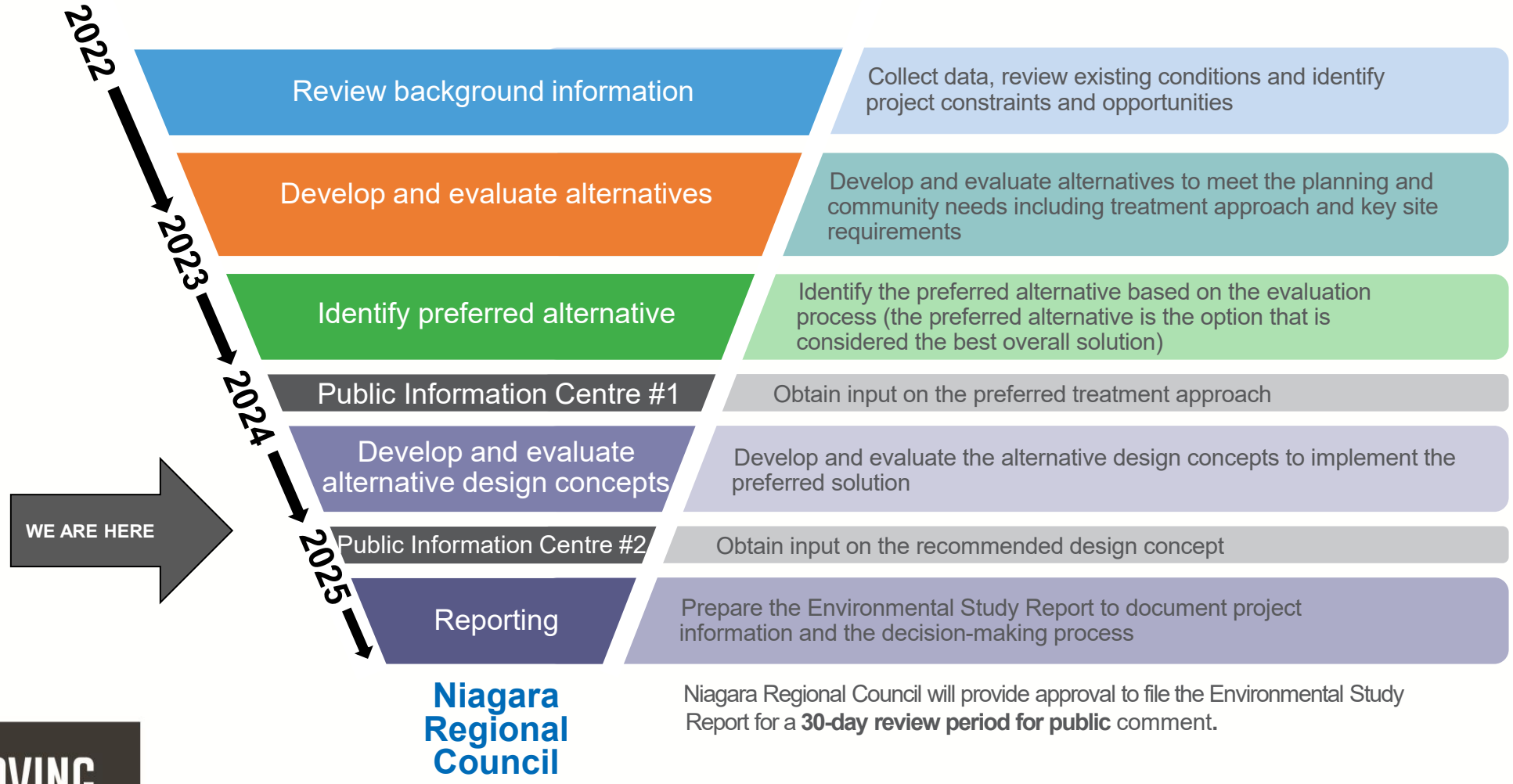
- Restrict clearing of unmaintained and/or woody vegetation to outside of migratory bird nesting and bat maternity seasons (April 1 through September 30)
- Erosion and Sediment Controls should be designed and installed to provide the added function of wildlife barrier fencing

Mitigation Measures of Environmental Impacts based on Preferred Alternative (aquatic)

Fish and Fish Habitat

- Vegetation scheduled for removal will have proper clearing techniques implemented to protect and retain the surrounding vegetation and root masses should be left in place for soil stabilization
- Re-vegetate the disturbed area with native species suitable for the site quickly following completion of shoreline works
- In-water work undertakings or activities to respect timing windows (July 16 to September 29)
- Regularly monitor the lake for signs of sedimentation
- Fish exclusion zone should be installed around any areas where in-water works are proposed
- Maintain all machinery on site in a clean condition and free of fluid leaks
- Wash, refuel, and service machinery and store fuel and other materials for the machinery in such way as to prevent any deleterious substances from entering nearby drains
- Spill Response and Action Plan

Next Steps


2022
2023
2024
2025
WE ARE HERE
Review background information
Collect data, review existing conditions and identify project constraints and opportunities
Develop and evaluate alternatives
Develop and evaluate alternatives to meet the planning and community needs including treatment approach and key site requirements
Identify preferred alternative
Identify the preferred alternative based on the evaluation process (the preferred alternative is the option that is considered the best overall solution)
Public Information Centre #1
Obtain input on the preferred treatment approach
Develop and evaluate alternative design concepts
Develop and evaluate the alternative design concepts to implement the preferred solution
Public Information Centre #2
Obtain input on the recommended design concept
Reporting
Prepare the Environmental Study Report to document project information and the decision-making process
Niagara Regional Council
Niagara Regional Council will provide approval to file the Environmental Study Report for a **30-day review period for public** comment.

Thank you for your participation!

How can you stay engaged and up to date on this Municipal Class EA?

Review presentation materials on the Region's project webpage

Submit any questions, comments or suggestions use the online comment form or by contacting the Study's Project Team.

Request to be added to the Study Contact List to receive future notices.

Visit the Region's project webpage for study updates
https://niagararegion.ca/projects/grimsby-water-treatment-plant/

Questions

Your feedback is important. Your comments will be reviewed and considered as the Study progresses.

To submit questions/comments/suggestions after this PIC, please use the online comment form available on the project webpage **by October 8, 2025.**

https://niagararegion.ca/projects/grimsby-water-treatment-plant/

If you have further questions, please contact a member of the Project Team:

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