Hannan Hills

Environmental Impact Study

Cavanagh Developments

CIMA+ file number: A001535

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27 May 2025 – Review 001

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Confidentiality and ownership

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Register History			
No.	**Reviewed by**	**Date**	**Description of the review**
001	ML/AQ	2025-01-27	Updated following completion of Site Investigations and changes to ESA
002	ML/AQ/SDL	2025-05-27	Updated following comments

List of Acronyms and Definitions

ANSI	Area of Natural and Scientific Interest
BHA	Butternut Health Assessment
BHE	Butternut Health Expert
CASAR	Canadian Aquatic Species at Risk
CC	Coefficient of Conservation
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DBH	Diameter-at-breast Height
DFO	Fisheries and Oceans Canada
EIA	Environmental Impact Assessment
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	*Endangered Species Act, 2007*(Provincial)
FA	*Fisheries Act*
FWCA	*Fish and Wildlife Conservation Act, 1997* (Provincial)
GPS	Global Positioning System
NAD 83	North American Datum 1983
UTM	Universal Transverse Mercator
LIO	Land Information Ontario
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual
MBCA	*Migratory Bird Convention Act, 1994* (Federal)
MECP	Ministry of Environment, Conservation and Parks
MNR	Ministry of Natural Resources
MVCA	Mississippi Valley Conservation Authority
OBBA	Ontario Breeding Bird Atlas
OP	Official Plan
ORAA	Ontario Reptile and Amphibian Atlas
OSAP	Ontario Stream Assessment Protocol
OWES	Ontario Wetland Evaluation System
PSW	Provincially Significant Wetlands
SAR	Species at Risk (in this report they refer to species that are provincially or federally listed as endangered or threatened and receive protection under ESA or SARA)
SARA	*Species at Risk Act* (Federal)
SARO	Species at Risk in Ontario
SWHTG	Significant Wildlife Habitat Technical Guide

SRANK Definitions

S1 Critically Imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure; uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure; Common, widespread, and abundant in the nation or state/province.

? Inexact Numeric Rank—Denotes inexact numeric rank

SNA Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#B Breeding

S#N Non-Breeding

SARA Status Definitions

END Endangered: a wildlife species facing imminent extirpation or extinction.

THR Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern: a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

SARO Status Definitions

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

Coefficient of Conservatism Ranking Criteria

0 Obligate to ruderal areas.

1 Occurs more frequently in ruderal areas than natural areas.

2 Facultative to ruderal and natural areas.

3 Occurs less frequent in ruderal areas than natural areas.

4 Occurs much more frequently in natural areas than ruderal areas.

5 Obligate to natural areas (quality of area is low).

6 Weak affinities to high-quality natural areas.

7 Moderate affinity to high-quality natural areas.

8 High affinity to high-quality natural areas.

9 Very high affinity to high-quality natural areas.
10 Obligate to high-quality natural areas

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1. INTRODUCTION

CIMA+ was retained by Cavanagh Developments (1384341 Ontario Ltd), hereafter referred to as the proponent, to update the Environmental Impact Study (EIS) for the development of a subdivision within their lands (the "Site") in Mississippi Mills, situated east of Florence Street.

1.1 Project Description

The proponent is proposing to construct a residential subdivision in the Town of Mississippi Mills and is re-submitting a Draft Plan of Subdivision and Zoning By-law Amendment. The Site will require clearing of vegetation and grading, followed by construction of the subdivision and rehabilitation of the setback from the aquatic features.

Stormwater management facilities will be treated on Site, and the development will fully be on municipal services. The Serviceability and Conceptual Stormwater Water Management Report (Novatech, 2024) notes that the stormwater management (SWM) will be a dry pond that will provide enhanced water quality treatment (i.e., min. 80% long-term total suspended solids (TSS) removal) (Novatech, 2024). That report also notes that low impact development techniques will be implemented, where feasible, to minimize any reduction of groundwater infiltration/recharge (Novatech, 2024).

The Hannan Hills Subdivision Hydrologic Impact Study (HIS) (Novatech, 2025) indicates that the existing direction of surface water drainage will not change ensuring that the quantity of water reaching the North Feature and Spring Creek Municipal Drain will remain similar (pre-development to match post-development) (Novatech, 2025).

There is an anticipated watermain crossing and, potentially, a pedestrian crossing of Spring Creek Municipal Drain. Details on these crossings are not available at this time, but they are considered herein by assuming a maximum disturbance width (Figure 1). This maximum disturbance width has been selected to allow for both temporary and permanent footprints required for these types of activities. The details of this crossing will be provided at detailed design, at which time, review by various agencies will ensure protection of the natural environment. The consultations are summarized at the end of this report.

1.2 Project Location

The Site consists of 4.15 ha and is situated east of Florence Street. It is part of Lot 16 Concession 10, in the Geographic Township of Ramsay (UTM 18T 406400 m E; 5009892 m N, and Latitude 45.23632 Longitude -74.19246) (**Figure 1**).

1.3 Background and Scope of Assessment

An Environmental Impact Assessment (EIA) (Muncaster, 2021), Wetland Description Memo (Muncaster, 2019), Blanding's Turtle Assessment (Bowfin Environmental Consulting, 2018), and

Headwater Drainage Features Assessment (including Fisheries Assessment) (Bowfin Environmental Consulting, 2021) were previously completed for the initial Draft Plan of Subdivision. Note that Bowfin Environmental Consulting (Bowfin) merged with CIMA+ in 2022 and as such, Bowfin's data is included in this report with permission. The EIA (Muncaster, 2021) was reviewed by the Mississippi Valley Conservation Authority (MVCA) who was responsible for reviewing the EIA at the time under the contact of Natural Hazards, Natural Heritage and Water Quality and Quantity policies (MVCA, 2021).

The purpose of this report is to compile the information from the aforementioned reports into a single Environmental Impact Study (EIS) and to address MVCA's comments pertaining to the natural environment (Section 6). The report also provides a summary of methods and findings of site investigations as completed by CIMA+ in 2024 as well as an updated background review.

This EIS compiles an understanding of the boundaries, attributes, connectivity, and functions of relevant environmental features present in or within 120 m (the adjacent lands) of the Site. Unless policies or legislation have changed, this report does not revisit features already evaluated and addressed in the EIA (unless additional information was required to address MVCA comments). It is highlighted that the potential for Blanding's Turtle to occur along with the proposed avoidance and mitigation measures was reviewed by the Ministry of Environment, Conservation and Parks (MECP) and that those commitments remain. Finally, the report concludes with an updated and consolidated list of recommendations on avoidance and mitigation measures to protect natural features from impacts.

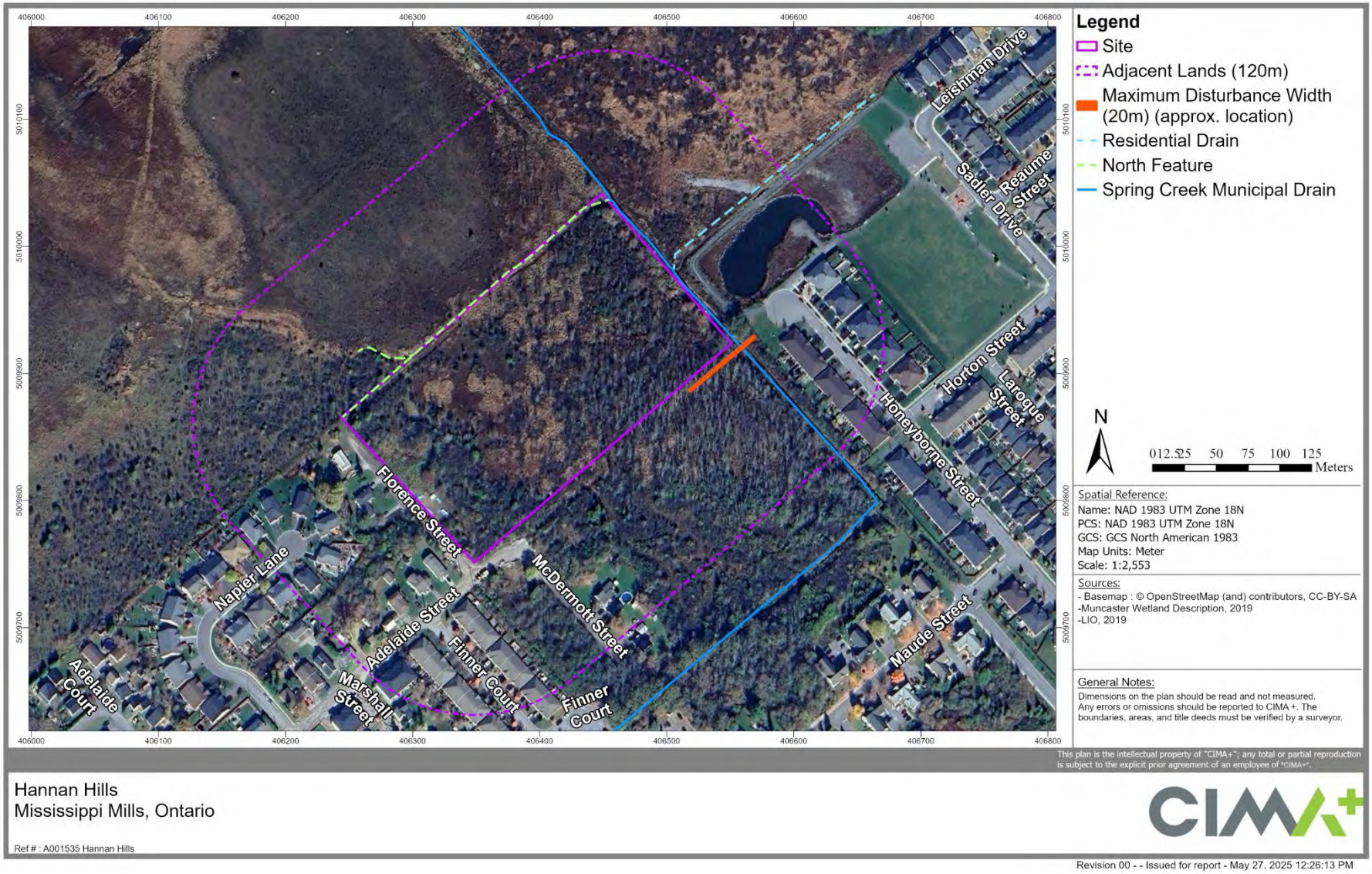

Figure 1: Site and Adjacent Lands (120 m)

2. LEGISLATIVE CONTEXT

This section includes a summary of the relevant regional, provincial, and federal acts, regulations and policies that apply to the proposed development with respect to the natural heritage features. It provides a brief description of the implications these may have for the construction of the infrastructure.

2.1 Provincial

The *Planning Act* (1990) provides the basis for land use planning in Ontario and the creation of official plans. The entire property and its surrounding lands (adjacent lands 120 m) are situated within Almonte. Planning and development are subject to the Official Plan (OP) of Mississippi Mills (Approved December 4, 2019). That OP follows the guidelines set out in the Provincial Policy Statement (PPS) (MMAH, 2020). Note that the 2014 version of the PPS is similar to the current 2020 version. This report will use the 2020 version for guidance (MMAH, 2020). The OP addresses the following features:

- Provincially significant wetlands;
- Locally Significant Wetlands or other wetlands;
- Habitat of endangered and threatened species;
- Areas of Natural and Scientific Interest (ANSIs);
- Significant woodlands / Vegetation Cover
- Fish habitat; and
    - Including Major waterways
- Ground water resources
- Significant wildlife habitat.

Note that there are no significant valleylands identified in this area and the identification of a natural heritage system has been deferred.

Table 1: Summary of Natural Heritage Features

Natural Heritage Feature	Reference for Mississippi Mills OP (2019)
Provincially Significant wetlands	Policy 3.1.3 states provincially significant wetlands (PSWs) are derived from MNRF boundaries and are depicted on the Land Use Schedules and Appendix A1. Alternations to boundaries require the approval of the Ministry of Natural Resources and Forestry (MNRF). Policy 3.1.4.1 states that no development or site alteration is permitted in PSWs. In addition, development within the 30m setback from the highwater mark would require Planning Act approval and an EIS. Development or site alteration on adjacent lands of a PSW (120 m) or

Natural Heritage Feature	Reference for Mississippi Mills OP (2019)
	LSW (50m) will be subject to an EIS and shall conform to the underlying land use designation.
Locally Significant Wetlands / Unevaluated Wetlands	None identified at this time, but can be added as an amendment to the OP. These will be evaluated as per OWES. Once identified they will receive the same protection as PSW, though the adjacent lands for these are reduced to 50m. Unevaluated wetlands may require an EIS, if requested by Council. These may also require evaluation as per the Natural Heritage Reference Manual (MNRF, 2010).
Significant Habitat of Endangered and Threatened Species (SAR)	SAR habitat is not mapped on any Schedules or Appendices. Policy 3.1.4.2 states an Ecological Site Assessment (EcoSA) is required when screening identifies potential habitat. Development is prohibited on significant habitat of endangered or threatened species, but may be permitted on adjacent lands (120 m), subject to an EIS. Note that adjacent land width may be superseded by guidelines provided by applicable provincial or federal regulations.
Areas of Natural and Scientific Interest (ANSI)	ANSIs are depicted on Appendix A1. Policy 3.1.4.3 notes that development in or within 120 metres of a life science ANSI and within 50 metres of an earth science ANSI is subject to an EIS. Alterations to boundaries require the approval of the MNRF.
Significant woodlands / Vegetation Cover	Significant woodlands are depicted on Appendix A1 from MNRF desktop data and boundaries may need to be reviewed in the field further, ground truthing is required to confirm that areas identified are in fact significant woodlands and to capture significant woodlands that may have been missed by the desktop mapping. Policy 3.1.4.4 notes development and site alteration in or within 120 m of a significant woodland may take place in accordance with the underlying land use designation and subject to an EIS demonstrating that no negative impacts to the natural feature or its ecological functions will occur. Woodlands are to be assessed on site based on the appropriate provincial protocol. Policy 3.1.4.4 requires retention or creation of native vegetation cover (including trees) within 15 m of highwater mark (except for water access that will have a maximum width of 9 m). Retention of natural vegetation along public rural roads will be encouraged as well as selective protection of significant woody vegetation in urban areas.
Fish Habitat	Policy 3.1.4.5 identifies fish habitat as defined by the *Fisheries Act*. Fish Habitat is also protected under the federal *Fisheries Act*. The *Fisheries*

Natural Heritage Feature	Reference for Mississippi Mills OP (2019)
	Act, managed by Fisheries and Oceans Canada (DFO), is the authority for decision-making with respect to fish and fish habitat. Policy 3.1.4.5 states that development and site alteration shall require a setback of a minimum of 30 metres from fish habitat. Decreases to the 30-meter setback shall only take place where it has been demonstrated through an approved study and through Planning Act approval.
Significant wildlife habitat	Significant wildlife habitat is partially mapped on Appendix A1. Policy 3.1.4.6 notes SWH shall be identified and assessed based on the appropriate MNRF reference documents. Development in or within 120 m of significant wildlife habitat shall be permitted subject to an EIS. In certain circumstances, the adjacent lands may be widened depending on the habitat identified.
Significant valleylands	There are no significant valleylands identified at this time. Policy 3.1.4.7 states that valleylands shall be depicted on Appendix A1 when they are identified, and that development and site alteration are subject to an EIS. Adjacent lands are within 120 m.

2.2 Provincial - Other

2.2.1 Endangered Species Act

The *Endangered Species Act, 2007* (ESA) prohibits killing or damaging the habitat of species that are listed on the SAR in Ontario list. Endangered (END) indicates that the species lives in the wild in Ontario but is facing imminent extinction or extirpation. Threatened (THR) indicates the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address the factors threatening it. Note that species listed as special concern are not afforded protection under the Act.

The ESA is applicable on private and provincial lands. It can also sometimes be applicable to federal lands. The relevant sections to the project are:

- Prohibition on killing or harming of END or THR individuals (Section 9)
- Prohibition on damage to END or THR habitat (Section 10)

2.2.2 Conservation Act

This Site is under the jurisdiction of the Mississippi Valley Conservation (MVCA). On April 1, 2024, changes to the *Conservation Authorities Act* and a new regulation (O. Reg. 41/24) under the *Act* came into effect. Note that O.Reg. 41/24, Prohibited Activities, Exemptions, and Permits, replaces all previous Conservation Authority development regulations. As this Act pertains to impacts to

floodplains, hazardous lands, and hydrologic functions of wetlands, the evaluation of impacts to these functions is outside of the scope of this report and are discussed in Novatech's HIS Report (Novatech, 2025). However, the evaluation of the ecological functions and the delineation of the wetland boundary are part of this EIS.

2.2.3 Fish and Wildlife Conservation Act

In addition to the protections offered by the statutes and policies noted above, the *Fish and Wildlife Conservation Act, 1997*, administered by the Ministry of Natural Resources and Forestry (MNRF), needs to be considered. This Act imposes restrictions on the hunting, trapping, and fishing of wildlife, as well as the possession of animals (live or dead). These restrictions include the capturing or harassing of specially protected wildlife or any wild bird species (not a game bird and not listed as an exception) regardless of its live stage (egg, adult) (Part II 5 (1)). It also protects nests or eggs of wild bird species (other than American crow, brown-headed cowbird, common grackle, house sparrow, red-winged blackbird, or starling) (Part II 7(1)). In case of conflicting provisions with the *Endangered Species Act,* the Act providing greater protection for the animal, invertebrate, or fish in question will prevail.

2.3 Federal

2.3.1 Fisheries Act

The *Fisheries Act,* last amended on August 28, 2019, is administered by Fisheries and Oceans Canada (DFO) and is intended to provide a framework for the management of threats to fish and fish habitat, including the prevention of pollution, regardless of their attachment to a fishery. The most relevant sections to works, undertakings and activities are:

- Prohibition of the Death of Fish (Section 34.4 (1));
- Prohibition of the Harmful alteration, disruption, or destruction of Fish Habitat (Section 35 (1)); and
- The provisional Ministerial powers to ensure the free passage of fish or the protection of fish or fish habitat with respect to existing obstructions (Section 34.3).

2.3.2 Migratory Birds Convention Act

The *Migratory Birds Convention Act, 1994* (MBCA) regulates the protection and conservation of migratory birds as populations and individuals. It also offers protection for nests containing a live bird or viable eggs for most migratory bird species. Schedule 1 under the Migratory Bird Regulations (2022) lists 18 species that may reuse nests and whose nests are protected year-round regardless of occupation, unless the nest has been reported and deemed abandoned after a waiting period. Species listed under Schedule 1 that occur in Ontario include great egret, great blue heron, cattle egret, green heron, snowy egret, black-crowned night heron, and pileated woodpecker. The Migratory Bird Regulations (2022) prohibits the disturbance, damage, or destruction of migratory bird nests or eggs. These prohibitions and regulations apply to any areas where migratory birds and their nests are found in Canada.

2.3.3 Species at Risk Act

Federally protected species are listed in 'Schedule 1' of the *Species at Risk Act* (SARA). The application of SARA varies depending on the species and the level of government with jurisdiction over the land. In general, the relevant sections are:

- Prohibition of killing, harming, harassment, capturing or taking of an individual listed as extirpated, endangered, or threatened (Section 32(1))
- Prohibition of possessing, collecting, buying, selling, or trading an individual listed as extirpated, endangered, or threatened (Section 32(2))
- Prohibition against the damaging or destruction of residences of species listed as endangered or threatened. For extirpated species, the recovery strategy must also recommend the reintroduction of the species into the wild in Canada (Section 33)

However, on lands that are not federal, Sections 32 and 33 do not apply except for aquatic species (those listed as "fish" under the *Fisheries Act* or a migratory bird as per the *Migratory Birds Convention Act, 1994* (MBCA), unless a federal order has been created.

2.4 Summary of EIS Requirements

To fulfill the requirements of the policies and legislation above, the following natural heritage features were considered for this project:

- Provincially Significant Wetlands
- Other wetlands (i.e. under MVCA jurisdiction)
- Endangered and Threatened Species and their Habitat
- ANSIs
- Significant Woodlands
- Fish Habitat
- Significant Wildlife Habitat (including Pileated Woodpecker nesting cavities)

No valleylands have been identified in this area.

3. METHODOLOGY

3.1 Study Area

Natural heritage features within the Site and adjacent lands were examined and analyzed through the review of available information from desktop research and site investigations. For the most part, the OP calls for an evaluation of the areas to be impacted directly and the adjacent lands (120 m). This area is widened when analyzing the potential for species at risk (SAR) as their protected habitats vary with the species being considered.

3.2 Background Review

Information on known natural heritage features was collected through a background review. When completing desktop reviews, a larger area (~5 km) was applied to obtain a better understanding for the local characteristics and occurrences of species at risk. The data was then reviewed and analyzed for applicable site-specific information. Information from government websites and personal knowledge has also been included as appropriate. Data sources included:

- Official Plan of Mississippi Mills (2019)
- Geographic information from Land Information Ontario (2023)
- The Ministry of Natural Resources (MNR) Natural Heritage Information Center (NHIC) Make A Map for squares (NHIC, 2023).
- Ontario Breeding Bird Atlas squares (Atlas 2- 2001 - 2005)
- Atlas of the Mammals of Ontario (Dobbyn, 1994)
- Ontario Reptile and Amphibian ATLAS (ORAA) (2019)
- iNaturalist (2022)
- eBird (2023)
- Important Bird and Biodiversity Areas (IBA, 2023)
- Global Biodiversity Information Facility (GBIF) (2023)
- Mississippi Valley Conservation Authority (MVCA, 2023)
- Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2022)
- Aerial/Satellite Imagery (ERIS, 2021)
- Other Consultant's reports including:
    - Evoy Lands, East Almonte – Wetland Description (Muncaster, 2019)
    - Hannan Hills Environmental Impact Assessment (Muncaster, 2021)
    - Hannan Hills Subdivision Headwater Drainage Feature Assessment (Bowfin, 2022)
    - Blanding's Turtle Assessment for MECP (Bowfin, 2022)
    - Preliminary Geotechnical Investigations Proposed Development – Evoy Lands Florence Street at Adelaide Street – Almonte, Ontario (Paterson Group, 2019)
    - Hannan Hills Subdivision Serviceability and Conceptual Stormwater Management Report – Draft (Novatech, 2024)
    - Hannan Hills Subdivision Hydrologic Impact Study – Draft (Novatech, 2024)

3.3 Field Studies

3.3.1 Vegetation Descriptions and Flora Observations

The vegetation community descriptions, including the wetland boundary delineation, were completed by Muncaster (Muncaster, 2021). The habitat was reviewed in 2024 to ensure that the communities remained similar to those described in Muncaster's EIS (Muncaster, 2021). The vegetation communities in both the previous EIS and this report were classified using satellite imagery and verified during field visits. Field studies were completed by systematically walking

the Site. Field investigations included a botanical inventory, and vegetation were characterized based on the appropriate methodologies: Ontario Wetland Evaluation System, Southern Manual (OWES) (MNRF, 2022) for wetland habitats and the Ecological Land Classification for Southern Ontario (ELC) (Lee *et al.* 1998) for upland habitats. Note that the MNRF's ELC and OWES definition of wetlands do not match one another. Since wetlands are to be evaluated following OWES, the determination of the presence/absence of wetland habitat was solely based on the OWES definition of wetland habitat:

> *"Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favored the dominance of either hydrophytic or water tolerant plants". (MNRF, 2022)*

As per OWES, the minimum community size is 0.5 ha and the minimum wetland size to be assessed is 2 ha unless special functions or ecological importance is identified. In that case, smaller wetland communities or wetlands may be delineated.

The upland vegetation communities was characterized using ELC to classify and map ecological communities to the community class or lower. The ecological community boundaries were generally defined through the review of satellite imagery and further refined during field investigations from lands that were accessible within the area investigated. Like OWES, the ELC protocol recommends that a vegetation community be at least 0.5 hectares (ha) in size before it is defined. Based on the composition of vegetation communities in the area investigated, patches of vegetation less than 0.5 ha were described as inclusions (if required). The information was documented and classified according to species, and locational data will be gathered using a hand-held GPS.

Plants that could not be identified in the field were collected or photographed for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2010) for both common and scientific names which are based on Newmaster et al. (1998). Authorities for scientific names are given in Newmaster et al. (1998).

3.3.2 Species at Risk Plants, Including Butternut and Black Ash Inventory

Specific attention was paid to locating species at risk (SAR) plants or plant species of conservation value listed as potentially occurring within the Site. In addition, the provincial protocols for the identification and assessment of butternut and black ash were followed.

The Butternut Assessment Guidelines were followed in 2021 and 2024 (MECP, 2021). The requirements of this protocol are summarized below:

- Surveys to be completed by a Butternut Health Expert.
- Information collected includes location (UTM coordinates using a GPS unit set at 18T NAD83), diameter-at-breast-height (dbh), tree height, canopy cover, and number of cankers.

- Each individual tree is to be assigned a number and identified (i.e., paint, preference for white) or flagged.
- Inventory included the forested area on site and the 50 m surrounding area. Where the 50 m extends into neighbouring lands, inventory was assessed over the fence.

Black ash surveys were conducted as per the Black Ash Assessment Guidelines (MECP, 2024). The following data was obtained:

- Coordinates of individual (UTM coordinates using a GPS unit set at 18T NAD83)
- Photograph of the individual
- The diameter of the stem of the tree measured at a height of 1.37 metres (dbh).
- Assessment of those that are 8 cm in dbh or larger
  - General notes on tree's health condition
  - A description of whether the tree is or has been infested by emerald ash borer and the severity of the infestation.
  - A description of factors other than emerald ash borer that may be harming the tree.
- Inventory included all wetland, riparian and lowland habitats in or within 30 m of the Site.

3.3.3 Amphibian Surveys

The amphibian work was completed by Bowfin in 2021 and is included in the Site Investigations section of this EIS (Section 5.4). That information is still relevant, and the survey was not repeated. The 2021 survey was conducted as per the evening amphibian calling surveys outlined in the Environment Canada Marsh Monitoring Program (MMP) guide. The protocol is summarized below:

- The surveys were completed three times, in the early spring, the late spring, and in the summer (once per survey period to collect data on all species).
- Observations began 30 minutes after sunset and end before midnight.
- Each station was surveyed for 3 minutes during which time the species and the calling code were recorded for each of the following distances: 0-50m, 50-100m, and >100m. Additional notes were taken on whether amphibians were in the feature being assessed. The calling codes were recorded as one of:
  - Code 1: Calls not simultaneous, number of individuals can be accurately counted
  - Code 2: Some calls simultaneous, number of individuals can be reliably estimated
  - Code 3: Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated
- Surveys were only conducted if the wind strength was Code 0, 1, 2 or 3 on the Beaufort Wind Scale.
- The MMP protocol calls for the stations to be separated by at least 500 m; however, in this instance, the stations were positioned to capture the amphibian data on the various headwater drainage features and as such, some stations were closer.

3.3.4 Breeding Bird Survey

The 2024 daytime breeding bird surveys followed the *Birds and bird habitats: guidelines for wind power projects* (MNRF 2020), and consisted of:

- Minimum of three visits between May 24 and July 10.
- Visits will be spaced at least 10 days apart
- Surveys will begin no earlier than 30 minutes after dawn and completed by four hours after sunrise.
- Visits will be conducted on days with little to no rain, little to no wind (up to 3 on the Beaufort scale), and good visibility.
- The survey type will consist of point-counts:
  - 10-minute point count stations generally spaced 250m apart (or as near as 100 m if information from all habitat types was needed).
  - Point counts consist of listening and observing over a specified time period and recording the number of birds heard/seen, their sex, location, behavior and interactions with others.
  - While walking between points, any additional observations were recorded.
- Birds will be identified by sound and/or sight.

3.3.5 Raptor Nest Survey

A raptor nest survey was completed during the leaf-off season of 2024, involving a search for individuals or evidence of nesting (such as stick nests, food caches, whitewashing of branches and foliage, accumulation of feathers/fur, or prey remains on the ground or in shrubs as per the Significant Wildlife Habitat Technical Guide (SWHTG) Appendix O).

3.3.6 Leaf Off Nest Survey for Species Protected by Migratory Bird Regulation

The potential for species with year-round nest protection to occur was completed. For this Site, these would be heron or Pileated Woodpecker nests. Surveys for nests were completed by walking transects and searching with binocular during leaf-off period. With respect to Pileated Woodpecker nests, trees larger than 25 cm dbh were scanned with binoculars for cavities. Appropriate nests were dome shaped, with the following dimensions: 10-13 cm high and 7-10 cm wide (ECCC, 2022). If more than one such hole present is present in a decaying tree, it would be considered a roosting cavity. A photograph was taken along with notes on cavity size, tree species, and tree health.

3.3.7 Bat Maternity Habitat

This was completed based on provincial guidelines established in the Bats and Bat Habitats: Guidelines for Wind Power Projects (OMNR, 2011) and the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (SWHCS) (MNRF, 2015): Alongside the leaf off nest survey, any observed tree over 10cm with a cavity, leaf clusters, or loose bark was photographed along with notes taken on cavity size, tree species, and tree health.

3.3.8 Fish Habitat and Communities

Bowfin documented the fish habitat and communities in 2021, and these results are included in this report's Site Investigations (Section 5.7). The aquatic habitats on-Site were assessed based on the point observation technique used by *Ontario Stream Assessment Protocol* (Stanfield, 2013) and the Ministry of Transportation of Ontario (MTO)'s *Environmental Guide for Fisheries* (MTO, 2020). This included a description of the channel morphology using evenly spaced transects upon which data was recorded from evenly spaced observation points. The following data was collected: channel width, wetted width, bankfull depth, water depth, substrate size, morphological units, temperature, and in-stream cover. The locations of the stations described are provided in the results section.

Fish community sampling was completed in both the spring and summer. The fish community was sampled using dip netting and backpack electrofishing. Individuals were identified, counted, measured [fork length (FL)/total length (TL) as appropriate], and released. The transect length, approximate width, volts, current, water conductivity, and effort were also recorded. The locations of the sampling stations are provided in the results section.

3.3.9 Incidental Fauna Observations

During all visits, any wildlife observations were recorded. Incidental observations included observations of an individual, its tracks, burrows, feces and/or kill sights.

3.4 Evaluation of Natural Heritage Features

The potential for natural heritage features to be present or significant was assessed based on the applicable municipal, provincial and/or federal guidelines. This step is completed following the site investigations and further described in Section 6 of this report.

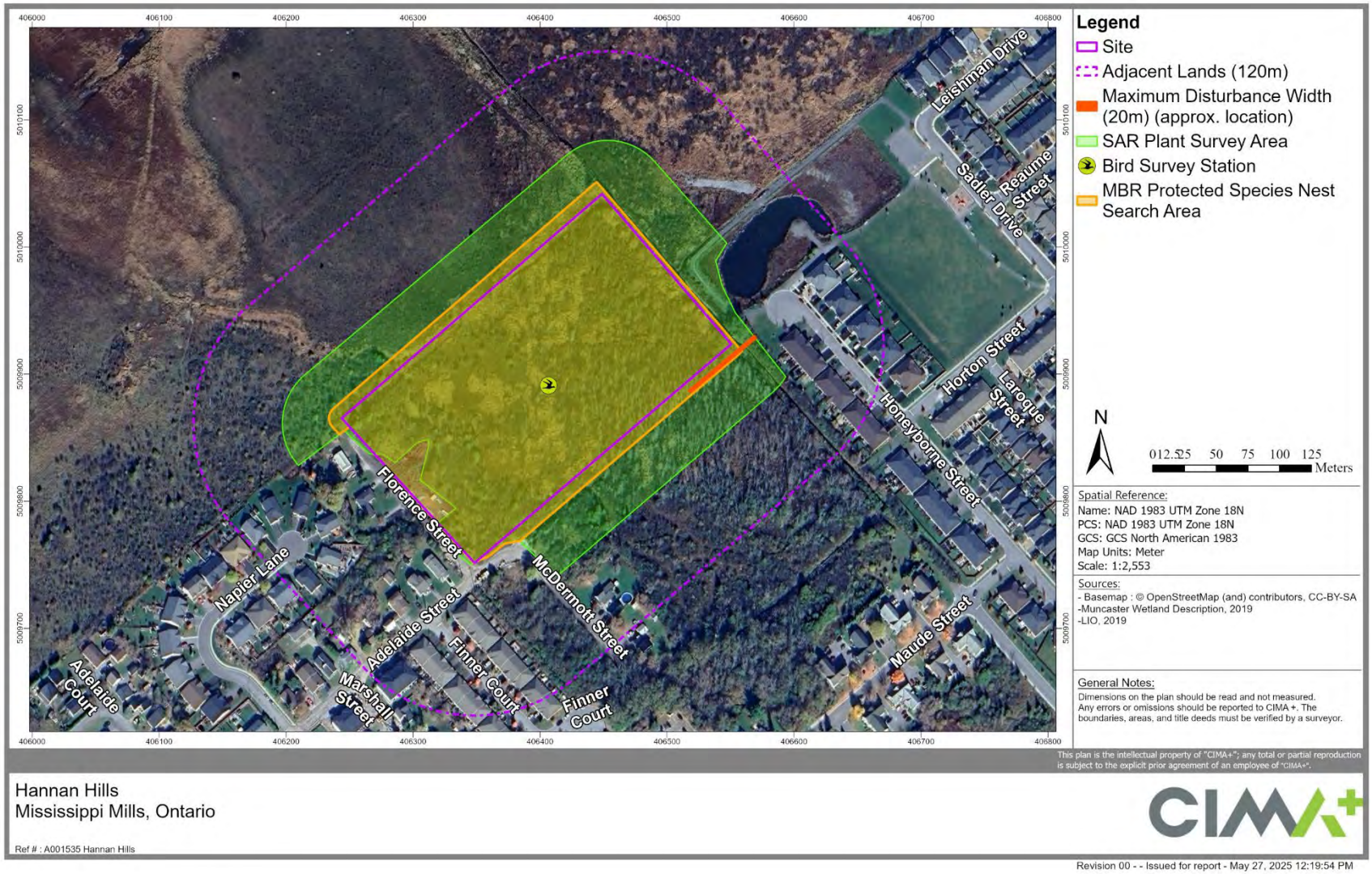

Figure 2: Butternut/Black Ash, MBR Protected Species Nest Search Area and Bird Survey Station (2024)

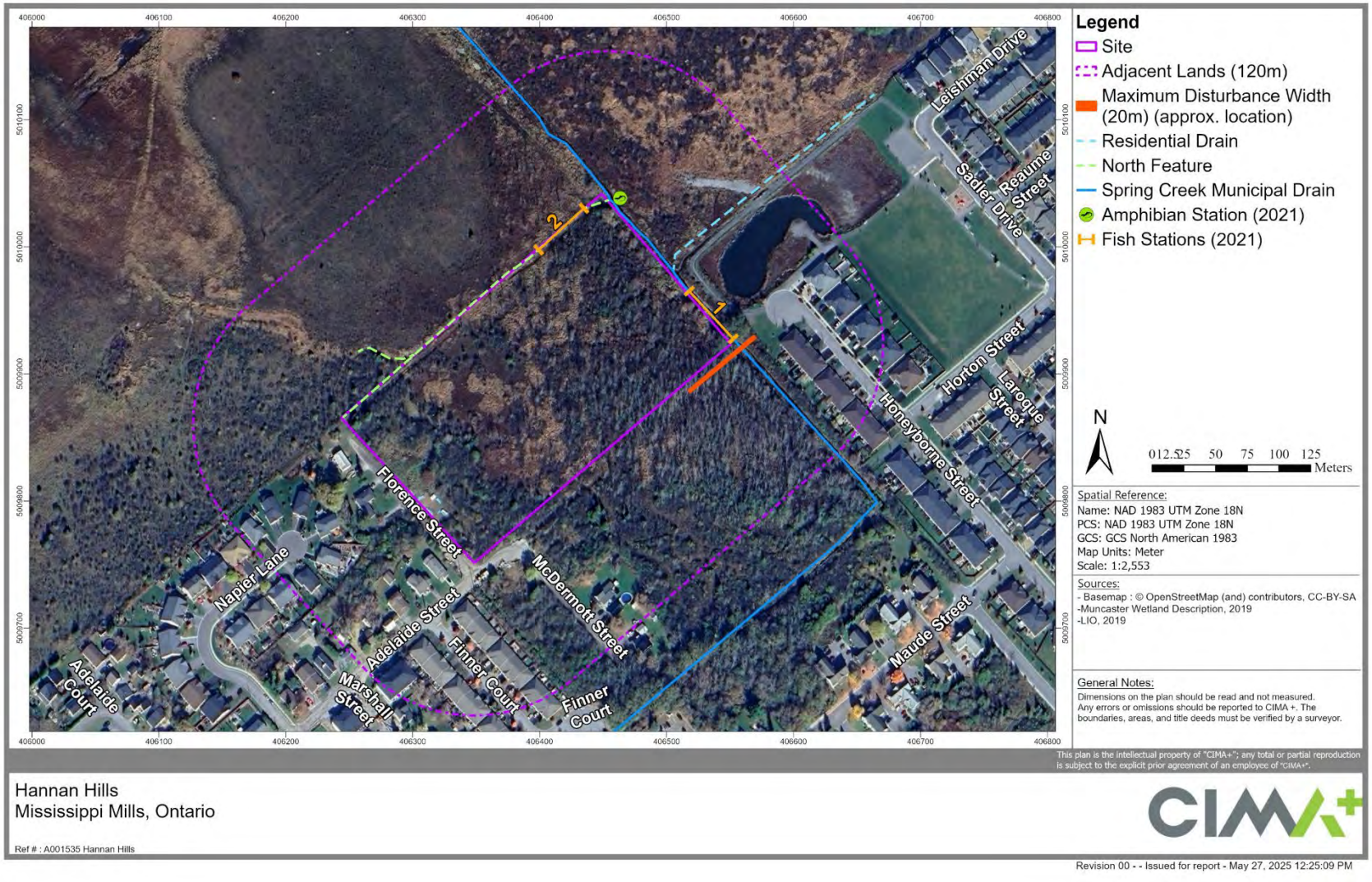

Figure 3: Location of Amphibian Survey Points and Fish Sampling Stations (2021)

4. BACKGROUND

4.1 Summary of Known Natural Heritage Features

As noted above, the lands for the subdivision approximate 4.15 ha. The surrounding lands are cleared to the north and developed (residential subdivisions) to the east, south and west. Running along the east edge of the Site is the Almonte Municipal Drain / Spring Creek. There is also a smaller, unnamed feature coming from the north and then entering the constructed straight swale along the north side of the Site (herein referred to as the "North Feature").

A review of the Municipality of Mississippi Mills interactive map (conducted June 6, 2024) confirmed that the only feature identified within the property remains significant woodland. The mapping tool noted an absence of evaluated significant wetlands, ANSIs, deer yards, fish spawning, nesting sites, environmental hazard, floodplain or environmental protection. It noted that Unevaluated wetlands and regulation limit as determined by MVCA were present (https://cgis.com/cpal/Default.aspx?CLIENT=MMILLS&MAPTYPE=Zoning). The MVCA information was also reviewed on the MVCA Regulation Public Mapping Browser which confirmed the non-evaluated wetland and regulation limits and also depicted the north feature and Spring Creek (accessed June 06, 2024). Consequently, the list of natural heritage features to be considered is as follows:

+ Unevaluated Wetlands (delineated within the Site by MEP, 2021)
+ Endangered and Threatened Species and/or their habitats
+ Significant Woodlands
+ Significant Wildlife Habitat
+ Fish Habitat (as delineated by Bowfin, 2022)
    - Spring Creek
    - North Feature

Table 2: Summary of Available Background Information on the Identified Natural Features within the Study Area

Natural Heritage Systems	Present within Area to be Impacted	Present within Adjacent Lands (120m) of Area to be Impacted	Comments
Provincially Significant Wetlands	None identified by OP, MVCA or provincial (LIO Wetland Database) mapping.		None
Unevaluated Wetlands	Both OP and MVCA mapping identified an unevaluated wetland that was on Site and continued into the adjacent lands to the north.		Discussed in Section 6.2.1
Habitat of Endangered and	None identified in previous surveys.	Blanding's Turtles were present in 2021.	Discussed in Section 6.2.1

Natural Heritage Systems	Present within Area to be Impacted	Present within Adjacent Lands (120m) of Area to be Impacted	Comments
Threatened Species (SAR)	Further investigations were completed in 2024.	This Project was submitted for review by MECP and a letter of advice was issued (August 31, 2022).	
Areas of Natural and Scientific Interest (ANSIs)	None identified by OP or LIO mapping		None
Woodlands	Present in Mississippi Mills Natural Features Mapping		Discussed in Section 6.2.3
Significant wildlife habitat	None identified by mapping, further investigations were completed in 2024.		Discussed in Section 6.2.5
Fish Habitat	None on site.	Spring Creek Municipal Drain and an unnamed tributary are present along the edge of the Site.	Discussed in Section 6.2.4
Significant valleylands	OP indicates that there are none.		None

4.2 Surficial and Subsurface Soils

The Preliminary Geotechnical Investigations report prepared by Paterson Group (Paterson, 2019) noted that the Site was flat. Based on their surveys, the subsurface conditions were described to consist of topsoil over silty sand or glacial till (gravel, cobble with some clayey silt) over shallow bedrock. They also noted some ground water on top of grey silty clay layer on the north side of the Site at 0.5 m to 1.1 m during the winter conditions. The bedrock was shallow being encountered at depths of 0.33 m to 1.70 m (Paterson, 2019).

4.3 Endangered and Threatened Species and their Habitat

Endangered and threatened species (SAR) are protected under the provincial *Endangered Species Act, 2007*. The federal *Species at Risk Act* applies only to fish species on private land. Most birds, including SAR, also receive protection from *Migratory Bird Convention Act, 1994*, and/or *Fish and Wildlife Conservation Act, 1997*. Together, provincially, and federally protected species are referred to as SAR, herein. This project is situated on private lands and as such, the evaluation of presence was completed following the province's guidelines.

A list of potential endangered and threatened species was compiled using various sources. The NHIC database provides information available to the public on SAR documented as occurring within the general area. It should be noted that not all information for all species is available to the public. Furthermore, the absence of a record does not necessarily indicate that the species is absent from the area. The purpose of the NHIC database is to help determine what species *may* occur within the project area. The background review included looking at the list of birds observed as part of the Ontario Breeding Bird Atlas (OBBA) and any SAR species listed on these lists were considered as potentially occurring within the Site. Similarly, all SAR reptiles and/or SAR amphibians included in the Ontario Reptile and Amphibian Atlas (ORAA) within the vicinity of the area investigated was included in the assessment. Added to this list were species that often occur within the general area based on personal experience or observations. Finally, there may also be Restricted Species. These species cannot be referred to but if the potential for any to occur is present along with the species' suitable habitat, then any avoidance and mitigation measures would simply be embedded with other species or natural heritage features and separate discussions held with MECP to ensure that ESA is not contravened. The resulting list includes 19 SAR:

- 1 fish
- 1 reptile
- 8 birds (Eastern Whip-poor-will is now downlisted to SC)
- 7 mammals.
- 2 plants (**Table 7**).

These species are discussed further in Section 6.2.1.

4.4 Available Information on Fish Habitat and Communities

The Site crosses one unnamed tributary of Spring Creek Municipal Drain. This Municipal Drain is a tributary of the Mississippi River which in turns flows into the Ottawa River. Spring Creek Drain runs along the edge (north/east) of the Site. The North Feature flows into the Spring Creek Municipal Drain in the northeast corner.

A review of available background information did not provide information for the North Feature; however, fish community information for Spring Creek Municipal Drain was available and obtained from the Aquatic Resource Area (ARA) database on Land Information Ontario, iNaturalist and Bowfin (2022). The resulting list contains 8 common warm to cool water species (**Appendix B**). No species at risk or of special concern were identified. This list did not include any sportfish, pan fish, or provincially listed species. There was no thermal regime information on the LIO dataset.

The DFO Canadian Aquatic Species at Risk Mapping (CASAR) indicates that there are no federally listed endangered, threatened, or special concern species in this area (see Appendix A).

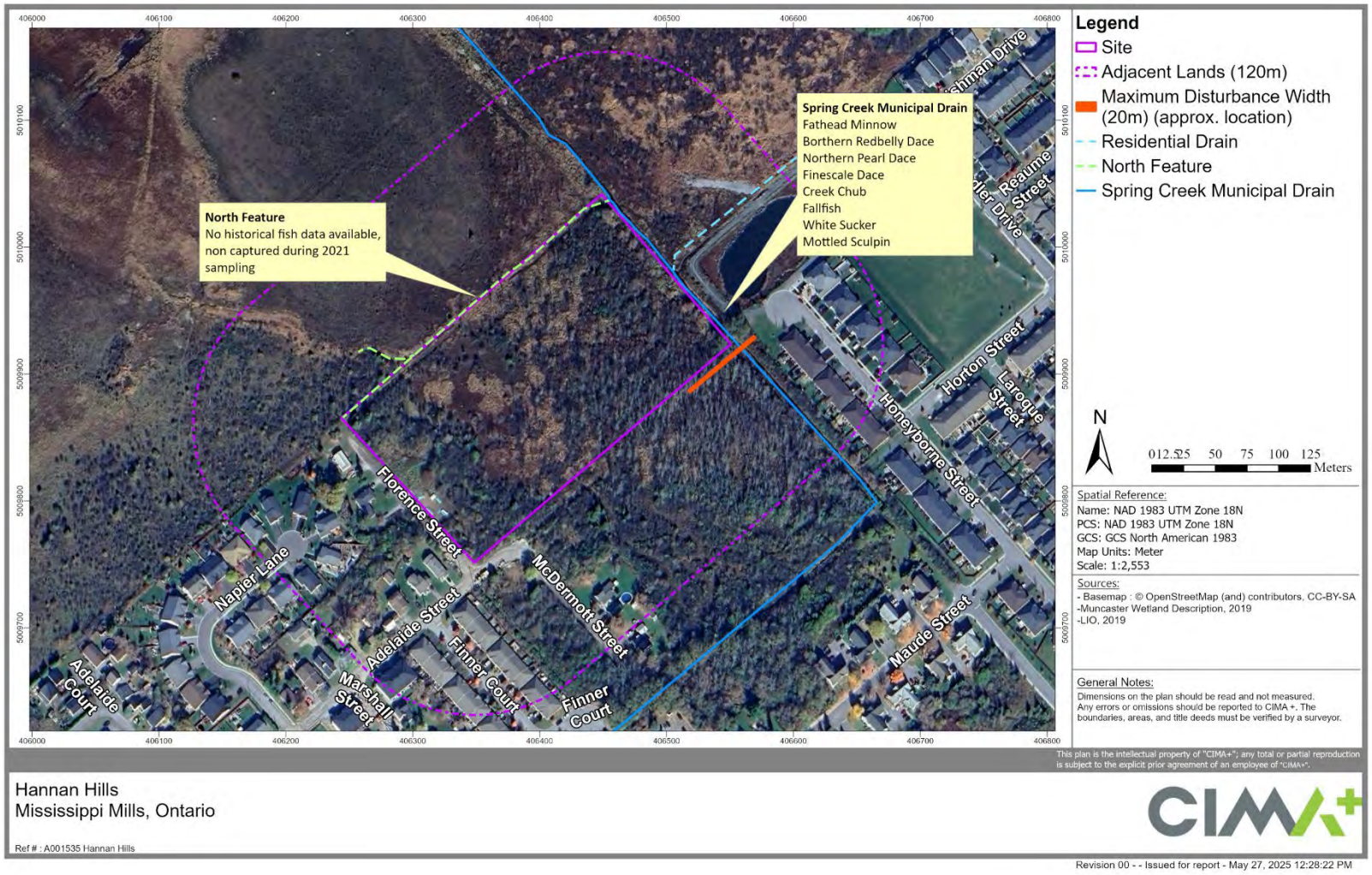

Figure 4: Summary of Background Fish Community Information

5. SITE INVESTIGATIONS

5.1 Site Visit Dates and Purpose

A summary of the dates, times, ambient conditions, and purpose for site visits completed by Bowfin or CIMA+ between 2021 and 2024 are provided in **Table 3**. Rainfall and water level conditions are included alongside the aquatic field work to capture the general watershed conditions at the time of the work. The vegetation communities are described in the section below, followed by the results from the species-specific surveys.

Table 3: Summary of Dates, Times, Conditions and Purpose of Site Investigations

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit*	Water Level Conditions*	Purpose
March 30, 2021	1345-1645	M. Lavictoire S. Lafrance A. Quinsey	14.0 (-2.3-17.8)	Partially Cloudy Wind: light air (1) to light breeze (2)	52.2	Water Safety Statement	-Flow Visit #1-Fish Community Sampling
April 7,2021	1945-2015	M. Lavictoire S. Lafrance A. Quinsey	15.0 (0.5-18.8)	Hazy Wind: light air (1)	n/a	Water Safety Statement	- Amphibian Survey #1
April 27,2021	2030-2215	S. Lafrance	12.0 (0.4-15.0)	Partially Cloudy Wind: light air (1)	9.5	Normal	-Flow Visit #2
May 5,2021	2130-2145	A. Quinsey J. Malcolm	19.0 (5.2-23.5)	Clear skies Wind light air (1)	n/a	Normal	- Amphibian Survey #2
June 17, 2021	1430-2130	S. Lafrance J. Malcolm	26.0 (8.4-26.1)	Clear skies Wind: moderate breeze (3)	15.0	Normal	-Fish Habitat Description -Amphibian Survey #3
July 27, 2021	1500-1630	A. Quinsey	n/a (13.3-18.0)	Overcast Wind: light breeze (2)	66.2*In addition,	Normal	-Flow Visit #3

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit*	Water Level Conditions*	Purpose
		J. Malcolm			6.7 mm fell on this day		-Fish Habitat Description
August 5, 2021	1400-1445	M. Lavictoire A. Quinsey	26.0 (14.3-28.8)	Partially cloudy Wind: light air (1)	n/a	Normal	-Vegetation Description
August 25, 2021	1030-1130	S. Lafrance A. Quinsey	23.0 (18.2-32.8)	Mostly Cloudy Wind: calm (0)	0.0	Normal	-Fish Community Sampling
March 26, 2024	1100-1330	A. Quinsey	9.0 (-1.2 – 11.6)	Cloudy Wind: light air (1)	1.4	Flood Outlook Statement	-Wildlife Tree Cavity visit
June 3, 2024	0845-0915	A. Quinsey	19.0 (11.9-28.6)	Clear Wind: light breeze (2)	n/a	n/a	- Bird Survey
June 17, 2024	0830-0900	A. Quinsey	17.0 (14.2-30.2)	Cloudy Wind: light breeze (2)	n/a	n/a	- Bird Survey
June 27, 2024	0845-1030	A. Quinsey	13.0 (9.1-19.3)	Clear Wind: moderate breeze (3)	n/a	n/a	- Bird Survey -SAR Plant Survey - Vegetation Description
May 13, 2025	1015-1445	J. Zientek	22.0 (9.2-26.8)	Partly Cloudy Wind: light air (1)	n/a	n/a	-Cavity Tree Survey

M. Lavictoire – Michelle (Nunas) Lavictoire – B.Sc. Wildlife Resources and M.Sc. Natural Resources
S. Lafrance – Sophie Lafrance – B.Sc. Biology and graduate diploma in Ecosystem Restoration
J. Malcolm – Janessa Malcolm – Coop Placement (B.A. Environmental Studies)
A. Quinsey – Al Quinsey - B.Sc. Environmental Biology
J. Zientek - Jake Zientek (Fish and Wildlife Technician)

*Min-Max Temp Taken From: Environment Canada. National Climate Data and Information Archive. Available http://climate.weatheroffice.gc.ca/ [May 15, 2023]
** Precipitation: none (N), light rain (LR), moderate rain (MR), heavy rain (HR)

Water Level Definitions

Flood Outlook Statement Early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high wind or other conditions that could lead to high runoff, cause ice jams, lakeshore flooding or erosion

5.2 Vegetation Communities

The original vegetation descriptions were completed by Muncaster (Muncaster, 2021) and these were reviewed in 2024 along with comments from the Bowfin Blanding's Turtle memo (Bowfin, 2022) and found to be unchanged.

The vegetation communities (minimum size 0.5 ha as per both ELC and OWES, unless a significant smaller community is identified) are described below along with the dominant plant species and a representative photograph. The wetland communities were described by an OWES certified evaluator.

The majority of the Site consists of a naturalized old field and wetland habitats. The vegetation communities listed in the EIS (Muncaster, 2021) included:

- Cultural Meadow (dominated by herbaceous species with no more than 25% cover provided by either shrub or tree species
- Deciduous Cultural Thickets (>75% canopy cover by deciduous shrubs)
- Deciduous Forests (communities with >75% canopy cover by deciduous trees)
  - Deciduous Ash
- Marshes (wetland plant species provide 50% or more cover; and community is dominated by narrow-leaved emergents (ne), robust emergents (re), and/or herbs (gc).
- Tall Shrub Swamp (live woody vegetation, from 1-6m tall, provides >25% cover)
- Deciduous Treed Swamp (live deciduous wood vegetation that is >6m tall provide ≥25% cover)

MEP's notes, along with Bowfin's from 2021, did not identify any open marsh or aquatic wetland habitat. Though MEP indicated that the water table was near or at the surface during soil sampling, they rarely found surface water (October 2018 or May 2019). They did note some surface water within the reed canary marsh and willow thicket (tall shrub swamp) communities in June 2019. Bowfin reviewed the habitats on April 27, 2021, and found no open water, no vernal pools and no surface water.

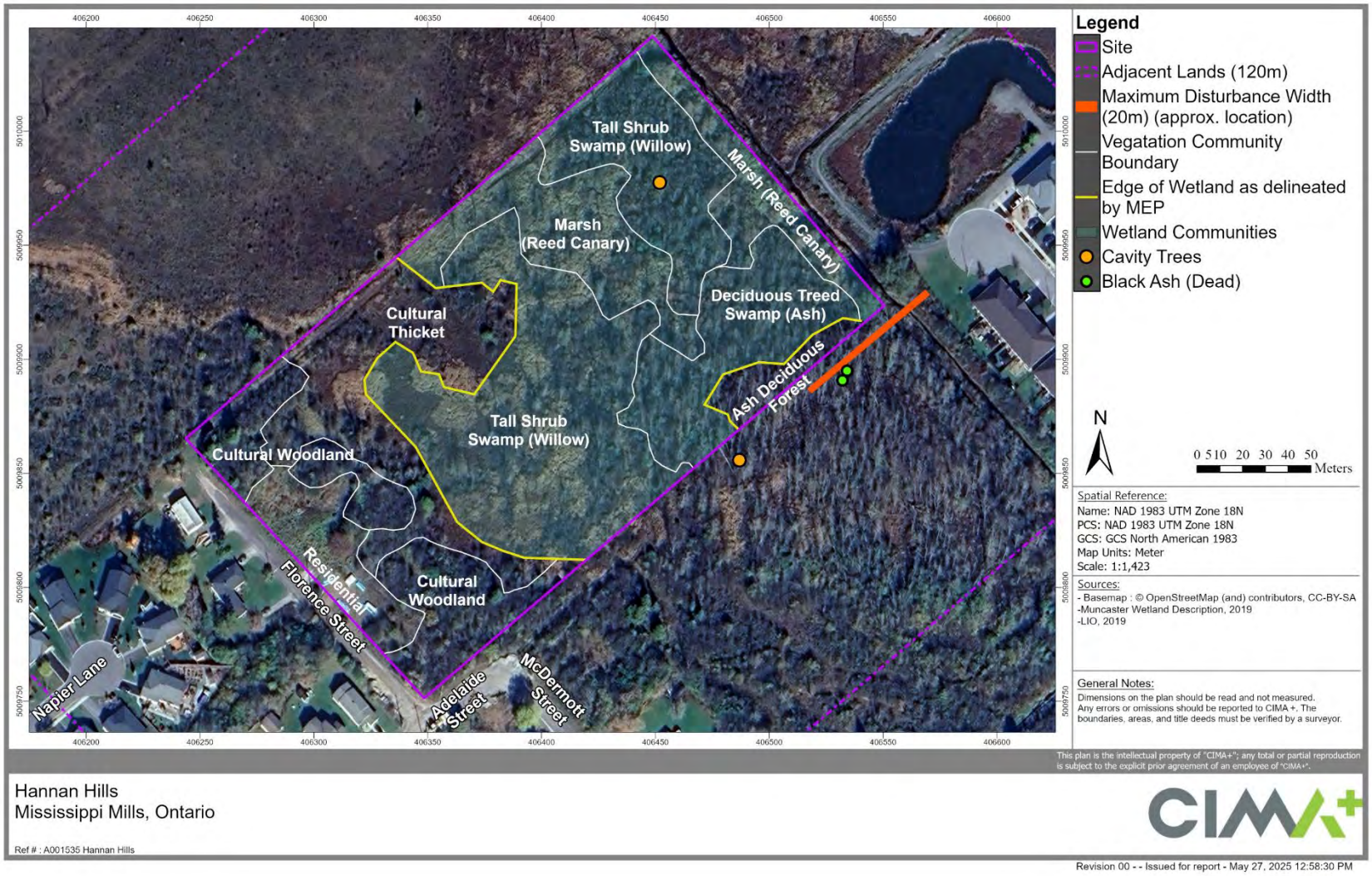

Figure 5: Vegetation Communities (Based on Muncaster, 2019)

Photo 1: Marsh (reed canary) and berm along Municipal Drain (June 27, 2024)

Photo 2: Looking south towards tall shrub swamp (June 27, 2024)

Photo 3: Looking north within treed swamp (June 27, 2024)

Photo 4: Looking south towards deciduous ash forest (March 26, 2024)

Photo 5: Looking west within marsh (reed canary) in middle of site (June 27, 2024)

Photo 6: View of tall shrub swamp in middle of site (June 27, 2024)

Photo 7: View of cultural thicket (June 27, 2024)

Photo 8: View of cultural woodland from road (March 26, 2024)

5.3 Endangered and Threatened Plant Surveys

Investigations included a search for SAR plants including the butternut and black ash inventories and assessments, as applicable, were completed in June during the appropriate conditions.

As per the 2021 results, no butternut were found.

Two dead black ash were identified within 30m of Site (10 and 13 cm in dbh), which both showed signs of damage from the emerald ash borer.

No other SAR plants were located.

Photo 9: Emerald Ash Borer gallery under the bark of a dead black ash near Site (June 27, 2024)

Photo 10: Dead crown of black ash near Site (June 27, 2024)

5.4 Amphibian Surveys

The surveys were completed by Bowfin in 2021 on evenings with appropriate conditions for amphibian call surveys. The dates were slightly early in response to the warm conditions and amphibians calling (April 7, May 5, and June 17). Few amphibians were heard calling from within the Site. Only one American Toad was heard in the Spring Creek Municipal Drain, and none were heard from the North Feature.

5.5 Breeding Bird Surveys

Three breeding bird surveys were conducted in June 2024. Visits took place in the morning on days with appropriate weather conditions. Overall, 17 species of birds were observed on-Site and within the adjacent lands, of which 10 were found likely to be breeding on Site (Mourning Dove, Blue Jay, Black-capped Chickadee, Gray Catbird, Yellow Warbler, Common Yellowthroat, Song Sparrow, Swamp Sparrow, Red-winged Blackbird, and Common Grackle).

A male Eastern Meadowlark was heard **offsite ~300m** to the north on a single occasion (June 3, 2024). However, as it did not remain and defend territory through the breeding season it is unlikely to have been breeding in this area. Similarly, an Eastern Wood-pewee (special concern) was heard offsite to the south on a single occasion (June 3, 2024).

Table 4: Birds found to be breeding on or near Site

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Breeding Evidence
Mourning Dove	*Zenaida macroura*	S5	n/a	n/a	T
Blue Jay	*Cyanocitta cristata*	S5	n/a	n/a	T
Black-capped Chickadee	*Poecile atricapilla*	S5	n/a	n/a	P/T
Gray Catbird	*Dumetella carolinensis*	S5B,S3N	n/a	n/a	T
Yellow Warbler	*Dendroica petechia*	S5B	n/a	n/a	T
Common Yellowthroat	*Geothlypis trichas*	S5B	n/a	n/a	T
Song Sparrow	*Melospiza melodia*	S5B	n/a	n/a	T
Swamp Sparrow	*Melospiza georgiana*	S5B	n/a	n/a	T
Red-winged Blackbird	*Agelaius phoeniceus*	S4	n/a	n/a	T
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	S
Common Grackle	*Quiscalus quiscula*	S5B	n/a	n/a	T

Last Updated: February 2025

Breeding Evidence Codes

Possible

S Singing male or adult producing other sounds associated with breeding (e.g., calls or drumming) in suitable nesting habitat during the species' breeding season.

P Pair observed in suitable nesting habitat during the species' breeding season.

Probable

P Pair observed in suitable nesting habitat during the species' breeding season.

T Presumed Territory based on the presence of an adult bird (usually singing, but not necessarily so), in the same suitable nesting habitat patch on at least two visits, one week or more apart, during the species' breeding season. Use discretion when using this code. "T" is not to be used for colonial birds, or species that might forage or loaf a long distance from their nesting site (e.g. Turkey Vulture, and male waterfowl).

5.6 Wildlife Trees

A leaf-off visit was completed during spring 2024 and updated in 2025. A total of 2 trees were identified with cavities, they had a decay class of 2 and 6 (as per Watt and Caceres 1999). Several of the ash trees within the swamp and forest communities had loose bark due to the emerald ash borer. No potential Pileated Woodpecker nesting cavities or raptor nests were found.

Table 5: Cavity Trees

Species	Decay Class	Cavity Number	Cavity Height	Tree Diameter	Tree Heights
Unknown	6	2	4-6	30cm	8m
Ash	2	1	1	28cm	14m

Photo 11: Cavity Tree (Decay Class 6) (March 26, 2024)

Photo 12: Cavity Tree (Decay Class 2) (March 26, 2024)

5.7 Fish Habitat and Communities

The fish habitat and community data and analysis were collected by Bowfin in 2021. CIMA+'s surveys in 2024 confirmed that the habitats remained similar to 2021.

5.7.1 Spring Creek Municipal Drain

Spring Creek Municipal Drain is a channelized drain that flowed through a straight channel in a northwest to southeast direction; along the east side of the property. The riparian habitat on the property consisted of a treed swamp and that on the east bank was vegetated with herbaceous and, on the lower end, woody species. The drain travels approximately 1 km downstream of the Site before draining into the Mississippi River.

Photo 13: Spring Creek Municipal Drain (June 27, 2024)

Station 1

Station 1 was located near the downstream end of the drain within the site and was 51 m in length. The average channel width and bankfull depths were 2.3 m and 10 cm, respectively. The average spring wetted width and depth were 2.6 m and 28 cm (range: 13-46 cm), respectively. Note that this portion of the drain had recently been cleaned making the measurements of the channel width and bankfull depths difficult. The average summer wetted width and depth were 1.7 m and 4 cm (range: 1-16 cm), respectively. There were no barriers present, and the stream morphology was a glide.

The substrate consisted almost entirely of fines, but there were a few rocks and pebbles, along with some gravel. The in-water cover throughout the station was provided by overhanging

vegetation, with some aquatic vegetation (stonewort) and small woody debris. The top of the banks were fully vegetated with reed canary grass, horsetail, sedges, grasses, goldenrod, and boneset. There were some alders and willows on the top of the banks at the downstream end of the station. The station had poor canopy cover.

During the March 31, 2021, visit, the station was electroshocked over an area of approximately 132 m^2. A total of 52 fish were captured representing 3 species: northern redbelly dace, finescale dace, and fathead minnow.

During the August 25, 2021, visit, the station was electrofished over an area of approximately 86 m^2. A total of 40 fish were captured, representing the same 3 species as in the spring.

Table 6: Summary of Spring and Summer Catches from Station 1 (2021)

Species Name	Scientific Name	No. of Fish (size range; mm)	
		March 31, 2021	August 25, 2021
Northern Redbelly Dace	*Chrosomus eos*	19 (35-63)	1 (43)
Finescale Dace	*Chrosomus neogaeus*	5 (35-62)	2 (62-64)
Fathead Minnow	*Pimephales promelas*	28 (31-67)	37 (26-57)
	Effort (s/m^2)	**4**	**n/a**
	Number of Species	**3**	**3**
	Number of Fish	**52**	**40**

Photo 14: Station 1 looking downstream from the upstream end (March 31, 2021)

Photo 15: Station 1 looking downstream from the upstream end (August 25, 2021)

5.7.2 North Feature

The North Feature flowed in a southwest to northeast direction. The feature flowed along the north edge of the property. This was a branched feature with one branch originating offsite to the north and the other from the storm water outlet at the end of Florence Street. It is this second branch that was accessible for investigations and is within 30 m of the Site. This branch was a constructed channel with no sinuosity. Only the downstream portion had been recently cleaned. The upstream section was more of a constructed swale without defined channel. The riparian within the Site was classed as woodland, thicket and treed swamp in the EIA (Muncaster, 2021). The adjacent lands contained herbaceous species. The tributary travels approximately 270 m along the site before reaching Spring Creek Municipal Drain. The lower 15 m was backwatered by the Municipal Drain.

Photo 16: Upstream end of North Channel standing at the storm water outlet (March 31, 2021)

Photo 17: Transition of habitat on North Feature. Beginning of fully vegetated swale (March 30, 2021)

Photo 18: Portion of channel that came from the north (March 26, 2024)

Photo 19: Downstream portion of North Feather that was cleaned (March 26, 2024)

Photo 20: Downstream portion of North Feather that is backwatered (March 30, 2021)

Station 2

Station 2 was located near the downstream end of the tributary and was 45 m in length. The average channel width and bankfull depths were 1.0 m and 5 cm, respectively. The average spring wetted width and depth were 0.9 m and 6 cm (range:3-17 cm), respectively. Note that this portion of the feature had recently been cleaned making the measurements of the channel width and bankfull depths difficult. The station was dry during the summer. There were no barriers present, and the stream morphology was a glide.

The substrate consisted entirely of fines. The limited in-water cover consisted of small woody debris. The top of the banks were fully vegetated with grasses. There were some alders and willows on the top of the banks. The station had poor canopy cover.

The portion of the branch coming from the north that was investigated was also heavily vegetated and rutted from ATVs.

During the March 30, 2021, visit, the station was electroshocked over an area of approximately 40 m^2. No fish were observed or captured. The station was dry during the summer.

Photo 21:Station 2 looking upstream from the downstream end (March 30, 2021)

Photo 22: Station 2 looking upstream from the downstream end (August 25, 2021)

Photo 23:Station 2 looking upstream from the downstream end (March 26, 2024)

Photo 24: Station 2 looking upstream from the downstream end (March 26, 2024)

5.8 Conclusion

Based on the background review and the site investigations, it was concluded that there were no identified provincially significant wetlands, significant valleylands, or ANSIs. The vegetation communities and landscape provide potential for other wetlands, endangered or threatened species and their habitat, significant woodlands, fish habitat, and significant wildlife habitat.

6. EVALUATION OF SIGNIFICANCE AND ASSESSMENT OF IMPACTS

As per the conclusions of the background review and site investigations, potential or known natural heritage features were identified:

- Other Wetlands (MVCA Regulated)
- Habitat of endangered and threatened species
- Woodlands
- Fish Habitat
- Significant Wildlife Habitat

The following section assesses whether these features are significant based on the OP, or the *Natural Heritage Reference Manual* (OMNR, 2010), or other legislations, as applicable. Where it is determined that a significant natural heritage feature is present or is assumed to be present, the potential impacts are determined based on the understanding of project activities and the impact assessment methods. These methods are summarized below following by the evaluation for each feature.

6.1 Review of Project Activities

The construction of the subdivision will require clearing and grading of the Site, construction of the servicing and houses. Once grading is completed, the dedicated buffers will be rehabilitated with suitable native vegetation. The previous reports established setbacks from the Blanding's Turtle and fish habitats that was reviewed by MECP and MVCA, respectively. These were 15 m from the high-water mark of the Spring Creek Municipal Drain and the very downstream end of the North Feature (portion that was backwatered from the municipal drain) and ±9 m from the North Feature. These commitments remain in place, with one exception, and they will be delineated with permanent turtle exclusion measures.

Within the Site, this project will result in the removal of 2.69 ha of wetland habitat (0.69 ha of marsh, 1.55 ha of tall shrub swamp and 0.45 ha of deciduous treed swamp), and of 1.2 ha of upland habitat (0.20 ha of cultural meadow, 0.50 ha of cultural thicket, 0.40 ha of cultural woodland and 0.10 ha of deciduous forest). Again, the removal of some of the wetland is temporary and needed for grading but will be rehabilitated back to wetland. The wetland habitat to be permanently removed is 2.33 ha. The remaining 0.36 ha of wetland is within the buffers,

and it will be rehabilitated back into wetland habitat. Rehabilitation will include the planting of native vegetation (herbaceous and woody).

A dry pond will be created for flood attenuation in the eastern corner of Site, outside of the buffer for turtle and fish habitat. As noted in the introduction, it is anticipated that service will need to cross Spring Creek Municipal Drain, as will a pedestrian crossing. While the details will be provided at detailed design, it has been assumed that the work will require the following:

Permanent footprints:

- Open cut crossing for watermain (±2.5 m diameter watermain)
- ±3.0 m pedestrian crossing
  - Will require a culvert or a bridge. Must be designed to satisfy DFO.

Temporary Footprints

- Cofferdams upstream and downstream of the in-water work area to isolate the work area from remainder of the drain during construction. Cofferdams (i.e., lager meter bag, aqua barrier or steel plates) would be positioned far enough upstream and downstream to ensure sufficient work area. It is estimated that this will be no further than 5 m from the open cut crossing/culvert installation.

Based on the above, a conservative length of drain that would be impacted is 20 m.

6.2 Impact Assessment Methods

The assessment of the potential impacts is completed by analyzing the impact of various activities associated with the project. The significance of the potential impacts is measured using four different criteria:

1. Area affected may be:
   a. local in extent signifying that the impacts will be localized within the Site
   b. regional signifying that the impacts may extend beyond the immediate Site.

2. Nature of Impact:
   a. negative or positive
   b. direct or indirect
   c. risk (certainty, understanding of impacts)

3. Duration of the impact may be rated as:
   a. short term (1-2 years)
   b. medium term (>2years)
   c. long term (>7 years).
   d. permanent

4. Magnitude of the impact may be:
   a. negligible signifying that the impact is not noticeable
   b. minor signifying that the project's impacts are perceivable and require mitigation
   c. moderate signifying that the project's impacts are perceivable and require mitigation as well as monitoring and/or compensation
   d. major signifying that the project's impacts would destroy the environmental component within the Site.

Where identified, the boundaries of any significant features are noted and the potential for the development to cause negative impacts is assessed. For those features which may be negatively impacted, avoidance and mitigation measures are recommended, as appropriate. The PPS (MMHA, 2020) states that a negative impact signifies:

> *"a) in regard to policy 2.2, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development or site alteration activities.*
>
> *c) in regard to fish habitat, any permanent alteration to, or destruction of fish habitat, except where, in conjunction with the appropriate authorities, it has been authorized under the Fisheries Act.*
>
> *d) in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities."*

6.2.1 Wetland

While there is no evaluated wetland present, an unevaluated wetland was identified that is part of MVCA's regulated habitat. The non-evaluated wetland boundary matches that in the EIA (Muncaster, 2021) and added to this is the 30 m MVCA regulation limit. As per the MVCA comment letter (Dated September 20, 2021), MVCA staff confirmed the wetland boundary in 2020. In that letter, MVCA requested additional information with are itemized below (items 1-6) along with the requested details in the sub-bullets.

1. Ecological services and functions of the wetland at the local and property scale.
   a. No open water is present on Site.
   b. No surface water is present on Site except for small shallow (<5 cm) areas within the marsh in spring during some years.
   c. No amphibians were heard calling from Site during the 2021 surveys or incidentally in 2024.
   d. No marsh birds were found on site during the 2024 surveys.
   e. The only channels are off Site: North Feature and Spring Creek Municipal Drain.
   f. Additional information on the linkages is provided in the paragraphs below.
2. Connectivity of the on-site versus the off-site wetland areas and linkages between the wetlands that could be affected.

a. Previous report noted that there was no channels connecting the habitat found on Site to that off site. This remains true. Should any of the adjacent lands to the north drain towards the south, that water would be intercepted by the North Feature. This Project will protect the functions of the North Feature.
b. Spring Creek Municipal Drain has tall banks and there is not surface water connection with this channel and the wetland habitat on Site. This Project will protect the functions of the Spring Creek Municipal Drain.
c. The wetland on Site is the downstream section of wetland that continues along both sides of the Municipal Drain. As mentioned, it is isolated from the remainder of the wetland habitat (situated offsite) due to the lack of surface water connections. Ecological linkages were restricted to the Municipal Drain itself. Additional information on the linkages is provided in the paragraphs below and under the Blanding's Turtle discussion (Section 7.1). The established 15 m buffer will serve to protect this function.

3. Maps and tables to identify the locations and size of enhancement features (on and off-site)
    a. The buffer that needs to be graded will be rehabilitated with native wetland species (including woody species).
        i. 0.36 ha will be rehabilitated.
    b. The remaining 2.33 ha will be offset through the creation of new wetland habitat. At a minimum that habitat will be similar in function as that identified on Site (tall shrub or deciduous treed swamp with no surface water features). The details of the wetland compensation plan will be supplied in a stand-alone document towards detailed design once final decisions have been made. That plan will need to be circulated to MVCA for approval.
        i. 2.33 ha will be created

4. Clarification of maintaining on-site infiltration and contributions to channel baseflow
    a. See Novatech's Serviceability and Conceptual Stormwater Management Report Hannan Hills Subdivision (Novatech, 2024).

5. Clarifications on if and where LID techniques can be implemented
    a. See Novatech's Serviceability and Conceptual Stormwater Management Report Hannan Hills Subdivision (Novatech, 2024).

6. On site hydrology to be coordinated with EIS Findings
    a. See Novatech's Hannan Hills Subdivision Hydrologic Impact Study (Novatech, 2024).

Based on the EIA, these wetland communities were restricted to the following (terminology updated to match OWES):

- Marsh – dominated by the narrow-leaved emergent reed canary grass with purple loosestrife, joe-pye weed, marsh bedstraw, yellow sedge, spotted jewelweed and broad-leaved cattail. Based on the description in the EIA, this may be a two – three form wetland with ground cover and possibly robust emergents providing the other forms, if the plants represented 25% cover.
- Tall Shrub Swamp – represented by slender willow, glossy buckthorn, red-osier dogwood, Bebb's willow, and narrow-leaved meadowsweet along with young white elm, ash, and green ash. Based on the description in the EIA, this may be a two-three form wetland with ground cover (joe-pye weed, purple loosestrife) and robust emergents (broad-leaved cattail) as the other forms if they represented at least 25% cover.
- Deciduous Treed Swamp – characterized by green and green ash with some white elm, eastern white cedar and Manitoba maple. No other forms are noted. The comments included a note that the ash were generally in poor condition due to emerald ash borer.

The portion of the wetland habitat on Site did not possess characteristics of a PSW. The total MVCA mapped wetland is estimated as 46.5 ha and runs in a northwest to southeast drainage direction (Novatech, 2024). Aerial interpretation of the wetland notes that much of the habitat to the north of the Site (orange rectangle) is naturalizing agricultural lands and the Sonnenburg lands immediately north (north of the North Feature) were recently cleared by others. There is another, MVCA wetland to the east of the Site with beaver dams and open water present which is hydrologically connected by drains. Apart from these constructed drains and beavers dams, there are few surface water features, with the bulk of the wetland appearing to be heavily vegetated. Such items as ponds/pools, channels, that serve to create greater ecological functions are mostly limited to along the municipal drain and begin upstream of the Hannan Hills site (roughly 200 m).

Photo 25: Snapshot of MVCA regulated Habitat (Site highlighted in Orange)

Ecological habitats provided by wetlands often include habitat for amphibians, turtles, wetland birds, and/or fish. More complex habitats with structure and sinuosity (creating blind spots) increase habitat use by fish and wildlife. The portion of the wetland on Site had no open water, no vernal pools, and no surface water even during the early spring (Bowfin's notes from April 27, 2021). Though standing water was present on June 20, 2019, it followed 30.6 mm of rainfall in the seven days preceding that visit.

The soils sampled lacked organics, and had a moisture regime of moist to very moist (Muncaster, 2019). The wetland is along the drain, but did not have any channels to serve as an outlet. The Spring Creek Municipal Drain has tall banks that limit direct connectivity with the wetland on Site.

The lack of vernal pools/surface water limited habitat function in terms of direct breeding habitat for frogs, foraging/mating/overwintering for turtles, waterfowl, and fish habitat. As evidenced from the 2024 breeding bird surveys, the small size of the wetland communities on Site and the forms listed in the bullets above limited its function in terms of wetland breeding birds. No colonial nesters or standing dead community that would be suitable for that function were observed by CIMA+ or MEP (Muncaster, 2019). Invasive species such as reed canary grass, and purple

loosestrife were scattered throughout and are listed on the Ontario Invasive Species website and considered non-desirable (https://www.ontarioinvasiveplants.ca/).

With respect to turtles, the value of the habitat is limited. As discussed with MECP (specifically for Blanding's turtle), the communities consisted of dense vegetation with little to no surface water (even in the spring) and the municipal drain was a shallow lotic environment with fines (not organic substrate). Its maximum depth was anticipated to be <0.5 m using the estimated bankfull average depths of 0.4 m (the drain had been recently cleaned, affecting the ability to accurately measure the bankfull values).

The North Feature was seasonal, and had a fully vegetated swale outside of the lower section that had also been recently cleaned (Bowfin, 2022). The municipal drain could provide movement corridor and the adjacent riparian (any type of natural vegetation) would be part of this movement corridor. The wetland on Site would be restricted to thermoregulation use by turtles however, there is no habitat for them to be travelling towards the west or south (fully developed). This restricts the value of the movement corridor to one that is only for movement along the drain. MECP reviewed the information and agreed to a minimum buffer of 15 m along the Municipal Drain and roughly 9-10m. The proposed subdivision, Hannan Hills, is on the far downstream side of this wetland, away from the more diverse habitat upstream, and only represents 2.69 ha of the wetland. The intent is to ensure that the commitment with MECP on the width of the travel corridor be maintained along Spring Municipal Drain allowing movement to continue upstream into the larger wetland.

As the wetland forms part of the MVCA-regulated wetlands, a permit and compensation for the loss of wetland will be required. As noted above, the wetland habitat that will remain on Site in the buffer will be revegetated with native wetland species. Since it needs to be graded, the invasive species can be removed (following best management practices from Ontario Invasive Plant Council (https://www.ontarioinvasiveplants.ca/). As the setback from fish habitat of 15m needs to be adhered to, no channels are proposed in the buffer. A robust planting plan can be created using native vegetation and additional areas for compensation, along this drain. The wetland offsetting plan is currently under development in consultation with MVCA and is a stand alone document.

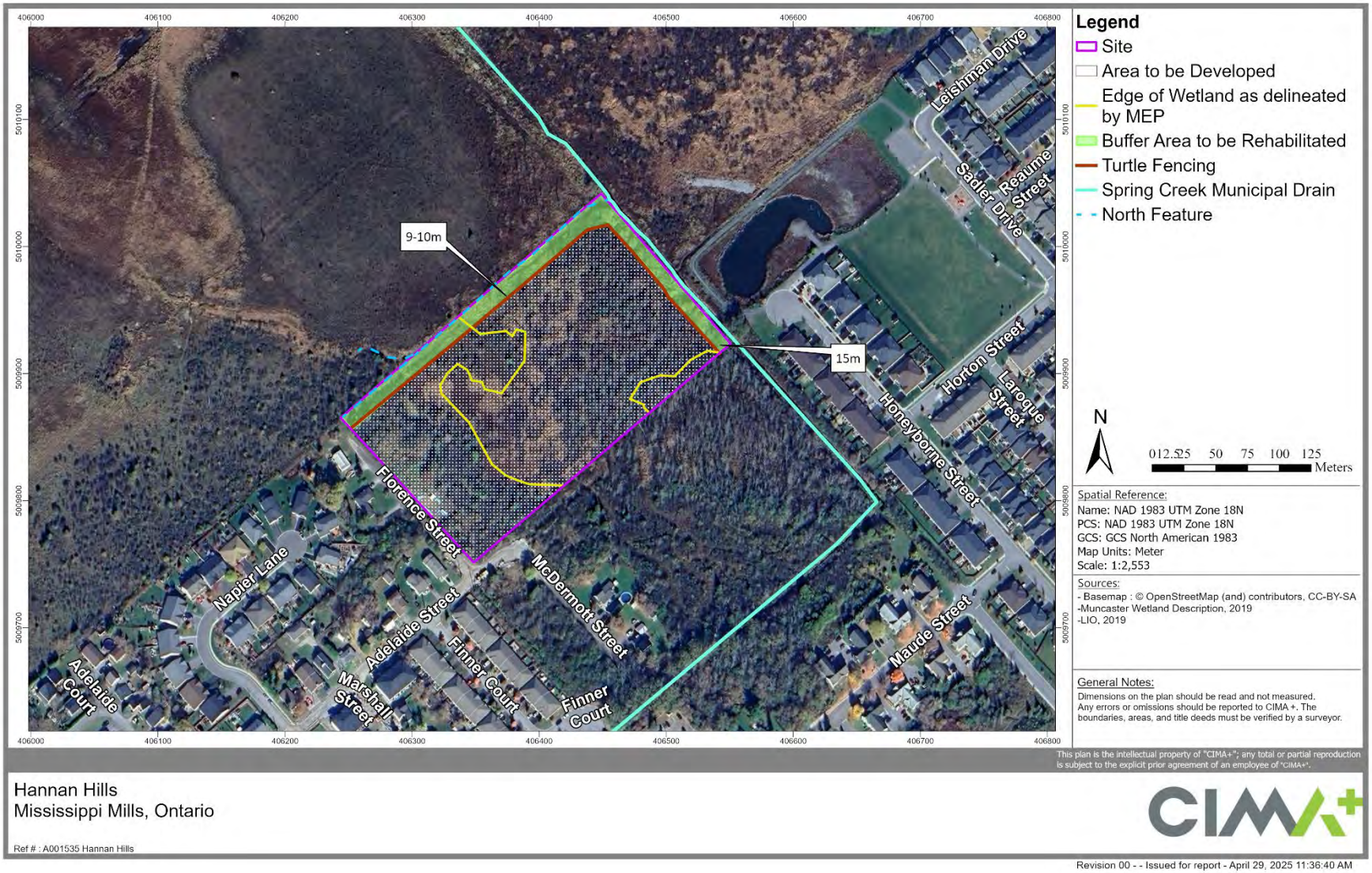

Figure 6: Wetland Area and Development Footprint

6.2.2 Habitat of Endangered and Threatened Species

Note that since changes to policies and legislations with respect to species at risk have occurred, this section has been updated since the previous reports.

A mentioned in Section 4.3, a list of 19 Endangered or Threatened species were identified as potentially occurring. These species are described in Table 7 along with their status, preferred habitats, and guidelines. The likelihood of the species or its habitat being present is then evaluated based on the data collected from site investigations, as well as legislative requirements. For some species, the federal and/or provincial governments provide guidelines on what habitats should receive automatic protection. This is usually based on distances from known sightings or suitable habitat. Federally, the habitat is typically classed based on function, while provincially, it is categorized as either regulated or general habitat. Regulated habitat has a detailed description and is prescribed in an Ontario Regulation. General habitat often splits habitat requirements into up to three categories, Categories 1-3, where 1 indicates the greatest sensitivity to disturbances. Note that Butternuts are the exception, where Category 1 individuals are least sensitive.

Where guidance is provided by the government, it is used to evaluate whether to bring the species forward for assessment. If no guidance is provided, the available literature is used to evaluate the suitability of the habitat on-site for that species. For the species brought forward to impact analysis, additional details on the species' needs, any governmental guidance, and the potential for the project to interact with the species or its habitat are discussed in the subsections below. If analysis identifies a necessity for avoidance and/or mitigation measures, then they will be provided in the next iteration of this report.

It is noted that the ESA is anticipated to undergo a regulatory review and may be replaced with the Species Conservation Act. This is best addressed as part of detailed design.

Table 7: List of Potential Endangered or Threatened Species and Identification of those Brought Forward following Site Investigations

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat	Evaluation	Brought Forward (Yes/No)
FISH							
American Eel	*Anguilla rostrata*	S1?	END	No Status	Near cover over muddy bottoms in lakes, ponds, rivers and creeks at depths <15 m; preferred water temperature range 16-19°C. (COSEWIC 2006)	Present within Mississippi River, not found within Spring Creek Municipal Drain during 2021 sampling. With low numbers, this species has not been found in smaller watercourses or drains in recent years (pers. obs.)	No
REPTILES							
Blanding's Turtle	*Emydoidea blandingii*	SNR	THR	END	Shallow water, large marshes, shallow lakes or similar such water bodies. General habitat protection is provided for suitable habitat that is within 2 km of an occurrence when certain conditions are met (COSEWIC, 2016).	Present within the adjacent lands and assumed to be present on Site. Project was reviewed by MECP.	Yes
BIRDS							
Least Bittern	*Ixobrychus exilis*	S4B	THR	THR	Freshwater marshes habitat with dense vegetation (Sandilands, 2005; COSEWIC, 2009a). Nests are typically in cattail marshes, near edge or openings but they have been found in other emergents and occasionally in willow (Woodcliff, 2007). Recovery strategy states that the species must have permanent marsh/shrub swamps and a mosaic of tall and robust herbaceous or woody vegetated with open water areas and natural regime water levels (ECCC, 2014). The open water areas can be shallow (10-50cm) (OMNRF, 2016). Movements within this suitable habitat can extend within a 500m radius of the nest (ECCC, 2014). and are usually found in those that are larger than 5 ha (COSEWIC 2009; OMNRF, 2014). The province does not currently have any	No suitable wetlands on site or within the adjacent lands.	No

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat	Evaluation	Brought Forward (Yes/No)
					guidance on the general habitat requirements of this species (COSEWIC 2009a).		
Short-eared Owl	*Asio flammeus*	S2N, S4B	THR	SC	Breeds in large (50-100ha) open areas such as grasslands, hay fields, and marshes (COSEWIC 2021).	No suitably large grasslands.	No
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR	THR	Cities, towns, villages, rural, and wooded areas. This species rarely utilizes trees; they prefer trees greater than 50 cm in diameter and that are within 1 km of waterbodies (COSEWIC 2007). Provincially, this species' protected habitat consists of Category 1 habitat, which is a human-made nesting/roosting feature or natural nesting/roosting tree cavity, as well as the area within 90 m of the natural tree cavity (MECP, 2017). No Category 2 or 3 habitats are outlined for this species (MECP, 2017).	Absent during breeding bird surveys, site has few large trees. This species is considered absent	No
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	END	END	Open deciduous woodland, woodland edges, and sparsely treed habitats. (COSEWIC, 2007; MECP, 2022). The province does not currently have guidance for the general habitat of this species, though critical habitat is identified (both federally and provincially) as the suitable habitat within a 200 m radius around a nest observation OR the 600 m around confirmed or probable breeding OR two possible breeding records within 600 m and 7 days of each other (MECP, 2022; ECCC, 2019). Observations must be from after 2001.	Absent during breeding bird surveys. This species is considered absent	No
Loggerhead Shrike	*Lanius ludovicianus*	S2B	END	END	Breeding habitat is characterized by open areas such as pastures, prairie grasslands, and agricultural fields. Nesting sites are small shrubs and trees, usually those with thorns or dense interiors (COSEWIC, 2014). The federal recovery strategy states that the species critical habitat is all suitable habitat patches in which confirmed or probable breeding evidence was observed between 2004-2008 (ECCC, 2010) OR two such observation were made in differing years between 1999-2003 as well as suitable habitat patches of which >50% fall within a 400 m radius of the	Absent during breeding bird surveys. This species is considered absent	No

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat	Evaluation	Brought Forward (Yes/No)
					observation/s. Provincially, the species' critical habitat is the 200 m surrounding a nesting site (Category 1) and 200 m surrounding the Category 1 habitat (Category 2) (MECP, 2017).		
Bank Swallow	*Riparia riparia*	S4B	THR	THR	This species nests within vertical banks, with a preference for sand-silt substrate. Nesting sites more likely near open upland habitats. (COSEWIC 2013). Provincially, the species protected habitat is the 50 m in front of a breeding colonies bank face and all suitable foraging habitat within 500 m (MECP 2015).	No suitable banks present. Will be further assessed during 2024 bird surveys.	No
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	Primarily in forage crops, and grassland habitat. It is sensitive to edge effects, size of habitat and areas with dense shrub vegetation or a litter layer deeper than a few centimetres (COSEWIC, 2010). The federal recovery strategy defines critical habitat as predetermined 10x10 km squares containing habitat with suitable biophysical attributes (ECCC, 2022). Provincially, this species protected habitat is the area extending 60 m from the nest as well as the 300 m of suitable habitat around the nest (MECP 2013).	No suitable fields on site, open habitat present to the north. As an Eastern Meadowlark was observed there is a possibility for this species to use the habitat offsite to the north.	Yes
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	Typically require larger grasslands but have been known to breed in habitats that were 1 ha in the United States. Usually, this species' defended territories consist of 2.8-3.2 ha of uncut meadow or field (OMNR, 2014b). Personal observations of successful nesting habitat for this species in Eastern Ontario have not found any successful nesting pairs in habitats that were less than 5 ha, which is estimated to be this species' approximate area requirement (COSEWIC, 2011). The federal recovery strategy requires habitat to fall within 10x10 km squares of occupancy to be considered for critical habitat. Provincially, this species protected habitat is the area extending 100 m from the nest as well as the 300 m of suitable habitat around the nest (MECP 2013).	No suitable fields on site, open habitat present to the north. None breeding on site, but one early season observation was made ~300m to the north. This species has a chance to occur.	Yes

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat	Evaluation	Brought Forward (Yes/No)
MAMMALS							
Little Brown Myotis	*Myotis lucifugus*	S4	END	END	Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Overwinter in cold and humid hibernacula (caves/mines). (COSEWIC 2013).	No rocky habitat for hibernacula or eastern small footed myotis maternity habitat. All other bats are woodland species: A single cavity tree was identified within the site; it is heavily decayed and as such is unlikely to be used. However a low potential for use remains, woodland bat maternity habitat is brought forward.	Yes
Northern Myotis	*Myotis septentrionalis*	S3	END	END	Older (late successional or primary forests) with large interior habitat and snags that are in the mid-stage of decay. They prefer intact interior habitat and are sensitive to edge habitats (Menzel et al., 2002; Broders et al., 2006; SWH 6E Ecoregion Criterion Schedule). Critical habitat has not yet been defined by the province.		
Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END		Roost in a variety of habitats, including in or under rocks, in rock outcrops, or in caves, mines, or hollow trees. Preferred maternity habitat of this species consists of open rock habitats, it rarely uses old buildings as roosting/maternity sites . In the winter, these bats hibernate, most often in caves and abandoned mines (Humphrey 2017). Critical habitat has not yet been defined by the province.		
Tri-colored Bat	*Perimyotis subflavus*	S3?	END	END	Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Overwinter in cold and humid hibernacula (caves/mines). (COSEWIC, 2013). Critical habitat has not yet been defined by the province.		
Silver-haired Bat	*Lasionycteris noctivagans*	S4	END (as of 2025)	No Status	Females establish summer maternity colonies in large diameter trees (COSEWIC 2023). They also use buildings as roosting sites. Critical habitat has not yet been defined. Provincially, hibernacula have a buffer of 200m. Buffers for maternity sites have not been established.		
Eastern Red Bat	*Lasiurus borealis*	S4	END (as of 2025)	No Status	Roost in a variety of deciduous and coniferous forest types, usually in trees but occasionally shrubs. Trees used as		

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat	Evaluation	Brought Forward (Yes/No)
Hoary Bat	*Lasiurus cinereus*	S4	END (as of 2025)	No Status	maternity roosts by both species tend to be large diameter and tall (COSEWIC 2023). Both migrate south to hibernate in the southern US (COSEWIC 2023).		
VASCULAR PLANTS							
Butternut	*Juglans cinerea*	S2?	END	END	Found in a variety of habitat types but grows best on well-drained fertile soils in shallow valleys and on gradual slopes (COSEWIC, 2017). The federal recovery strategy does not outline critical habitat for this species. Provincially, butternuts are assessed and categorized based on the amount of canker. These categories are outlined in Section 5.	None found in 2021 or 2024.	No
Black Ash	*Fraxinus nigra*		END	No Status	Swamps, bogs, and riparian areas, occasionally poorly drained upland areas (COSEWIC 2018).	Two dead individuals present offsite but within 30m. No live individuals in or within 30m.	Yes

Table Updated: April 2025

SRANK DEFINITIONS

S1 Critically Imperiled, Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled, Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable, Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.

SU Unrankable, Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

? Inexact Numeric Rank—Denotes inexact numeric rank

S#B Breeding

S#N Non-Breeding

SARO STATUS DEFINITIONS

END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.
THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

END Endangered, a wildlife species facing imminent extirpation or extinction.
THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Reptiles

Blanding's Turtle

Blanding's turtle is associated with a variety of shallow slow aquatic habitats with submergent and emergent plants and soft substrate (COSEWIC, 2016). Their preferred aquatic habitat is less than <2 m deep (ECCA, 2018). To err on the side of caution, depths up to 4.5 m are considered habitat for this species (ECCA, 2018). These turtles require basking sites located near the water such as exposed rocks or partially submerged logs. The nesting sites are located within areas of loose substrates varying from sand to cobblestone and may occur along roadways as far as 400 m away. Marsh habitat is important for the juveniles for protection from predators. The species overwinters within permanent water bodies (COSEWIC, 2016). This species can migrate far distances of up to 6 km (OMNR, 2013b). Migration routes can include overland movement. However, some habitats such as: active agricultural croplands, sand pits, large waterbodies, fast-flowing systems, and high use highways are not considered suitable habitat (ECCA, 2018). They also note that heavily developed urban areas without aquatic or wetland habitats are considered unsuitable (ECCA, 2018).

The habitat guidelines for Blanding's turtle provide protection to the areas surrounding a nest, or perceived nest area. The level of protection varies with the distance from the nest and has been categorized by MNRF into three categories. These, along with their protection level are:

- Category 1 Nest and the area within 30 m or Overwintering sites and the area within 30 m
- Category 2 The wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies
- Category 3 Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

This species and its habitat was assessed in terms of its presence, the habitat on site and potential interactions and impacts from this proposed subdivision by Bowfin (Bowfin, 2022). That assessment was circulated to MECP for review and was accepted. It was identified that some Category 2 and 3 habitat would be impacted by the proposed subdivision. This new Draft Plan has maintained the same commitments made to MECP, and other than the new MECP timing windows with respect to movement, no new evaluation is required with respect to the work within the Site. All avoidance and mitigation measures provided to MECP are included in the avoidance and mitigation section below and depicted on Figure 8.

The proposed watermain crossing (open cut) and potential pedestrian crossing will be reviewed at detailed design to ensure that any additional permitting, consultations and/or avoidance and mitigation measures are respected. Impacts associated with the crossing are anticipated to be negligible. Mitigation measures for the protection of Blanding's Turtle during a drain crossing are also included in the section below.

Birds

Bobolink

This species is grassland-breeding-bird typically requiring a minimum of 4 ha of uncut meadow or field (McCracken, 2013). It is described as area-sensitive in the general habitat guidelines (MECP, 2021). That same publication also notes that its defended territory tends to be between 1.2-6.1 ha, but it prefers larger tracks of grassland. The Bobolink General Habitat Description (MECP, 2021) indicates that the protected habitat for this species includes three categories:

- Category 1 known nests and 10 m of the nest
- Category 2 the area between 10 m and 60 m from the nest or the approximate centre of the defended territory
- Category 3 the area of continuous suitable habitat between 60 m and 300 m of the nest or approximate centre of the defended territory

The little cultural meadow habitat in (0.2 ha) or adjacent to the Site does not consist of grassland. There appears to be suitable habitat offsite to the north, but in 2024 no bobolinks were observed.

Eastern Meadowlark

Like the bobolink, this species is grassland-breeding-bird that typically requires a minimum of 4 ha of uncut meadow or field (McCracken, 2013). The general Habitat Description for the Eastern Meadowlark (OMNRF, 2018) indicates that the protected habitat for this species includes three categories:

- Category 1 known nests and 10 m of the nest
- Category 2 the area between 10 m and 100 m from the nest or the approximate centre of the defended territory
- Category 3 the area of continuous suitable habitat between 100 m and 300 m of the nest or approximate centre of the defended territory

The little cultural meadow habitat in (0.2 ha) or adjacent to the Site does not consist of grassland. There appears to be suitable habitat offsite to the north and an individual was observed on June 3rd 2024, but it did not stay and defend the territory so is not considered to be breeding in the area.

Bats

At this time, Eastern Small-footed Myotis, Tri-colored, Northern Myotis, Little Brown Myotis, Eastern Red Bat, Hoary Bat and Silver-haired Bat are all listed as endangered species provincially signifying that they are at risk of becoming extinct or extirpated in Ontario. There are three types of habitats required by bats: hibernation, maternity sites and day-roost sites.

Hibernacula

Four of the seven protected bat species (Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis and Tri-colored Bat) prefer to hibernate in caves or mines. They can hibernate in buildings but that is rare for these species (COSEWIC, 2013). No caves or mines were present in the Area Investigated.

The three newly listed species are migratory and do not overwinter in this part of Ontario. Further, the Eastern Red-bat and Hoary Bat do not overwinter in Canada. The Silver-haired Bat is unlikely to overwinter in Canada but there remains a potential for hibernacula along the Great Lakes region in sheltered areas with winter temperatures above 5°C (COSEWIC, 2023).

Maternity

The recovery strategy for the eastern small-footed myotis indicates that the preferred maternity habitat of this species consists of open rock habitats and that it rarely uses old buildings as roosting/maternity sites (Humphrey, 2017). There was no rocky habitat present and no buildings within the study areas searched. Based on this information, this species' maternity sites are considered absent.

The recovery strategy for tri-coloured bat indicates that the maternity roost requirements for this species are poorly understood (Humphrey 2019). In Ontario, only maternity roosts in buildings have been documented. However outside of Ontario maternity roosts have been found amongst dead leaf clusters in the shape of an umbrella, grey squirrel dreys, dense clusters of live foliage, arboreal lichens, and buildings (Humphry 2019). No suitable leaf clusters were identified during the leaf-off surveys. Based on this information this species is unlikely to use the Site as maternity habitat.

The northern myotis tends to prefer larger expanses of older forests (late successional or primary forests) and choose maternity sites in snags that are in the mid-stage of decay. They prefer habitat with intact interior habitat and is shown to be negatively correlated with edge habitat (Menzel et al., 2002; Broders et al., 2006; Yates et al., 2006; OMNRF, 2015a). There was no woodland interior within the study area. As such, the preferred habitat was not present, and this species is considered very unlikely to have maternity sites here.

The little brown myotis is one of the few bat species that can use anthropogenic structures as maternity sites. Potential suitable structures can include buildings, bridges, barns, and bat boxes. The little brown myotis can also use tall, large cavity trees that are in the early to mid-stages of decay as maternity roosts, as well as loose/raised tree bark, and/or crevices in cliffs (ECCC, 2018). This bat species occurs in higher densities in mature deciduous and/or mixed forests due to increased opportunities for large snags. However, unlike the northern myotis, the little brown myotis does not exclusively require mature forest stands in order to find appropriate maternity roosts (COSEWIC, 2013a). This is a more commonly observed species; therefore it is possible

that maternity sites are present. As noted above, one candidate tree was identified on Site. Appropriate surveys and/or discussions with MECP would be required prior to its removal.

Eastern Red Bat and Hoary Bat tend to require forested areas for maternity habitat roosting in trees or (less commonly) shrubs that are over 5 m tall. The trees used for maternity are typically larger diameter, face south where there is more sun exposure, and in areas protected from wind. The maternity sites are often in the taller and larger trees in the woodlot (i.e., exceeding the height of the rest of the canopy). Eastern Red Bat tends to avoid areas with large variations in temperature (COSEWIC, 2023). Foraging habitat is often associated with edge or aquatic habitat (COSEWIC, 2023). The single potential bat maternity tree is unlikely to provide maternity habitat for this species.

Silver-haired Bat prefers larger diameter trees for its summer habitat and can roost under bark or in cavities (including old woodpecker cavities) (COSEWIC, 2023). This species is associated with areas containing large, decaying trees (COSEWIC, 2023). As they tend to select sites with high snag density of larger cavity trees (only 2 were present) it is unlikely they would select this Site for maternity roosting.

There is potential for bats to use the one cavity tree identified on site for day-roosting and maternity habitat. Mitigation measures will be included in Section 7.1.

Plants

Butternut is listed as an endangered species federally signifying that it is at risk of becoming Extinct or Extirpated in Ontario and in Canada. Butternut is a shade intolerant species that is often found along edge habitats on rich, moist, well-drained loams or well-drained gravels (COESWIC, 2003). The butternut is threatened by a canker for which there is no known control (COESWIC, 2003). Butternuts are assessed based on the amount of canker (the disease which is killing the species), their size and health, as per the MNRF BHA protocol. This method classes the individual trees as one of three categories:

+ Category 1 are those that are heavily infected to the point that they are not expected to survive.
+ Category 2 may have some canker but are still considered healthy.
+ Category 3 are the same as Category 2, but these are larger individuals situated near heavily cankered trees and province believes that some may be showing immunity to the disease.

No butternuts were identified during the surveys of 2021 or 2024. However, as it is possible to miss an individual or for a new seedling to grow, general avoidance and mitigation measures are always included. Note that Butternut inventories are valid for 2-years.

Black Ash

Black ash was listed as an endangered species provincially on January 25, 2024. Black ash is a facultative wetland species found primarily in swamps, fens, floodplain forests, and shorelines,

with occasional occurrences in upland habitat (Catling et al. 2022). There are limitations on its protection (O. Reg. 6/24), individuals and the surrounding 30m are protected if they meet the following criteria:

+ They fall within a defined geographic area;
+ Are in good health
+ Over 8 cm in diameter at breast height

Only 2 dead individuals with signs of emerald ash borer damage are present within 30m of site, this species is considered present but as per O. Reg 6/24: *the prohibitions in clause 9(1)(a) of the ESA (against killing, harming, harassing, capturing or taking) apply to any **living** Black Ash tree*. As these individuals are not living, the prohibitions under the ESA do not apply.

6.2.3 Significant Woodlands and Vegetation Cover

As mentioned in the background review section, the OP mapping notes the presence of a significant woodland in and continuing to the south of the Site. This stand is approximate 5.4 ha in size (based on interpretation of satellite imagery and OP).

The EIA, reviewed by MVCA, included an assessment that the woodlands on Site did not meet the test of significance as per the *Natural Heritage Reference Manual* as a result of their relatively small size, poor condition, and a general lack of important characteristics (i.e., mature trees, interior habitat, rare vegetation, or unique characteristics). Measures to protect the trees on the edge of the area to be graded is included.

The OP policy to enhance vegetation cover within 15 m of watercourses (i.e., the municipal drain) is noted and will be addressed in the planting plan.

6.2.4 Fish Habitat

While no fish habitat was present on Site, fish habitat was present in the adjacent lands. The Spring Creek Municipal Drain provided year-round fish habitat for limited fish species (3 common minnows were captured), and all but the lower portion of the North Feature consisted of indirect fish habitat. No fish were captured in the downstream 11 m of the North Feature but its recently cleared state at the time of the fish habitat assessment noted that there was nothing preventing fish access.

No direct impacts are proposed for the North Feature. With respect to the Spring Creek Municipal Drain. The impacts for this watercourse consist of an open cut crossing of the drain for the construction of a watermain, and the potential for the construction of a permanent pedestrian crossing (i.e., culvert or bridge). Prior to completing these, a detailed design will be developed and circulated to the relevant agencies (i.e., DFO). In addition to the above footprints, the construction will require the temporary isolation and dewatering of the work area followed by the re-instatement of the drain's channel to the pre-construction dimensions. The temporary impacts are to an area of no more than 46 m^2 and would be short-term and temporary. This work will require DFO review at detailed design but impacts can be minimised as part of this report.

A minimum setback of 30 m for development is recommended in the NHRM for watercourses unless an EIS documents that there would be no negative impacts (MNRF, 2010). The NHRM does permit the reduction of this setback to 15 m from the high-water mark if it still maintains the fish and fish habitat (MNRF, 2010).

The reduction in setback is supported as the fish habitat consisted of a municipal drain and the habitat is well-contained in that channelized system. Further, the proposed project is committed to ensuring that the 15 m riparian area is planted with native shrubs. These will allow for the protection of the banks, and provide shading and a source of woody debris (structure to the point acceptable along a municipal drain) and a source of food (allochthonous contributions). It is noted that the setback may need to be regraded, and this is acceptable provided that the avoidance and mitigation measures to prevent indirect impacts are included in Section 7.3 are followed.

6.2.5 Significant Wildlife Habitat

The PPS indicates that no development or site alteration is permitted within significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural feature or its ecological functions. It defines wildlife habitat as:

> *"Areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitat of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species"*

The EIA previously completed noted the lack of suitable habitat for wildlife based on the size, quality and type of habitats observed along with a lock of observations of such features as old growth, rare vegetation, stick nests, and structure (i.e. rock piles, stone fences, fissured bedrock) (Muncaster, 2021). This assessment was accepted by MVCA and there have been no changes to legislation, or policies associated with significant wildlife habitat.

It is also noted that no special concern or S1-S3 ranked species were identified during the surveys of 2024. While no significant wildlife habitat was identified by others (Muncaster, 2021), there remains a need to ensure that other legislations such as the FWCA and/or MBCA/MBR are not contravened. As such, measures to avoid contravention are included in Section 7.4.

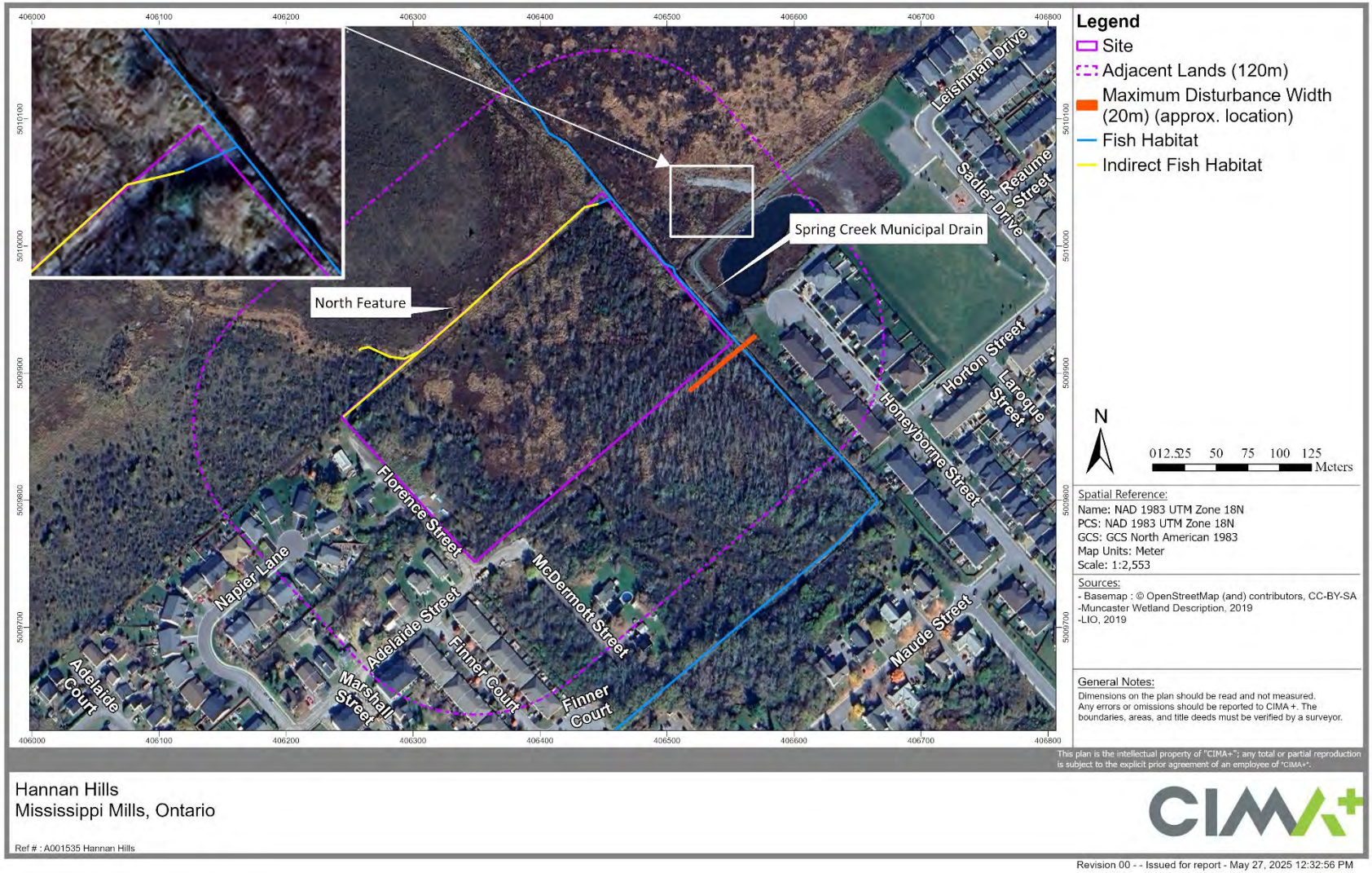

Figure 7: Fish Habitat Near the Site

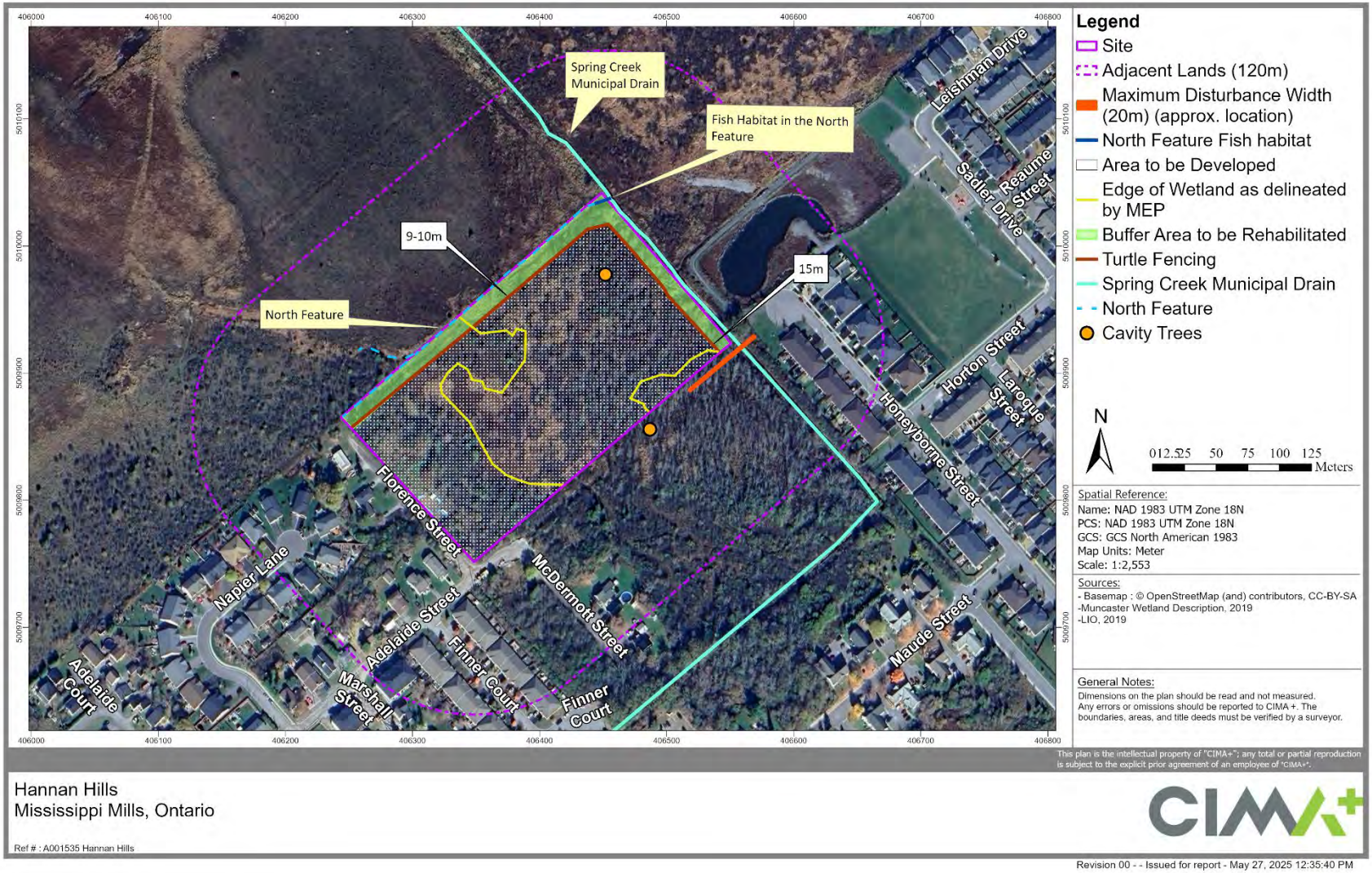

Figure 8: Natural Heritage Constraints

7. AVOIDANCE AND MITIGATION MEASURES

Following a review of the background information, including previous reports, and evaluation of the potential natural heritage features, the following features were identified for avoidance and or mitigation measures:

- Species at Risk Habitat
  - Presence of Blanding's Turtle
  - Potential for Birds
  - Potential for Bats
  - Potential for Butternuts
  - Potential for Black Ash
- Vegetation Cover
- Fish Habitat
  - Spring Creek Municipal Drain (permanent direct fish habitat)
  - North Channel (Indirect except for downstream end (15 m) which is direct)
- Other
  - Species protected by FWCA or MBCA
  - Invasive Species

7.1 Species at Risk

As noted above, species at risk identified to be present or assumed to be present on the Site are as follows: Blanding's turtle, birds, and bats. The following list provides common avoidance and mitigation measures applicable at the time of this report for the species brought forward.

General

- Endangered and threatened species are protected and cannot be harmed, harassed, or killed and in some cases their habitats are also protected. These individuals will only be handled by qualified personnel and only if the individual is in imminent threat of harm. An authorization under the ESA 2007 would be required to handle individuals that are not in imminent threat of harm.
- If a SAR enters the work area during the construction period, any work that may harm the individual is to stop immediately and the supervisor will be contacted. No work will continue until the individual has left the area.
- Should an individual be harmed or killed then work will stop, and the Ministry of Environment, Conservation and Parks (MECP) will be contacted immediately.
- Educate staff and contractors on the potential for SAR, with a particular emphasis on the potential for Blanding's turtle, bats, butternut, and black ash to be in the area and their significance.
- Mitigation measures listed elsewhere in this report are also applicable to this section.
- If a SAR is encountered, this information will be provided to the Natural Heritage Information Centre (Report rare species (animals and plants) | Ontario.ca)

+ Note that species-specific surveys may have a shelf-life, and policies may change. These will be reviewed at the detailed design and construction stages of development.

Blanding's Turtle: There has been no change to the proposed works within the Site since that provided to MECP for review. The crossing of the Drain are anticipated to be mitigated through measures below and this will be confirmed at Detailed Design.

+ Educate construction workers of the potential for Blanding's Turtle to be present and that this is a protected species from harm and injury under the provincial Endangered Species Act. Ensure to inform workers that there is a high potential for the species to occur in this area.
+ Educate workers, that this species is known to travel far from aquatic habitats and as such, they are to perform a mandatory daily sweep of the work area when they first arrive on-site during the turtle active season (typically April 1-October 31; timing affected by weather conditions).
+ Implement a strict speed limit of <15 km/h during construction. The speed limit is to be posted during construction.
+ During construction, temporary turtle exclusion fencing will be installed along the edge of the areas to be retained with turn arounds on the ends. Information on provincial guidelines for exclusion fencing is currently found online (MECP, 2021, Reptile and amphibian exclusion fencing | ontario.ca).
  - The sediment fencing along the edge of the area to be cleared can be used for temporary exclusion fencing during construction. These will be properly countersunk and maintained to ensure that any turtles cannot get into the site.
  - Plan to install the exclusion fence and clearing vegetation for its installation outside of the active turtle season [i.e., clear after October 31 (or freeze up) and before April 1 (or spring thaw)].
+ Clearing of vegetation should take place during the turtle inactive season when they are hibernating which typically occurs between November 1-March 31 (weather dependent). Otherwise, additional surveys (i.e., sweeps for turtles by fish and wildlife technician or biologist familiar with the species) are needed).
+ Impacts to Spring Creek Municipal Drain by the watermain and for the potential pedestrian crossing must:
    - Minimize the in-water footprint (no more than 46 m^2) (see fish section)
    - Ensure that turtle salvage is completed during dewatering.
    - Monitor the in-water work area and the approaches carefully for turtles.
    - Complete in-water work during the active turtle period.
    - Follow any reporting / permitting requirements as per ESA or similar acts as appropriate at the time of construction.
+ Stockpiles that might provide suitable nesting substrate (i.e., gravel, soil) will be provided with additional sediment fencing to prevent turtles from nesting in the work area. Note that should Blanding's Turtle nest on-site, then all work that could impact the nest or hatchlings would be stopped until the appropriate process is followed.

+ Recommend clearing in the direction from west to east and south to north to allow wildlife the opportunity to leave the site into the natural areas that are to remain.
+ If an individual is found:
  - Work that puts the individual in danger will cease (i.e., moving machinery), and the individual will be watched from far to document where and when it leaves the site for a minimum of 2 hours. If it does not leave, then it may need to be relocated. Contact a biologist experienced with this species to relocate the individual.
  - Turtles encountered on-site cannot be harmed or harassed.
+ If an individual has been impacted, the supervisor should contact MECP (and if applicable the project biologist) immediately.

Operations:

+ The final design of the development will include a permanent barrier to turtle access. Information on provincial guidelines for exclusion fencing is currently found online (MECP, 2021, Reptile and amphibian exclusion fencing | ontario.ca).

Table 8: Review of Impacts from Subdivision Land Development

Phase	Activity	Area	Nature	Duration	Magnitude
Construction	Removal of Habitat	Local	Negative Direct	Permanent	Permanent loss of some Category 2 and 3 habitat which was reviewed by MECP and determined not be consist of a contravention of ESA due to quality of habitat and measures committed to.
Construction	Crossing of Spring Creek Municipal Drain	Local	Negative Direct	Permanent to Temporary	To be reviewed at detailed design.
Construction/ Operation	Accidental harm or killing	Local	Negative Direct	Permanent	Negligible if exclusion is adequate and maintained

Birds:

No SAR birds were confirmed or suspected to be breeding on-Site.

- Implement a restriction to clearing vegetation between March 31 and August 31 (inclusive).
- No impacts to provincial SAR bird nests or their eggs are permitted under the provincial Endangered Species Act. If a provincially listed bird species at risk is encountered, then work must stop and MECP contacted (sarontario@ontario.ca).
- No impacts to federal SAR bird nests, or their eggs is permitted under the federal *Species at Risk Act*. If a federally listed bird species at risk nest is encountered, then work must stop until the young have fledged. If the nest/young have been harmed, then Environment Canada must be notified immediately for guidance.
- Should a nest be discovered, stop all work that may disturb the birds (i.e., that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species.
- Work during the daytime hours to prevent light disturbances.
- Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.
- Design lighting for the subdivision to minimize illumination of retained / rehabilitated natural areas.

Activity	Area	Nature	Duration	Magnitude
Removal of Vegetation Sensory Disturbances During Construction	Local	Negative Direct to Indirect	Permanent	None to Negligible – No SAR birds were documented

Bats

The potential to impact SAR bats would be restricted to day-roosts and maternity habitat within trees with the most likely species being little brown myotis. As the site has very little forested habitat, there will be little impact to these species. A single potential bat maternity tree was identified.

- Educate contractors by informing them that most bats in Ontario are protected.
- **Protect candidate bat maternity tree until the lack of use by bats can be determined and /or follow appropriate procedures as necessary.**
- Remove all trees that are 10 cm in diameter at breast height or larger and are not candidate bat maternity habitat between October 1 and March 31 (Bat active season is currently assumed to be April 1 to September 30 in Southern Ontario as Eastern Small-footed Myotis maternity habitat is not anticipated to be present in this wooded area). I
- Work during the daytime hours to prevent light disturbances.

+ Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.
+ Design lighting for the subdivision to minimize illumination of retained / rehabilitated natural areas.

Activity	Area	Nature	Duration	Magnitude
Removal of vegetation Sensory Disturbances During Construction	Local	Negative Direct to Indirect	Permanent	Low potential since no hibernacula. Consult with MECP is single potential bat maternity tree is found to provide bat habitat

Plants

No butternuts or protected black ash were identified on or around the Site.

+ Should Butternuts be identified then these will need to be assessed and the appropriate actions taken. A buffer of 50m around any not assessed Butternut will be applied until further direction is provided as per the province's guidelines for this species.
+ Should Black Ash be identified then these will need to be assessed and the appropriate actions taken. A buffer of 30m around any not assessed Black Ash will be applied until further direction is provided as per the province's guidelines for this species.
+ For areas not cleared prior to June 27, 2026, repeat the inventory during the green-leaf period (usually mid-May to end of August) prior to clearing of vegetation.
+ Follow guidance on clearing of trees from bats and birds and wildlife in general sections.

7.2 Vegetation

The potential to harm vegetation not intended for removal can be minimized by the following measures:

+ Clearly delineate on the construction drawings and in the field the area to be cleared to prevent the loss of woody vegetation that is not intended for removal;
+ Utilize small machinery for the removal of woody vegetation and do not work under the drip line of trees that are not intended for removal;
+ No stockpiling or infilling should occur within the drip line of the remaining woodland.
+ Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.
+ If the construction will have to encroach into the drip line of a tree to be retained, then installing a temporary layer of 150mm deep partially composed wood chips mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels.
+ Do not attach any signs, notices, or posters to trees.
+ To minimize harm to trees scheduled to be retained:

  - Tree protection fencing shall be at least 1.2 metres in height and installed in such a way that the fence cannot be altered.
  - Do not place any material or equipment within the drip line of a tree.
  - Do not raise or lower the existing grade within the drip line of a tree.
  - See Woodland/Vegetation section.
- Follow guidance on clearing of trees from turtles, birds and bats and wildlife in general sections.

7.3 Fish and Fish Habitat

Spring Creek Municipal Drain is permanent fish bearing watercourses as is the lower 15 m of the North Feature. The remainder of the North Feature is indirect fish habitat. The proposed open-cut crossing would require temporary changes to fish habitat in Spring Creek Municipal Drain. The pedestrian crossing would result in a new culvert or bridge crossing of this Drain. The proposed subdivision would take place within the adjacent lands of these watercourses. A reduced setback to the direct fish habitat of 15m is applied (though it may be temporarily impacted by clearing and grading prior to rehabilitation). A setback of roughly 9m is established along the portion of North Feature that is indirect habitat. The measures below are pertinent to the scope of work on the Site (subdivision lands and any additional measures for the crossing of Spring Creek Municipal Drain have been added to the end of this list).

Planning

- Site instruction will be provided to contractor to highlight that the channel provides permanent fish habitat;
- No work below the high-water mark of the direct fish habitat unless DFO review has been completed.
- To the extent feasible, minimize footprints within 30 m;
- Erosion and sediment control measures will be installed prior to the clearing of vegetation within 30 m of the aquatic features.
- Suspend activities that cause muddy environments during periods of heavy rains.
- The same water quantity reaching features is to be maintained.
- The water quality reaching each feature is to be the same or better than existing conditions.
  - SWM facility is to provide Enhanced treatment (i.e., 80% TSS removal)
  - SWM facility is a dry pond and as such will not expected to inadvertently offer fish habitat. Ensure that fish cannot reach the dry pond where they could become trapped.

Erosion and Sediment Control

- An erosion and sediment control plan will be developed by contractor and implemented prior to any work within 30 m of the aquatic features.

  - Provide regular maintenance to the erosion and sediment control measures during construction. Contractor shall be responsible for ensuring that the erosion and sediment control measures are maintained and will monitor the water clarity downstream of the work site throughout the day and during rain events. Water quality is to meet the *Canadian Water Quality Guidelines for the Protection of Aquatic Life*. Monitoring for visible plumes outside of the work area is to be undertaken.
  - At a minimum, the erosion and sediment control plan will include the installation of sediment fencing prior to clearing within 30 m of the waterbodies. Properly keyed in to prevent turbidity from reaching wetland or river.
  - Additional materials (*i.e.,* rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
- Any stockpiles of soil or fill material will be stored as far as possible from the channel and protected by silt fencing (minimum 30 m).
- The sediment fencing will not be removed until the bank is stabilized (<20% bare soil).
- Any disturbed banks will be stabilized and revegetated with native species.
- Where banks/riparian area (area within 30 m of channel) have been stabilized by seeding and/or planting, monitor the revegetation to ensure that the vegetation becomes fully established.
- Where possible, limit clearing of vegetation to trimming and leave the stump and lower 60 cm of the tree trunk in place (for shoreline stabilization).

Contaminant and Spill Management

- All equipment working in or near the water should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refueling, oil changes or lubrication would only be permitted in designated area located at a minimum of 30 m from the shoreline in an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze, or other materials from inadvertently entering the ground or the surface water flow.
- Emergency spill kits will be located on site. The crew will be fully trained on the use of clean-up materials to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the project manager would halt the activity and corrective measures would be implemented.
- If a spill occurs:
  - Stop all work
  - Spills are to be immediately reported to the MECP Spills Action Centre (1 800 268-6060). Note that under the *Fisheries Act* deleterious substance includes sediments.

  - Clean-up measures are to be appropriate and are not to result in further harm to fish/fish habitat.
  - Sediment-laden water will be removed and disposed of appropriately.
- No construction debris will be allowed to enter the watercourse.
- Following the completion of construction, all construction materials will be removed from site.

Crossing of Spring Creek Municipal Drain

- Pedestrian crossing will ensure that DFO policies for fish passage are followed. This will be reviewed by DFO at detailed design.
- All in-water works to occur during the in-water work window (July 1 to March 14, inclusive);
- Follow applicable DFO Code of Practices (i.e., temporary cofferdams and end-of-pipe (https://www.dfo-mpo.gc.ca/pnw-ppe/practice-practique-eng.html));
- Minimize footprints below the high-water mark. Anticipated to be less than 46 m^2.
- No in-water work will begin until the area has been isolated.
- The work within the isolated in-water work area will ensure that:
  - An effective fish salvage can be completed by a biologist or technician with expertise in the aquatic environment;
  - There is no transportation of sediments upstream or downstream of the isolated area.
  - Water from dewatering will be treated prior to returning it to the system (i.e., straw bale settling ponds covered by geotextiles or sediment sock on the end of hose and situated on top of well vegetated slopes);
- Outside of limited pumping for the fish salvage, assume that no pumping will be allowed (pumping may result in additional permitting requirements).

Fish and Fish Habitat Protection

- The construction of the cofferdams will be undertaken in the wet. If large meter bags, methods to minimize fish within the work area should be considered (i.e., seine nets could be used by the biologist to minimize the number of fish in the immediate area. Seine nets will not provide any mitigation for suspended sediments);
- Fish (and other aquatic fauna) will be salvaged from the isolated channel by a qualified biologist/technologist. The salvage will need to be repeated if the work area becomes flooded;
- Dewatering of water in areas that may contain fish will be completed from hoses placed in fish baskets or covered with clean wash rock or other such method to prevent fish impingement and entrainment. Note that the screens that come on

the hoses are not enough to prevent fish from harm. Contractor should refer to DFO's Standard Code of Practice for End-of-Pipe;

- Monitor the end of pump frequently for ensure that all fish protection measures are functioning;
- Bypass flow may be required. The amount of flow bypass should be sufficient to maintain the habitats downstream of the site (i.e., similar to what would be present if work was not occurring). The DFO Standard Code of Practice for End-of-Pipe should be followed to ensure that fish do not become impinged or entrained;
- Monitor the water levels upstream and downstream of the cofferdam during construction. Adjust the bypass flow as necessary;
- Placement of any erosion control blankets with mesh is to avoid the area that will be wet (i.e., will be placed above the high-water level) as the mesh of the blankets can trap fish;
- Any rock protection will consist of clean rocks, free of fines;
- If working at night, ensure that lighting needed to perform work safely is installed and focused on the work area minimizing the lighting of watercourses.

7.4 Significant Wildlife Habitat / Other

In addition to the items listed above, it is important to note that there are other acts and regulations which may apply, and the following measures provide additional information on avoidance and mitigation measures which should be followed for items that are not identified in the OP but still needs to be obeyed on private lands scheduled for development.

General Wildlife

- The turtle active season included under Blanding's turtle measures will prevent impacts to Special Concern turtles that may also be present within the area.
- Almost all breeding birds are protected under the MBCA and/or FWCA. The only species not protected are: American crow, brown-headed cowbird, common grackle, house sparrow, red-winged blackbird, and starling. It is prohibited to destroy or disturb an active nest of other birds, or to take or handle nests, eggs, or nestlings. In this part of Ontario, the SAR bird window is more restrictive than the ECCC nesting calendar and that window will be applied for all birds (active season/no clearing of vegetation is **March 31-August 31)**. Outside of this timing window, it is considered unlikely that birds would be nesting. Note, there are some birds (birds of prey, herons etc.) that do begin nesting earlier in the year. It should also be noted, that if an active nest is present before or after the above dates that it is still protected.
- After clearing lands, there is often a higher potential for ground nesting birds (i.e., killdeer) to be present. These prefer to nest on bare soil or gravel areas. Perform regular walks of the cleared areas looking for ground nesters. If any are present, the contact a biologist for guidance.

- Work during the daytime hours to prevent light disturbances.
- Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.
- If a turtle nest is suspected, then flag a 10 m buffer to protect the nest. Contact MECP (for SAR) and MNRF (all other species).
- Do not flag bird nests as it attracts predators.
- If a nest is found, do not flag as it attracts predators. A biologist can be contacted or Ministry of Environment, Conservation and Parks (for suspected species at risk) or Ministry of Natural Resources and Forestry (for other provincial species), and/or Environment Climate Change Canada (for federally protected birds).
- Be vigilant in looking for the presence of snakes or reptiles. If found allow to leave on their own. If a suspected species at risk is noted, then contact MECP or a biologist for assistance immediately.

Invasive Species

Invasive species tend to be fast-growing and difficult to control once established. A key component to managing the spread of invasive species is to avoid creating suitable conditions for dispersal and establishment of these species - especially during construction and maintenance activities. Note that reed canary grass and purple loosestrife have been documented on site.

- Throughout project construction, invasive species should be managed in accordance with all relevant provincial regulations (i.e., Invasive Species Act and Weed Control Act).
- Machinery arriving on-site will be clean and free of plant material or mud to minimize the transfer of invasive plants.
- Clean sludge, dirt, and plant material from equipment and tools before leaving a site infested with invasive species. High pressure air hoses, mobile cleaning stations which retain water runoff, and brushes or brooms are acceptable cleaning methods.
- Disturbed surface areas will be rehabilitated as soon as possible to reduce the duration of soil exposure.
- Vegetate any disturbed areas as per the planting plan (to be developed).
- Do not include any invasive tree/plant species in the planting plan.
- When removing invasive plant species, ensure that plant material is appropriately disposed of to minimize spread (as per best management practices of Ontario Invasive Plant Council (https://www.ontarioinvasiveplants.ca/).
    - For material with a heavy presence of invasive species (i.e., common reed, purple loosestrife), it is recommended that these be removed to a facility or buried in a pit that is 0.5 m deep will be dug and the invasive species buried.

8. CONCLUSION

This EIS provides an analysis of the potential impacts to natural heritage features that may result from the development of a residential subdivision east of Florence Street in Almonte, Ontario. Based on the proposed design, project construction would require vegetation clearing and grading, including within the setbacks. These areas will be rehabilitated. There are several

significant or assumed significant natural heritage features identified (habitat of endangered or threatened species, unevaluated wetland, and fish habitat) along with a need to prevent contravention of other legislation (i.e., MBCA, FWCA). Through consultation with MECP's SAR branch, it was determined that the use of appropriate avoidance and mitigation measures for the work within the Site will be effective in minimize potential contraventions to ESA for Blanding's turtle.

Review/Communications:

1. Jp2g will provide a conceptual compensation plan for the removal of regulated wetland habitat to MVCA for review. It will then be submitted alongside the Draft Plan of Subdivision application.
2. At Detailed Design:
    a. DFO will need to review any work below the high-water mark (i.e., crossings of Spring Creek Municipal Drain).
    b. Follow the appropriate review as per ESA or Species Conservation Act, as applicable:
        i. To review any changes to ESA.
        ii. Commitments from 2021 on Blanding's Turtle
        iii. Crossing of Spring Creek Municipal Drain
3. Prior to removal of the one candidate woodland bat maternity trees
    a. Conduct appropriate surveys and/or contact MECP.

Planning:

+ Turtle Active Season – April 1 to October 31, inclusive (implement turtle exclusion fencing, monitoring for individuals etc.)
+ Bird Active Season (SAR) – March 31 to August 31, inclusive (no removal of any vegetation without consultation with biologist).
+ Bat Active Season (woodland habitat) – April 1 to September 30, inclusive (no removal of trees that are 10 cm or larger in diameter without consultation with MECP and/or additional measures).
+ In-water work window for work in Fish Habitat - July 1 to March 14, inclusive (no work in water without consultation with DFO)

As noted, there is an anticipated crossing of the Municipal Drain for servicing and a pedestrian crossing. During detailed design, this crossing will be reviewed as per applicable regulations (i.e., *Act, Fisheries Act, Endangered Species Act* and potentially *under the Drainage Act*). It is anticipated that the crossing can meet the appropriate standards and that provided that the project properly implements and maintained the measures outlined herein, that the crossing of the drain is reviewed by appropriate agencies, and a wetland compensation plan is developed and accepted by MVCA, then the project can proceed as designed.

9. STUDY LIMITATIONS AND CONSTRAINTS

CIMA+ completed diligent and reasonable research in the conduct of this evaluation, with respect to the recognized laws and standards of practice.

The facts presented in this report are strictly limited to the period of investigation. The conclusions presented in this report are based on the available information and documents, the observations made during the Site visit and the information obtained from communications with various contacts. The interpretation presented in this report is limited to this data.

CIMA+ is not responsible for erroneous conclusions due to voluntary abstention or the non-availability of pertinent information. Any opinion expressed in relation to legal or regulatory conformity is technical and should not be, in any case, considered as legal advice.

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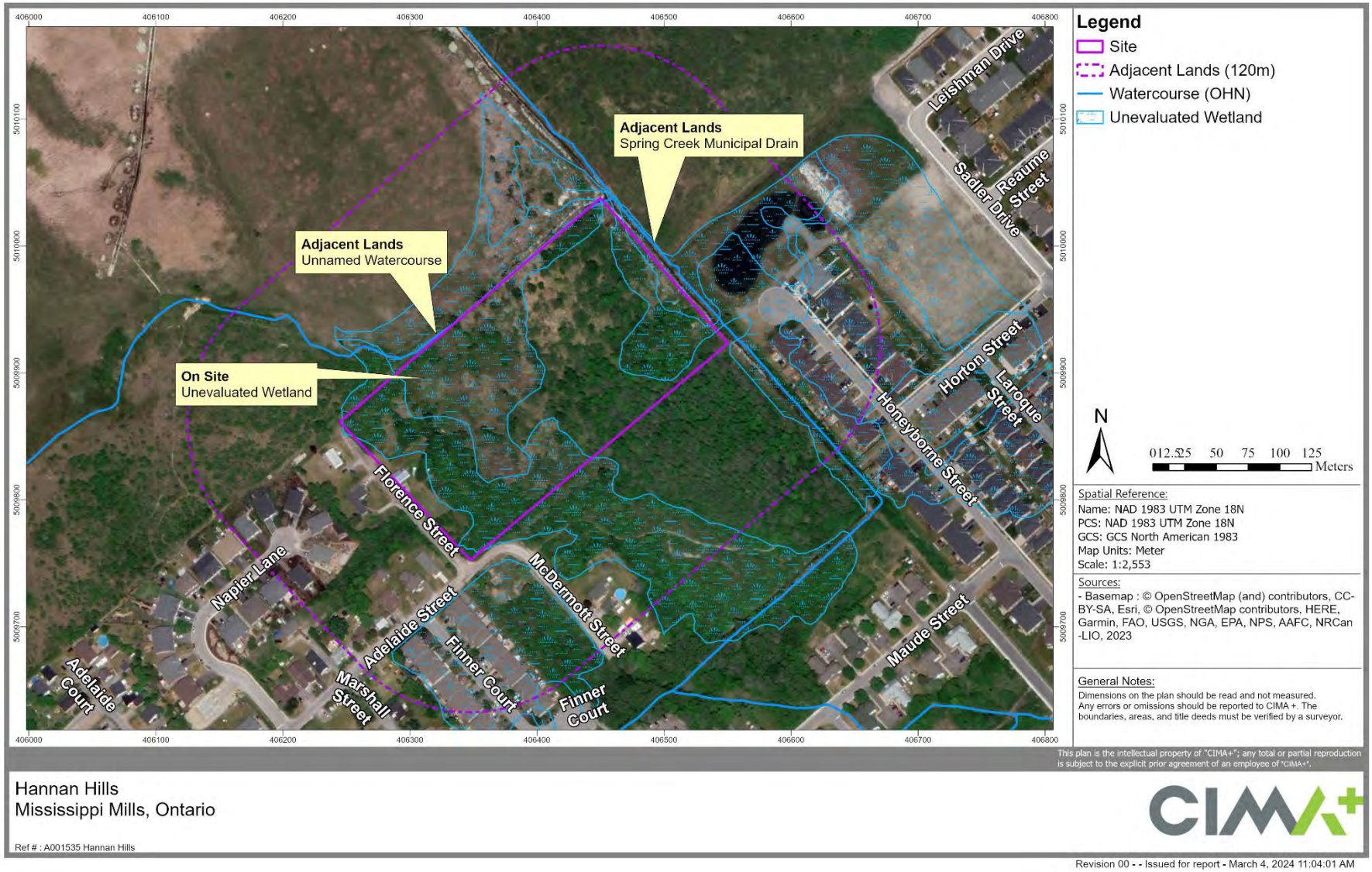
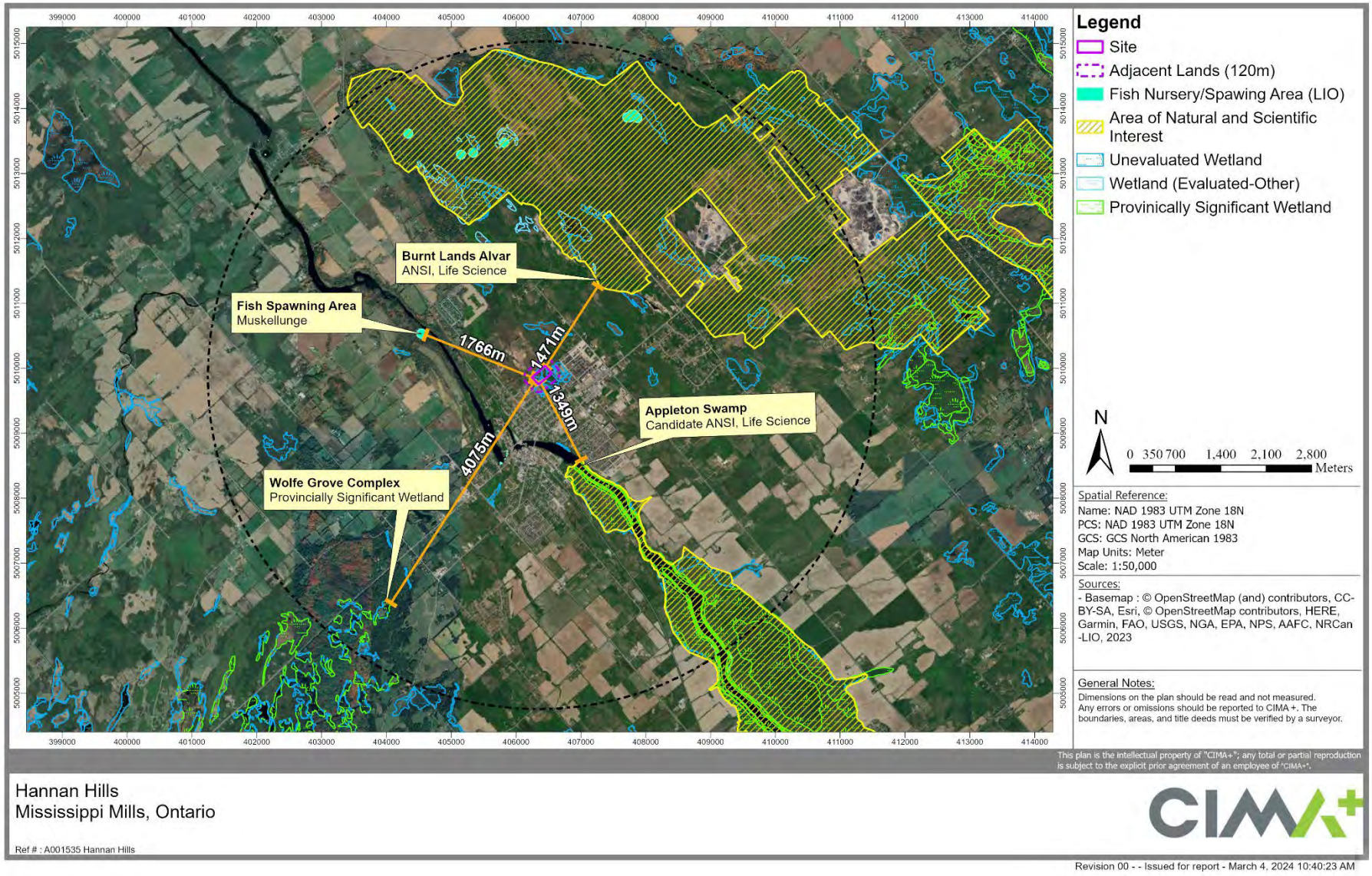
A

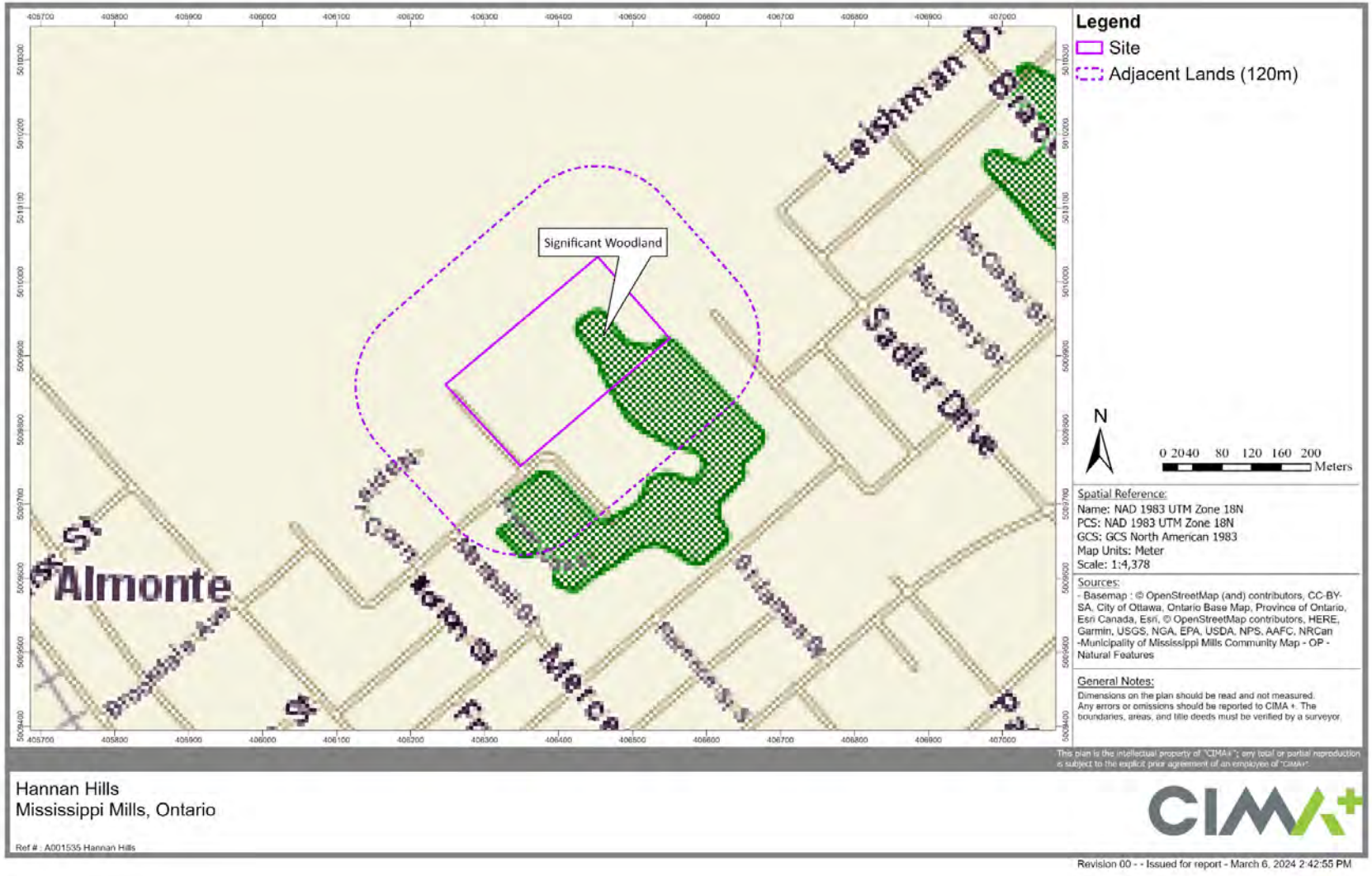
Appendix A
Background Mapping



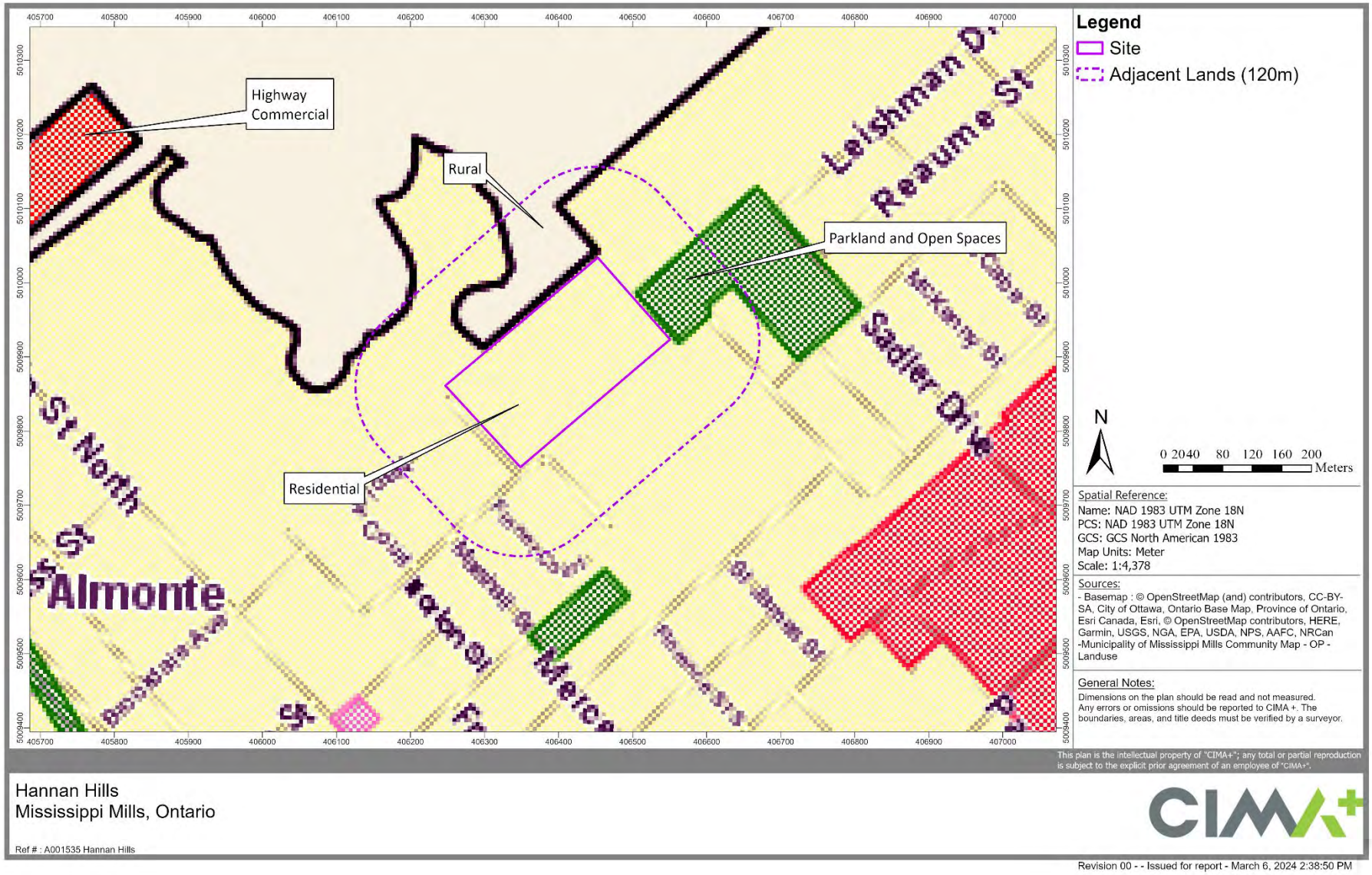
Natural Heritage Features Near Site (LIO)



Natural Heritage Features within 5km of Site (LIO)



Mississippi Mills Natural Features Map



Mississippi Mills Land Use Map

B

Appendix B
Bird Survey Results

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	1	2	3
Wild Turkey	*Meleagris gallopava*	S5	n/a	n/a	1 H		
Turkey Vulture	*Cathartes aura*	S5B	n/a	n/a			1 Fly
Osprey	*Pandion haliaetus*	S5B	n/a	n/a			
Mourning Dove	*Zenaida macroura*	S5	n/a	n/a	2 H	1 H	
Northern Flicker	*Colaptes auratus*	S5	n/a	n/a		1 S	
Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC	1 S (Offsite)		
Alder Flycatcher	*Empidonax alnorum*	S5B	n/a	n/a	1 S		
Red-eyed Vireo	*Vireo olivaceus*	S5B	n/a	n/a	1 S		
Blue Jay	*Cyanocitta cristata*	S5	n/a	n/a	1 H	1 H	
American Crow	*Corvus brachyrhynchos*	S5B	n/a	n/a	1 H	1 H	2 H
Black-capped Chickadee	*Poecile atricapilla*	S5	n/a	n/a	2 P	1 H	
House Wren	*Troglodytes aedon*	S5B	n/a	n/a	1 S		
American Robin	*Turdus migratorius*	S5B	n/a	n/a		2 S	
Gray Catbird	*Dumetella carolinensis*	S5B,S3N	n/a	n/a	1 S	3 S	1 S
Brown Thrasher	*Toxostoma rufum*	S4B	n/a	n/a	1 S		
Cedar Waxwing	*Bombycilla cedrorum*	S5B	n/a	n/a	1 S		

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	1	2	3
Yellow Warbler	*Dendroica petechia*	S5B	n/a	n/a	1 S	1 S	
Black-throated Green Warbler	*Dendroica virens*	S5B	n/a	n/a	1 S		
Black-and-white Warbler	*Mniotilta varia*	S5B	n/a	n/a	1 S		
Common Yellowthroat	*Geothlypis trichas*	S5B	n/a	n/a	1 S	1 S	3 S
Chipping Sparrow	*Spizella passerina*	S5B	n/a	n/a	1 S		
Field Sparrow	*Spizella pusilla*	S4B	n/a	n/a			1 S
Savannah Sparrow	*Passerculus sandwichensis*	S4B	n/a	n/a	1 S		
Song Sparrow	*Melospiza melodia*	S5B	n/a	n/a	2 S	1 S	2 S
Swamp Sparrow	*Melospiza georgiana*	S5B	n/a	n/a	1 S		2 S
Northern Cardinal	*Cardinalis cardinalis*	S5	n/a	n/a	1 S		
Red-winged Blackbird	*Agelaius phoeniceus*	S4	n/a	n/a	1 S	2 S	
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	1 H (offsite)		
Common Grackle	*Quiscalus quiscula*	S5B	n/a	n/a	1 H	1 H	

Common Name	Scientific Name	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	1	2	3
American Goldfinch	*Carduelis tristis*	S5B	n/a	n/a			1 H

C

Appendix C
List of Fish and Birds from Background Sources

Atlas of the Breeding Birds of Ontario

Squares: 18VR01, 18VR11, 18VR00, 18VR10

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Canada Goose	*Branta canadensis*	Confirmed	S5	no status	no status
Wood Duck	*Aix sponsa*	Confirmed	S5	no status	no status
Gadwall	*Anas strepera*	Possible	S4	no status	no status
American Black Duck	*Anas rubripes*	Confirmed	S4	no status	no status
Mallard	*Anas platyrhynchos*	Confirmed	S5	no status	no status
Northern Shoveler	*Anas clypeata*	Probable	S4	no status	no status
Green-winged Teal	*Anas crecca*	Probable	S4	no status	no status
Blue-winged Teal	*Anas discors*	Confirmed	S4	no status	no status
Common Goldeneye	*Bucephala clangula*	Possible	S5	no status	no status
Hooded Merganser	*Lophodytes cucullatus*	Confirmed	S5B,S5N	no status	no status
Common Merganser	*Mergus merganser*	Confirmed	S5B,S5N	no status	no status
Ring-necked Pheasant	*Phasianus colchicus*	Possible	SNA	no status	no status
Ruffed Grouse	*Bonasa umbellus*	Confirmed	S4	no status	no status
Wild Turkey	*Meleagris gallopava*	Confirmed	S5	no status	no status
Common Loon	*Gavia immer*	Confirmed	S5B, S5N	no status	no status
Pied-billed Grebe	*Podilymbus podiceps*	Confirmed	S4B, S4N	no status	no status
American Bittern	*Botaurus lentiginosus*	Probable	S4B	no status	no status
Great Blue Heron	*Ardea herodias*	Confirmed	S4	no status	no status
Green Heron	*Butorides virescens*	Confirmed	S4B	no status	no status
Turkey Vulture	*Cathartes aura*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Osprey	*Pandion haliaetus*	Confirmed	S5B	no status	no status
Northern Harrier	*Circus cyaneus*	Confirmed	S4B	no status	no status
Sharp-shinned Hawk	*Accipiter striatus*	Possible	S5	no status	no status
Cooper's Hawk	*Accipiter cooperii*	Possible	S4	no status	no status
Northern Goshawk	*Accipiter gentilis*	Confirmed	S4	no status	no status
Red-shouldered Hawk	*Buteo lineatus*	Confirmed	S4B	no status	no status
Broad-winged Hawk	*Buteo platypterus*	Probable	S5B	no status	no status
Red-tailed Hawk	*Buteo jamaicensis*	Confirmed	S5	no status	no status
American Kestrel	*Falco sparverius*	Confirmed	S4	no status	no status
Merlin	*Falco columbarius*	Probable	S5B	no status	no status
Virginia Rail	*Rallus limicola*	Confirmed	S5B	no status	no status
Sora	*Porzana carolina*	Confirmed	S4B	no status	no status
Common Gallinule	*Gallinula galeata*	Possible	S4B	no status	no status
American Coot	*Fulica americana*	Possible	S4B	no status	no status
Killdeer	*Charadrius vociferus*	Confirmed	S5B, S5N	no status	no status
Spotted Sandpiper	*Actitis macularia*	Confirmed	S5	no status	no status
Upland Sandpiper	*Bartramia longicauda*	Probable	S4B	no status	no status
Common Snipe	*Gallinago delicata*	Confirmed	S5B	no status	no status
American Woodcock	*Scolopax minor*	Confirmed	S4B	no status	no status
Rock Pigeon	*Columba livia*	Confirmed	SNA	no status	no status
Mourning Dove	*Zenaida macroura*	Confirmed	S5	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Black/Yellow-billed Cuckoo	*Coccyzus erythropthalmus/americanus*	Possible	S5B, S4B	no status	no status
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Probable	S5B	no status	no status
Eastern Screech-Owl	*Megascops asio*	Possible	S4	no status	no status
Great Horned Owl	*Bubo virginianus*	Confirmed	S4	no status	no status
Barred Owl	*Strix varia*	Probable	S5	no status	no status
Short-eared Owl	*Asio flammeus*	Probable	S2N, S4B	THR	SC
Northern Saw-whet Owl	*Aegolius acadicus*	Possible	S4	no status	no status
Common Nighthawk	*Chordeiles minor*	Probable	S4B	SC	THR
Whip-poor-will	*Caprimulgus vociferus*	Possible	S4B	THR	THR
Chimney Swift	*Chaetura pelagica*	Probable	S4B, S4N	THR	THR
Ruby-throated Hummingbird	*Archilochus colubris*	Probable	S5B	no status	no status
Belted Kingfisher	*Ceryle alcyon*	Confirmed	S4B	no status	no status
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Confirmed	S5B	no status	no status
Downy Woodpecker	*Picoides pubescens*	Confirmed	S5	no status	no status
Hairy Woodpecker	*Picoides villosus*	Confirmed	S5	no status	no status
Northern Flicker	*Colaptes auratus*	Confirmed	S5	no status	no status
Pileated Woodpecker	*Dryocopus pileatus*	Confirmed	S5	no status	no status
Olive-sided Flycatcher	*Contopus cooperi*	Probable	S4B	SC	THR
Eastern Wood-Pewee	*Contopus virens*	Confirmed	S4B	SC	SC
Yellow-bellied Flycatcher	*Empidonax flaviventris*	Possible	S5B	no status	no status
Alder Flycatcher	*Empidonax alnorum*	Probable	S5B	no status	no status
Willow Flycatcher	*Empidonax traillii*	Probable	S5B	no status	no status
Least Flycatcher	*Empidonax minimus*	Confirmed	S4B	no status	no status
Eastern Phoebe	*Sayornis phoebe*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Great Crested Flycatcher	*Myiarchus crinitus*	Confirmed	S4B	no status	no status
Eastern Kingbird	*Tyrannus tyrannus*	Confirmed	S4B	no status	no status
Blue-headed Vireo	*Vireo solitarius*	Probable	S5B	no status	no status
Warbling Vireo	*Vireo gilvus*	Confirmed	S5B	no status	no status
Philadelphia Vireo	*Vireo philadelphicus*	Probable	S5B	no status	no status
Red-eyed Vireo	*Vireo olivaceus*	Confirmed	S5B	no status	no status
Blue Jay	*Cyanocitta cristata*	Confirmed	S5	no status	no status
American Crow	*Corvus brachyrhynchos*	Confirmed	S5B	no status	no status
Common Raven	*Corvus corax*	Confirmed	S5	no status	no status
Horned Lark	*Eremophila alpestris*	Confirmed	S5B	no status	no status
Purple Martin	*Progne subis*	Confirmed	S3S4B	no status	no status
Tree Swallow	*Tachycineta bicolor*	Confirmed	S4B	no status	no status
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Confirmed	S4B	no status	no status
Bank Swallow	*Riparia riparia*	Confirmed	S4B	THR	THR
Cliff Swallow	*Petrochelidon pyrrhonota*	Possible	S4B	no status	no status
Barn Swallow	*Hirundo rustica*	Confirmed	S4B	SC	THR
Black-capped Chickadee	*Poecile atricapilla*	Confirmed	S5	no status	no status
Red-breasted Nuthatch	*Sitta canadensis*	Confirmed	S5	no status	no status
White-breasted Nuthatch	*Sitta carolinensis*	Confirmed	S5	no status	no status
Brown Creeper	*Certhia familiaris*	Probable	S5B	no status	no status
Carolina Wren	*Thryothorus ludovicianus*	Possible	S4	no status	no status
House Wren	*Troglodytes aedon*	Confirmed	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Winter Wren	*Troglodytes troglodytes*	Probable	S5B	no status	no status
Marsh Wren	*Cistothorus palustris*	Probable	S4B	no status	no status
Golden-crowned Kinglet	*Regulus satrapa*	Possible	S5B	no status	no status
Ruby-crowned Kinglet	*Regulus calendula*	Possible	S4B	no status	no status
Eastern Bluebird	*Sialia sialis*	Confirmed	S5B	no status	no status
Veery	*Catharus fuscescens*	Confirmed	S4B	no status	no status
Swainson's Thrush	*Catharus ustulatus*	Probable	S4B	no status	no status
Hermit Thrush	*Catharus guttatus*	Probable	S5B	no status	no status
Wood Thrush	*Hylocichla mustelina*	Confirmed	S4B	SC	THR
American Robin	*Turdus migratorius*	Confirmed	S5B	no status	no status
Gray Catbird	*Dumetella carolinensis*	Confirmed	S5B,S3N	no status	no status
Northern Mockingbird	*Mimus polyglottos*	Probable	S4	no status	no status
Brown Thrasher	*Toxostoma rufum*	Confirmed	S4B	no status	no status
European Starling	*Sturnus vulgaris*	Confirmed	SNA	no status	no status
Cedar Waxwing	*Bombycilla cedrorum*	Confirmed	S5B	no status	no status
Golden-winged Warbler	*Vermivora chrysoptera*	Possible	S4B	SC	THR
Nashville Warbler	*Vermivora ruficapilla*	Confirmed	S5B	no status	no status
Yellow Warbler	*Dendroica petechia*	Confirmed	S5B	no status	no status
Chestnut-sided Warbler	*Dendroica pensylvanica*	Confirmed	S5B	no status	no status
Magnolia Warbler	*Dendroica magnolia*	Confirmed	S5B	no status	no status
Cape May Warbler	*Dendroica tigrina*	Probable	S5B	no status	no status
Black-throated Blue Warbler	*Dendroica caerulescens*	Probable	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Yellow-rumped Warbler	*Dendroica coronata*	Confirmed	S5B	no status	no status
Black-throated Green Warbler	*Dendroica virens*	Confirmed	S5B	no status	no status
Blackburnian Warbler	*Dendroica fusca*	Probable	S5B	no status	no status
Pine Warbler	*Dendroica pinus*	Possible	S5B	no status	no status
Black-and-white Warbler	*Mniotilta varia*	Confirmed	S5B	no status	no status
American Redstart	*Setophaga ruticilla*	Confirmed	S5B	no status	no status
Ovenbird	*Seiurus aurocapillus*	Confirmed	S4B	no status	no status
Northern Waterthrush	*Seiurus noveboracensis*	Confirmed	S5B	no status	no status
Mourning Warbler	*Oporornis philadelphia*	Probable	S4B	no status	no status
Common Yellowthroat	*Geothlypis trichas*	Confirmed	S5B	no status	no status
Canada Warbler	*Wilsonia canadensis*	Confirmed	S4B	SC	THR
Eastern Towhee	*Pipilo erythrophthalmus*	Possible	S4B	no status	no status
Chipping Sparrow	*Spizella passerina*	Confirmed	S5B	no status	no status
Clay-colored Sparrow	*Spizella pallida*	Probable	S4B	no status	no status
Field Sparrow	*Spizella pusilla*	Confirmed	S4B	no status	no status
Vesper Sparrow	*Pooecetes gramineus*	Confirmed	S4B	no status	no status
Savannah Sparrow	*Passerculus sandwichensis*	Confirmed	S4B	no status	no status
Grasshopper Sparrow	*Ammodramus savannarum*	Confirmed	S4B	SC	SC
Song Sparrow	*Melospiza melodia*	Confirmed	S5B	no status	no status
Swamp Sparrow	*Melospiza georgiana*	Confirmed	S5B	no status	no status
White-throated Sparrow	*Zonotrichia albicollis*	Confirmed	S5B	no status	no status
Dark-eyed Junco	*Junco hyemalis*	Possible	S5B	no status	no status

Common Name	Scientific Name	ABBO Category	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status
Scarlet Tanager	*Piranga olivacea*	Confirmed	S4B	no status	no status
Northern Cardinal	*Cardinalis cardinalis*	Confirmed	S5	no status	no status
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Confirmed	S4B	no status	no status
Indigo Bunting	*Passerina cyanea*	Confirmed	S4B	no status	no status
Bobolink	*Dolichonyx oryzivorus*	Confirmed	S4B	THR	THR
Red-winged Blackbird	*Agelaius phoeniceus*	Confirmed	S4	no status	no status
Eastern Meadowlark	*Sturnella magna*	Confirmed	S4B	THR	THR
Common Grackle	*Quiscalus quiscula*	Confirmed	S5B	no status	no status
Brown-headed Cowbird	*Molothrus ater*	Confirmed	S4B	no status	no status
Baltimore Oriole	*Icterus galbula*	Confirmed	S4B	no status	no status
Purple Finch	*Carpodacus purpureus*	Confirmed	S4B	no status	no status
House Finch	*Carpodacus mexicanus*	Confirmed	SNA	no status	no status
American Goldfinch	*Carduelis tristis*	Confirmed	S5B	no status	no status
Evening Grosbeak	*Coccothraustes vespertinus*	Confirmed	S4B	SC	SC
House Sparrow	*Passer domesticus*	Confirmed	SNA	no status	no status

Table Updated January 21, 2024

SRANK DEFINITIONS

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure, Common, widespread, and abundant in the nation or state/province.
SNA Not Applicable, A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S#B Breeding
S#N Non-Breeding

SARO STATUS DEFINITIONS

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

SARA STATUS DEFINITIONS

THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Available Background Fish Community Information for Spring Creek Municipal Drain

Common Name	Scientific Name	Trophic Class*	Thermal Regime	SRank	ESA Reg. 230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Source
Northern Pearl Dace	*Margariscus nachtriebi*	invertivore/ carnivore	cool	S5	No status	No status	iNaturalist, 2019
Northern Redbelly Dace	Chrosomus eos	invertivore/ planktivore	cool	S5	No Status	No Status	Bowfin, 2021
Finescale Dace	*Chrosomus neogaeus*	invertivore/ planktivore	cool	S5	No Status	No Status	LIO, 2023
Fathead Minnow	*Pimephales promelas*	detritivore/ invertivore	warm	S5	No Status	No Status	Bowfin, 2021
Creek Chub	*Semotilus atromaculatus*	invertivore/ carnivore	cool	S5	No Status	No Status	LIO, 2023 iNaturalist, 2019
Fallfish	*Semotilus corporalis*	invertivore/ carnivore	cool	S4	No Status	No Status	LIO, 2023
White Sucker	*Catostomus commersonii*	invertivore/ detritivore	cool	S5	No Status	No Status	LIO, 2023
Mottled Sculpin	*Cottus bairdii*	invertivore	cool	S5	No status	No status	iNaturalist, 2019
Number of Species							**8**

(Bowfin 2021, DFO, 2019; Eakins, 2018; OMNRF, 2014; MNRF, 2017; MTO, 2006)

Table Updated: March 2024

SRANK Definitions

S1 Critically Imperiled, Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled, Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

extirpation.

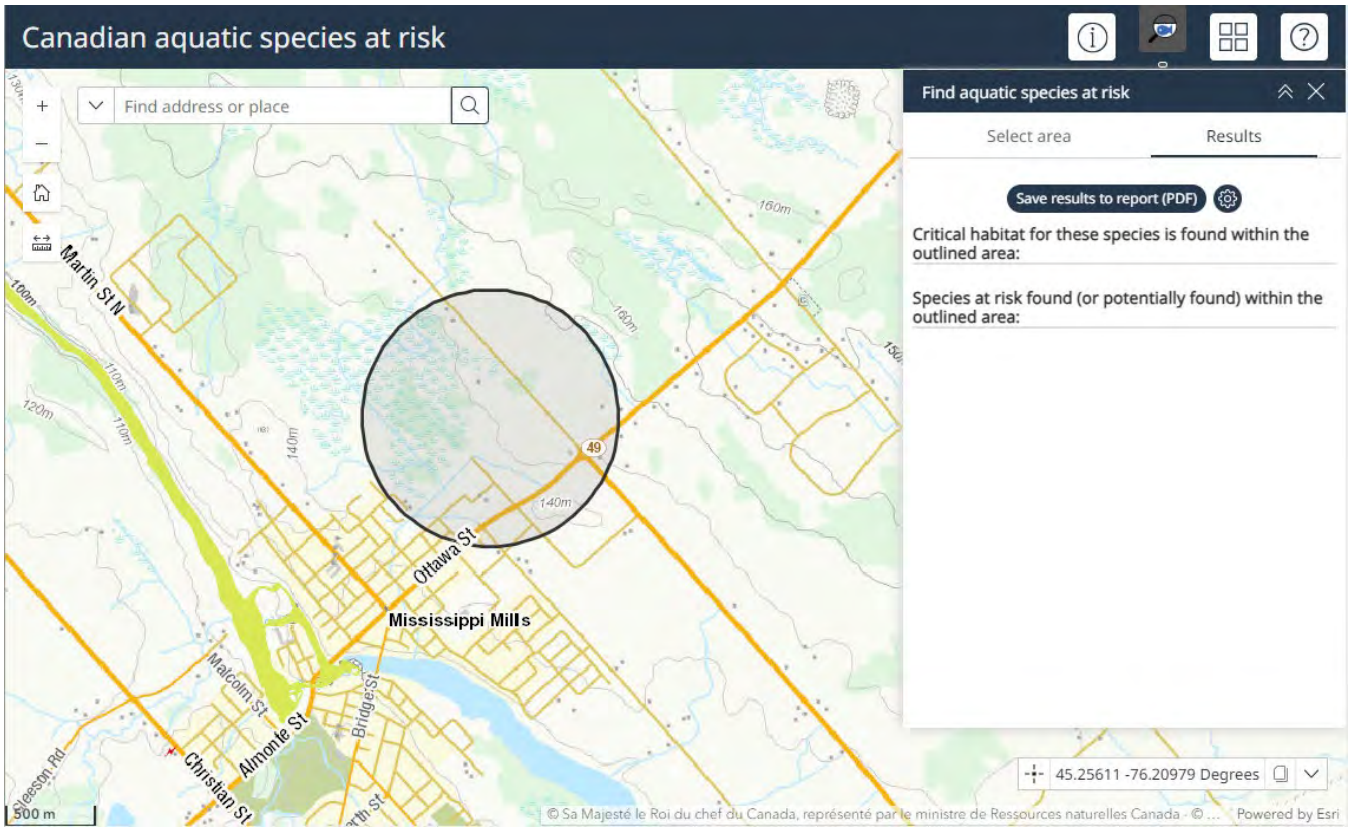
S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.

? Inexact Numeric Rank—Denotes inexact numeric rank

S5 Secure, Common, widespread, and abundant in the nation or state/province.

C

Appendix D
DFO CASAR Mapping



Accessed 2025-01-14