



# Kashwakamak Lake Dam Class EA Public Information Centre Meeting Minutes

Date and Time: May 23, 2024, 4:00 – 5:35 PM

Location: Teleconference Call via Zoom

List of Attendees: **Mississippi Valley Conservation Authority (MVCA)**  
Juraj Cunderlik, Director, Engineering  
Jennifer North, Water Resources Technologist  
Jane Cho, Water Resources EIT  
Alana Perez, Water Resources Engineer  
Kelly Stiles, Biologist  
Sally McIntyre, General Manager  
Christopher Stoddard, Civil-Geotechnical Engineer  
Kelly Hollington, Executive Assistant

**Egis**  
Lisa Marshall, P.Eng., Project Manager (PM), Lead Environmental Planner  
Mustafa Sasal, Lead Sr. Water Resources Engineer  
Monika Orwin, Water Resources Engineering Intern

**Public Information Centre Members – 14 Attendees**

Subject: Kashwakamak Lake Dam Class EA  
Public Information Centre Meeting #1

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## 1.0 INTRODUCTION

- Mississippi Valley Conservation Authority (MVCA) provided a brief overview of the project and meeting objectives.
- An introduction was provided for all MVCA and Egis project team members.

## 2.0 PUBLIC INFORMATION CENTRE PRESENTATION

- Egis PM provided the Public Information Centre (PIC) presentation to meeting participants. A copy of the PIC recording and presentation have been posted on the MVCA website: [Kashwakamak Lake Dam Class EA - Mississippi Valley Conservation Authority](#)

## 3.0 QUESTIONS AND OPEN DISCUSSION

- CLC member (██████) – Could any new information relative to what was presented to the first CLC meeting on February 26, 2024 be highlighted?
  - Egis PM agreed to highlight new information as the presentation progressed.
- CLC member (██████) – How is the project funded and will the cost of the dam improvement have an impact on the municipality (of North Frontenac and possibly others) in terms of additional pressure on their budgets?
  - MVCA noted that they were successful in securing both federal and provincial funding for the project and provided further explanation as follow;
    - MVCA has been granted federal funding through the *Disaster, Mitigation, and Adaptation Fund (DMAF)* program, which is run by Infrastructure Canada. Federal funding is provided for up to 40% of the project balance.
    - MVCA has been granted provincial funding through the *Water, Erosion, and Control Infrastructure (WECI)* program, which is delivered through a municipal-provincial-conservation authority partnership. Provincial funding is provided for up to 50% of the project balance.
    - The remainder of the project costs are assumed by the MVCA. The project is eligible for *Category 1* funding, meaning that all of the member municipalities within the jurisdiction contribute towards the reconstruction/rehabilitation of the dam to some level. The degree of financial contribution from each municipality is dictated through a formula based on the assessment value within the municipality and watershed. In this case, the City of Ottawa is a major contributor to the project. The Municipality of North Frontenac will be contributing but to a lesser degree.
- CLC member (██████) – Is there an estimate for the overall cost of the project?
  - MVCA noted that the total cost has been estimated to be approximately \$6 million.
- Mayor of North Frontenac (Gerry L.) – North Frontenac already has a funding agreement with the MVCA; approximately how much can this be expected to increase?
  - MVCA noted that the funding agreement is for *Category 3* programs, while this project is a *Category 1* program which is mandatory for the MVCA to deliver on. It goes on the main levy, which is established annually and has no impact, other than what the council has already accepted when the 2024 budget was put forth for both capital and operations.
  - MVCA noted that over the past few years, the capital levy to all municipalities has been increasing to help pay for the rehabilitation of both this dam, as well as other dams throughout the system

which are well in excess of their design life. Investment will need to be put into this infrastructure over the coming years. The 10-year capital plan currently allows for approximately \$10 million - \$11 million of investment in capital renewal.

- CLC member (██████) – For many years, there has been an informal walkway running from the dam through the wooded area along the north side of the river down to the ponds below. Will this be maintained? Can it be improved/maintained considering that it is likely on private property?
  - MVCA noted that they are familiar with the walkway, and do not foresee construction works relating to the dam disturbing the walkway and should therefore be maintained. In regard to the walkway being improved, the land ownership would need to be evaluated as it may be private property or part of the North Frontenac shoreline allowance.
- CLC member (██████) – What do the different colours represent on the watershed map (on the slide for Hydrologic and Hydraulic Assessment)?
  - The colours represent the ground level elevations, where the darker red corresponds to higher elevations while the green corresponds to lower elevations.
- CLC member (██████) – Are there any climate-related hydrological changes expected in the near future?
  - Storms and weather events are definitely changing. MVCA noted that a climate change analysis was completed as part of the hydrological analysis to evaluate various scenarios and found that the future inflows to the lake may increase by approximately 20%. It is something that will need to be considered/accommodated in the design stage of the project to ensure an additional safety factor in the event that the flows increase due to the climate change impact.
- Member of the Public – If the dam is replaced, will the water levels be maintained at the same level?
  - MVCA confirmed that the water levels and water management plans will be maintained and even improved as a result of the structure providing more efficient service/function and the seepage issues being addressed.
- Egis PM noted that Alternative Solution 2b to decommission the existing dam and reinstate the natural watercourse was not carried forward to higher levels of evaluation as it does not address the problem statement or meet the needs of the watershed management plan.
- Member of the Public – For Alternative Solution 4 (the preferred solution), how would the project proceed? What do temporary impacts mean? Will a temporary dam be built ahead of the existing to hold the water in the lake?
  - MVCA noted that a temporary cofferdam will be built to remove water from the existing dam area to allow for the construction.
  - To accommodate the construction period, the temporary impacts would include considering an earlier drawdown of the lake, which typically happens in the fall around early October. MVCA may need to proceed with an earlier drawdown of the lake levels, such as in September, to allow for the construction.

- Member of the Public – Since water will continue to flow from upstream waterbodies, will mitigation be needed upstream of the Kashwakamak Lake Dam during this period as well to drop water levels and reduce incoming flows?
  - MVCA noted that the mitigation will be occurring at the site of the dam/construction, so a temporary bypass will be designed. However, it is too early in terms of the staging/construction of the project to provide details. Once the design stage begins, the potential alternative solutions for dewatering and bypassing the water will be evaluated but will occur at the construction site.
- CLC member (██████) – Noted that most people who have their boats in the lake have them taken out at the end of the season in early October before the fall drawdown. The local marina should be notified about the timing for the reduced water levels, so they are prepared for the surge of boats at that time.
  - MVCA confirmed that they will have logistics in place to inform everyone affected by the earlier changes in water level. They will try to choose the timing that will have the least impact and accommodate the users of the lake.
- Mayor of North Frontenac (Gerry L.) – Is there an immediate risk of the dam failing?
  - MVCA noted that Alternative Solution 1 (the option to do nothing) has significant deficiencies due to the dam’s age and would pose a greater risk of dam failure. Proceeding with this project is a top priority as part of the 10-year capital plan to avoid risking the loss of the dam and lake.
  - With respect to the dam failure, it is constantly being observed and monitored by the MVCA as part of a monthly monitoring program to evaluate the risks of failure, as well as assess the structure and seepage.
- Mayor of North Frontenac (Gerry L.) – Regarding Alternative Solution 5 where a new dam would be built just downstream of the existing one, could the new dam be built in the summer while the old dam acts as the cofferdam? There would be minimal impact on the lake residents, and the old dam could be taken out in the winter while water levels are at their lowest.
  - MVCA acknowledged that Alternative Solution 5 definitely has some benefits with regards to construction, however, the channel widens downstream relative to where the current dam is placed. This would mean that the cost of the project would approximately double due to needing a larger/longer structure to accommodate the wider channel.
  - For Alternative Solution 5, using the existing dam as a cofferdam would be ideal, however, it is also evaluated from a socio-economic and environmental perspective regarding the impacts on the downstream area. From a hydraulic perspective, it could result in additional properties flooding due to elevation differences and topography at other possible dam locations downstream.
  - The report including further details on the alternative solutions evaluation process will be developed and there will be time for the public to review it over a 30-day period.
- CLC member (██████) – Is there an updated sense of timing for the next CLC meeting?
  - It is currently expected to occur in mid to late June 2024. The Notice of PIC has requested that all comments/concerns be submitted by no later than June 20<sup>th</sup> so that the information can be brought to the CLC meeting.

- CLC member ( ) – Is there an updated sense of timing for the whole project getting underway, including the demolition and lowering of lake levels?
  - The next phase of the project will be preliminary and detailed design, which will take place in 2025-2026. Following that there will be acquiring permits for the project. Therefore, construction is currently expected to occur in in the Fall of 2026 at the earliest.
- Closing comments:
  - A copy of the recorded PIC presentation will be posted on the MVCA website.
  - MVCA team members will be attending the KLA AGM meeting in July.

## 4.0 NEXT STEPS

- Continue consultation with governing agencies, CLC, First Nations, stakeholders, residents/cottagers and the public;
- Update evaluation criteria and matrix, and confirm selection of Recommended Technically Preferred Alternative Solution based on consultation;
- Conduct detailed analysis of environmental impacts and develop mitigation measures for Technically Preferred Alternative Solution;
- Prepare Conceptual Design for Technically Preferred Alternative Solution;
- Community Liaison Committee Meeting #2; and
- Prepare Project Plan and issue Notice of Filling (30-day review period).

The meeting was adjourned at 5:35 pm.

For any errors or omissions, please contact the undersigned.

Lisa Marshall, P.Eng.

Project Manager

Email - [lisa.marshall@egis-group.com](mailto:lisa.marshall@egis-group.com)



**MISSISSIPPI VALLEY CONSERVATION AUTHORITY**

**KASHWAKAMAK LAKE DAM  
CLASS ENVIRONMENTAL ASSESSMENT**

**PUBLIC INFORMATION CENTRE**



**May 23, 2024**



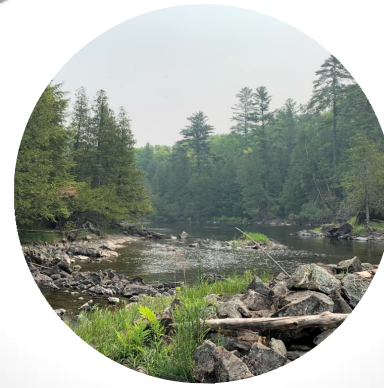
# PUBLIC INFORMATION CENTRE



Present the Study Area



Conservation Ontario's Class Environmental Assessment for Remedial Flood and Erosion Control



Review existing conditions



Outline alternatives, evaluation and recommended preferred alternative solution

Seek public input / comments & provide opportunities for public to ask questions

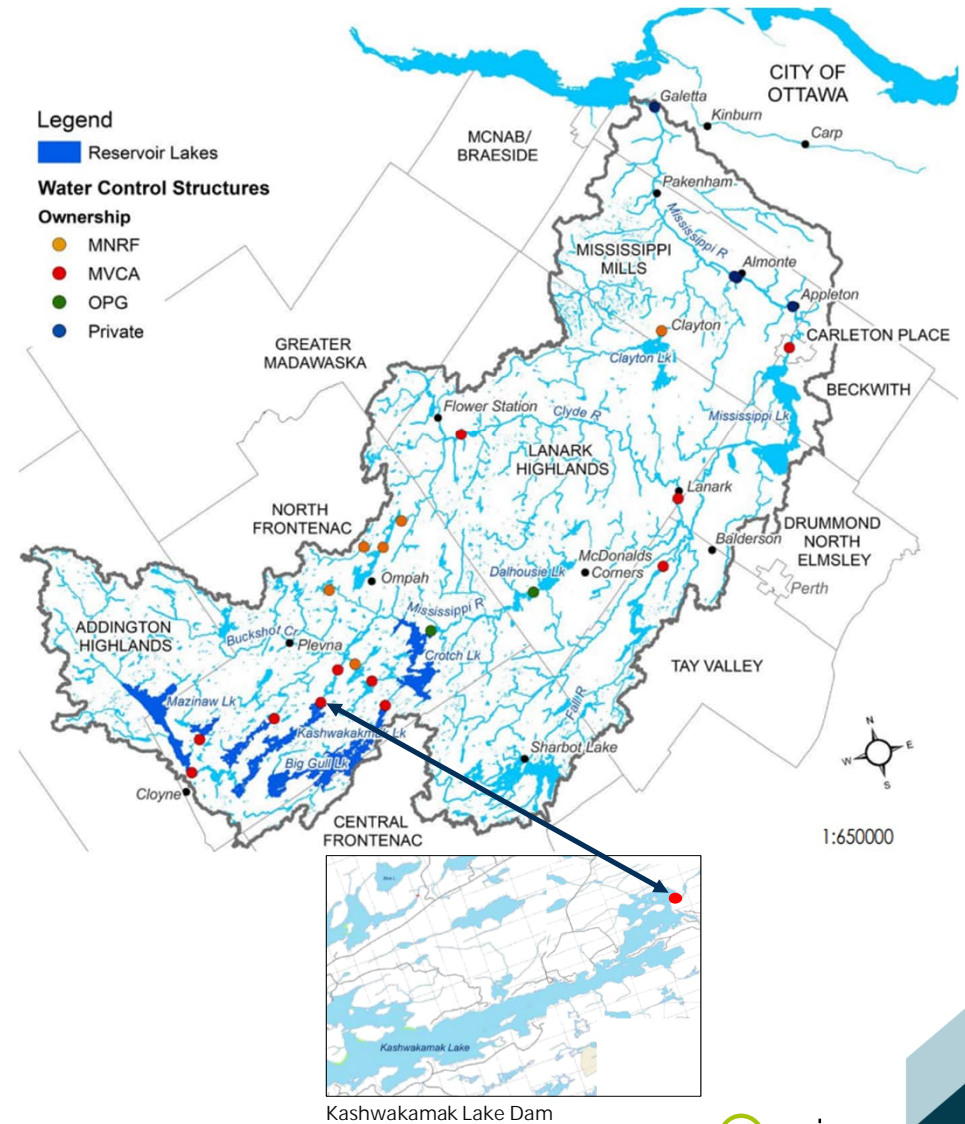
# WATERSHED MANAGEMENT

## Mississippi River

- The Mississippi River system is composed of a complex network of rivers, streams, rapids and over 250 lakes located in Eastern Ontario.
- Managed system with a watershed area of 3765 km<sup>2</sup>.
- Several dams and weirs along the Mississippi River:
  - Mitigate drought and flooding (i.e., regulate flows and manage water levels); and
  - Maintain water levels throughout the watershed.

## Kashwakamak Lake

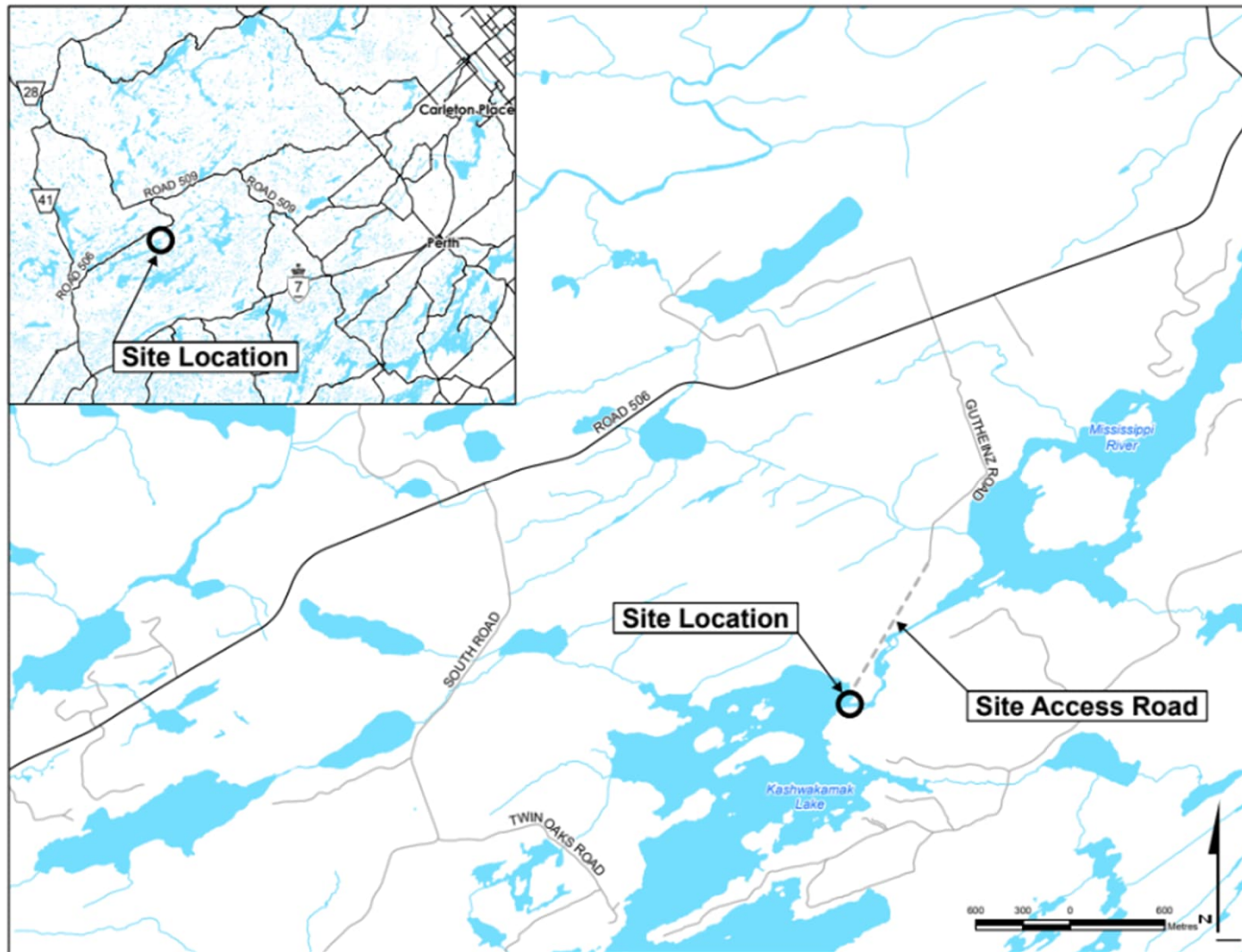
- Located in the upper reaches of the Mississippi River, within the Township of North Frontenac
  - Catchment area of 415 km<sup>2</sup>.
- One of several reservoir lakes that serve a critical storage function:
  - Alleviate flooding and drought, and
  - Maintains stable water levels on the lake.



Source: Mississippi River Watershed Plan (MVCA, 2021)



# STUDY AREA



Main Kashwakamak Lake Dam Structure



Saddle Dam

# HISTORY OF KASHWAKAMAK LAKE DAM

- Designed and constructed as a lumber dam in the 1860s.
- Reconstructed in 1911 by private interests.
- Minor repairs completed between 1911 and 1988.
- MVCA assumed ownership in 1991.
- 1995-2016 various works carried out to reduce seepage and improve dam safety.
- In 2022, dam safety review identified the structure in deteriorated state and in poor to fair condition.
- 10-year Capital Plan updated to allow for the environmental assessment and dam renewal/replacement.



# CLASS ENVIRONMENTAL ASSESSMENT PROCESS

Conservation Ontario's Class Environmental Assessment for Remedial Flood and Erosion Control Projects

Stage 1	Stage 2	FINDINGS: Can Impacts be Avoided, Mitigated or Compensated?		
Environmental Assessment Process				
Project Initiation	Alternative Solutions	Yes	Uncertain	No
Technical Process				
<ul style="list-style-type: none"> <li>✓ Prepare Problem Statement</li> <li>✓ Prepare Baseline Environmental Inventory</li> </ul>	<ul style="list-style-type: none"> <li>✓ Identify and Evaluate Alternative Solutions</li> <li>✓ Identify Impacts and Mitigation Measures                             <ul style="list-style-type: none"> <li>▪ Select Preferred Solution</li> <li>▪ Conduct Detailed Analysis of Environmental Impacts</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Prepare Project Plan</li> <li>▪ Are all Concerns Addressed? (No Part II Order Requests)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prepare Environmental Study Report (ESR)</li> <li>▪ Are Impacts Deemed Acceptable?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prepare Individual Environmental Assessment</li> <li>OR</li> <li>▪ Reassess Program Option</li> </ul>
Consultation Process				
<ul style="list-style-type: none"> <li>✓ Notice of Intent</li> <li>✓ Establish Community Liaison Committee (CLC)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Host CLC meeting                             <ul style="list-style-type: none"> <li>▪ Engage public agencies, stakeholder, First Nations and general public</li> <li>✓ Public Information Centre</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Notice of Filing to Interested Persons/Parties</li> <li>▪ Provide Notice of Project Approval &amp; Proceed to Construction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Publish Notice of Filing for Review</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue Consultation as Required during Detail Design</li> </ul>

# PROJECT PROBLEM STATEMENT

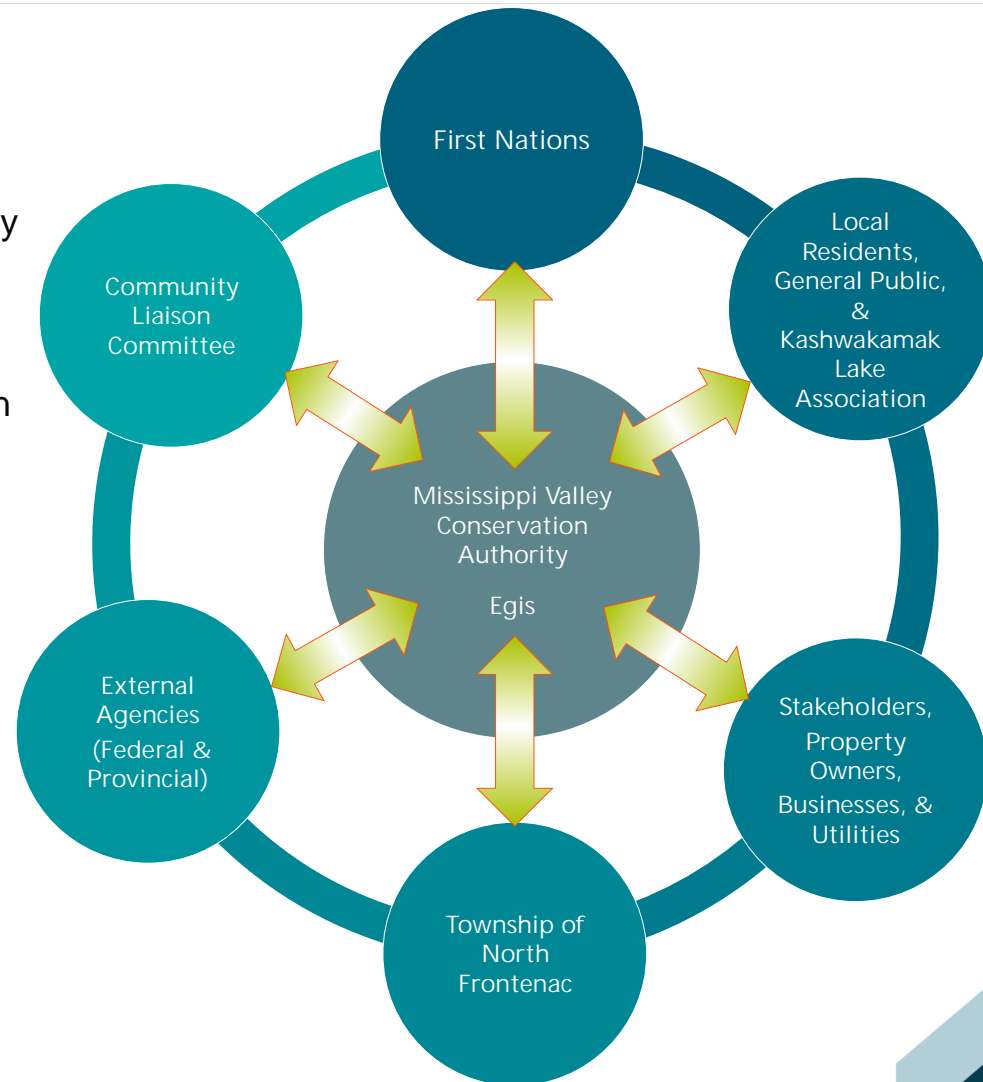


- The existing Kashwakamak Lake Dam is well beyond its design life.
- The 2022 Dam Safety Review identified significant deterioration, especially the overflow weir.
- A decision needs to be made on whether to decommission, repair, or replace the dam.
- Selection of the Preferred Alternative must consider several constraints and opportunities such as public safety, riverine processes, flooding, climate change, cultural heritage, Indigenous rights, natural habitat, public uses and aesthetics.
- The Preferred Alternative must address the problem while balancing study area constraints and opportunities, in order to best meet the needs of the various stakeholder groups and interested parties.

# CONSULTATION PROGRAM

Consultation completed to-date:

- May 25, 2023: Notice of Intent;
- August 24, 2023: Expression of Interest to join the Community Liaison Committee (CLC); and
- February 26, 2024: CLC Workshop Meeting #1.
- August 30, 2023: Invitation sent First Nations to participate in Marine Archaeological Assessment;
- September 11, 2023: Marine Archaeological Assessment field investigation;
- May 2, 2024: Notice of Public Information Session
- May 9 & 16, 2024: Notice of Public Information Session published in the North Frontenac News;
- April 18, 2024: Invitation sent to First Nations to participate in Stage 2 Archeological Assessment, and
- May 2, 2024: Stage 2 Archeological Assessment field investigation.



# COMMENTS AND CONCERNS RECEIVED

## Comments/Inquiries

- Requests to stay involved with the study and be able to provide input;
- The current dam controls and maintains water levels for both safety and recreational/tourism purposes for hundreds of people who either live or own seasonal cottages on the lake.
- Has consideration been given to creating a power supply with the Kashwakamak Lake Dam which could become a revenue source.



## Concerns

- Changes in water levels, as well as the ability of the proposed alternative to continue to mitigate flood and drought risk;
- When construction will commence and how water levels be impacted and controlled during the replacement of the dam, and
- Potential impacts of the dam on Manòmin (wild rice crops).

# INVENTORY STUDIES



## Natural Heritage Assessment

- ✓ Existing Conditions Inventory
- ✓ Environmental Impact Assessment



## Archaeological and Cultural Heritage

- ✓ Land Archaeological Assessment
- ✓ Marine Archaeological Assessment
- ✓ Cultural Heritage Evaluation Report



## Hydrology and Hydraulic Assessment

- ✓ Hydrology and Hydraulic Assessment (modeling)



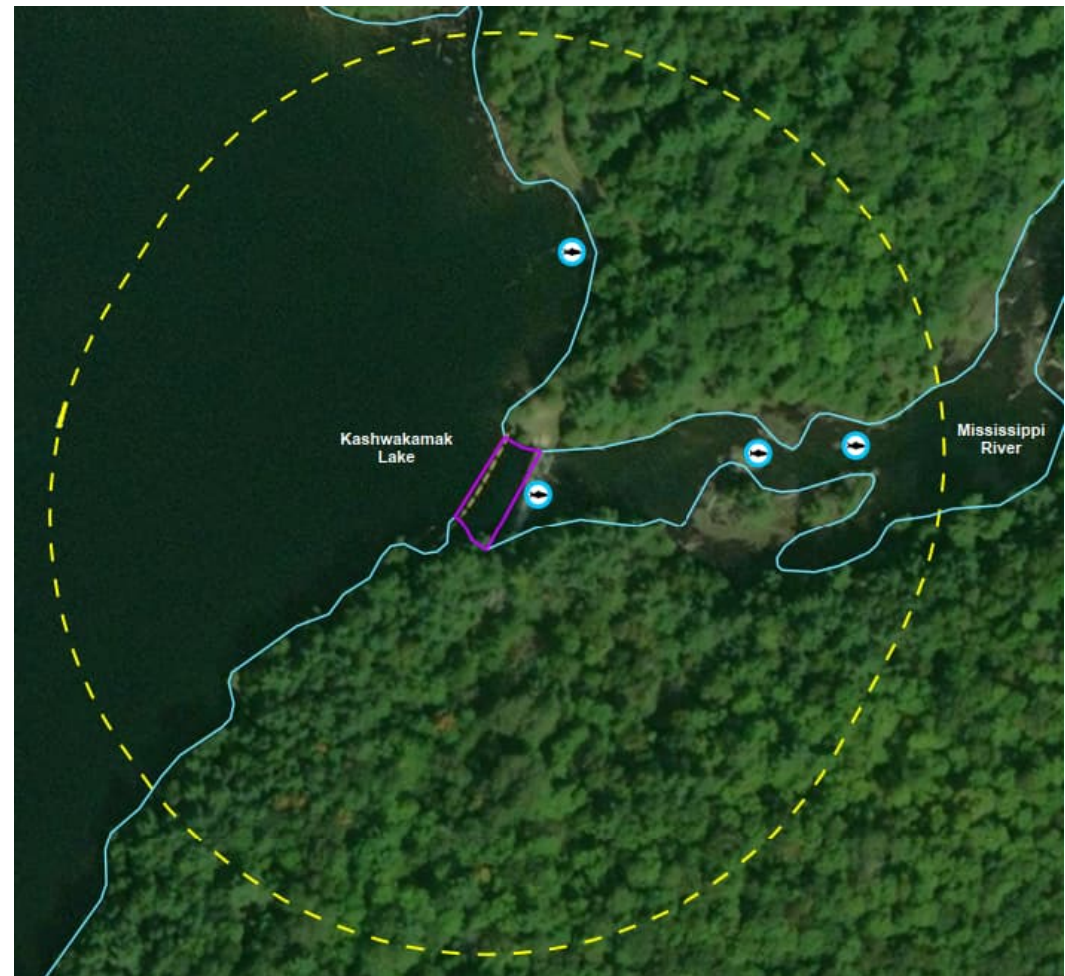
## Geotechnical Investigation

- ✓ Explore the subsurface conditions and documentation





# NATURAL ENVIRONMENT

## Fish and Fish Habitat

- Kashwakamak Lake is identified as having a cool/warmwater thermal regime.
- The lake, and the Mississippi River, provide permanent fish habitat and suitable spawning habitat.
- Significant fish habitat: sport fish and baitfish spawning immediately downstream of the Dam.
- Large population: Walleye, White Sucker, Bass, Northern Pike, baitfish and non-sport fish species.



### LEGEND

-  Potentially Sensitive Fish Spawning Habitat
-  Approximate Dam Location
-  Waterbody
-  Study Area



# NATURAL ENVIRONMENT

## Wetlands

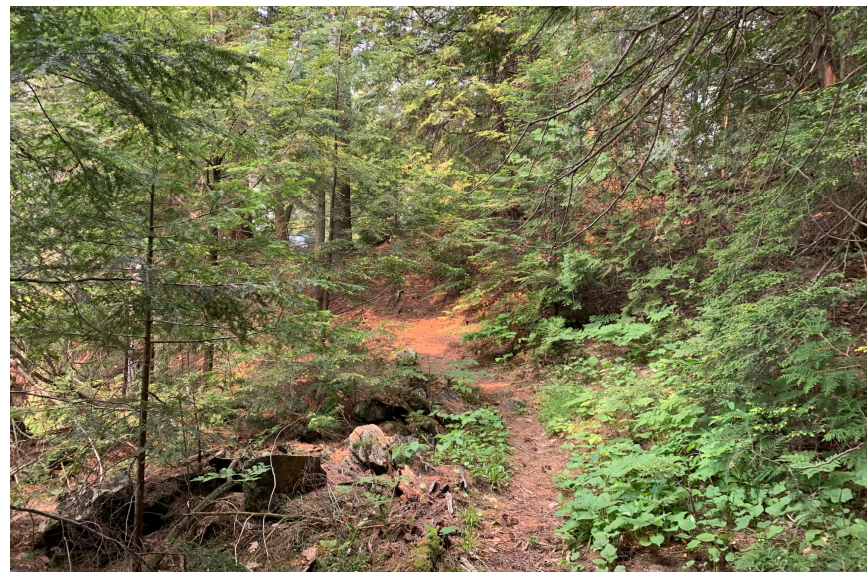
- No significant wetlands are present within the study area.
- Several small wetlands around the perimeter of the lake and downstream (Mud Lake Provincially Significant Wetland).
  - Overwintering habitat for turtles - Blanding's Turtle.
- The Manòmin (wild rice crops) - approximately 7.0 km downstream of the dam.
  - Aquatic annual species of grass;
  - Cultural significance: Ardoch Algonquin First Nation, Alderville First Nation, and potentially other First Nations.
  - Changes in water levels can have potential impacts on the wild rice crops.



# NATURAL ENVIRONMENT

## Vegetation

- Mixed Forest including species:
  - Eastern hemlock, Eastern white cedar  
American elm, American beech, white pine,  
red oak, and paper birch.
- Natural Heritage Information Centre identifies woodlands, however, does not identify the woodlands as being “significant”.
- No invasive and/or noxious plant species were observed on site.
- No Butternut or Black Ash (SAR) were observed.



# NATURAL ENVIRONMENT

## Wildlife Habitat

- Significant Wildlife Habitat:
  - Bat Maternity Colonies, Birds, Turtle Wintering Area, Special Concern and Rare Wildlife Species, and Turtle and Lizard Nesting Habitat.
  - Mixed Forest provides suitable habitat:
- Rock structures (i.e., rocky outcroppings) - snakes and lizards.



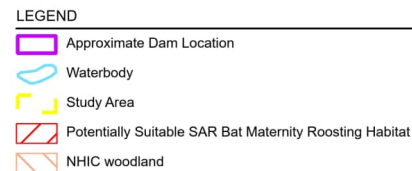
# SPECIES AT RISK (SAR)

## Bats

- High-quality maternity roosting trees (April - September 30):
  - Little Brown Myotis;
  - Northern Myotis, and
  - Tri-colored Bat.

## Birds

- Potentially suitable breeding habitat (i.e., nesting):
  - Red-headed Woodpecker;
  - Eastern Whip-poor-will, and
  - Wood Thrush.



# SPECIES AT RISK (SAR)

## Herptiles

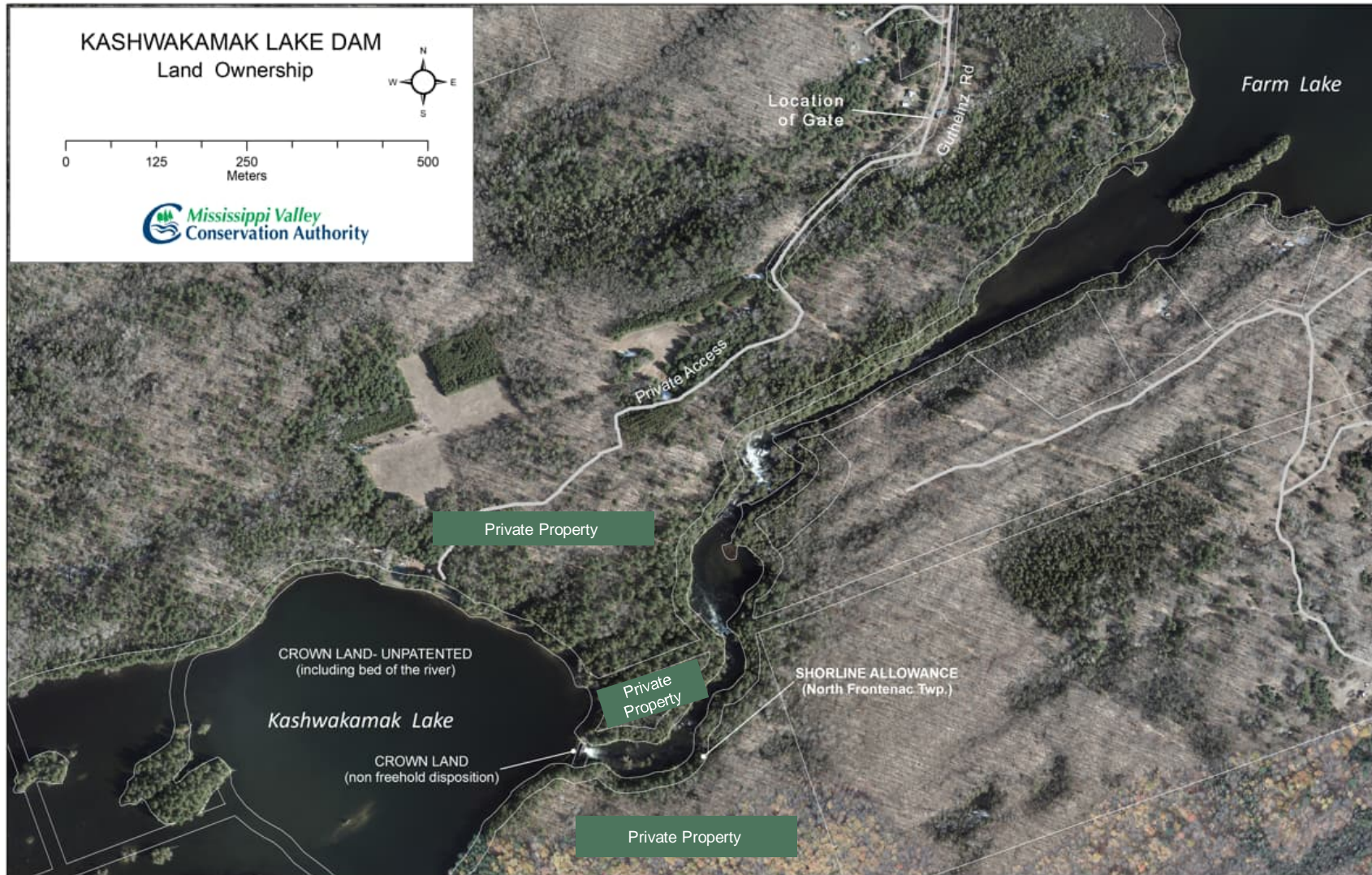
- Potentially suitable nesting and overwintering habitat:
  - Blanding's Turtle;
  - Midland Painted Turtle, and
  - Snapping Turtle.
- Rock features on the edge of lake provide suitable habitat:
  - Milksnake, and
  - Five-lined skink.



### LEGEND

-  Snapping Turtle Observation
-  Turtle Nest Location
-  Approximate Dam Location
-  Study Area
-  Waterbody

# SOCIAL ENVIRONMENT AND LAND USE



# ARCHAEOLOGICAL & BUILT CULTURAL HERITAGE

## Land Archaeological

- Stage 1 Archaeological Assessment (June 6, 2023)
  - Study area exhibits archaeological potential.
- Stage 2 Archaeological Assessment (May 2, 2024)
  - Several First Nations showed interest in attending the field investigation.
  - A small Indigenous site along the water's edge was identified.
  - A Stage 3 Archaeological Assessment is currently be considered.



### LEGEND

#### Project Layers

 Study Area

#### Stage 1 Results

 Area of archaeological potential; testing recommended

 Field photographs; image location, orientation, and report image #

# ARCHAEOLOGICAL & BUILT CULTURAL HERITAGE

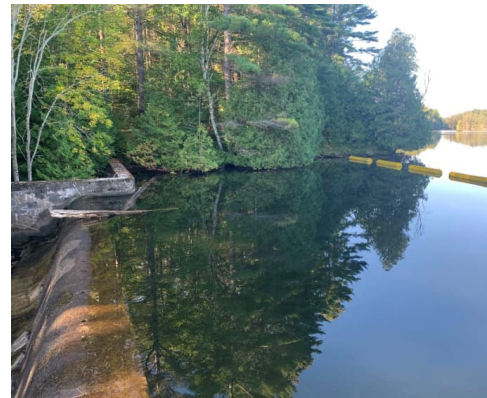
## Marine Archaeological

- A Stage 1 & 2 in-water Marine Assessment (September 11, 2023);
- No registered archaeological sites within one kilometer of the study area.
- Study area free of any archaeological features and concerns.



## Built Cultural Heritage

- Dam does not retain any cultural heritage value or interest (CHVI) under the Ontario Heritage Act.





# GEOTECHNICAL INVESTIGATION

- Exploration of subsurface conditions (September 18 and 25, 2023)
  - Four (4) boreholes advanced into the subsurface;
  - Bedrock was observed at the ground surface and cored to the bottom of the boreholes;
  - Bedrock - Carbonate Metasedimentary bedrock, and
  - Slightly weathered and fractured with moderately close, horizontal to diagonal joints.
- Proposed design considerations:
  - Excavation for new dam to extend down to sound bedrock.
  - Appropriate dewatering measures to effectively control the water levels in the lake during construction are to be implemented.



# EXISTING DAM STRUCTURES AND CONDITIONS

## Main Dam Structure

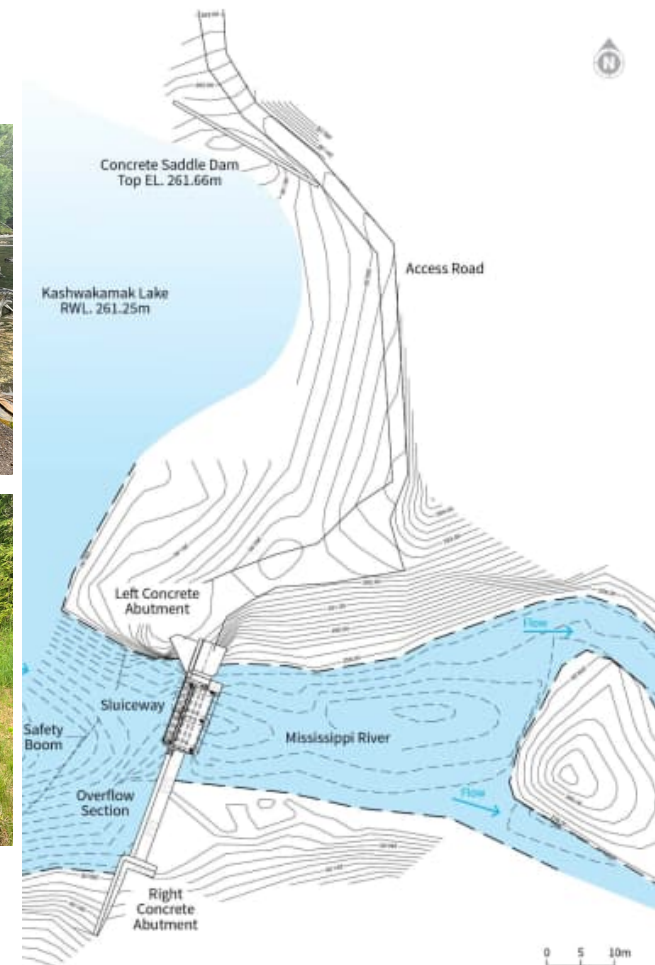
- Main Dam Structure: north and south abutment walls, three concrete piers forming the two sluiceways, and broad crested concrete weir.
- Based on previous dam inspection (2016) and the Dam Safety Inspection Report (2022):
  - Dam abutments have inadequate freeboard;
  - Overflow weir and abutments do not satisfy requirements for ice loading;
  - Outdated methods and materials;
  - All concrete structures are in a deteriorated state and in poor to fair condition, and
  - Designed to an outdated HPC/IDF.



# SADDLE DAM CONDITIONS

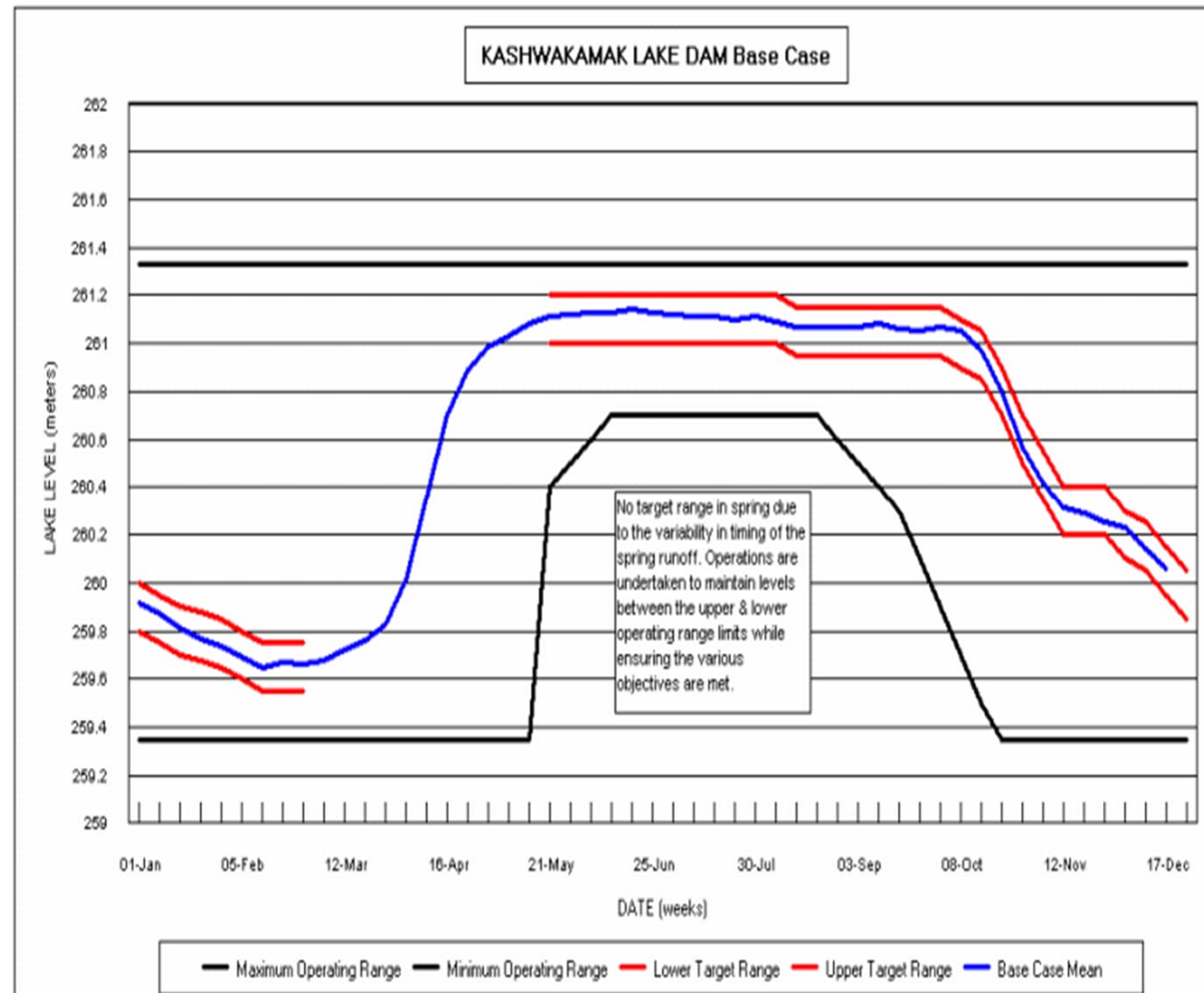
## Saddle Dam Structure

- Saddle Dam located approximately 60 m to the north of the main dam and runs adjacent to access road.
- Prevents spillage of the lake, however, has inadequate freeboard.
- Failure of the dam would result in:
  - Limits access to the Dam, and
  - Access to perform emergency maintenance or operations during a significant storm event.
- Seepage and settlement was noted along the access road.
- Outdated methods and materials used to originally construct the dam.



# OPERATION OF THE EXISTING DAM

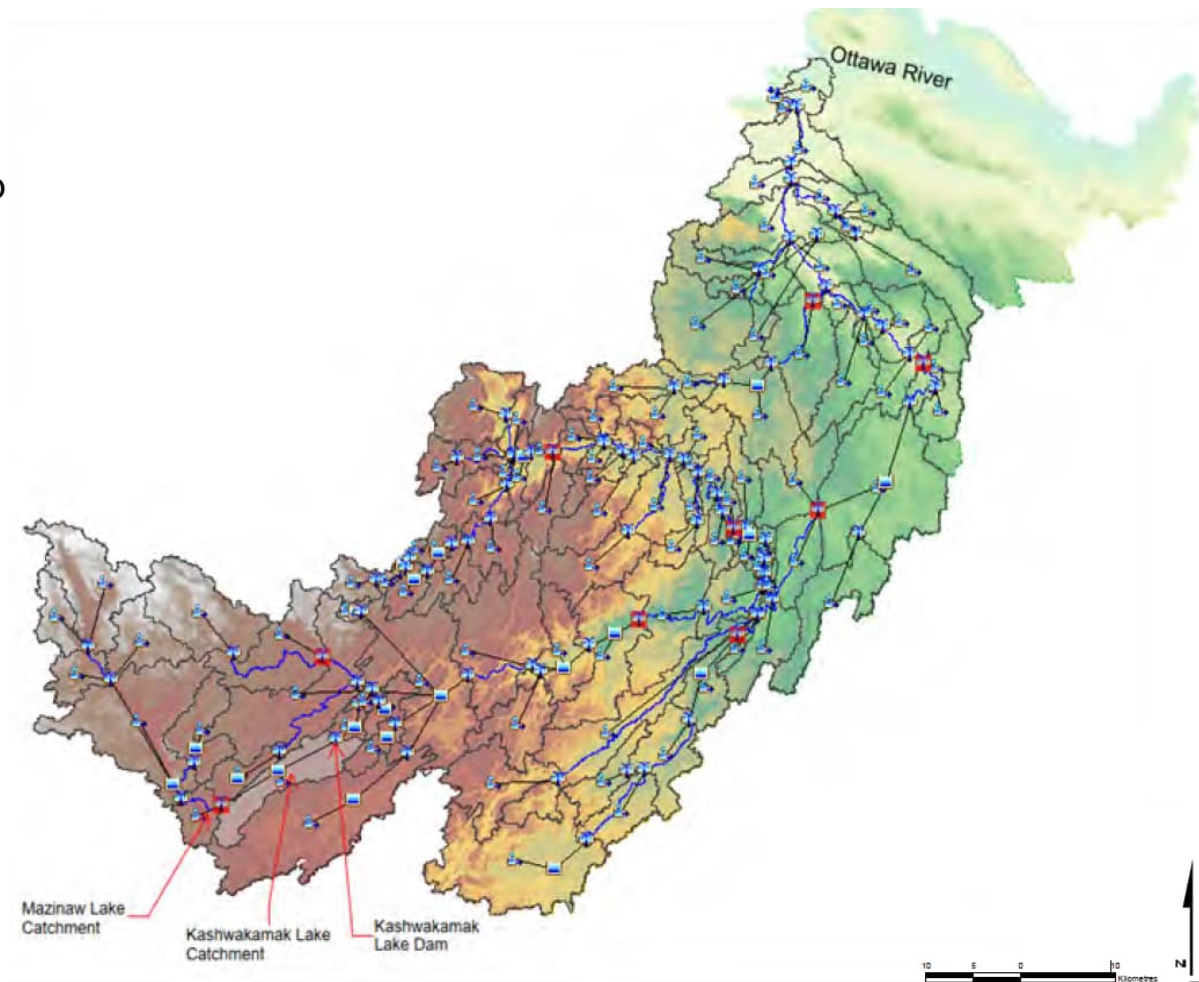
- 16.9 m long overflow structure at elevation of 261.06 m.
- Two gates (~3 m width each) with timber stoplogs (0.3 m x 0.3 m).
- Manually operated gates with elevations ranging between 258.22 m to 261.22 m.
- Target water level for spring and summer ranges from 260.98 m to 261.28 m
- Target water level for winter ranges from 259.5 m to 259.7 m.



# HYDROLOGIC AND HYDRAULIC ASSESSMENT

## Hydrologic Assessment

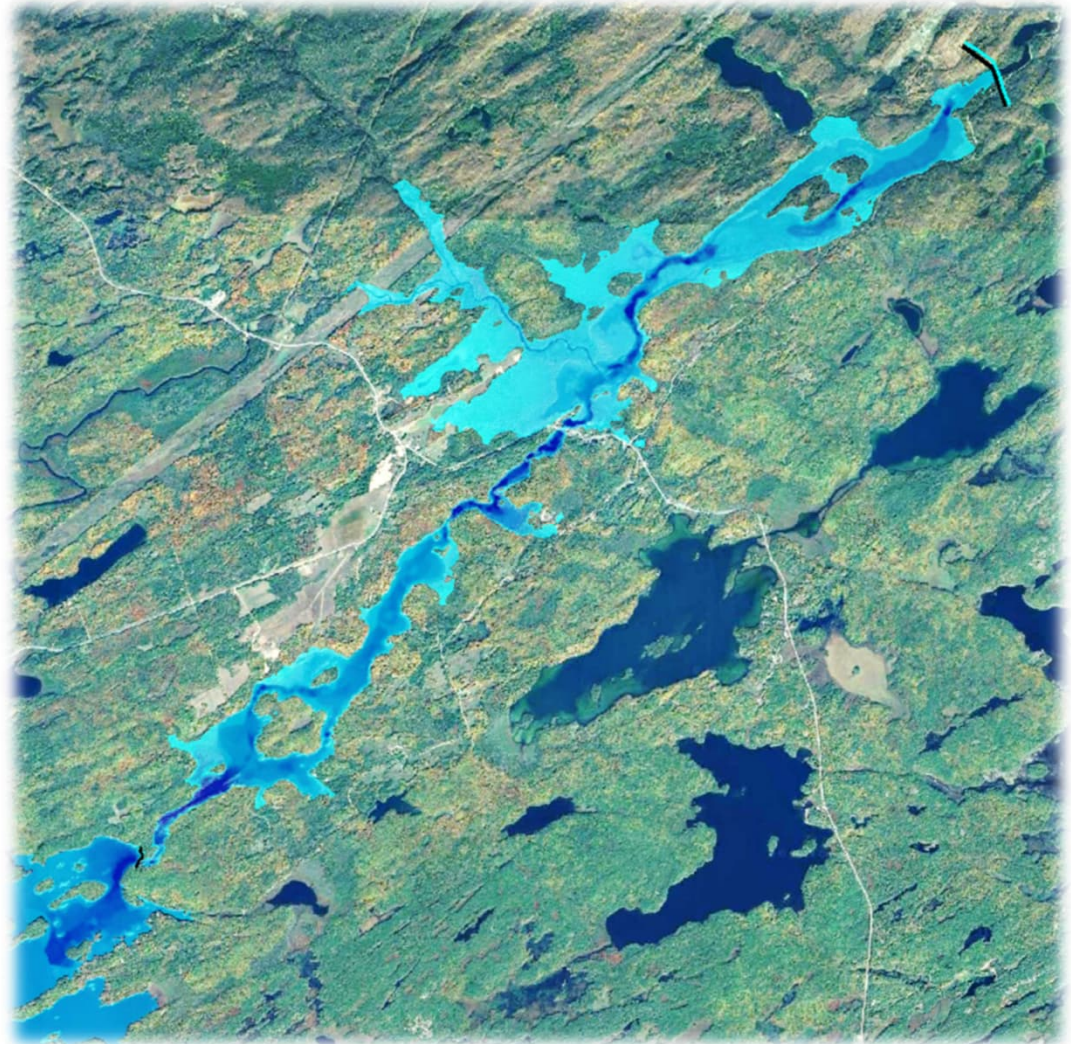
- HEC-HMS numerical model for the Mississippi watershed.
- Flood frequency flows for the Kashwakamak Dam.
- Inflow hydrographs to Kashwakamak Lake.
- Probable Maximum Precipitation (PMP) and Probable Maximum Flood (PMF) estimates.
- Inflow hydrographs under a climate change scenario.



# HYDROLOGIC AND HYDRAULIC ASSESSMENT

## Hydraulic Analysis

- HEC-RAS numerical model of the dam and Mississippi River.
- Latest topo-bathymetric data (2022 LiDAR, 2023 survey).
- Incremental flood inundation study for various flood scenarios without and with dam breach.
- Hazard Potential Classification (HPC) of the dam determined to be “Moderate”.
- Updated Inflow Design Flood (IDF).
- Updated freeboard for abutments and saddle dam.



# PROPOSED ALTERNATIVE SOLUTIONS

## **Alternative 1 – Do Nothing**

No change made within the Study Area (status quo). No changes to the existing dams within the study area. No changes to existing conditions.

## **Alternative 2a – Decommission the Existing Dam and Construct Passive Control System**

Decommissioning of the dam and creating a passive water control system (such as an overflow weir).

## **Alternative 2b – Decommission the Existing Dam and Reinstate Natural Watercourse**

Decommissioning/full removal of the existing dam and reinstating a natural watercourse/channel.

## **Alternative 3 – Rehabilitation of the Existing Dam**

Rehabilitation of the Dam would consist of salvaging elements of the existing dam and preserving the structure in a stable state similar to the existing condition.







## **Alternative 4 – Replace the Existing Dams at the Same Location**

Construction of a new dam within a similar alignment to that of the existing dam.

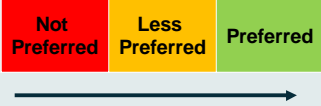
## **Alternative 5 – Construct New Dam Downstream**

Construct a new dam immediately downstream of the existing dam.

# EVALUATION CRITERIA

Function/Technical	Natural Environment	Social Environment
 <ul style="list-style-type: none"> <li>▪ Hydraulic Function/Flooding and Drought</li> <li>▪ Geomorphology/Sediment Transport</li> <li>▪ Dam Safety</li> <li>▪ Durability/ Service Life</li> <li>▪ Climate Change Adaptation</li> <li>▪ Implementation/Construct ability</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Fisheries/Aquatic Impacts</li> <li>▪ Terrestrial Habitat (Wildlife and Vegetation)</li> <li>▪ Species at Risk</li> <li>▪ Existing Watercourses Quality and Quantity</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Private Property Impacts During Construction and Commissioning</li> <li>▪ Temporary/Permanent Property Agreements/ Acquisitions</li> <li>▪ Recreational Impacts/Enhancement</li> <li>▪ Tourism Impacts</li> </ul>
Cultural Environment	First Nations	Economic Environment
 <ul style="list-style-type: none"> <li>▪ Archaeological Resources</li> <li>▪ Built Heritage Resources and Cultural Heritage Landscapes</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Lands Rights</li> <li>▪ Harvesting Rights (wild rice crops)</li> </ul>	 <ul style="list-style-type: none"> <li>▪ Capital Costs</li> <li>▪ Operational and Maintenance Costs</li> </ul>



Category	Alternative 1 Do Nothing	Alternative 2a Decommission the Existing Dam and Construct Passive Control System	Alternative 3 Rehabilitation of the Existing Dam	Alternative 4 Replace the Existing Dam at the Same Location	Alternative 5 Construct New Dam Downstream
Functional / Physical	Not Preferred	Less Preferred	Less Preferred	Preferred	Preferred
Natural Environment	Not Preferred	Preferred	Less Preferred	Less Preferred	Not Preferred
Social Environment	Less Preferred	Not Preferred	Preferred	Preferred	Less Preferred
First Nations/Cultural Environment	Preferred	Less Preferred	Preferred	Preferred	Less Preferred
Economic Environment	Less Preferred	Preferred	Not Preferred	Less Preferred	Not Preferred
<b>Summary (Key Pros/Cons):</b>	<b>Not Recommended</b> – Does not address the PS.	<b>Not Recommended</b> – Does not address the PS.	<b>Not Recommended</b> – Does not address the PS.	<b>Recommended</b> – Addresses the PS.	<b>Not Recommended</b> – Addresses the PS.
<b>Abbreviation Legend:</b> PS – Problem Statement WMP - Watershed Management Plan SAR – Species at Risk  <b>Ranking:</b> 	<p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>Existing conditions remain the same.</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>Less resiliency to larger storm events (climate change).</li> <li>Continue to deteriorate.</li> <li>Continued risk of dam failure.</li> <li>Maintains current WMP until potential failure of the dam.</li> </ul>	<p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>Relatively low/moderate cost.</li> <li>Property acquisition most likely not required.</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>Reduction/limited ability to mitigate floods/droughts and maintain current WMP.</li> <li>Limited ability to fully adapt to Climate Change.</li> <li>High fluctuation in water levels.</li> <li>Potential impacts to the Manòmin.</li> <li>Temporary impacts due to construction activities (i.e. property, recreational, tourism, etc.).</li> </ul>	<p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>Maintains current WMP.</li> <li>Maintains existing conditions.</li> <li>No significant change to water elevation and volume.</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>Less resiliency to larger storm events (climate change).</li> <li>Continued risk of dam failure.</li> <li>Temporary impacts due to construction activities (i.e. property, recreational, tourism, etc.).</li> </ul>	<p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>Maintains current WMP.</li> <li>Designed to accommodate larger storm events and adapt to climate change.</li> <li>Meet safety guidelines.</li> <li>Sensitive fish spawning habitat maintained.</li> <li>No long-term impacts to First Nation Lands including Manòmin.</li> <li>No permanent property impacts anticipated.</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>Temporary impacts due to construction activities (i.e. property, recreational, tourism, etc.).</li> </ul>	<p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>Maintains current WMP.</li> <li>Designed to accommodate larger storm events and adapt to climate change.</li> <li>Meet safety guidelines.</li> <li>No direct or indirect impacts to the recreational/tourism use of the lake.</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>Requires larger structure.</li> <li>Significant cost.</li> <li>Additional property requirements/acquisition.</li> <li>Environmental Impacts.</li> <li>Unaltered lands and watercourse impacted by construction.</li> <li>Temporary impacts due to construction activities (i.e. property, recreational, tourism, etc.).</li> </ul>

## NEXT STEPS

- Continue consultation - governing agencies, CLC, First Nations, stakeholders, residents/cottagers and the public;
- Update evaluation criteria and matrix, and confirm selection of Recommended Technically Preferred Alternative Solution based on consultation;
- Conduct detailed analysis of environmental impacts and develop mitigation measures for Technically Preferred Alternative Solution;
- Prepare Conceptual Design for Technically Preferred Alternative Solution;
- Community Liaison Committee Meeting #2, and
- Prepare Project Plan and issue Notice of Filling (30-day review period).

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