

Executive Summary

This report summarizes the findings of a Schedule B Municipal Class Environmental Assessment (completed by the Lake Huron Primary Water Supply System) to develop and assess alternative solutions to improve disinfection and increase water storage at the Lake Huron Water Treatment Plant. Located in the Municipality of South Huron, Ontario, the Lake Huron Water Treatment Plant is a 340 megalitre-per-day conventional treatment plant that supplies drinking water to eight municipalities via a 1,200 millimetre-diameter partially twinned transmission system. The municipalities that receive drinking water from the Lake Huron Water Treatment Plant include the City of London, the Township of Lucan-Biddulph, and the Municipalities of Bluewater, Lambton Shores, Middlesex Centre, North Middlesex, South Huron, and Strathroy Caradoc.

This Class Environmental Assessment was initiated based on findings from the 2020 Lake Huron Primary Water Supply System Master Water Plan Update, to meet water demands to the year 2038. The Master Plan identified the need to improve disinfection due to limitations with the existing disinfection process and to add water storage at the water treatment plant to improve operational flexibility and provide servicing in the event of a planned or unplanned interruption of water production. The objectives considered in this Class Environmental Assessment therefore fell into two categories:

1. Disinfection Objectives:
 - a. Improve disinfection under cold water conditions
 - b. Decrease reliance on chlorine for disinfection in the pre-treatment process at the treatment plant and in the transmission pipeline
2. Storage Objectives:
 - a. Provide additional water storage to meet future water demand needs
 - b. Provide storage to support an operating strategy for energy management
 - c. Improve hydraulic conditions for high-lift pumps

Eleven alternative solutions to address the disinfection and storage objectives for the water treatment plant were identified and subjected to a high-level screening. Alternative solutions that passed the screening process, resulting in a short list of six alternative solutions, were further developed and evaluated in the study. The short list consisted of the following alternative solutions:

- Alternative 1: Do nothing
- Alternative 2: Construct a new reservoir and modify the flow through the existing clear wells by increasing the baffle factor and installing overflow weirs at the clear well effluent
- Alternative 3: Construct a new reservoir that is large enough to meet both the disinfection and storage needs
- Alternative 4.1: Construct a new reservoir and add ultraviolet disinfection at the settled water conduits
- Alternative 4.2: Construct a new reservoir and add ultraviolet disinfection at each filter effluent
- Alternative 4.3: Construct a new reservoir equipped to provide ultraviolet disinfection.

Based on the nature of the alternative solutions, this Class Environmental Assessment was carried out in accordance with the planning and design process for Schedule B projects under Ontario's *Environmental Assessment Act (1990)*, as outlined in the Municipal Engineers Association's *Municipal Class Environmental Assessment* document (2000, as amended in 2007, 2011, 2015, and 2019). This included consultation and communication with stakeholders, including the public, review agencies, and indigenous communities located within the Lake Huron Primary Water Supply System service area. Comments received throughout the study and the responses provided are documented as part of this Project File report.

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A comparative evaluation of the short list of alternatives was completed using criteria reflecting four overarching categories:

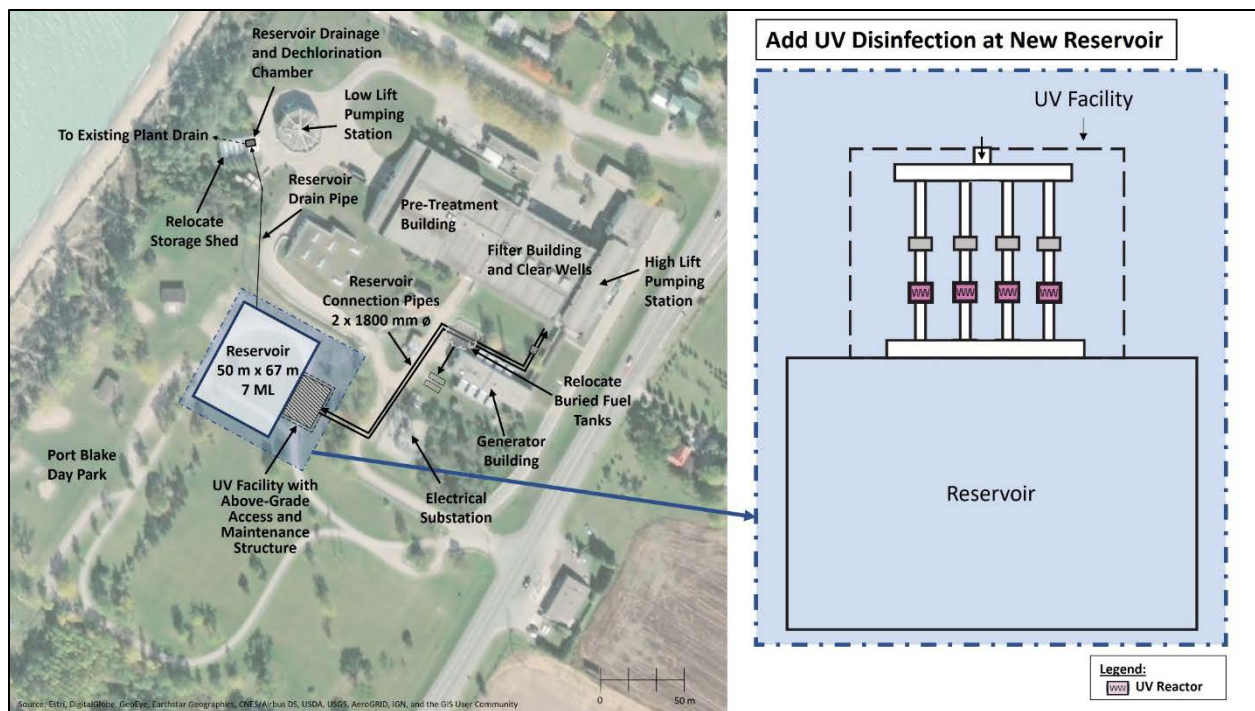
- Natural Environment Impacts
- Sociocultural Environment Impacts
- Technical Environment Impacts
- Economic Environment Impacts.

Supporting studies were completed as part of this Class Environmental Assessment to inform the development of alternatives and their evaluation, including: a desktop natural features assessment; a cultural heritage screening assessment; a Stage 1 archaeological assessment; and a dynamic hydraulic modelling assessment of the water treatment plant.

Upon completion of the evaluation and a sensitivity analysis, Alternative 4.3 was proposed as the preferred alternative solution. A summary of the Class Environmental Assessment process that was followed as well as the proposed preferred solution were presented during a virtual Public Information Centre via a recorded video presentation format that was viewable and open for comments during a two-week period. Comments received during this period were supportive of the proposed preferred solution.

The preferred solution, which is shown in Figure ES-1, consists of constructing a below-grade reservoir with an adjacent ultraviolet disinfection facility to treat the water before it enters the new reservoir. The new reservoir and the ultraviolet disinfection facility will be located south of the existing water treatment plant, within the northern portion of Port Blake Day Park.

Figure ES-1. Preferred Solution



The preferred solution will provide the Lake Huron Water Treatment Plant with enhanced primary disinfection capabilities through a multi-barrier disinfection process while reducing the use of chlorine. The Preferred Solution will also provide the plant with water storage to improve operational flexibility and reduce the potential impacts from planned or unplanned service interruptions to the Lake Huron Primary Water Supply System's customers. The new plant storage will not provide municipal emergency storage or fire flow, as these are the responsibility of the individual municipalities.

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The implementation of the preferred solution will involve construction activities that may have impacts to the natural and sociocultural environments. Preliminary recommendations of mitigation measures have been made and will be further established in the design stage to mitigate impacts during construction. Additional studies may be conducted to further identify and minimize potential impacts, including but not limited to: Stage 2 archaeological assessment (including test pit surveys); an environmental impact study and a follow-up species-at-risk survey; and geotechnical studies and hydrogeological assessments. Plans may also be developed prior to construction to mitigate impacts. These plans include: a sediment and erosion control, a tree protection, removal, and replacement plan as well as a soil management plan.

The Lake Huron Water Treatment Plant Disinfection and Storage Upgrades Schedule B Municipal Class Environmental Assessment Project File will be available for a 30-day public comment period. The next stage of the project is preliminary design of the preferred solution, followed by the detailed design and then construction. Construction is anticipated to commence in 2024-2025.