

## Existing Environmental Conditions Memo

To: Mississippi Valley Conservation Authority

From: Lindsay Bennett, Biologist  
McIntosh Perry Consulting Engineers Ltd.

c.c. Lisa Marshall, Manager, Environmental Engineering  
McIntosh Perry Consulting Engineers Ltd.

Date: February 20, 2024

Re: Kashwakamak Lake Dam– Existing Environmental Conditions Memo

---

## INTRODUCTION

The Kashwakamak Lake Dam (**Photo 1**) is located along the main channel of the Mississippi River and is owned and maintained by the Mississippi Valley Conservation Authority (MVCA). The structure is situated approximately 8 km east of Fernleigh on Lot 21, Concession 10, Clarendon Ward, in the North Frontenac Township. Kashwakamak Lake lies within the Georgian Bay Eco-region and is located in the 5E-11 Ecodistrict of Bancroft and is part of the Mississippi River, western sub-watershed (Mississippi watershed is divided into three sub-watersheds). The Kashwakamak Lake Dam, hereafter referred to as the study area, is one of six (6) major dams in the Mississippi River that is used to alleviate drought and flooding. The dam structure consists of a small concrete saddle dam with an overflow weir spillway, and a two - sluices that each contain a 10 timber stop logs (0.3m high x 0.3m wide x 3.43m long).

The dam, originally constructed in 1910, is now over 100 years old with deteriorating concrete in several areas. The proposed project aims to completely replace the Kashwakamak Dam to mitigate the risk of the dam overtopping and failing.

L. Bennett of McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) conducted a site visit on June 6<sup>th</sup>, 2023 to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area.

## **METHODOLOGY**

### **Background Review**

As part of the background review, the following background documentation and related information sources were reviewed prior to McIntosh Perry conducting field investigations of the Study Area to identify natural heritage features and constraints:

- Township of North Frontenac Official Plan (2017);
- Mississippi Valley Conservation Authority's Public Mapping Tool (2023);
- The Land Information Ontario (LIO) Metadata Management Tool Aquatic Resource Area (ARA) database (MNRF, 2023a);
- The Fish ON-Line database (MNRF, 2023b);
- Department of Fisheries and Oceans Canada (DFO) SAR mapping tool (DFO, 2023);
- LIO was consulted for natural heritage information in the vicinity of the Study Area (MNRF, 2023c);
- Natural Heritage Information Centre (NHIC) Make a Map Data Tool (NHIC, 2023);
- The Atlas of the Breeding Birds of Ontario (OBBA) (Cadman et al., 2007);
- The Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2023);
- The Ontario Butterfly Atlas Online (OBAO) (Toronto Entomologists' Association, 2023);
- iNaturalist (iNaturalist, 2023); and
- eBird (eBird, 2023).

### **Field Investigations**

McIntosh Perry staff conducted a single field investigation on June 6, 2023, to inspect the study area for any natural environmental features (e.g., fish habitat, ecological land classification, SAR bat habitat, etc.). Environmental conditions at the time were extremely smoggy with poor air quality from forest fires occurring in northern Ontario and Quebec. Conditions were warm (20°C) and cloudy with 100% smog/cloud cover. The field investigations included a walkthrough of the study area to document existing conditions (i.e., Ecological Land Classification) and document SAR and their habitat. Areas within the study area, where access was not permitted, or inaccessible, were observed using binoculars. The study area was inspected for hollow and snag trees that may be suitable for bat maternity roosting habitat, as well as Butternut and Black Ash within 25 m of each of the proposed alternative bridge structure locations.

The vegetation communities observed within the study area were characterized using the (ELC) protocol (Lee et al., 1998), and delineated on an aerial photograph. During the field investigations, observations of wildlife species were made through sight, sound, and physical evidence.

## DESCRIPTION OF THE NATURAL ENVIRONMENT

### Existing Land Use

The study area lies within the Township of North Frontenac, with the site itself located along Kashwakamak Lake on Lot 21, Concession 10. According to the Township of North Frontenac's Official Plan (2017) the shores of the lake are zoned as:

- Waterfront Area
- Crown Land
- Rural

The shores of Kashwakamak Lake are also home to over 500 cottages/ residences, as well as resorts and marinas. Kashwakamak Lake is also upstream of manomin (*Zizania palustris*) rice (or wild rice) crops, which are culturally important to the Ardoch Algonquin First Nation, Alderville First Nation, and potentially other First Nations. The landscape is dominated by forests, lakes, wetlands (both evaluated and unevaluated), and is largely undeveloped.

The study area itself is only accessible by a private road off North Frontenac Road 506, which is surrounded by Mixed Forest (FOM) and Open Aquatic [(OAO) i.e., Kashwakamak Lake) communities (see **Figure 1**).

The forest itself should be considered as potentially suitable high-quality bat maternity roosting habitat (see **Figure 2**).

No Butternut or Black Ash were observed during the site visit, however, the north side of the shoreline was not assessed due to there being no access.

A Snapping turtle (Special Concern under the ESA) was observed to be present within Kashwakamak Lake.

Photos from the field investigations have been included in **Appendix B** of this memo.

**Figure 1** illustrates the Ecological Land Classification features observed within the study area.

**Figure 2** illustrates natural heritage features of the Study Area based on the field investigations.

### Natural Heritage System Components

Using the provincial NHIC (2023a) database as well as the Townships's OP (2017), the following natural heritage features have been identified in the study area:

- Woodlands (NHIC 2023a)

No other natural heritage system components are identified as being present.

### Landscape, Soil and Geology

The Study Area is situated in the Bancroft Ecodistrict (5E-11) within the Georgian Bay Ecoregion. Over half of this ecodistrict is covered by mixed (35%), deciduous (14%), and coniferous forests (25%), with large areas characterized by base-rich (e.g., marble) Precambrian bedrock. Land use in 5E-11 is driven by timber harvest, mineral and aggregate extraction and mining. Other less significant land uses are settlement and associated infrastructure (1%) and protected areas (5%) (Henson and Brodribb 2005).

The Study Area is in the Upper St. Lawrence section of the Great Lakes-St. Lawrence Forest Region, characterized by predominantly deciduous forests, dominated by sugar maple, American beech, red maple, yellow birch, basswood, white ash, largetooth aspen, red oak, and bur oak. Other tree species occurring in the Upper St. Lawrence section include white oak, green ash, grey birch, rock elm, blue-beech, and bitternut hickory. White elm is typically prominent in contemporary settled landscapes. Less frequent species in this section include butternut, eastern cottonwood, slippery elm, black maple, silver maple, and black ash. Coniferous trees such as eastern hemlock, white spruce, and balsam fir occur frequently on shallow, acidic, or eroding materials. Eastern white pine, red pine, black spruce, and eastern white cedar may be found where soil conditions are favorable (Rowe 1972).

The geology of the area is influenced by the underlying Precambrian bedrock, which is found throughout Bancroft Ecodistrict 5E-11. The surficial geology of the Study Area is shown as being dominated by Paleozoic bedrock-rift complex (Ontario Geological Survey 2019).

Regional physiography is characterized by acidic morainal material (97%) covering a rolling landscape, with several areas of bare bedrock outcroppings (Henson and Brodribb 2005). Rowe (1972) shows the Study Area being located within a large area of Till Moraine. Additionally, the soils have good drainage due to the coarse texture of the deposit types.

### **Groundwater, Surface Water and Fish Habitat**

The study area lies within Kashwakamak Lake, where LIO (MNR 2023b) identifies the lake as having a cool - warmwater water thermal regime with fish present (**Photos 2-4**). The lake, and the Mississippi River downstream of the dam, provides permanent fish habitat where potentially suitable spawning habitat may be present both upstream and downstream of the study area. Spawning habitat is potentially present for Walleye, White Sucker, and bait fish (i.e., minnow sp.) downstream within the Mississippi River, with spawning habitat potentially present for Largemouth Bass, Smallmouth Bass, Sunfish species (*Lepomis sp.*), and bait fish species upstream (**Figure 2**).

#### *Physical Characteristics of Kashwakamak Lake (MVCA, 2018)*

<b>Elevation (m)</b>	261
<b>Emergency Spillway Elevation (m)</b>	261.67
<b>Surface Area (ha)</b>	1191
<b>Drainage Area (sq. km)</b>	417
<b>Maximum Depth (m)</b>	22
<b>Mean Depth (m)</b>	8
<b>Volume (m<sup>3</sup>)</b>	9.7 x 10
<b>Perimeter (km)</b>	66
<b>Elevation of Dam Deck (m)</b>	262.06
<b>Weir Elevation (m)</b>	261.06
<b>Total Storage Volume (ha. M)</b>	3822
<b>Hydraulic Capacity (cms)</b>	65

The Department of Fisheries and Oceans (DFO) does not identify any aquatic SAR or SAR habitat within the study area.

The following species have been identified as occurring in Kashwakamak Lake (MNR, 2023b):

- Banded Killifish (*Fundulus diaphanous*)
- Bluegill (*Lepomis macrochirus*)
- Bluntnose Minnow (*Pimephales notatus*)
- Brook Stickleback (*Culaea inconstans*)
- Brown Bullhead (*Ameiurus nebulosus*)
- Burbot (*Lota lota*)
- Cisco (*Coregonus artedii*)
- Common Shiner (*Luxilus cornutus*)
- Fallfish (*Semotilus corporalis*)
- Golden Shiner (*Notemigonus crysoleucas*)
- Iowa Darter (*Etheostoma exile*)
- Lake Whitefish (*Coregonus clupeaformis*)
- Largemouth Bass (*Micropterus salmoides*)
- Logperch (*Percina sp.*)
- Northern Pike (*Esox Lucius*)
- Pumpkinseed (*Lepomis gibbosus*)
- Rock Bass (*Ambloplites rupestris*)
- Slimy Sculpin (*Cottus cognatus*)
- Smallmouth Bass (*Micropterus dolomieu*)
- Spoonhead Sculpin (*Cottus ricei*)
- Spottail Shiner (*Notropis hudsonius*)
- Walleye (*Sander vitreus*)
- White Sucker (*Catostomus commersonii*)
- Yellow Perch (*Perca flavescens*)

### **Known Fish Spawning**

There is a large population of Walleye that are known to occur at Kashwakamak Lake, where spawning takes place at the main inlet at Whitefish Rapids (flowing from Marble Lake) and several other locations along the north shore of the lake (MVCA, 2018). Whitefish Rapids is approximately 14km upstream of the Kashwakamak Dam structure. Additional species that are known to spawn in the lake include Bass, and Northern Pike. Bass have been observed to spawn throughout the lake in shallow bays, while Northern Pike are known to spawn at two locations in the extreme eastern end of the lake (MVCA, 2018). As such water levels must be maintained high enough in the early spring for successful Walleye spawning (260.5 m) and Bass spawning (261.1 m) in June. Northern Pike do not require operational constraints (MVCA, 2018). It is recommended during construction activities that water levels/ dam activity follow restrictions and guidelines outlined in MVCA (2018) and follow the restricted activity timing window described below.

### **Restricted Activity Timing Windows**

Restricted activity timing windows are applied to protect fish from impacts of works or undertakings in and around water during spawning migrations and other critical life history stages. These guidelines are set by the MNR based on location; the study area is in the MNR Southern Region. Given the known presence of the fish species, the following Restricted Activity Timing Windows for the protection of fish and fish habitat should be followed:

#### **Spawning Period – Spring**

March 15 – July 15

Given the timing restriction, work may be permitted from July 16 – March 14.

## Vegetation Cover

The vegetation cover within the study area consisted of one vegetation community surrounding the dam, which was a Mixed Forest (FOM) that is characteristic of Ecodistrict 5E-11 (**Photo 5**). The dominant tree species that were observed were Eastern hemlock (*Tsuga canadensis*) and Eastern white cedar (*Thuja occidentalis*) with American elm (*Ulmus americana*), American beech (*Fagus grandifolia*), white pine (*Pinus strobus*), red oak (*Quercus rubrum*), and paper birch (*Betula papyrifera*) occurring occasionally.

The area immediately surrounding the dam has been cleared for the access road and has a trail that runs along it for portaging (**Photo 5**), where herbaceous species such as common dandelion (*Taraxacum officinale*), Canada columbine (*Aquilegia canadensis*), cow vetch (*Vicia cracca*), Philadelphia fleabane (*Erigeron philadelphicus*), red clover (*Trifolium pratense*), Mayflower (*Maianthemum canadense*), grass species (*Poa* sp.) and royal fern (*Osmunda regalis*) were commonly encountered. Occasionally occurring herbaceous species were blue cohosh (*Caulophyllum thalictroides*), wild strawberry (*Fragaria vesca*), common milkweed (*Asclepias syriaca*), indian tobacco (*Lobelia inflata*), and northern bugleweed (*Lycopus uniflorus*).

No tree or herbaceous SAR were observed.

### *Culturally Significant Plant Species – Manomin*

Manomin, or wild rice, is an aquatic annual species of grass of cultural significance to the Algonquin First Nations. The species grows in brackish marshes, lacustrine, riverine, or along shored habitats where the water depth ideally ranges from 15 – 90cm with a soft soil layer on the bottom (OMAFRA, 2012). The species is sensitive to changes in temperature and water levels, with an ideal temperate range of between 17 – 21 °C. Wild rice is also important for several different species, as it provides food for waterfowl and habitat for furbearing mammals, snails and insects (MVCA, 2018). Manomin, although not present in Kashwakamak Lake, is found growing in Mud Lake (**Figure 3**) which is downstream from Kashwakamak Lake and subsequently affected by alterations to water levels (MVCA, 2018). Manomin is sensitive to changes in water levels, as low levels can cause them to dry and destroy seed beds with high water levels causing them to drown.

Operational constraints during construction should follow the same guidelines and restrictions as outlined in MVCA (2018). This includes having outflow being controlled during June 1 – September 30<sup>th</sup> to maintain the growth of Manomin crops and allow for harvest.

### *Invasive and Noxious Plant Species*

There were no plant species listed as Restricted under the *Invasive Species Act (2015)* observed to be present within the study area during the 2023 field investigation.

## Significant Woodlands

There are no significant woodlands present within the study area. Though the NHIC (2023a) identifies woodlands as being present within the study area, this layer, however, does not identify the woodlands as being significant and it is recommended that this be used as a starting point for municipalities to help assess if woodlands are significant within their jurisdiction.

### Significant Wetlands

There are no significant wetlands present within the study area based on background review and field truthing.

### Significant Valleylands

There are no significant valleylands present within the study area based on background review and field truthing.

### Significant Wildlife Habitat

The *Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E* (MNR 2015) provide descriptions of wildlife habitats and guidance on criteria for determining the presence of candidate and confirmed wildlife habitats. Presence or absence of candidate habitats in the Study Area is discussed below.

The natural heritage reference manual divides significant wildlife habitat into four broad categories:

1. Habitats of seasonal concentrations of animals
2. Rare vegetation communities or specialized habitats for wildlife
3. Habitats of species of conservation concern (excluding endangered and threatened species)
4. Animal movement corridors

The presence or absence of candidate habitats in the study area is assessed below in **Table 2**.

Table 2: Significant Wildlife Habitat within the Study Area		
Specialized Wildlife Habitat Category	Candidate Significant Wildlife Habitat (Y/N)	Confirmed Significant Wildlife Habitat (Y/N)
Waterfowl Stopover and Staging Areas (Terrestrial)	No	No
Waterfowl Stopover and Staging Areas (Aquatic)	No	No
Shorebird Migratory Stopover Area	No	No
Raptor Wintering Area	No	No
Bat Hibernacula	No	No
Bat Maternity Colonies	Yes	No
Bat Migratory Stopover	No	No
Turtle Wintering Area	Yes	No
Reptile Hibernaculum	No	No
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	No	No
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	No	No

**Table 2: Significant Wildlife Habitat within the Study Area**

<b>Specialized Wildlife Habitat Category</b>	<b>Candidate Significant Wildlife Habitat (Y/N)</b>	<b>Confirmed Significant Wildlife Habitat (Y/N)</b>
Colonially-Nesting Bird Breeding Habitat (Ground)	No	No
Migratory Butterfly Stopover Area	No	No
Landbird Migratory Stopover Area	No	No
Deer Yarding Area	No	No
Deer Winter Congregation Area	No	No
Cliff and Talus Slopes	No	No
Sand Barren	No	No
Alvar	No	No
Old Growth Forest	No	No
Tallgrass Prairie	No	No
Savannah	No	No
Other Rare Vegetation Communities	No	No
Waterfowl Nesting Area	No	No
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	No	No
Woodland Raptor Nesting Habitat	No	No
Turtle and Lizard Nesting Area	Yes	No
Seeps and Springs	No	No
Amphibian Breeding Habitat (Woodland)	No	No
Amphibian Breeding Habitat (Wetlands)	No	No
Area-sensitive Bird Breeding Habitat	No	No
Marsh Bird Breeding Habitat	No	No
Open Country Bird Breeding Habitat	No	No
Shrub/Early Successional Bird Breeding Habitat	No	No
Terrestrial Crayfish	No	No
Special Concern and Rare Wildlife Species	Yes	No
Amphibian Movement Corridors	No	No
Deer Movement Corridors	No	No

Based on the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E* (MNRF, 2015), Candidate SWH was determined to be present within the study area for four categories: Bat Maternity Colonies, Turtle Wintering Area, Special Concern and Rare Wildlife Species, and Turtle and Lizard Nesting Habitat

### *Candidate Bat Maternity Colonies*

Candidate Bat Maternity Colonies are present within the study area. SAR bat species utilize large diameter breast height (DBH) snag and dead trees that have potential cavities in which to roost and breed (i.e., maternity colonies). These trees can be found in forested habitat adjacent to suitable foraging areas such as open wetlands and waterbodies. The FOM community had several potentially suitable SAR bat maternity roosting trees (**Photo 7**). These species are not heavily dependent on large cavity or snag trees as they often roost singly or in small groups during the maternity period. In addition, they are generally considered to utilize forested habitats at the landscape scale and often move maternity roosts between years. As described in the *Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E's Technical Guide (2015)*, candidate bat maternity colonies have the following features:

- Maternity colonies can be found in tree cavities;
- Female bats prefer wildlife trees (snags) in early stages of decay (i.e., class 1-3);
- SAR bats prefer mixed – deciduous forest types.

These are all features that were observed to be present within the study area at the time of the field visit.

### *Candidate Turtle Wintering*

Candidate turtle wintering areas are present within the study area. Kashwakamak Lake likely provides overwintering habitat, as the lake is deep enough to not freeze completely overwinter. A Snapping turtle was observed to be present during the 2023 site visit, and during the background review there were many observations of Snapping Turtle, Blanding's Turtle, and Midland Painted Turtle within and near the study area. A hatched/predated turtle nest was also observed to be present immediately adjacent to the Kashwakamak Dam structure (**Photo 9-10**). It is not anticipated that overwintering would occur immediately upstream of the dam due to flows and the habitat downstream is not considered to be conducive. However, the bays northeast of the dam and open water areas further upstream may be suitable. As described in the *Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E's Technical Guide (2015)*, candidate turtle wintering areas are described as having the following features:

- Water that is deep enough to not freeze and have soft mud substrate.
- Permanent, and large bodies of water.

These are all features that were observed to be present within the study area during the time of the field visit.

### *Candidate Special Concern and Rare Wildlife Species*

Candidate Special Concern and Rare Wildlife Species are present within the study area. During the 2023 site visit, a Snapping Turtle, and nesting feature (see Figure 2) were observed to be present. Additionally, during the background

review it was found that the following species were observed to potentially occur within a 2km radius of the study area: Eastern Whip-poor-will, Blanding's Turtle, Butternut, Eastern Ribbonsnake and a restricted species.

### *Candidate Turtle and Lizard Nesting Areas*

Candidate Turtle and Lizard Nesting Areas were observed to be present in the study area. During the 2023 site visit, a Snapping Turtle nest was observed to be present immediately adjacent to the Kashwakamak Lake dam structure (see Photos 9-10). Additionally, several rocky outcroppings, rock features and open deciduous-mixed forests were observed to be present. As described in *the Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E's Technical Guide (2015)*, candidate turtle and lizard nesting areas are described as having the following features for turtles and Five-lined skink:

- Close to water and away from roads;
- Must provide sand and gravel that turtles are able to dig in and are located in open and sunny areas;
- Skinks will nest under logs, in stumps or under loose rock in partially wooded areas;

These are all features that were observed to be present within the study area during the time of the field visit.

### **Habitat for Species at Risk**

A search of the NHIC's database, using their 1 x 1 km squares in a 2km radius surrounding the study area identified the following species, protected under the ESA, where identified as potentially occurring:

- Eastern Whip-poor-will
- Blanding's Turtle
- Butternut
- Restricted Species

Further desktop background review resulted in a total of twenty (20) SAR, which are summarized below in **Table 3**, that have been previously documented as historically occurring or have the potential to occur within the study area. Thirteen (13) of these species have been considered to have suitable habitat within the study area.

Table 3: Potential SAR habitat within the Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Federal Protection of Individual and Residence outside of Federal lands	Other Applicable Legislation	Suitable Habitat Present Within General Study Area
<b>Birds (suitable habitat for nesting or breeding only)</b>							
Barn Swallow <sup>3</sup>	<i>Hirundo rustica</i>	Special Concern (as of January 2023)	No	Threatened	Yes	MBCA	No. No suitable nesting habitat (i.e., old barns and bridges) observed to be present within the study area. May utilize the open water areas for feeding.
Bobolink <sup>3</sup>	<i>Dolichonyx oryzivorus</i>	Threatened	Yes	Threatened	Yes	MBCA	No. There is no suitable grassland habitat present within the study area.
Canada Warbler <sup>3</sup>	<i>Cardellina canadensis</i>	Special Concern	No	Threatened	Yes	MBCA	No. There is no suitable nesting habitat present within the study area.
Eastern Meadowlark <sup>1,3</sup>	<i>Sturnella magna</i>	Threatened	Yes	Threatened	Yes	MBCA	No. There is no suitable grassland habitat present within the study area.
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	No	Special Concern	No	MBCA	Yes. Eastern Wood-pewee is considered a habitat generalist, and suitable habitat may be present within the FOM community, as Eastern Wood-pewee is known to occur in mid-canopy layer mixedwood forests (i.e., FOM).
Red-headed Woodpecker <sup>1,3, 5</sup>	<i>Melanerpes erythrocephalus</i>	Endangered	Yes	Threatened	Yes	MBCA	Yes. Suitable habitat may be present within the FOM community. This species was not observed during the 2023 field visit but is known to be a habitat generalist who prefers open woodlands and forest edges. There are also iNaturalist observations from as recent as 2019 in the area.
Eastern whip-poor-will <sup>1,3,4</sup>	<i>Antrostomus vociferus</i>	Threatened	Yes	Threatened	Yes	MBCA	Yes. Eastern-whip-poor-will may be present within the study area as the species nests in

Table 3: Potential SAR habitat within the Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Federal Protection of Individual and Residence outside of Federal lands	Other Applicable Legislation	Suitable Habitat Present Within General Study Area
							most early successional forest types, where the species prefers semi-open/ patchy forests such as rock barrens or regenerating forests. These conditions were observed to be present within the study area.
Wood Thrush <sup>1, 2, 5</sup>	<i>Hylocichla mustelina</i>	Special Concern	No	Threatened	Yes	MBCA	Yes. There is potentially suitable habitat present within the study area as the forested sections are large enough to support Wood Thrush breeding.
<b>Mammals</b>							
Eastern Small-footed Myotis <sup>6</sup>	<i>Myotis leibii</i>	Endangered	Yes	No status	No	FWCA	No. This species prefers to utilize rocky outcroppings, caves, rock barrens or cliff and talus slopes. During the 2023 site visit, there were no cliffs or caves observed to be present within the study area.
Little Brown Myotis <sup>6</sup>	<i>Myotis lucifugus</i>	Endangered	Yes	Endangered	No	FWCA	Yes. These bat species share similar habitat preferences during their active season and are described together. They have been observed using trees as small as 10 cm DBH, but typically exhibiting early stages of decay, with cavities (usually >10 m high), loose bark, and/or leaves within forested habitats for maternity roosting purposes. Additionally, these species are known to use anthropogenic structures (e.g., houses, barns) for roosting as well (COSEWIC 2013, ECCS 2018).
Northern Myotis <sup>6</sup>	<i>Myotis septentrionalis</i>	Endangered	Yes	Endangered	No	FWCA	
Tri-colored Bat <sup>6</sup>	<i>Perimyotis subflavus</i>	Endangered	Yes	Endangered	No	FWCA	Most of the study area is considered to be a mixed forest where little brown myotis,

Table 3: Potential SAR habitat within the Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Federal Protection of Individual and Residence outside of Federal lands	Other Applicable Legislation	Suitable Habitat Present Within General Study Area
							northern myotis & tri-colored bat have a moderate potential of occurring during their active season (April – September). Additionally, there were several potentially suitable high-quality SAR bat maternity roosting trees observed to be present during the 2023 site visit.
<b>Reptiles</b>							
Eastern Milksnake <sup>2,5</sup>	<i>Lampropeltis triangulum triangulum</i>	No Status	No	Special Concern	No	FWCA	Yes. Eastern Milksnakes are habitat generalists, but prefer open areas such as pastures, meadows, prairies, rock outcrops, rights-of-way, and agricultural land near forest habitat. Potentially suitable rocky outcroppings were observed to be present in the study area.
Blanding’s Turtle (Great Lakes/St. Lawrence population) <sup>1,2,5</sup>	<i>Emydoidea blandingii</i>	Threatened	Yes	Threatened	Yes	FWCA	Yes. Kashwakamak Lake and the surrounding area provides suitable nesting and overwintering habitat. There are also records on iNaturalist in the surrounding area from as recent as earlier this spring/summer (2023). MVCA (2018) also confirms the presence of the species within pocketed wetlands in the lake.
Midland Painted Turtle <sup>2,5</sup>	<i>Chrysemys picta marginata</i>	No Status	No	Special Concern	No	FWCA	Yes. Kashwakamak Lake and the surrounding area provides suitable nesting and overwintering habitat. There are also records on iNaturalist from as recent as 2021.
Snapping Turtle <sup>2,5</sup>	<i>Chelydra serpentina</i>	Special Concern	No	Special Concern	No	FWCA	Yes. Kashwakamak Lake and the surrounding area provides suitable nesting and overwintering habitat. During the 2023 site

Table 3: Potential SAR habitat within the Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Federal Protection of Individual and Residence outside of Federal lands	Other Applicable Legislation	Suitable Habitat Present Within General Study Area
							visit an individual was also observed near the north log bay, as well as a previous turtle nest in a sandy patch of soil at the lakes edge that is also likely a Snapping Turtle nest. There are also records on iNaturalist from as recent as 2022.
Five-lined Skink (Great Lakes/ St. Lawrence Population) <sup>2,5</sup>	<i>Plestiodon fasciatus</i>	Special Concern	No	Special Concern	No	FWCA	Yes. Five-lined Skink may be observed in the study area where the shoreline of Kashwakamak Lake was observed to have large rocks and rocky outcroppings, where individuals are known to spend most of their time. There are also several records on iNaturalist from as recent as 2022.
<b>Amphibians</b>							
Western Chorus Frog (Great Lakes/St. Lawrence – Canadian Shield population) <sup>1,2</sup>	<i>Pseudacris triseriata</i>	No Status	No	Threatened	No	N/A	No. There are no wetlands or ephemeral pools Western Chorus Frog rely on for breeding present within the study area.
<b>Insects</b>							
Monarch	<i>Danaus plexippus</i>	Special Concern	No	Special Concern	No	FWCA	Yes. Suitable habitat may be present within the study area. Though no Monarch individuals were observed during the site visit, common milkweed was observed which the Monarch relies during its larval stage.
<b>Vascular Plants</b>							
Butternut	<i>Juglans cinerea</i>	Endangered	Yes	Endangered	Yes	N/A	No. No Butternut individuals were observed to be present during the 2023 site visit.

Table 3: Potential SAR habitat within the Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Federal Protection of Individual and Residence outside of Federal lands	Other Applicable Legislation	Suitable Habitat Present Within General Study Area
							Butternuts are shade intolerant and generally prefer open areas with well-drained soil, therefore, it is not believed that Butternut could survive under the FOD canopy. Butternuts are often associated with mid-successional forests, forest edges, and hedgerows (COSEWIC 2017).

<sup>1</sup> NHIC

<sup>2</sup> Ontario Nature

<sup>3</sup> Ontario Breeding Bird Atlast (2001-2005)

<sup>4</sup> eBird

<sup>5</sup> iNaturalist

<sup>6</sup> Dobbyn 1994

### *SAR Bats*

#### *Little Brown Myotis, Northern Myotis & Tri-colored Bat*

There were several high-quality potentially suitable bat maternity roosting habitat trees (i.e., cavities, large DBH, peeling bark, etc.) observed within or adjacent to the study area (**Photo 7**) suitable for these three species. This was observed to be present within the FOM community within the study area.

During the removal and replacement of the Kashwakamak Lake dam structure, there is potential for SAR bats and their habitat to be impacted should the removal of trees be required to accommodate better accessibility for construction vehicles and laydowns for vehicle parking and material storage.

Little Brown Myotis, Northern Myotis & Tri-colored Bat are SAR bat species share similar habitat preferences during their active season and are described together. They have been observed using trees as small as 10 cm DBH, but typically exhibiting early stages of decay, with cavities (usually >10 m high), loose bark, and/or leaves within forested habitats for maternity roosting purposes. Additionally, these species are known to use anthropogenic structures (e.g., houses, barns) for roosting as well (COSEWIC 2013, ECCC 2018).

Given the presence of forests (i.e., FOM), high-quality maternity roosting trees in the study area, little brown myotis, northern myotis, and tri-colored bat, have a moderate potential of occurring during their active season (April 1 – September 30).

### *SAR Herptiles*

The study area is located on Kashwakamak Lake where there are many observations from Ontario Nature, NHIC and iNaturalist for several SAR herptiles, the likelihood of each SAR herptiles presence and mitigation are outlined below.

#### *Blanding's Turtle*

Blanding's Turtles are largely aquatic and inhabit shallow lakes, ponds, slow moving creeks, and wetlands with soft organic substrates with abundant submergent vegetation. Upland habitats are used as migratory corridors between summer, winter, breeding, and nesting habitats and adults regularly travel several km between habitats. Blanding's Turtles nest in open habitat with low vegetation cover and loose, sandy and/or gravelly soil above the waterline in natural and developed habitats (COSEWIC 2016a).

No Blanding's turtle were observed during the 2023 site visit, however, there were several verified observations on iNaturalist from as recent as June of 2023 and Kashwakamak Lake provides suitable nesting and overwintering habitat. Immediately adjacent habitat is not as conducive for their summer habitats as there was not an abundance of aquatic vegetation. They may use the Mississippi River as a migration corridor.

#### *Midland Painted Turtle*

Midland Painted Turtles inhabit slow moving, relatively shallow and well-vegetated wetlands including swamps, marshes, ponds, fens, bogs, lakes, rivers, and creeks with abundant basking sites and organic substrate. Nesting habitat is usually within 1,200 m of aquatic habitat and in an open, south-facing area with sandy-loamy and/or gravelly substrate (COSEWIC 2018a).

No Midland painted turtle were observed during 2023 site visit, however, there were several verified observations on iNaturalist from as recent as 2021 and Kashwakamak Lake provides suitable nesting and overwintering habitat.

### *Snapping Turtle*

Snapping Turtles inhabit a wide range of wetland habitats including ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, soft bottoms, and dense aquatic vegetation. Adults will use streams to move between waterbodies especially during the mating season. Nesting sites are in open habitat with sandy or gravelly substrate and are often found in road shoulders (COSEWIC 2008).

During the 2023 site visit, a Snapping Turtle was observed to be present within the northern log catchment bay near the dam's structure (**Photo 8**). Additionally, a previous turtle nest was observed to be present with 5m of the dam's structure in sandy loose soil at the lake's edge (**Photo 9-10**). Turtle eggs can be challenging to identify once they have hatched, but it is believed to be a Snapping Turtle nest.

Overall, there is potentially suitable nesting and overwintering habitat for Blanding's Turtle, Midland Painted Turtle and Snapping Turtle to occur within the study area (OAO/ Kashwakamak Lake). Any work done on the construction and replacement of the existing Kashwakamak Dam should occur outside of the active turtle nesting season for Central & Northern Ontario of April 15 – October 15 or protection measures be put in place to reduce the risk of harm.

### *Milksnake*

Eastern Milksnakes are habitat generalists, but prefer open areas such as pastures, meadows, prairies, rock outcrops, rights-of-way, and agricultural land near forest habitat. They commonly feed around old buildings and barns, where rodent populations are high. Milksnakes hibernate in mammal burrows, old building foundations, old wells, hollow logs, and rock crevices (COSEWIC 2014)

No Milksnake were observed during the 2023 site visit. However, there are reports from iNaturalist of Milksnakes within ~1km of the site as recent as 2022. No suitable habitat for hibernation was observed within the study area.

### *Five-lined Skink*

The Five-lined Skink (Great Lakes/ St. Lawrence Population) is the most widely distributed lizard species in North America, where the species prefers rocky outcroppings, sand dunes, and open deciduous – mixed forest types (COSEWIC 2007). Individuals are known to spend most of their time under rocks, woody debris and other forms of cover, individuals of the Great Lakes/ St. Lawrence Population are known to occur in the Canadian Shield where they hide under rocks from the open bedrock.

No Five-lined skinks were observed during the 2023 site visit, however, there are many observations on iNaturalist from as recent as 2022.

Given the location of the study area (i.e., within Frotenac Arch) and the presence of rock features on the edge of Kashwakamak Lake, the presence of Milksnake and Five-lined skink cannot be eliminated as suitable habitat is present. However, dam replacement activities are not anticipated to impact Milksnake or Five-lined Skink.

### *SAR Birds*

#### *Eastern Wood-pewee*

Eastern Wood-pewee are found in the mid-canopy layer of deciduous and mixedwood forests with open understories and is commonly associated with edges and clearings. Forest size does not seem to be a critical factor in habitat selection; however, breeding numbers decrease with increasing development in surrounding habitat. Eastern Wood-pewee hunts aerial insects from a perch in the subcanopy (COSEWIC 2012a).

No Eastern Wood-pewee individuals were observed during the 2023 site visit, however they may be present with the FOM community.

#### *Eastern Whip-poor-will*

Eastern Whip-poor-will are nocturnal aerial insectivores in the nightjar family that nests in most early successional forest types, where the species prefers semi-open/ patchy forests such as rock barrens or regenerating forests (COSEWIC 2009). Common tree associations for Eastern Whip-poor-will nesting habitat include pine, oak, aspen and birch, all of which were observed to be present within the FOM community.

No Eastern Whip-poor-will individuals were observed during the 2023 site visit, however species-specific surveys were not completed. The access road and lake provide openings in the canopy that Eastern Whip-poor-will are known to utilize.

#### *Red-headed Woodpecker*

The Red-headed Woodpecker is considered a habitat generalist, but prefers open woodlands and forest edges, often found in disturbed areas such as cemeteries, parks, golf courses, sparsely treed pastures, and agricultural areas. Preferred nesting habitat typically requires dead limbs or snags with an open canopy (COSEWIC 2018b).

No Red-headed Woodpecker were observed to be present during the 2023 site visit, however, may use the FOM community for breeding habitat.

#### *Wood Thrush*

Wood Thrush breeds in deciduous or mixed upland forest habitat with a moderate subcanopy and open forest floor. Wood Thrush are sensitive to habitat fragmentation but will nest in forest patches as small as 3 ha. Nests are constructed in young trees or shrubs and adults primarily forage for invertebrates on the ground (COSEWIC 2012b).

No Wood Thrush were observed to be present during the 2023 site visit, however, may use the FOM community for breeding habitat.

Overall, no SAR birds were observed during the 2023 site visit. The forested area within the study area could provide potentially suitable breeding habitat (i.e., nesting) for both Red-headed Woodpecker and Wood Thrush. Additionally, any work that has the potential to harm or kill SAR birds should occur outside of their active season window, and therefore it is recommended that tree removals not be completed from April 15 – August 31. If tree removal is required during this time period the area should be screened and cleared by an Biologist.

## *SAR Insects*

### *Monarch*

Monarchs are generally associated with open habitats such as meadows, fallow fields, roadside ditches, and wetlands where they forage on flowering plants. Foraging plants often include goldenrods (*Solidago* spp.), asters (*Aster* spp.), other plants in the Aster (*Asteraceae*) family, and milkweeds (*Asclepias* spp.). Flowering crops such as alfalfa (*Medicago* spp.) may also provide an important source of nectar. Breeding habitat is limited to areas with abundant milkweed plants, which are the sole food source for caterpillars (COSEWIC 2016b).

No Monarch individuals were observed during the 2023 site visit, however, their host plant common milkweed (i.e., suitable reproductive habitat) and foraging habitat (i.e., wildflower patches) were present.

## **Conclusion**

Overall, the study area has the potential to support several SAR, contains several candidate significant wildlife habitat features, as well as potentially sensitive fish spawning habitat that may be affected during the dam replacement activities. During the site visit potentially suitable SAR bat maternity roosting trees, SAR bird habitat within the FOM, SAR turtle and lizard nesting and overwintering habitat present within and around the shores of Kashwakamak Lake, rock structures (i.e., rocky outcroppings) that may be utilized by Milksnake and Five-lined Skink, the host plant (milkweed) for Monarch, and potentially suitable fish spawning habitat were observed.

It is anticipated that there will be impacts to the surrounding woodlands, however, the removal of a small portion of trees to complete the dam replacement will likely not be significant, nor will it affect ecological function.

Additionally, if the replacement of the dam occurs in the existing location, it will only temporarily affect fish and fish habitat, and is expected that any damage to existing fish habitat will be restored post- construction. If the dam replacement structure needs to be placed downstream, then sensitive fish spawning habitat (see **Figure 2**) will likely be impacted due to alterations in the habitat. This design alternative would impact approximately 100 m<sup>2</sup> of sensitive fish habitat and would need to be reviewed by DFO.

A better understanding of the Kashwakamak Lake Dam rehabilitation design and the trees, if any, that will be proposed to be removed to facilitate construction of the dam is required to accurately identify impacts on species at risk and their habitat. Once the dam's design has been selected and the limits of construction are confirmed, more appropriate impact assessment and mitigation measures, and any relevant seasonally surveys for SAR birds and SAR bats (i.e., spring/summer) will be recommended to determine if appropriate.

The rehabilitation/replacement of Kashwakamak Lake Dam will require consultation with regulatory agencies including, but not limited to the following:

- A *Request for Review* will be submitted to the DFO following the guidance documents on preparing the form;
- Any in-water work within the study area must be conducted during appropriate timing windows for fish approved by the Kingston District of the MNRF. The timing windows will be implemented to avoid harm to fish and fish habitat

**Kashwakamak Dam  
Existing Conditions Memo**

*February 20, 2024*

---

- It is not anticipated at this time that consultation with MECP will be necessary. Further determination will be made upon selection of the Technically Preferred Alternative.

Please contact the undersigned if you have any questions.

Respectfully,

**McIntosh Perry Consulting Engineers Ltd.**



---

Lindsay Bennett, M.Sc.

Biologist

Cell: 819-209-5081

[l.bennett@mcintoshperry.com](mailto:l.bennett@mcintoshperry.com)

**References:**

- Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier. 2007. The Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, Ontario Nature. Toronto, Ontario.
- Committee On The Status Of Endangered Wildlife In Canada (COSEWIC). 2007. COSEWIC assessment and update status report on the Five-lined Skink *Eumeces fasciatus* (Carolinian and Great Lakes/ St. Lawrence population) in Canada. Committee On The Status Of Endangered Wildlife In Canada. Ottawa. vii + 50 Pp
- COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle *Chelydra serpentina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
- COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi+ 28 pp
- COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee *Contopus virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm))
- COSEWIC. 2012b. COSEWIC assessment and status report on the Wood Thrush *Hylocichla mustelina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp
- COSEWIC. 2013. COSEWIC Assessment And Status Report On The Little Brown Myotis *Myotis Lucifugus*, Northern Myotis *Myotis Septentrionalis* And Tri-Colored Bat *Perimyotis Subflavus* In Canada. Committee On The Status Of Endangered Wildlife In Canada. Ottawa. Xxiv + 93 Pp
- COSEWIC. 2014. COSEWIC assessment and status report on the Eastern Milksnake *Lampropeltis triangulum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 61 pp.
- COSEWIC. 2016a. COSEWIC assessment and status report on the Blanding's Turtle *Emydoidea blandingii*, Nova Scotia population and Great Lakes/St. Lawrence population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xix + 110 pp
- COSEWIC. 2016b. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 59 pp.
- COSEWIC. 2017. COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 74 pp.
- COSEWIC. 2018a. COSEWIC assessment and status report on the Midland Painted Turtle *Chrysemys picta marginata* and the Eastern Painted Turtle *Chrysemys picta* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 107 pp.
- COSEWIC. 2018b. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.
- Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Don Mills, Ontario.

- Environment and Climate Change Canada (ECCC). 2018. General Nesting Period of Migratory Birds in Canada. Accessed March 2023. <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratorybirds/general-nesting-periods/nesting-periods.html>.
- eBird Canada. 2023. Ottawa- Retrieved March 2023 from eBird Canada: <https://eBird.org/hotspot/L2181669>.
- geoOttawa. 2023. Retrieved February 2023 from geoOttawa: <http://maps.ottawa.ca/geoottawa/>
- Google Earth Pro Ver. 7.3.2.5776. 2023. Google Earth
- Halloran, J., Anderson, H., and Tassie, D. 2013. Clean Equipment Protocol for Industry. Stewardship Council and Ontario Invasive Plant Council. Peterborough, ON. Accessed March 2023 from: [https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol\\_June2016\\_D3\\_WEB-1.pdf](https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf)
- iNaturalist. 2023. "Homepage". Accessed April 2021. <https://www.inaturalist.org/home>.
- Kingston. 2022. City of Kingston Official Plan. Accessed May 2023 from: <https://www.cityofkingston.ca/business/planning-and-development/official-plan>
- Land Information Ontario (LIO). 2023. Land Information Ontario Natural Heritage Mapping Tool. Retrieved January 2023 from: [http://www.gisapplication.lrc.gov.on.ca/matm/Index.html?site=Make\\_A\\_Topographic\\_Map&viewer=ATM&locale=en-US](http://www.gisapplication.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=ATM&locale=en-US).
- Macnaughton, A., Layberry, R., Cavasin, R., Edwards, B., and C. Jones. 2020. Ontario Butterfly Atlas Online. Accessed February 2023 from: [http://www.ontarioinsects.org/atlas\\_online.htm](http://www.ontarioinsects.org/atlas_online.htm).
- Ministry of Natural Resources and Forestry (MNRF). 2023a. Land Information Ontario (LIO). On-line Natural Heritage Mapping and Natural Heritage Information Database
- MNRF. 2023b. Natural Heritage Information Centre (NHIC). Provincial status of plants, wildlife and vegetation communities database. Ministry of Natural Resources and Forestry, Peterborough. <http://www.mnr.gov.on.ca/MNR/nhic/nhic.html>
- MNRF. 2023c. Fish ON-Line. Accessed March 2023 from: <https://www.lioapplications.lrc.gov.on.ca/fishonline/Index.html?viewer=FishONLine.FishONLine&locale=en-CA>
- MNRF. 2015. Technical Notes Species at Risk (SAR) Bats. Regional Operations Division.
- MNRF. 2014. Survey methodology – use of buildings and isolated trees by species at risk bats. Guelph District.
- Mississippi Valley Conservation Authority (MVCA) Interactive Property Map. Accessed May 2023 from: <https://camaps.maps.arcgis.com/apps/webappviewer/index.html?id=70831905961e470988262c7a703a56af>
- MVCA. 2018. Mississippi River Watershed Management Plan. Final Report. 383 p

- Natural Heritage Information Centre (NHIC) database. 2023. Make a Map: Natural Heritage Areas. Retrieved February 2023 from:  
[https://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR\\_NHLUPS\\_NaturalHeritage&viewer=NaturalHeritage&locale=en-US](https://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US)
- Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA). 2012. Specialty Crops: Wild Rice. Retrieved December 2023 from: Specialty Croppportunities - Wild Rice (gov.on.ca)
- Ontario Nature. 2023. Ontario Reptile and Amphibian Atlas Program. Retrieved February 2023 from  
[http://www.ontarionature.org/protect/species/herpetofaunal\\_atlas.php](http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php).
- Toronto Entomologists' Association. 2019. Ontario Butterfly Atlas. Accessed April 2021. <https://www.ontarioinsects.org/atlas/>.
- Township of North Frontenac Official Plan (2017). Retrieved May 2023 from:  
<https://www.northfrontenac.com/en/township-services/resources/Documents/Zoning/Official-Plan.pdf>
- Wester, M.C., B.L. Henson, W.J. Crins, P.W.C. Uhlig and P.A. Gray. 2018. The Ecosystems of Ontario, Part 2: Ecodistricts. Ontario Ministry of Natural Resources and Forestry, Science and Research Branch, Peterborough, ON. Science and Research Technical Report TR-26. 474 p. + appendices

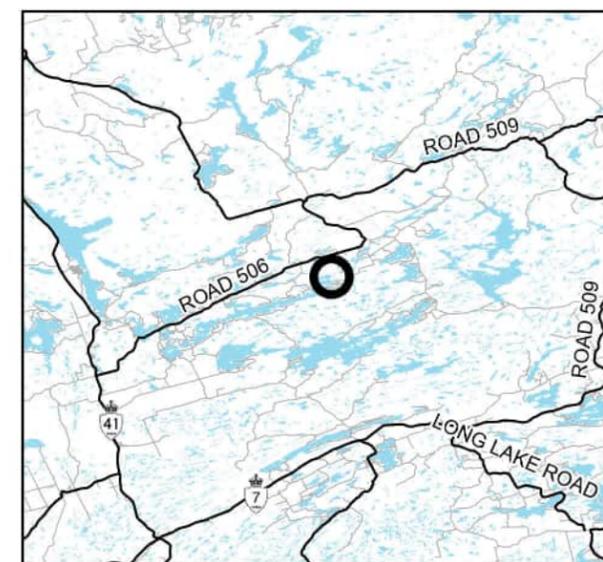
## APPENDIX A: STUDY AREA FIGURES

C:\Users\M.Grunstra\Documents\Projects\2023\CCO\CCO-23-3603\_MVCA\_Kashwakamak Dam EA\appx\Environmental\CCO-23-3603\_Existing\_Conditions.aprx



**LEGEND**

- Approximate Dam Location
- Study Area
- Open Aquatic (OAO)
- Mixed Forest (FOM)
- Waterbody



**REFERENCE**

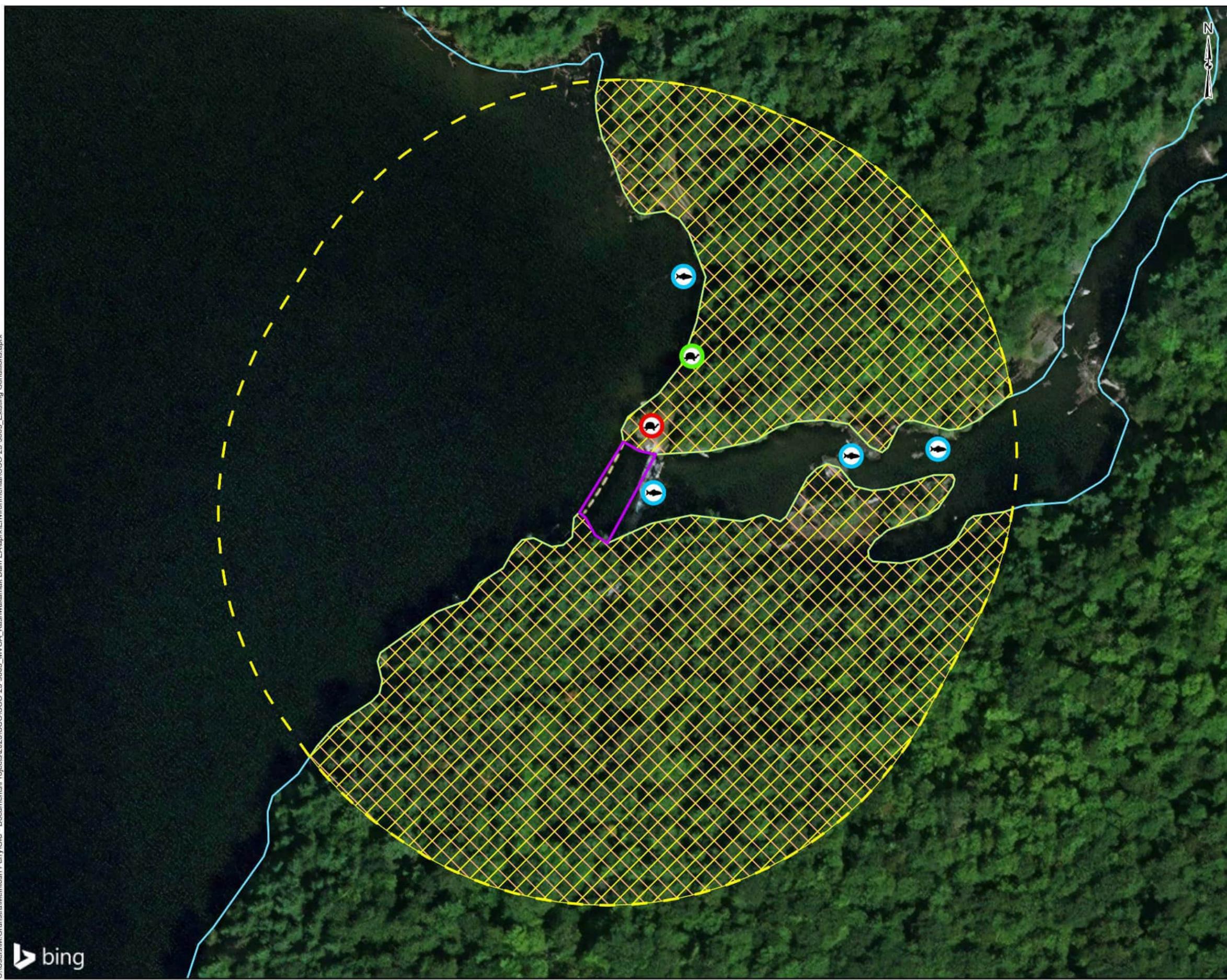
GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.



<b>CLIENT:</b>	MISSISSIPPI VALLEY CONSERVATION AUTHORITY	
<b>PROJECT:</b>	EXISTING CONDITIONS REPORT	
<b>TITLE:</b>	ECOLOGICAL LAND CLASSIFICATION	
<b>McINTOSH PERRY</b> <small>115 Walgreen Road, RR3, Carp, ON K0A1L0                  Tel: 613-836-2184 Fax: 613-836-3742                  www.mcintoshperry.com</small>	<b>PROJECT NO:</b> CCO-23-3603	<b>FIGURE:</b>
	Date	Jul., 24, 2023
	GIS	MG
	Checked By	LB
		1

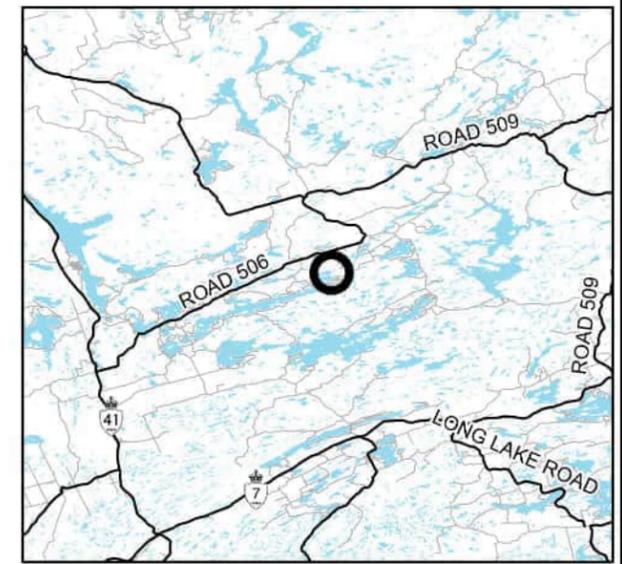


C:\Users\M.Grunstra\Documents\Projects\2023\CCO\CCO-23-3603\_MVCA\_Kashwakamak Dam EA\Approximate Dam Location\CCO-23-3603\_Existing Conditions.aprx



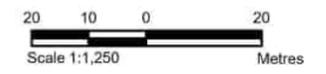
**LEGEND**

-  Potentially Sensitive Fish Spawning Habitat
-  Snapping Turtle Observation
-  Turtle Nest Location
-  Approximate Dam Location
-  Study Area
-  Potentially Suitable SAR Bat Maternity Roosting Habitat
-  NHIC woodland
-  Waterbody

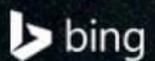


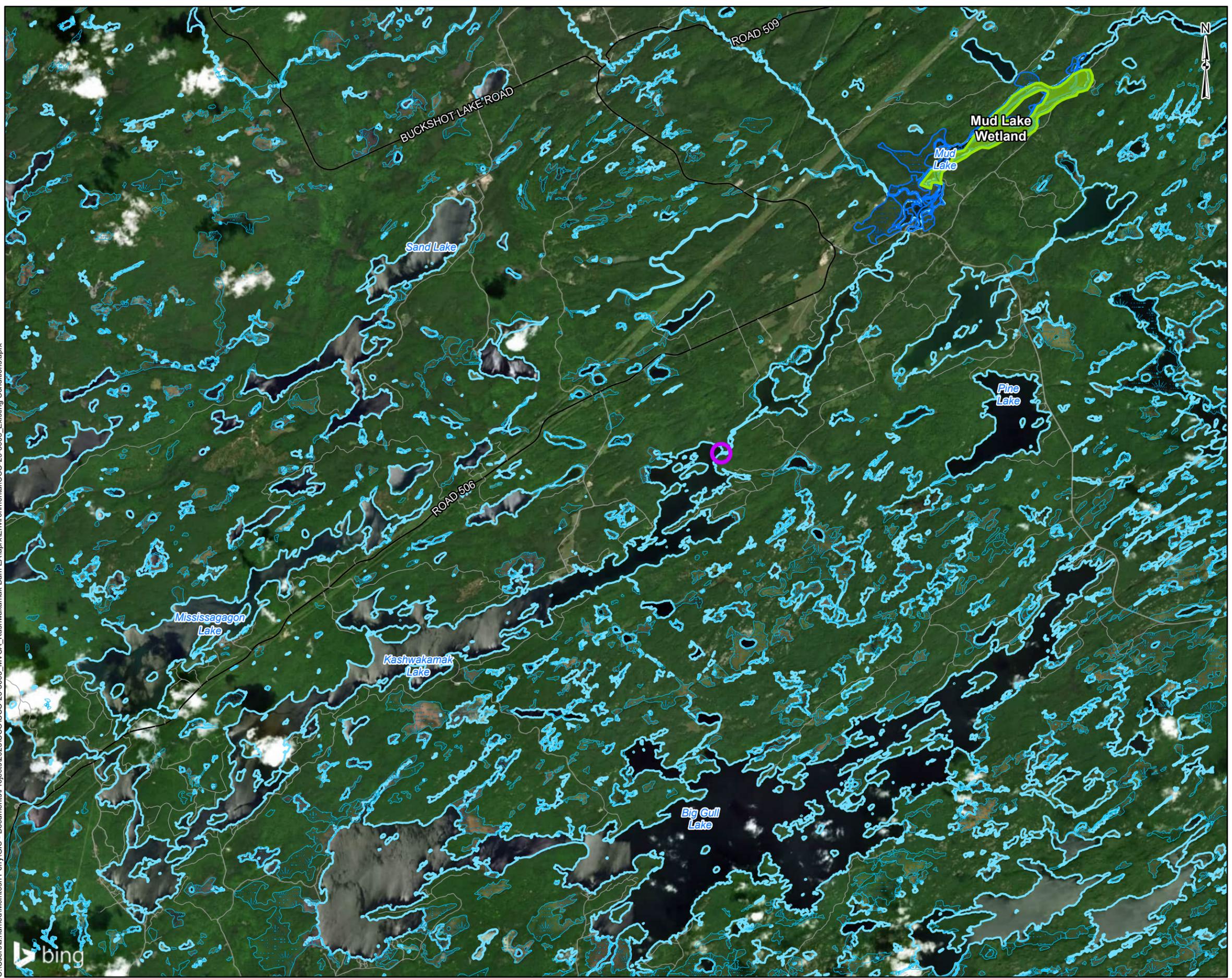
**REFERENCE**

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.



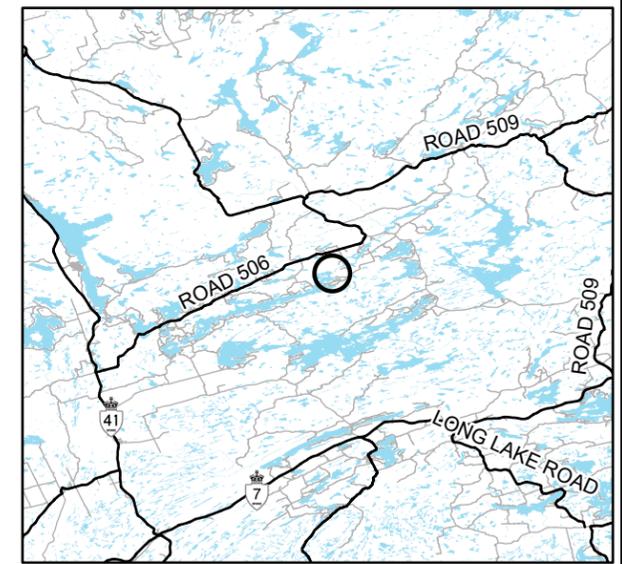
CLIENT:	MISSISSIPPI VALLEY CONSERVATION AUTHORITY	
PROJECT:	EXISTING CONDITIONS REPORT	
TITLE:	NATURAL HERITAGE FEATURES	
<b>McINTOSH PERRY</b> <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>	PROJECT NO: CCO-23-3603	FIGURE:
	Date: Aug., 21, 2023	<b>2</b>
	GIS: MG	
	Checked By: LB	



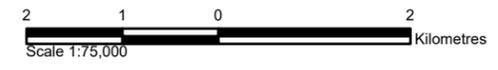


**LEGEND**

- Kashwakamak Lake Dam
- Manòmin
- Unevaluated Wetland
- Provincially Significant Wetland
- Waterbody
- Major Road
- Local Road



**REFERENCE**  
 GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2023.



CLIENT:	MISSISSIPPI VALLEY CONSERVATION AUTHORITY	
PROJECT:	EXISTING CONDITIONS REPORT	
TITLE:	LOCATION OF MANÒMIN	
 <small>115 Walgreen Road, RR3, Carp, ON K0A1L0          Tel: 613-836-2184 Fax: 613-836-3742          www.mcintoshperry.com</small>	PROJECT NO: CCO-23-3603	FIGURE:
	Date	Dec., 15, 2023
	GIS	MG
	Checked By	LB
		<b>3</b>

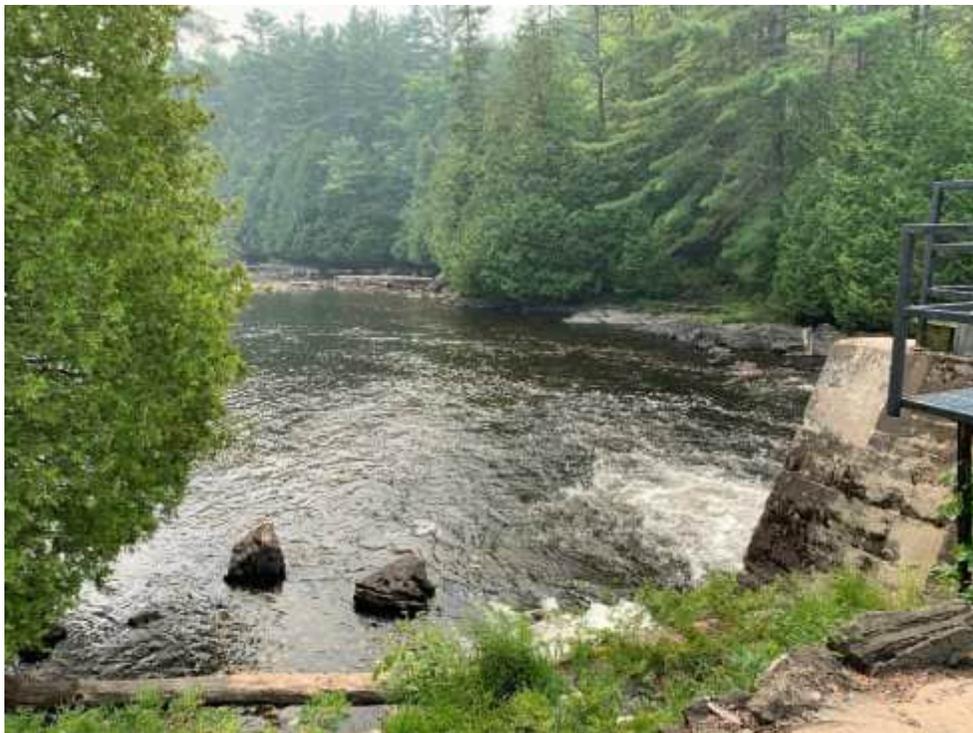
C:\Users\hamed\OneDrive\Documents\Projects\2023\COO\COO-23-3603\_MVCA\_Kashwakamak Dam EA\aprx\Environmental\COO-23-3603\_Existing Conditions.aprx



## **APPENDIX B: STUDY AREA PHOTOS**



*Photo 1: Existing conditions of the Kashwakamak Lake Dam structure to be replaced, facing north.*



*Photo 2: Existing conditions of Kashwakamak Lake, downstream of the dam structure. Facing east*



*Photo 3: Existing conditions of Open Aquatic ELC community observed at Kashwakamak Lake, facing west.*



*Photo 4: Existing conditions of log catchment bay, facing south.*



*Photo 5: Existing conditions of Mixed Forest (FOM) community observed and canoe portage pathway downstream of Kashwakamak Lake dam. Facing east.*



*Photo 6: Existing conditions of Canadian Shield/ rocky outcroppings located on the lake edge that be utilized by Milksnake or Five-lined Skink. Facing east.*



*Photo 7: Existing conditions illustrating a potentially suitable high-quality bat maternity roosting tree, with several cavities. Facing up*



*Photo 8: Existing conditions of log catchment bay, where a Snapping turtle was observed to be present. Facing south.*



*Photo 9: Existing conditions illustrating an old turtle nest within 2m of the Kashwakamak Lake dam structure. Facing south.*



*Photo 10: Existing conditions of observed turtle nest, likely that of a Snapping turtle. Facing down.*