GEMTEC
www.gemtec.ca

Environmental Impact Statement
Proposed Dementia Village and Retirement Community
5400 Appleton Side Road
Geographic Township of Ramsay
Almonte, Ontario

GEMTEC
www.gemtec.ca

Submitted to:

Chello Building Corp.
c/o NOVATECH
240 Micheal Cowpland Drive
Ottawa, Ontario
K2M 1P6

Environmental Impact Statement
Proposed Dementia Village and Retirement Community
5400 Appleton Side Road
Geographic Township of Ramsay
Almonte, Ontario

November 21, 2023
Project: 100011.069

experience • knowledge • integrity

EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Chello Building Corp. c/o NOVATECH Engineers, Planners, & Landscape Architects (NOVATECH) to complete an Environmental Impact Statement (EIS) for an existing 24.6 ha property located at 5400 Appleton Sideroad in the Geographic Township of Ramsay, Almonte, Ontario. This EIS has been completed in support of a proposed dementia and retirement community and was completed in accordance with all federal, provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and multiple field investigations were completed throughout 2023 to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. The focus of the site investigation was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and site investigations the following natural heritage features were identified on-site or within the study area: significant woodlands, local unevaluated wetlands, significant wildlife habitat for amphibian woodland breeding (*confirmed),* reptile hibernaculum (*candidate*), special concern and rare wildlife habitat (common nighthawk, eastern wood-pewee, grasshopper sparrow, and wood thrush), and headwater drainage features. The following SAR and their habitat were identified as having a potential to occur on-site: eastern whip-poor-will, eastern small-foot myotis, little brown myotis, tri-colored bat, and black ash. Category 1, 2, and 3 habitats for eastern whip-poor-will has been confirmed for the site. No other SAR species were identified during site investigations.

Potential impacts to the natural heritage features were primarily associated with the loss of woodland, thicket, meadow and wetland habitat, the alteration of an approximately 115 m stretch of a headwater drainage feature, and indirect impacts to local wetlands. Direct loss of thicket, meadow, and wetland habitats and the section of the headwater drainage feature are associated with the vegetation removal and land grading required for development. Further, the development will result in the loss of Category 1, 2, and 3 habitats for eastern whip-poor-will (0.67 ha, 8.1 ha, 8.1 ha respectively). Indirect impacts to local wetlands are primarily associated with alterations to water quality through increased nutrient and sediment loading.

To compensate for the loss of wetland habitat within the southwest corner of the site, a new wetland will be created on-site, within the extreme eastern portion of the site. Wetland compensation will be completed following a 1:1 ratio and focused on compensating for the loss of ecological and hydraulic functions.

Prior to the completion of any in-water or wetland alteration work, it is anticipated that a permit from the Mississippi Valley Conservation Authority may be required.

Additionally, to provide protection to potential SAR and other wildlife on-site, exclusion fencing around the entire construction area to prevent the immigration of SAR species and other wildlife into the construction area. Should any SAR be discovered throughout the course of the proposed works, operations should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with all applicable legislation, all best management practices and adherence to vegetation clearing windows for birds and bats, outlined in Section 7 should be followed to ensure no negative impacts occur to natural heritage features on-site.

The proposed project complies with the natural heritage policies of the Provincial Policy Statement, the Lanark County Official Plan, and the Mississippi Mills Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed project as long as all mitigation measures in Section 7 are enacted and best management practices followed.

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Chello Building Corp. c/o NOVATECH Engineers, Planners, & Landscape Architects (NOVATECH) to complete an Environmental Impact Statement (EIS), to accompany a request for a Community Infrastructure and Housing Accelerator (CIHA) on behalf of the Municipality of Mississippi Mills, for the property located at 5400 Appleton Side Road, in the Geographic Township of Ramsay, City of Almonte, Ontario (hereafter referred to as "the subject property"). The location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking to support a proposed 8.1 hectare (ha) dementia village and retirement community, on an approximately 24.6 ha property. Based on Section 5 of the Lanark County Official Plan (2012) and Section 3.1 of the Mississippi Mills Official Plan (2005), an EIS is required demonstrating that the proposed development will not negatively impact any potential natural heritage features which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2 in Appendix A.

1.2 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that "development and site alteration shall not be permitted in: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions." Similarly, the 2020 Provincial Policy Statement dictates that 'development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed development application on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2020);
- Endangered Species Act (Ontario, 2007);
- Conservation Authorities Act (Ontario, 1990);

- Natural Heritage Reference Manual (OMNR, 2010);
- Lanark County Sustainable Communities Official Plan (2012); and
- Mississippi Mills Community Official Plan (2005).

1.3 Physical Setting

The subject property is located on Part of Lot 15, Concession 11, and is municipally addressed as 5400 Appleton Side Road in the Geographic Township of Ramsay, County of Lanark, Ontario. The site is comprised of coniferous and mixed forests, coniferous and deciduous thickets, meadows, and swamps. The subject property is bound to the west by Appleton Side Road, and to the east by residential properties situated on Greystone Crescent. To the north, the site is bound by a gravel link path adjacent to 5498 Appleton Side Road, and to the south by 5210 Appleton Side Road.

1.4 Land Use Context

The subject property is situated within a larger rural-agricultural area. Zoning for the site from the Mississippi Mills OP is Rural (RU). Land use designation from the Mississippi Mills OP is rural.

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records and a review of SAR habitat requirements and range maps.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make a Map: Natural Heritage Areas (OMNRF, 2014a)
- Land Information Ontario (OMNRF, 2011);
- Municipality of Mississippi Mills Official Plan (Mississippi Mills, 2019);
- Lanark County Sustainable Communities Official Plan (2012);
- Municipality of Mississippi Mills Community Map (Mississippi Mills, Undated);
- Mississippi Valley Conservation Authority Geoportal (MVCA, undated);
- Ontario Geological Survey (OGS, 2019);
- Fisheries and Oceans Canada SAR Maps (DFO, 2023);
- Fish ON-Line (ONMRF, 2023);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2022b);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007);
- Ontario Herpetofaunal Atlas (Oldham and Weller, 2000);
- Wildlife Values Area (OMNRF, 2020a);
- Wildlife Values Site (OMNRF, 2020b); and
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
April 27 2023	21:00-22:30	9°C, ~20% cloud cover, Beaufort 1, no precipitation	Amphibian Breeding Survey
May 5, 2023	12:00-18:00	9°C, ~50% cloud cover, Beaufort 2, no precipitation	Bat Maternity Roost Survey, Ecological Land Classification
May 9, 2023	09:45-17:00	10°C, ~15% cloud cover, Beaufort 2-3, no precipitation	Headwater Drainage Feature Assessment, Basking Turtle Survey
May 15, 2023	10:50-14:45	17°C, ~100% cloud cover, Beaufort 4, no precipitation	Headwater Drainage Feature Assessment, Basking Turtle Survey
May 23, 2023	22:30-23:30	19°C, ~60% cloud cover, Beaufort 1, no precipitation	Amphibian Breeding Survey
May 25, 2023	12:55-14:05	14°C, ~0% cloud cover, Beaufort 2, no precipitation	Basking Turtle Survey
May 29, 2023	22:30-23:30	15°C, ~10% cloud cover, Beaufort 2, no precipitation, Moon illumination 72%	Whip-poor-will Survey
May 30, 2023	07:30-10:30	10°C, ~0% cloud cover, Beaufort 1, no precipitation	Breeding Bird Survey
June 1, 2023	22:15-23:15	25°C, ~0% cloud cover, Beaufort 0, no precipitation, Moon illumination 94%	Whip-poor-will Survey, Bat Acoustic Survey
June 2, 2023	21:30-22:30	21°C, ~0% cloud cover, Beaufort 1, light rain	Amphibian Breeding Survey
June 8, 2023	02:25-03:00	9°C, ~50% cloud cover, Beaufort 1, no precipitation, Moon illumination 22%	Whip-poor-will Survey
June 8, 2023	13:40-14:55	16°C, ~75% cloud cover, Beaufort 2, no precipitation	Basking Turtle Survey
June 9, 2023	14:05-15:20	18°C, ~70% cloud cover, Beaufort 1, no precipitation	Basking Turtle Survey
June 15, 2023	07:30-09:45	16°C, ~80% cloud cover, Beaufort 1, no precipitation	Breeding Bird Survey
June 29, 2023	05:40-08:15	17°C, ~100% cloud cover, Beaufort 3, no precipitation	Breeding Bird Survey
August 1, 2023	13:30-16:30	21°C, ~50% cloud cover, Beaufort 4, no precipitation	Headwater Drainage Feature Assessment

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on May 5, 2023, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted on three occasions at five point count locations; breeding bird survey locations are provided on Figure A.2. Breeding bird surveys followed protocols from the Canadian Breeding Bird Surveys (Downes and Collins, 2003) and the Ontario Breeding Bird Atlas (Cadman et al., 2007). Surveys were conducted no earlier than 30 minutes before sunrise and were completed within five hours of sunrise, to encompass peak songbird activity. Breeding bird surveys consisted of five minutes of passive listening in which all birds heard or seen within the survey period were recorded, including species, sex and breeding behaviour, if possible. A list of all avian species identified on-site is provided in Table C.1 in Appendix C.

2.2.3 Amphibian Breeding Surveys

Amphibian breeding surveys were conducted on three occasions at four point count locations; breeding amphibian survey locations are provide on Figure A.2. Breeding amphibian surveys followed protocols from the Marsh Monitoring Program (Bird Studies Canada, 2008). Surveys were conducted no earlier than 30 minutes after sunset and were completed by midnight, to encompass peak amphibian calling activity. Breeding amphibian surveys consisted of three minutes of passive listening in which all amphibians calling during the survey period were recorded, along with their call code. A list of all amphibian species identified on-site is provided in Table C.1 in Appendix C.

2.2.4 Nocturnal Whip-poor-will Breeding Surveys

Nocturnal whip-poor-will surveys were conducted on three occasions at two point count locations; whip-poor-will survey locations are provided on Figure A.2. Whip-poor-will surveys followed protocols from the MNRF (MNRF, 2014). Surveys were completed on May 29, June 1 and 8, 2023 under optimal weather conditions.

2.2.5 Bat Acoustic Survey

During the nocturnal whip-poor-will surveys on-site, a handheld ultrasonic module, the Echo Meter Touch 2 Pro and its auto-ID feature was used to aid in identifying potential bat species on-site. The auto-ID feature of the echo meter touch 2 pro uses recordings from the module and suggests the most likely species present for each recording. However, because bats vary their echolocation calls in response to a wide variety of needs, no automated call identification can achieve 100% accuracy in species identification. Species detected during the deployment of bat acoustic surveys are provided in Table C.1 in Appendix A.

2.2.6 Bat Maternity Roost Surveys

Potential bat maternity roosting sites were surveyed for in each forested ecosite on-site on May 5, 2023, following the protocol for identifying candidate maternity roosts outlined in the OMNR (2011a) Bats and Bat Habitats: Guidelines for Wind Power Projects. Snag survey stations are illustrated on Figure A.2 in Appendix A.

2.2.7 Basking Turtle Survey

In order to address the potential for the site to provide turtle overwintering, turtle nesting and the presence or absence of Blanding's turtle, a species at risk (SAR), a series of five turtle basking surveys were conducted following the approved protocol for Blanding's turtles established by the MNRF (2015). A list of all turtle species identified on-site is provided in Table C.1 in Appendix C.

2.2.8 HDF

2.2.9 Headwater Drainage Feature Assessment

Field data collection of headwater drainage features on-site followed the protocol outlined in Section 4: Module 11, "Unconstrained Headwater Sampling" from the Ontario Stream Assessment Protocol (Stanfield, 2017). Data collected during the site investigations included flow conditions, sediment transport, feature roughness, riparian and feature vegetation, as well as upstream and downstream site features. As outlined in the OSAP manual for assessing headwater drainage features, two to three site visits can be required to complete a HDFA. The first site visit is conducted within the short period following a major freshet event, in Ontario the first sampling event typically occurs between late March to mid-April. The second field event is conducted after the melt/thaw related flow has ceased, typically late April to mid-May. When flow conditions are still observed during the second site investigation, a third site visit may be conducted in July to mid-September to further ascertain the importance of the HDF for seasonal use by fish and other biota.

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015a); and
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-11 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C with annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Landforms, Soils and Bedrock Geology

The topography of the site is somewhat sloped, with a discernable slope from northeast to southwest. The site has a topographical high of 155 mASL in the northeastern portion of the property, along the northern boundary, and a topographical low of 140 mASL along the southern boundary of Appleton Side Road.

A single topographical landform, as mapped by Chapman and Putnam (1984) is described on the subject property, Limestone Plains of the Smiths Falls Limestone Plains.

The Ontario Geological Survey (OGS, 2019) identifies one surficial soil unit on the subject property, Paleozoic bedrock. This surficial unit extends past the property boundaries in all directions.

Bedrock on the site is composed of the Ottawa Group, Simcoe Group and Shadow Lake Formation comprised of limestone, dolostone, shale, arkose and sandstone.

3.3 Surface Water, Groundwater and Fish Habitat

Surface water features on-site consist of a headwater drainage feature, one swamp wetland community, a swamp inclusion, and a mixed shallow aquatic inclusion.

The headwater drainage feature is located along the northwestern property boundary and flows north to south. The feature appears to drain the property to the north as well the on-site mixed shallow aquatic inclusion. Off-site water features were observed entering the site, connecting to the feature through a small diameter culvert under a gravel pedestrian pathway. The feature has an approximate length of 250 m, losing definition as it approaches the southwest corner of the property, at its most downstream extents. Throughout the spring and early summer, the headwater drainage feature displayed slow flow, with depths of up to 30 cm, with most of the

feature going dry by mid-summer. Further details regarding the headwater drainage feature are provided in the attached HDF report (Appendix D) and in Section 3.3.1 below.

One swamp wetland community were identified on-site within the southernmost corner of the property. This wetland was identified by GEMTEC biologists during the field investigations.

Four patches of wetland mapped by the MVCA were identified on-site during the desktop review. However, two of these wetland communities were observed to be absent from site, based on observations from the field investigations including lack of surface water, wetland vegetation species, and amphibian activity. The remaining two MVCA mapped wetlands were identified to be inclusions of larger communities based on their small size (>0.5 ha) and are detailed below.

The swamp wetland inclusion located centrally along the northern property boundary is mapped by the MVCA and was confirmed to be present during the field investigations. Depths within the wetland inclusion were between 2 – 15 cm. Depths were observed to decrease to 5 cm, with much of the wetland drying up, by July.

The mixed shallow aquatic inclusion is mapped as an unevaluated wetland by MVCA. However, observations from the site investigations revealed the area to be pooling over exposed bedrock. Depths ranged between 5 – 30 cm, with the greatest depths present early in the season. The aquatic inclusion was mostly dry by July.

No fish were observed within any of the above-mentioned features throughout the 2023 field season.

No other surface water, groundwater, or fish habitat features were identified on-site.

Through completion of the HDFA and through observations during field investigations, the headwater drainage feature and local wetlands were confirmed not to provide fish habitat. It is assumed that the absence of fish habitat is primarily a result of shallow depths, short hydroperiod and lack of permanency and connectivity to other waterbodies.

Groundwater investigations were not completed in support of this EIS.

3.3.1 Headwater Drainage Feature Assessment

A headwater drainage feature assessment (GEMTEC, 2023) was conducted for the identified headwater drainage feature on-site. It should be noted that all eleven HDFs identified on-site are reflective of naturalized channel conditions and are associated with the drainage of on-site and off-site wetlands. The headwater drainage features are labelled as H1A-S1 through H1A-S9, H1B-S1 through H1B-S2, and H1C, and are illustrated on Figure A.2 of the attached HDF report (Appendix D).

H1A occurs along the northwestern property boundary originating centrally on-site where it appears to provide drainage for a small patch of wetland. H1A has a naturalized channel along most of its extent, losing definition in the southern portion of site where it opens into a field. When water was present during field investigations, flow was observed to non-distinctly dissipate into the field (MEFM4). Water was not observed to directly connect to other downstream surface water features. H1A has an approximate length of 250 m. H1A was observed to have limited connectivity to other surface water features, with the only observed connectivity being to other isolated headwater drainage features. H1A was split into nine segments due to observed differences in flow and riparian vegetation. The various segments of H1A have been separated through the use of consecutive alpha-numeric identifiers and have been labelled H1A-S1 through H1A-S9.

The headwater drainage feature of H1B occurs in the white cedar forest (Ecosite: FOCM2-2), with channelization under the gravel pathway north of site. H1B has a naturalized channel along most of its extent, joining with H1A 60 m from the outlet of the gravel path culvert. H1B was observed to have limited connectivity to other surface water features, with the only observed connectivity being to other isolated headwater drainage features. H1B was split into two segments due to observed differences in flow and riparian vegetation. The two segments of H1B have been separated through the use of consecutive alpha-numeric identifiers and have been labelled H1B-S1 through H1A-S2.

H1C is present within the white cedar forest and mixed shallow aquatic communities (Ecosites: FOCM2-2, SAM-1). H1C has a naturalized channel along most of its extent, draining the water within the mixed shallow aquatic community towards H1A. H1C was observed to have limited connectivity to other surface water features, with the only observed connectivity being to other isolated headwater drainage features. H1C was assessed as one segment due to consistent flow and vegetation conditions throughout its extent.

The evaluation, classification, and management recommendations for each HDF, as derived from the Guidance Document (CVC/TRCA, 2014) are provided in the HDFA for the property in Appendix D.

3.4 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC in2023, following protocols utilized in the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation at the site consists of deciduous forests, and shallow open water wetlands.

Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 – Vegetation Communities

ELC Community Type	Description	Size (ha)
Buckthorn Deciduous Shrub Thicket (THDM2-6)	Present fronting Appleton Side Road within the westernmost corner of site is a buckthorn deciduous shrub thicket community. The headwater drainage feature is present in the northern part of the community, flowing into the mixed meadow to the southwest. Vegetation within this community was heavily dominated by European buckthorn (*Rhamnus cathartica*). Ground cover vegetation was limited to grasses (*Poaceae sp.*) and moss (*Bryophyta sp.*).	2.91
Fresh – Moist Mixed Meadow (MEMM4)	The mixed meadow community was observed in the southern portion of site, encompassed by the buckthorn thicket community. Groundcover vegetation was the dominant type throughout, with species observed including Canada goldenrod (*Solidago canadensis*), grasses, red clover (*Trifolium pratense*), reed (*Phragmites sp.*), common milkweed (*Asclepias syriaca*), bladder campion (*Silene vulgaris*), wild carrot (*Daucus carota*), aster (*Aster sp.*), sow thistle (*Sonchus arvensis*), and bird's foot trefoil (*Lotus uliginosus*). Scattered shrubs were present and concentrated along the perimeter of the community. Species present included European buckthorn, meadow willow (*Salix petiolaris*), and alternate leaved dogwood (*Cornus alternifolia*). The meadow was observed to be very wet following the spring melt but did not hold surface water post spring freshet.	0.51
Fresh – Moist Mixed Thicket (THMM2)	Present in two separate locations as a small patch within the southern portion and as large patch centrally, is a moist mixed thicket dominated by shrub level vegetation. The sub canopy was co-dominated by juniper (*Juniperus communis*), young eastern white cedar (*Thuja occidentalis*), and European buckthorn. Scattered meadow willow and American elm (*Ulmus americana*) were sub-dominant species. Areas where shrub level vegetation thinned, ground cover vegetation was observed to be predominantly grasses, Canada golden rod, poison ivy (*Toxicodendron radicans*), and milkweed. Observed as a 0.34 ha patch within the mixed thicket was a Fresh to Moist Forb Meadow (MEFM4).	4.22

ELC Community Type	Description	Size (ha)
	Vegetation was noted as similar to mixed meadow community, albeit the distinct lack of grass species. Forb species of the above noted community were dominant throughout. Scattered shrubs were present and concentrated along the perimeter of the community with the same diversity as the mixed meadow community. The meadow was observed to be very wet following the spring melt but did not hold surface water post spring freshet	
Mineral Deciduous Thicket Swamp (SWTM5)	A small patch of deciduous thicket swamp is present in the southern most corner of the property. Black ash (*Fraxinus nigra)* saplings and meadow willow were the dominant shrub level species. Ground cover was dominated by inundated stands of cattail (*Typha sp.*).	0.76
Dry -Fresh Calcareous Bedrock Mixed Thicket (THMR1)	Located in the southwestern half of the property is a dry to fresh mixed thicket. Exposed calcareous bedrock was visible throughout. The headwater drainage feature flows south through the western portion of this community. Canopy level vegetation included semi-mature eastern white cedar. Shrub level vegetation was consisted of common buckthorn and young eastern white cedar. Other constituents included alternate-leaved dogwood. Groundcover vegetation was scarce and included moss, and saplings of the above-mentioned species.	1.83
Dry – Fresh Calcareous Bedrock Coniferous Thicket (THCR1)	This community occurs in three separate areas on-site, and is fragmented by the moist mixed thicket and white cedar forest communities. Juniper was the dominant vegetation species throughout. Subdominant species included young eastern white cedar and white pine saplings (*Pinus strobus*). Herbaceous growth was limited, including some grass species and young saplings.	3.91

ELC Community Type	Description	Size (ha)
Dry to Fresh White Cedar Coniferous Forest (FOCM2-2)	Present centrally on-site is a patch of dry to fresh cedar forest with a mixed shallow aquatic inclusion. Eastern white cedar was the dominant canopy species. Other common constituents included balsam fir (*Abies balsamea*), trembling aspen (*Populus tremuloides*), and ironwood (*Ostrya virginiana*). Shrub level vegetation was primarily saplings of eastern white cedar. Herbaceous vegetation was limited to wild sarsaparilla (*Aralia nudicaulis*), common self-heal (*Prunella vulgaris*), and Canada mayflower (*Maianthemum canadense*). A mixed shallow aquatic inclusion (SAM-1) was observed in the central patch of forest. The inclusion is approximately 0.18 ha and was observed to be flooded with 10-40 cm of water until early summer. Vegetation within the inclusion included black ash, grasses, and sensitive fern (*Onoclea sensibilis*).	3.6
Fresh to Moist White Cedar Coniferous Forest (FOCM4-1)	One large patch of fresh to moist white cedar forest was present in the northern portion of site, with a black ash mineral deciduous swamp inclusion. The topography was noted to vary within this community, creating scattered pooling early in the season. Eastern white cedar was the dominant canopy species. Other common constituents included balsam fir and white birch (*Betula papyrifera*). Shrub level vegetation included European buckthorn, alternate-leaved dogwood, and eastern white cedar saplings. Where the canopy was semi open, ground cover was sparse and dominated by grasses and saplings of the above-mentioned tree species. Herbaceous species observed included wild sarsaparilla, common self-heal, trillium (*Trillium sp.*), and yellow lady slipper (*Cypripedium parviflorum*). An ash mineral deciduous swamp inclusion (SWDM2) of 0.14 ha in size is present in the patch of forest within the northern portion of the property. Vegetation present within the inclusion included reeds, black ash, eastern white cedar, and meadow willow.	6.9

3.5 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2023 are summarized in Table C.1 in Appendix C.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as “features and areas, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area”.

4.1 Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands “mean lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface.” While *significant* regarding wetlands means “an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the province, as amended from time to time.”

No provincially significant wetlands were identified during the desktop review, nor were they identified on-site. As such, significant wetlands are not discussed or evaluated further in this EIS.

One swamp wetland (SWTM5) community was confirmed to be present on-site. The wetland community was not mapped by the MVCA and was identified by GEMTEC within the southern most corner of the property.

As mentioned in Section 3.3 above, two patches of unevaluated wetland as mapped by the MVCA were confirmed to be present on-site. However, due to their small area (<0.5 ha), they are considered to be inclusions of larger communities. The inclusion located along the northeastern property boundary was identified as a black ash mineral deciduous swamp inclusion (SWDM2). The second inclusion is located along the northwestern property boundary was identified as a mixed shallow aquatic inclusion (SAM-1).

Potential impacts to local unevaluated wetlands from the proposed development are discussed in Section 6 below.

4.2 Significant Woodlands

Significant woodlands are identified in the Natural Heritage Reference Manual (OMNR, 2010) as “an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.”

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any

woodland that contains any of the four criteria listed in Section 7.2 of the Natural Heritage Reference Manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics, and economic and social functional values.

Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. Based on the guidance outlined in the natural heritage reference manual (OMNR, 2010) and the Municipality of Mississippi Mills Official Plan, it is assumed that the woodland coverage within the planning area is between 15% and 30% of the land area, therefore the minimum woodland size for determining significance is 20 ha or greater.

Based on the results of the significant woodland screening presented in Table C.2, and observations from the field investigation, woodlands on-site and within the study area are considered significant based on their size and ecological functions.

In addition to the NHRM criteria presented in Table C.2, the Mississippi Mills Official Plan has significant woodlands mapped on-site, extending into the greater study area. This contiguous stretch of woodlands, as measured using significant woodland mapping from the Mississippi Mills OP (2018), is approximately 63 ha in size.

Impacts significant woodlands are discussed in Section 6 below.

4.3 Significant Valleylands

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as ‘a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time”. The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the ‘top-of-bank’ or ‘top-of-slope’ associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high-water marks or the width of the stream meander belt (OMNR, 2010).

As discussed in Section 3.2, the site has a gentle, gradual slope, and no valleylands were identified on-site during the desktop review or the site investigations. As such significant valleylands are not discussed or evaluated further in this EIS.

4.4 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario’s biodiversity and natural

landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

The Burnt Lands life science ANSI was identified approximately 650 m northeast of the subject property. However, no habitat associated with the ANSI occurs on-site or within the study area.

No other ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.5 Significant Wildlife Habitat

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (MNRF, 2000) and the significant wildlife habitat ecoregion criterion schedules (MNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Table C.3, C.4, C.5 and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.5.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015a) identify 12 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 12 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why they are or are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, one *candidate* habitat of seasonal concentration of animals is present on-site: reptile hibernaculum. The *candidate* SWH are discussed in detail in the subsections below.

4.5.1.1 *Candidate* Reptile Hibernaculum

Candidate reptile hibernacula SWH was identified on-site within the large rock piles and exposed bedrock outcrops in the northern most portion of the property, within the fresh to moist white cedar coniferous forest (Ecosite: FOCM4-1).The location of the *candidate* reptile hibernaculum structure is illustrated on Figure A.4 in Appendix A.

Candidate reptile hibernaculum habitat provides critically important lifecycle habitat for the following wildlife species: eastern gartersnake, northern watersnake, northern red-bellied snake, northern brownsnake, smooth green snake, northern ring-necked snake, milksnake , eastern ribbonsnake , and the southern shield population of five-lined skink . Hibernation sites are located

bellow the frost line in burrows, rock crevices, and other natural or naturalized locations. Sites for hibernation possess specific habitat parameters and consequently are used annually.

The defining criteria for confirmed reptile hibernaculum SWH is the presence of a minimum of five individuals of a snake species or individuals of two or more snake species. Any hibernaculum with the presence of five-lined skink is considered significant.

Targeted reptile hibernaculum surveys were outside of the scope for this EIS. As such, the presence or absence of reptile hibernaculum SWH was not confirmed.

Impacts to *candidate* reptile hibernaculum habitat from the proposed development are discussed in Section 6.

4.5.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.5.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wildlife habitats are evaluated in Table C.4 in Appendix C.

Following review of Table C.3 in Appendix C, two specialized habitats for wildlife are present within the broader study area, *candidate* seeps and springs SWH and *candidate* woodland amphibian breeding SWH.

4.5.3.1 *Candidate* Seeps and Springs

Candidate seeps and springs SWH was identified on-site based on the identification of a potential on-site seep within the fresh to moist mixed thicket (Ecosite: THMM2). Further, indicator species including blue-spotted salamander and white-tailed deer, were observed throughout the field investigations. Of note, a high density of deer carcasses was observed within the mixed thicket community.

Candidate seeps and springs SWH provide critical feeding and drinking areas, especially in the winter, often supporting a variety of plant and animal species. Animals associated and reliant on

seeps and springs include wild turkey, ruffed grouse, spruce grouse, white-tailed deer, and salamander sp. Often they are found within headwater areas within forested habitats, requiring a 25% meadow/field/pasture.

The defining criteria for *confirmed* seeps and springs SWH is the presence two or more seeps/springs. Given that only one seep was observed throughout the 2023 field investigations, seeps and springs SWH is not considered present within the study area and the are not discussed or evaluated further in this EIS.

4.5.3.2 *Candidate* Woodland Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat was identified on-site based on the presence of indicator species as well as appropriate habitat conditions of the on-site wetlands and wet inclusions (ELC Codes SWDM2, SWTM5, SAM-1) adjacent to and within the conifer forest (ELC Code FOCM4-1).

Woodland amphibian breeding habitat provides critically important breeding habitat for the following wildlife species: eastern newt, blue-spotted salamander, spotted salamander, gray treefrog, spring peeper, western chorus frog and wood frog. Woodland amphibian breeding habitat can be located in all forested ecosites that have or are adjacent to a wetland, pond or woodland pool (including vernal pools) >500 m^2 (about 25 m diameter). Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.

The defining criteria for confirmed woodland amphibian breeding SWH is the presence of breeding populations of one or more listed newt/salamander species, two or more of the listed frog/toad species with at least 20 individuals, or two or more of the listed frog/toad species with a call level code 3.

To evaluate the potential for the habitat on-site to provide amphibian breeding habitat, a series of amphibian breeding surveys were conducted. Table 4.1 below summarizes the results of the amphibian breeding surveys described in Section 2.2.2 of this report. Figure A.2 illustrates the survey locations.

Table 42.1 Summary of Amphibian Breeding Call Surveys

Survey Location	Breeding Habitat	Species/Highest Call Code/Date	Confirmed SWH
1	Woodland	SPPE/3/April 27, 2023 AMTO/1-1/April 27, 2023 CHFR/1-3/April 27, 2023 BLSP/May 25, 2023	Yes
2	Woodland	SPPE/3/April 27, 2023 CHFR/1-3/April 27, 2023 BLSP/April 27, 2023	Yes
3	Woodland	GRFR/3/May 23, 2023 SPPE/1-1/May 23, 2023	No
4	Woodland	No Calling Heard	No

Notes: GRFR = Green frog, GRTR = Gray Treefrog, SPPE = Spring Peeper, AMTO = American Toad, CHFR = Chorus Frog, BLSP = Blue-Spotted Salamander. Call Codes: the first number indicates the call code where: (1) number of individuals can be accurately counted, (2) individuals can be readily estimated, (3) calls are continuous and overlapping such that estimates of individuals are not reliable. The second number identifies the number of individuals calling. Call codes of 3 do not have a second number, as individual estimates are not possible.

In addition to the frog species heard calling during the targeted nighttime surveys, blue-spotted salamander were observed throughout the 2023 field investigations around the headwater drainage feature, black ash mineral deciduous swamp, and mixed shallow aquatic ecosite. Blue-spotted salamander egg masses were observed within the mixed shallow aquatic ecosite.

Based on review of Table 4.1 and the information above, the on-site local unevaluated wetlands, identified as an ash mineral deciduous swamp (SWDM2) and mixed shallow aquatic (SAM-1) ecosites respectively, are considered to be confirmed woodland amphibian breeding habitat. The entirety of the on-site forests (FOCM 2-2 and FOCM4-1) are considered to provide SWH for woodland breeding amphibians. The deciduous thicket swamp (SWTM5) on-site does not meet the defining use criteria for *confirmed* woodland amphibian breeding SWH.

Impacts to *confirmed* woodland amphibian breeding habitat from the proposed development are discussed in Section 6 below.

4.5.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political

boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6Eare provided in Table C.5 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS. Following review of Table C.5 in Appendix C, one habitat of species of conservation concern was identified on-site: special concern and rare wildlife species (common nighthawk, eastern wood-pewee, grasshopper sparrow, and wood thrush).

4.5.4.1 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations and from NHIC data squares encompassing the site, four species of special concern have been identified on-site or within the study area: eastern wood-pewee, grasshopper sparrow, common nighthawk, and wood thrush. No other species of special concern or rare wildlife species were identified on-site or within the broader study area.

Eastern Wood-Pewee

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4B (apparently secure - breeding population) and is listed as a species of special concern in Ontario. Eastern wood-pewee is a woodland species that is often found near clearings and edges. The eastern wood-pewee was identified as having potential to occur within the forested communities (FOCM2-2, FOCM4-1) adjacent to meadow habitats (MEMM4, MEFM4) on-site. The species was not observed on-site during the field investigations, however the NHIC indicates an occurrence record within 1 km of the site. Given the abundance of forest and open habitat in the study area, and the NHIC occurrence record for the species, there is a moderate potential for eastern wood-pewee and their habitat to occur on-site. Impacts to the Eastern wood-pewee are discussed in Section 6 below.

Grasshopper Sparrow

The Grasshopper sparrow is a small songbird with an S-rank of S4B (apparently secure - breeding population) and is listed as a species of special concern in Ontario. The Grasshopper sparrow is primarily found in grassland habitats and has a preference for areas with sparse vegetation and open ground. It has been recorded within the NHIC 1 km^2 grid that encompasses the site, indicating the potential for its occurrence on-site. Given the presence of meadow habitat

(MEMM4, MEFM4) on-site, there is a moderate potential for the Grasshopper sparrow and its habitat to be present. Impacts to the Grasshopper sparrow are discussed in Section 6 below.

Wood Thrush

The Wood Thrush is a medium-sized songbird with an S-rank of S4B (apparently secure – breeding population) and is listed as a species of special concern in Ontario. Wood thrush is typically found in deciduous and mixed forests with dense understory vegetation. The species prefers habitats with a combination of trees, shrubs, and leaf litter. The wood thrush was identified as having potential to occur within the forested communities (FOCM2-2, FOCM4-1) adjacent to meadow habitats (MEMM4, MEFM4) on-site. The species was not observed on-site during the field investigations, however the NHIC indicates an occurrence record within 1 km of the site. Given the abundance of forest and open habitat in the study area, and the NHIC occurrence record for the species, there is a moderate potential for wood thrush and their habitat to occur on-site. Section 6 below discusses potential impacts to wood thrush.

4.6 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “spawning grounds and nursery, rearing food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When development is unable to avoid resulting in the harmful alteration, disturbance or destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

A fisheries assessment was not conducted as part of this EIS. Based on observations from the site investigations, due to lack of sufficient water depth, water permanency, lack of flow, and connectivity to downstream surface water features, it is assumed that the headwater drainage features and unevaluated wetlands on-site do not provide direct or permanent fish habitat. Surface water features on-site are assumed to contribute to base flow conditions for downstream fish habitat, particularly during spring freshet and following major precipitation events. Furthermore, no fish were observed within any features during field investigations. No critical habitat or aquatic species at risk have been identified on-site or within the adjacent surface water features.

As such, fish habitat is not considered present on-site and is not discussed or evaluated further in this EIS.

4.7 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site-specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.7 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their regional distribution, their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in the Section 6.5.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area includes the proposed development of an 8.1 ha dementia village and retirement community on an approximately 24.6 ha existing property.

The southern portion of the property is proposed to be developed as a dementia village and retirement community fronting to Appleton Side Road. The proposed development will require water, sanitary and storm servicing including a stormwater management facility. The development will include one new 24-meter right-of-way street extending east from the Appleton Side Road and Industrial Drive intersection. The proposed development will consist of a 4-storey Long-Term Care Facility (192 beds) including surface parking, and a 4-storey seniors apartment building (66 units) with surface and underground parking. Additionally, the development will include a dementia village (8 pods with 84 beds and a community center building) and 21 semi-detached blocks (42 townhouse units).

Stormwater management for the property will entail the creation of a stormwater management pond in the southernmost corner of site. Details of the design of the stormwater management pond are not available at this time as it is to be determined during the draft plan of subdivision stage. As part of the design requirements, the stormwater management pond will provide the mandatory 80% minimum removal of total dissolved solids prior to discharge. The proposed pond will be connected to the existing Appleton Side Road ditch. Full details regarding the site servicing and stormwater management are provided by NOVATECH under separate cover. Future components of the proposed project considered in the impact assessment presented in Section 6 include: tree clearing and vegetation grubbing, fill placement and elevation grading, laneway and roadway construction, construction of stormwater infrastructure, excavation and pouring of foundations, construction of single-storey and four-storey multi-unit dwellings, all on municipal services, and general landscaping activities.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5. Natural heritage features identified in Section 4 of this report as present or likely to be present are discussed in the subsections below.

Potential effects to the environment of the site from the proposed development outlined in Section 5 include: a loss of woodlands, minor loss of on-site wetland, tree clearing and vegetation grubbing, habitat encroachment, increased disturbance, increased human-wildlife interactions, vegetation removal, disturbance of the natural soil mantle, increased noise generation, increased human disturbance, increased storm water generation, and increased nutrient loading to adjacent surface water features.

6.1 Significant Woodlands

As discussed in Section 4.2, the woodlands (Ecosites: FOCM4-1, FOCM2-2 and SWDM2) on-site are considered significant due to their contiguous size and ecological functions. As tree clearing and vegetation grubbing will be required as part of construction, the proposed future development has the potential to result in a loss of significant woodland cover on-site. Direct impacts to significant woodlands include the loss of up to 0.14 ha of the dry to fresh white cedar coniferous forest (Ecosite: FOCM2-2). Although 0.14 ha of significant woodlands will be lost to the development, the remaining 10.36 ha of on-site significant woodlands will be maintained. Further, the 0.14 ha loss only represents a 0.002% loss of the 63 ha of significant woodlands within the greater study area. The remaining woodlands will continue to meet the significant woodlands status based on contiguous size and ecological function despite the minor loss.

Other potential impacts include short-duration construction impacts, including heavy machinery encroachment, fill placement, and long-term human disturbances such as noise generation, dumping of refuse and yard waste and trampling.

Habitat fragmentation from the potential loss of significant woodlands is anticipated to be negligible given the abundance of woodland habitat in the greater study area and the relatively low quality of the forest edge habitat proposed to be cleared.

Avoidance and mitigation measures to reduce impacts to significant woodlands are outlined in Section 7.

6.2 Local Wetlands

As outlined in Section 3.3 and Section 4.1, two swamp wetland communities, a swamp inclusion, and a mixed shallow aquatic inclusion are present in the study area (Ecosites: SWMM1-1, SWTM5, SWDM2-1, and SAM-1). No Provincially Significant Wetlands are present within the study area.

The proposed project, as illustrated on Figure A.4 is anticipated to result in the loss of the on-site portion (0.76 ha) of mineral deciduous thicket swamp (Ecosite: SWTM5) from the total 1.08 ha of local wetlands on-site. This loss of on-site wetland habitat represents an 70% loss in the total local wetland area.

Impacts to local wetlands within the study area will include the direct loss of wetland habitat, the cumulative loss of habitat complexity and structure, potential changes to surface and groundwater balance through increased storm water runoff as a result of an increase in the impervious surface area, compaction of soils and vegetation loss.

Potential impacts to water quality from the proposed development may include increased overland flow and contaminant sediment transport caused by an increase in impervious surface area and vegetation loss, changes to the hydrologic regime, increased nutrient and/or contaminant loading through both overland and subsurface pathways resulting from landscaping practices. However, considering the current residential and commercial land use within and surrounding the study area, alterations to water quality from overland flow, nutrient loading and sediment transport from the residential development are likely to be negligible by comparison.

Impacts relating to wetland loss, and potential impacts relating to hydrologic regime and stormwater runoff can be offset through the design and construction of naturalized stormwater management ponds and habitat compensation. Mitigation measures to offset the loss of on-site local wetlands and to prevent cumulative impacts to off-site wetlands from development impacts are provided in Section 7.

6.3 Significant Wildlife Habitat

The potential presence of significant wildlife habitat on-site and within the study area was evaluated in Section 4.5, and as a result of this assessment, three types of significant wildlife habitat was determined to be present within the study area: *confirmed* woodland amphibian breeding habitat, *candidate* reptile hibernaculum, and habitats of special concern and rare wildlife species (common nighthawk, eastern wood-pewee, grasshopper sparrow and wood thrush).

Potential impacts to significant wildlife habitats are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.3.1 *Confirmed* Woodland Amphibian Breeding Habitat

Confirmed woodland amphibian breeding habitat is confined to a swamp and aquatic inclusions (Ecosites: SWDM2 and SAM-1) on-site and extends 230 m into adjacent forested areas (FOCM4-1 and FOCM2-2).

Although the proposed development is anticipated to result in the loss of the entire portion of on-site mineral deciduous thicket swamp, this wetland community was shown through the amphibian

surveys to not provide SWH habitat. As the on-site wetland *confirmed* to provide woodland amphibian breeding SWH are over 150 m from the proposed development, no direct impacts are anticipated to occur to the on-site wetland component of woodland amphibian breeding SWH.

Direct impacts to the terrestrial component of the SWH from the proposed development are anticipated given the required removal a minor 0.14 ha portion of woodlands (FOCM2-2) within 230 m of the *confirmed* woodland amphibian breeding wetland inclusions (SAM_1, SWDM2-1). Although 0.14 ha of terrestrial habitat will be lost, the remaining 10.36 ha of on-site suitable terrestrial habitat will be maintained.

Potential indirect impacts to wetlands on-site are primarily associated with changes to the surface water and groundwater water balance through increased stormwater runoff resulting from an increase in the impervious surface area and encroachment resulting in compaction of soils and vegetation loss.

Other potential impacts include short-duration construction impacts, including heavy machinery encroachment, fill placement, and long-term human disturbances such as noise generation, dumping of refuse and yard waste and trampling, and increased road mortality, particularly during the breeding season.

Mitigation measures to protect confirmed woodland amphibian breeding habitat are provided in Section 7.

6.3.2 *Candidate* Reptile Hibernaculum

Candidate reptile hibernaculum habitat can be found within the large rock piles and exposed bedrock outcrops in the northern most portion of the property, within the fresh to moist white cedar coniferous forest (Ecosite: FOCM4-1).

Given the nature of the proposed project and considering the distance between the identified rock structures and the proposed residential development, being greater than 350 m at the closest point, direct impacts to *candidate* reptile hibernaculum habitat are not anticipated.

Mitigation measures for the direct protection of *candidate* hibernaculum are not provided, however, mitigation measures for the protection of reptile species during construction are provided in Section 7.

6.3.3 Habitats of Special Concern and Rare Wildlife Species SWH

6.3.3.1 Eastern Wood-Pewee

The NHIC database indicates occurrence records within 1 km of the site. The eastern wood-pewee was not observed during the field investigation.

Impacts to eastern wood-pewee and their habitat on-site from the proposed development are concerned with the woodlands on-site (Ecosites: FOCM4-1, FOCM2-2, and SWDM2) which may provide suitable nesting and foraging habitat. These impacts may include loss habitat loss, increased fragmentation, and potential disturbance from increased human presence.

Based on the current proposed development concept, an 8.1 ha portion of the site is anticipated to be cleared of vegetation and built out. As such, direct impacts include the loss of up to 0.14 ha of the 10.5 ha of on-site suitable woodland habitat (1.3%)for eastern wood-pewee. The proposed development may result in the loss of suitable woodland habitat on-site however, suitable habitat is readily available within the broader study area.

Impacts from increased human presence and increased fragmentation are anticipated to be negligible given the existing development surrounding the proposed development and the availability of suitable habitat in the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

6.3.3.2 Grasshopper Sparrow

The NHIC database indicates occurrence records within 1 km of the site. The grasshopper sparrow was not observed during the field investigation.

Impacts to grasshopper sparrow and their habitat on-site from the proposed development are concerned with grassland habitat on-site (Ecosite MEFM4), which may provide suitable nesting and foraging habitat. These impacts may include loss habitat loss, increased fragmentation, and potential disturbance from increased human presence.

Based on the current proposed development concept, an 8.1 ha portion of the site is anticipated to be cleared of vegetation and built out. As such, direct impacts include the loss of the entire 0.34 ha of on-site suitable grassland habitat for grasshopper sparrow. The proposed development may result in the loss of suitable grassland habitat on-site however, suitable habitat is readily available within the broader study area.

Impacts from increased human presence and increased fragmentation are anticipated to be negligible given the existing development surrounding the proposed development and the availability of suitable habitat in the broader study area.

Mitigation measures aimed at minimizing impacts to nesting and foraging Grasshopper sparrows are presented in Section 7.

6.3.3.3 Wood Thrush

During the breeding season, the wood thrush is found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). For wood thrush, habitat selection is based more on the structure of the forest, preferring sites with lower elevations, trees taller than 16 m, closed canopy (>70%), with a high variety of deciduous species, moist soil and decaying leaf litter (COSEWIC, 2012b).

The NHIC database indicates occurrence records within 1 km of the site. The wood thrush was not observed during the field investigation.

Impacts to wood thrush and their habitat on-site from the proposed development are concerned with the woodlands on-site (Ecosites: FOCM4-1, FOCM2-2, and SWDM2) which may provide suitable nesting and foraging habitat. These impacts may include loss habitat loss, increased fragmentation, and potential disturbance from increased human presence.

Based on the current proposed development concept, an 8.1 ha portion of the site is anticipated to be cleared of vegetation and built out. As such, direct impacts include the loss of up to 0.14 ha of the 10.5 ha (1.3%) of on-site suitable woodland habitat for wood thrush. The proposed development may result in the loss of suitable field habitat on-site however, suitable habitat is readily available within the broader study area.

Impacts from increased human presence are anticipated to be negligible given the existing development surrounding the proposed development and the availability of suitable habitat in the broader study area.

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

6.4 Headwater Drainage Features

As mentioned previously in Section 4.6, when water was present within and upon discharging from the HDFs, flow was observed to non-distinctly diffuse into the meadow field (MEFM4), and to not directly connect to other downstream surface water features. Based on observations, it is assumed that the mapped HDFs are more representative of channels conveying temporary and seasonal overflow from upstream wetlands, as opposed to actual HDFs conveying flow to downstream systems and/or habitats. Based on the topography of the site, it is anticipated that surface water would continue downgradient and enter into either the roadside ditch along Appleton Sideroad and/or into the local unevaluated wetland in the southern most corner of the site, or infiltrate into the underlying soil/bedrock. As such, observations confirm the lack of suitable and/or contribution to fish habitat.

As per the proposed development, segments identified as H1A-S1 through H1A-S4 are to be functionally altered. These segments account for an approximate 115 m stretch of the headwater drainage feature. Other impacts associated with the alterations of the HDFs include the loss of adjacent vegetation associated with land grading required for the development. As per observations during the field investigations, these segments were observed to go dry by late summer and to provide little in terms of habitat. These stretches lacked diverse riparian vegetation communities, had no in-water vegetation, and were nearly devoid of large and medium sized hard substrates such as logs, sticks, and boulders. As these segments were classified as requiring **conservation,** any alterations to them will still maintain current hydrological functions and flows, meeting the requirements from the CVC/TRCA (2014) guidelines. As such, overall impacts to these segments are anticipated to be minimal and temporary.

HDFs H1A-S6 through H1A-S9 and H1B-S1 through H1B-S2 are not anticipated to be directly altered from the development. Potential impacts to these HDFs are mostly associated with indirect impacts resulting from potential loss of vegetation required for clearing and grading of adjacent lands. Additionally, function of the local wetlands associated with these HDFs are not anticipated to altered as they sit upgradient of the HDFs slated for alteration. As such, the alteration of the downgradient HDFs is not anticipated to have any impacts on the hydroperiod or hydrological function of the HDFs H1A-S6 and upstream to H1B-S2, thus meeting the requirements of the guidance document.

Mitigation measures to protect form, function, and integrity of the on-site HDFs are provided below in Section 7.3.

6.5 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.7, are discussed on a species-by-species basis in the subsections below.

6.5.1 Bobolink

Three diurnal breeding bird surveys were conducted during June 2023, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at five point count locations, with coverage of the surrounding and on-site suitable grassland habitat (Ecosites: MEMM4). The survey locations are illustrated on Figure A.2 in Appendix A. No bobolink were observed on-site or within the study area throughout the 2023 investigations. Given

the agricultural land use of the greater study area, it is likely that the NHIC observation is associated with higher quality grassland habitat outside of the immediate study area. As such, bobolink and its habitat are not considered to be present within the study area and are not discussed or evaluated further in this EIS.

6.5.2 Eastern Meadowlark

Three diurnal breeding bird surveys were conducted during June 2023, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at five point count locations, with coverage of the surrounding and on-site suitable grassland habitats (Ecosites: MEFM4, MEMM4). The survey locations are illustrated on Figure A.2 in Appendix A. No eastern meadowlark were observed on-site or within the study area throughout the 2023 investigations. Given the agricultural land use of the greater study area, it is likely that the NHIC observation is associated with higher quality grassland and pasture habitat outside of the immediate study area. As such, eastern meadowlark and its habitat are not considered to be present within the study area and are not discussed or evaluated further in this EIS.

6.5.3 Eastern Whip-poor-will

Three nocturnal breeding bird surveys were conducted on May 29, June 1, and June 8, 2023, under optimum conditions (moon phase, clear skies and air temperatures above 10°C) to target eastern whip-poor-will. The surveys were conducted at two locations on-site and are shown in Figure A.2 in Appendix A. Results of the nocturnal surveys are presented in Table 6.1 below.

Table 6.1 Summary of Whip-poor-will Survey Results

Survey Date	Whip-poor-will Detected On-site	Whip-poor-will Detected Off-site	Total Whip-poor-will Detected
May 29, 2023	3	0	3
June 1, 2023	1	0	1
June 8, 2023	4	5	9

As outlined in the MNRF general habitat description for eastern whip-poor-will, Category 1 habitat is defined as “areas of suitable habitat between 0 m and 10 m from the nest or centre of approximated defended territory”, Category 2 habitat is defined as “areas of suitable habitat between 10 m and 170 m from the nest or centre of approximated defended territory”, and Category 3 habitat is defined as “areas of suitable habitat between 170 m and 500 m from the nest or centre of approximated defended territory.” The MNRF general habitat description for eastern whip-poor-will is provided in Appendix E.

A total of thirteen whip-poor-will were heard calling within the study area over the course of the three surveys completed for the site. Eight of these observations occurred on-site with the remaining five occurring within the study area. The location of the eastern whip-poor-will observations are illustrated on Figure A.4 in Appendix A. Based on the general habitat description, Category 1, 2, and 3 habitat occurs on-site and within the study area.

Potential direct impacts to whip-poor-will and their habitat from the proposed development include the loss of 0.67 ha of Category 1 habitat, the loss of 8.1 ha of Category 2 habitat, and the loss of up to 8.1 ha of Category 3 habitat, as it occurs on-site.

Other potential impacts include short duration construction impacts, including: heavy machinery encroachment, fill placement and long term human disturbance such as noise generation, dumping or refuse and yard waste and trampling.

Avoidance and mitigation measures intended to prevent harm to eastern whip-poor-will who have the potential to occur on-site are presented in Section 7.

6.5.4 Loggerhead Shrike

The loggerhead shrike prefers open areas dominated by grasses and/or forbs, interspersed with scattered shrubs or trees and bare ground for its breeding habitat. Suitable habitat generally includes pasture, old fields, prairie, savannah, pinyon-juniper woodland, shrub-steppe, and alvars (COSEWIC, 2014). Winter and migration habitat are typically similar to breeding habitat requirements (COSEWIC, 2014). Territory size ranges from 2.7 to 47.0 ha and is corelated to the abundance of trees and shrubs – increasing perch density will decrease territory size (COSEWIC, 2014). In the eastern United States and Ontario, shrikes appear to prefer areas with relatively short grass, in which they may have greater foraging success or where they can forage with more energetic efficiency (COSEWIC, 2014).

Three diurnal breeding bird surveys were conducted during June 2023, under optimum weather conditions (minimal to no rain, low winds) to target breeding birds. The surveys were conducted at five point count locations, with coverage of the surrounding and on-site suitable meadow, thicket, and pasture habitats (Ecosites: MEFM4, MEMM4, THCR1, THMR1, THDM2-6, THMM2). The survey locations are illustrated on Figure A.2 in Appendix A. No loggerhead shrike were observed on-site or within the study area throughout the 2023 investigations. Given the agricultural land use of the greater study area, it is likely that the NHIC observation is associated with higher quality meadow and pasture habitat outside of the immediate study area. As such, loggerhead shrike and its habitat are not considered to be present within the study area and are not discussed or evaluated further in this EIS.

6.5.5 Eastern Small-footed Myotis

Although the woodland habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is

a potential for eastern small-footed myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect eastern small-footed myotis from impacts of the proposed development are discussed in Section 7.

6.5.6 Little Brown Myotis

Although the woodland habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for little brown myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown myotis are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect little brown myotis from impacts of the proposed development are discussed in Section 7.

6.5.7 Tri-colored Bat

Although the woodland habitat on-site does not meet the requirements to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with habitat loss, encroachment and increased wildlife-human interaction. Mitigation measures intended to protect tri-colored bat from impacts of the proposed development are discussed in Section 7.

6.5.8 Blanding's Turtle

A total of five targeted turtle basking surveys were completed throughout the 2023 field season. All surveys were completed in accordance with the document titled "Survey Protocol for Blanding's Turtle in Ontario", published by the MNRF, 2015. Survey efforts investigated the headwater drainage feature and the aquatic habitats on-site (Ecosites: SWMM1-1, SWTM5, SWDM2-1, and SAM-1). Blanding's turtle was not observed on-site or within the study area during any of the targeted basking surveys. Further, no Blanding's turtle or other turtle species were observed throughout the 2023 field work. Observations from the site investigation indicate the surface water features within the study area lack sufficient water depths and permanency to support turtle presence. Given the negative survey results and the observed habitat conditions, it is unlikely that Blanding's turtle or its habitat are present on site. As such, Blanding's turtle and its habitat are not discussed or evaluated further in this EIS.

6.5.9 Black Ash

Black ash was added to the Species at Risk in Ontario List in January 2022. Following its addition to the registry, the MECP temporarily suspended protections for a period of two years. During this time period proponents will not need to seek authorizations for activities that impact black ash and its habitat (Ontario, 2023a).

As habitat and species protections are suspended until January 2024, at the time of the site investigations and preparation of this report, no protections are currently required for black ash. However, as the proposed project is to commence after January 2024, it is anticipated that project will have impacts on black ash.

Direct impacts to black ash and their habitat are anticipated to be associated with the necessary vegetation removal, site disturbances, and construction activities. As described previously in Section 3.4, black ash was identified on-site within three different communities: Dry to Fresh White Cedar Coniferous Forest (FOCM2-2), Fresh to Moist White Cedar Coniferous Forest (FOCM4-1), and Mineral Deciduous Thicket Swamp (SWTM5).

A small, shallow aquatic inclusion (SAM-1) was observed within the central area of the Dry to Fresh White Cedar Coniferous Forest (FOCM2-2). The presence of black ash within the forest community was limited to only within the inclusion. The remainder of the forest community does not provide suitable habitat to support black ash. The entirety of the FOCM2-2 forest is outside of the proposed development, with the SAM-1 being approximately 110 m away from the development at their closest point. As such, black ash or their habitat within this community are not anticipated to harmed.

Similarly, the Fresh to Moist White Cedar Coniferous Forest does not provide direct habitat to support black ash, but does engulf an ash mineral deciduous swamp inclusion (SWDM2), situated towards the northernmost area of the property. This forest community and inclusion are not within the area of proposed development, separated by a distance of approximately 300 m. As such, black ash or their habitat within this community are not anticipated to harmed.

Within the mineral swamp (SWTM5), black ash was a co-dominant species in the shrub layer. As described in Section 6.2, it is anticipated that the proposed project will result in the loss of approximately 0.76 ha of the wetland, and subsequently the loss of any black ash shrubs within the area. It is important to note that this is the only community on-site that is anticipated to result in impacts to black ash.

Mitigation measures anticipated to be required to protect black ash are provided in Section 7.

6.6 Cumulative Impacts

Potential cumulative impacts associated with the proposed project include an increase in storm water generation, increases in nutrient loading to aquatic features, loss of wetland habitat, and the loss of thicket, forest and cultural meadow habitat, primarily for avian species.

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given the existing residential and agricultural land use in the surrounding project area.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6. As such, the following avoidance and mitigation measures should be enforced throughout the development through application of Site Plan Controls.

For the purpose of this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature and the prescribed setback. For the purpose of the following subsections, buffers should be located between natural heritage features and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self-sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). Buffers recommended in the following subsections and illustrated on Figure A.6, are done so within the context of the existing environmental disturbances but also to promote reasonable natural rehabilitation. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

7.1 Significant Woodlands

Development has the potential to result in the loss of 0.14 ha of significant woodland present on-site. The remaining woodlands will continue to meet the significant woodlands status based on contiguous size and ecological function despite the minor loss. No negative impacts on the ecological function of the significant woodlands are anticipated as a result of this project if all mitigation measures and best management practices recommended in Section 7.7 below are adhered to.

7.2 Local Wetlands

It is anticipated that a permit from MVCA may be required prior to any in-water work or wetland alteration.

The loss of approximately 0.76 ha of local wetlands (Mineral Deciduous Thicket Swamp (SWTM5)) from the proposed development will be fully compensated at a 1:1 ratio, maintaining the ecological and hydrological functions on-site. Of note, the southernmost wetland (SWTM5) proposed to be removed does not qualify as significant wildlife habitat and as such the functions are primarily hydrological. The proposed compensation will occupy the eastern most corner of the site (rear of the property) and is to have an approximate area of 0.64 ha. The new wetland design

will incorporate aspects to replicate the form and function of breeding amphibian habitat and associated HDFs.

Based on the stormwater management plan (SWMP) prepared for the proposed development, pre- and post- pipe flows to downstream habitat are anticipated to remain the same. Water quality is to be preserved through a wet stormwater management pond that will provide 80% total suspended solids removal. All stormwater generated on-site from the proposed development will be captured within the proposed stormwater management pond for retention, treatment and released in a controlled manner into the existing roadside ditch adjacent to Appleton Side Road, resulting in no significant change in post-development flows to the surrounding surface water features.

General mitigation measures recommended for the protection of water quality and wetland habitat include:

- Buffers should be comprised of a mixture of native, self-sustaining trees, shrubs and tall grasses.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high-water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.

7.3 Headwater Drainage Features

As detailed in Appendix D, the HDFA determined that the recommended management for the on-site headwater drainage features included protection and conservation.

As mentioned in Section 6.4, segments H1A-S1 through H1A-S4 are to be functionally altered as part of the proposed development. Given the requirements of conservation management, the overall function of these segments should be maintained, relocated, and/or enhanced, whichever is most feasible. The stormwater management plan should consider drainage options, such as rear lot swales, in order to ensure baseflow volumes are maintained. This alteration will also

maintain current directional flow existing on the site, as the water will be directed from the upgradient HDFs, channeled into the new SWMP in the southern corner of the site, and then exiting the site at the same point, discharging into the roadside ditch along Appleton Sideroad.

HDFs H1A-S6 through H1A-S9 and H1B-S1 through H1B-S2 are suggested for protection as per the CVC/TRCA guidance document (2014). However, giving consideration to the isolated nature of these HDFs and their lack of connectivity to downstream fish habitat, replication of the HDFs and their function will suffice should the current alignments conflict with the development on-site. As such, it is recommended that the HDFs be replicated in conjunction, and in concert with the wetland compensation at the eastern portion of the site.

General mitigation measures as prescribed for the protection of local wetlands is sufficient to protect HDFs, where applicable.

7.4 Significant Wildlife Habitat

7.4.1 *Confirmed* Woodland Amphibian Breeding Habitat

The proposed project has the potential to result in the loss of approximately 0.14 ha of the available forest habitat on-site. To mitigate impacts on migrating amphibians on-site, the proposed development will be encouraged to keep nature in mind in order to maximize woodland coverage. Maintaining woodland coverage when possible will provide ample opportunity for woodland dispersal and summer habitats within the built subdivision and surrounding vacant lands.

The mitigation measures as prescribed above for the protection of the headwater drainage features is sufficient to protect the aquatic component of the breeding habitat.

With respect to the terrestrial component of amphibian breeding SWH, the protection measures outlined Section 7.1, the loss of suitable on-site forest habitat will be limited to 0.14 ha of the total available 10.5 ha (1.3%). The remaining woodlands will continue to provide the ecological functions to support woodland amphibian breeding.

In addition to the above mitigation measures, exclusion fencing should be installed around the entire construction area prior to construction commencing to prohibit the movement of amphibians into the construction area. Exclusion fencing should follow guidelines established in *Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing* (OMNRF, 2013b).

7.4.2 Habitats of Special Concern and Rare Wildlife Species – Eastern Wood-Pewee, Grasshopper Sparrow, Common Nighthawk, and Wood Thrush

To protect eastern wood-pewee, grasshopper sparrow, common nighthawk, and wood thrush on-site, vegetation removal should occur outside of March 31 to August 31 to avoid the key breeding bird period as identified by Environment Canada. If vegetation clearing activities cannot take place

during the aforementioned timing window, then a nest survey shall be conducted by a qualified professional.

7.5 Species at Risk

7.5.1 Eastern Whip-poor-will

Eastern whip-poor-will habitat impacted by the proposed development includes the loss of approximately 0.67 ha of Category 1, 8.1 ha of Category 2, and 8.1 ha of Category 3 habitat on-site. While the proposed development will impact Category 1, 2, and 3 habitat on-site, suitable habitat is readily available in the surrounding area. Furthermore, the remainder of Category 1, 2, and 3 habitats within the study area (approximately 1.17 ha, 42 ha, and 46.3 ha respectively), will be maintained.

Due to the confirmed presence of eastern whip-poor-will and their regulated habitat on-site and that development cannot avoid impacts to regulated habitat, an Information Gathering Form (IGF) must be submitted to the MECP to determine if the proposed development will contravene the ESA.

The following mitigation measures are expected to be implemented to avoid contravention of the ESA:

- Vegetation removal should occur outside of the key breeding bird period (March 31 to August 31) where possible. If avoidance is not possible a nest survey should be completed by a qualified person prior to vegetation removal.
- To minimize impacts to breeding and foraging whip-poor-will no evening or night-time construction should take place.
- To minimize light pollution, the use of dark night friendly lighting should be used. The use of bright flood lights should be avoided.
- Each day of construction a daily pre-work sweep of the construction area should occur to ensure no SAR are present and to remove any wildlife from inside the construction area.
- All staff working on-site should be provided Species at Risk training to identify species at risk which a potential to occur on-site including: eastern whip-poor-will. Training will also outline the stop work procedures and MECP reporting/consultation prior to resuming work.
- During construction if any SAR is identified on-site all work should stop and a qualified professional and the MECP should be contacted for next steps. SAR sightings should be reported to the MECP and the NHIC.
- Following construction completion, property owners will be provided with information and awareness packages for SAR that have the potential to occur on their property. Information and awareness packages will include information on species identification, life-history, and habitat use for all species at risk with a potential to occur on-site, including eastern whip-poor-will. Information packages will also include contact/reporting options to the MECP and NHIC is species are encountered.

7.5.2 Eastern Small-footed Myotis, Little Brown Myotis & Tri-colored Bat

In addition to no SAR observations, no critical habitat for SAR bats (cave, crevice or maternity roosts) were identified on-site.

In accordance with MECP best management practices to protect roosting and foraging bats, tree removal where required should take place outside of the spring and summer active season (typically March 15 to November 30), when bats are more likely to be using forest habitat. If vegetation clearing must be conducted during the spring and summer timing window than a roost survey should be conducted be a qualified professional.

To further protect bat species during vegetation removal, trees and vegetation should be cleared in stages, working from the outer edge, in towards the centre, in order to provide wildlife in the forest time to migrate out.

In GEMTEC's experience on similar development applications and consultation with the MECP for projects and properties of similar size and scale, the above mitigation/avoidance measures are sufficient to ensure no negative impacts to SAR bats. In eastern Ontario habitat is not a limiting factor, as such the MECP recommends the use of avoidance timing window for clearing of trees (>10cm in diameter) in order to avoid impacts to SAR bat species. As long as timing windows can be adhered to, the project will not impact SAR bats, and it is GEMTEC's opinion that no further consultation with the MECP is required to address impacts to SAR bats.

Should any components of the proposed project require tree clearing within between March 15 and November 30, further consultation with the MECP may be required.

7.5.3 Black Ash

As discussed in Section 6.5.9, protections for black ash have been suspended until January 2024. Until this time, proponents do not need to seek authorizations from the MECP for activities that impact black ash and its habitat (Ontario, 2023a). At the time of this EIS report preparation, no further actions are required to address black ash.

Once the relevant protections and mitigation measures are made public by the MECP, the EIS will be updated accordingly to include any relevant protections which black ash will be granted under the ESA. If necessary, the MECP will be contacted to seek authorizations for activities that impact black ash and its habitat. All necessary recommendations will be followed as to mitigate impacts on black ash and its habitat.

Additionally, the mitigation measures as proposed above for the protection of local wetlands and headwater drainage features, through the act of wetland compensation will assist with offsetting the overall impacts on black ash and their habitat. It is further recommended that the wetland compensation be designed in such a way as to provide suitable habitat supportive of black ash and their recovery on-site.

7.6 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- Vegetation removal should occur outside of March 15 to November 30 to avoid the key breeding bird period, active turtle season, and bat summer active season. The timing windows provides protection of migratory birds, SAR turtles, roosting bats and avoids contravention of the Migratory Bird Convention Act and Endangered Species Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest, roost and site sweep surveys shall be conducted by a qualified professional.
- Installation of silt fence barriers around the entire construction area to prohibit the emigration of wildlife into the construction area, silt fencing should be checked daily and following each precipitation event.
- Cover all stockpiled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Perform daily pre-work sweeps of the construction area to ensure no species at risk are present and to remove any wildlife from inside the construction area.
- Should any species at risk be discovered throughout the course of the proposed works, the species at risk biologist with the local MECP district shall be contacted immediately and operations ceased to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.7 Best Practice Measures for Mitigation of Cumulative Impacts

The following best practice measures are provided for the mitigation of cumulative impacts resulting from general construction and development activities;

- To protect trees identified to be retained during construction, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.
- Maintain as much permeable surface as possible in future development plans to minimize the generation of stormwater runoff.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple, and red oak.

8.0 CONCLUSIONS

The proposed project supported by this EIS is the proposed development of an 8.1 ha dementia village/retirement community on an approximately 24.64 ha existing property.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual negative impacts are anticipated from the proposed future development.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant negative impacts to natural heritage features identified on-site, including surface water features, significant wildlife habitat, and habitats of species at risk, from future development are anticipated.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed development complies with the natural heritage polices of the Lanark County Official Plan and the Mississippi Mills Official Plan.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Chello Building Corp. c/o NOVATECH Engineers, Planners, & Landscape Architects (NOVATECH) and is intended for the exclusive use of Chello Building Corp. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC Chello Building Corp. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation.

Should new information become available during future work or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

Luca Fiorindi, B.A., Dip.
Junior Biologist

Adam Alaimo, B.Sc.
Biologist

Drew Paulusse, B.Sc.
Senior Biologist

10.0 REFERENCES

Beacon Environmental. 2012. Ecological Buffer Guideline Review – Prepared for Credit Valley

Cadman M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. Toronto.

Canada, Government of (Canada). 1985. Fisheries Act. R.S.C. 1985, c. F-14.

Chapman, L.J., and Putnam, D.F. 1984. The Physiography of Southern Ontario. Ontario Geological Survey, Special Volume 2.

COSEWIC. 2011. COSEWIC Assessment and Status Report on the Eastern Meadowlark *Sturnella magana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 50 pp.

COSEWIC. 2012a. COSEWIC assessment and status report on the Eastern Wood-Pewee *Contupus virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 39 pp.

COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis* and Tri-coloured Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp.

Crins, J., William., P. A. Grey, P. W. Uhlig, and M.C. Wester. 2009. The Ecosystems of Ontario, Part I: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Peterborough, Ontario.

Department of Fisheries and Oceans (DFO). 2019. Aquatic Species at Risk Map. Viewed online: November 4, 2022. Available online: http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists, Toronto.

Fraser E., MacKenzie, A., and Davy, C. 2007. Photo Field Guide to the Bats of Ontario. Published by St. Thomas Field Naturalists Club Incorporated.

Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. Vii + 76 pp.

Lee, H. T. 2008. Draft Southern Ontario Ecological Land Classification. Ministry of Natural Resources: London, Ontario.

Oldham, M.J and W.F. Weller. 2000. Ontario Herpetofaunal Atlas.

Ontario, Government of (Ontario). 2019a. Eastern small-footed Myotis. Viewed online: October, 2023. Available online: https://www.ontario.ca/page/eastern-small-footed-myotis

Ontario, Government of (Ontario). 2019b. Little Brown Myotis. Viewed online: October, 2023. Available online: https://www.ontario.ca/page/little-brown-myotis

Ontario, Government of (Ontario). 2019c. Northern Myotis. Viewed online: October, 2023. Available online: https://www.ontario.ca/page/northern-myotis

Ontario, Government of (Ontario). 1990. Conservation Authorities Act. R.S.O. 1990. Chapter C.27. Last amendment: 2011, C.9 Sched. 27, S. 22.

Ontario Legislative Assembly. 2007. Endangered Species Act.

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2020. Provincial Policy Statement – Under Planning Act, Toronto. May.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2013b. General Habitat Description for the Eastern Meadowlark (*Sturnella magna*).

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2018. Natural Heritage Information Request Guide.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2015a. Significant Wildlife Habitat Ecoregion 6E Criterion Schedules.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2014a. Make a Map: Natural Heritage Areas.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2014b. Significant Wildlife Habitat Mitigation Support Tool.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2013. Natural Heritage Information Centre (NHIC) Biodiversity Explorer.

Ontario Ministry of Natural Resources and Forestry (OMNRF). 2011. Land Information Ontario (LIO).

Ontario Ministry of Natural Resources (OMNR). March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition.

Ontario Ministry of Natural Resources (OMNR). 2005 Natural Heritage Information Centre. Ontario Odonata Atlas.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Technical Guide.

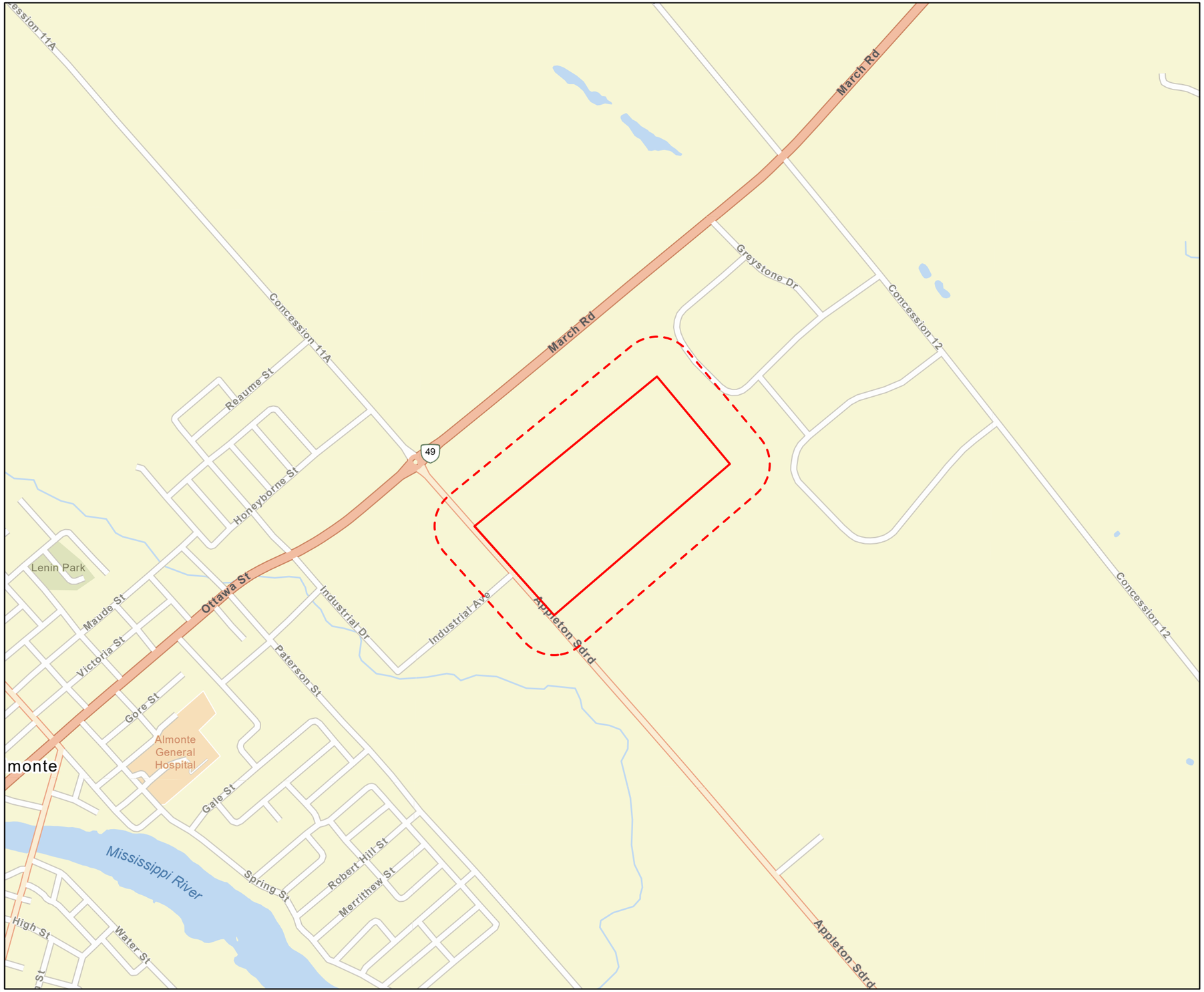
Ontario Geological Survey 2019. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV

Ontario Nature, 2019, Ontario Reptile and Amphibian Atlas. Viewed online: Viewed online October, 2023. Available online: https://www.ontarioinsects.org/herp/index.html?Sort=1&area2=squaresCounties&records=all&myZoom=5&Lat=42.95&Long=-81.01

Rowe, J.S. 1972. Forest Regions of Canada. Canadian Forestry Service Publication no. 1300. Publishing Division, Information Canada .

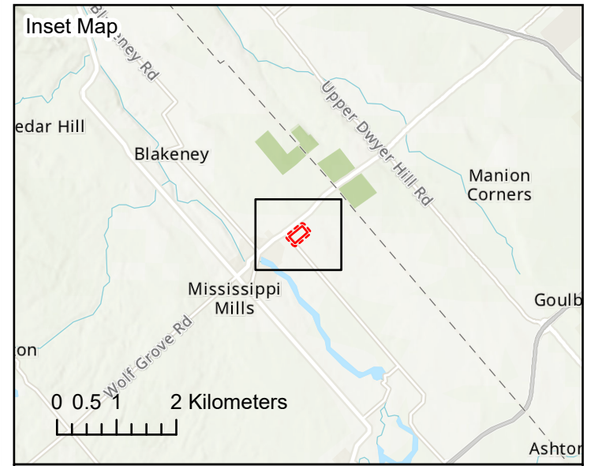
APPENDIX A

Report Figures
Figure A.1 – Site Location
Figure A.2 – Site Layout
Figure A.3 – Vegetation Communities
Figure A.4 – Development Concept
Figure A.5 – Natural Heritage Features
Figure A.6 – Mitigation



Legend

- Property Boundary
- Study Area



Scale
1:12,000
0 90 180 360 540 720 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location
5400 Appleton Sideroad
Almonte, Ontario

Drwn By:	Chkd By:	
C.Z.	L.F.	Site Location

Date: October 2023	Rev.	
	0	Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Study Area
- Property Boundary
- Local Wetlands
- MVCA Wetlands
- Breeding Bird Survey Location (100m radius)
- Amphibian Breeding Survey Location (100m radius)
- Bat Maternity Survey Location (12.6m radius)
- Whip-poor-will Breeding Survey Location (300m radius)

Scale
1:4,000
0 30 60 120 180 240 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client: Novatech

Project: 100011.069

Location: 5400 Appleton Sideroad
Almonte, Ontario

Drwn By: C.Z.

Chkd By: L.F.

Site Layout

Date: October 2023

Rev. 0

Figure: A.2

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- Local Wetlands
- MVCA Wetlands
- Vegetation Community

MEFM4: Fresh - Moist Forb Meadow Ecosite
MEMM4: Fresh - Moist Mixed Meadow Ecosite
SWTM5: Mineral Deciduous Thicket Swamp Ecosite
THCR1: Dry - Fresh Calcareous Bedrock Coniferous Thicket Ecosite
THMM2: Fresh - Moist Mixed Thicket Ecosite
THDM2-6: Buckthorn Deciduous Shrub Thicket
FOCM4-1: Fresh - Moist White Cedar Coniferous Forest
FOCM2-2: Dry - Fresh White Cedar Coniferous Forest
THMR1: Dry - Fresh Calcareous Bedrock Mixed Thicket Ecosite

Scale
1:4,000
0 30 60 120 180 240 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client: Novatech
Project: 100011.069

Location: 5400 Appleton Sideroad
Almonte, Ontario

Drwn By: C.Z.
Chkd By: L.F.

Vegetation Communities

Date: October 2023

Rev. 0

Figure: A.3

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- MVCA Wetlands
- Local Wetlands
- Headwater Drainage Feature
- Candidate Reptile Hibernacula
- Significant Woodlands
- Confirmed Woodland Amphibian Breeding Habitat
- Whip-poor-will Observation
- Whip-poor-will Category 1 Habitat (20m radius)
- Whip-poor-will Category 2 Habitat (170m radius)
- Whip-poor-will Category 3 Habitat (500m radius)

Scale
1:4,000
0 30 60 120 180 240 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location
5400 Appleton Sideroad
Almonte, Ontario

Drwn By:	Chkd By:	
C.Z.	L.F.	Natural Heritage Features

Date: October 2023	Rev.	
	0	Figure: A.4

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- MVCA Wetlands
- Local Wetlands
- Proposed Building
- Proposed Paved Areas
- Proposed Stormwater Management Area

Scale
1:4,000
0 30 60 120 180 240 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location
5400 Appleton Sideroad
Almonte, Ontario

Drwn By:	Chkd By:	
C.Z.	L.F.	Development Plan

Date: October 2023	Rev.	Figure: A.5
	0	

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- MVCA Wetlands
- Local Wetlands
- Headwater Drainage Feature
- Proposed Development

Scale
1:4,000
0 30 60 120 180 240 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location
5400 Appleton Sideroad
Almonte, Ontario

Drwn By:	Chkd By:	
C.Z.	L.F.	Mitigation Measures

Date: October 2023	Rev.	
	0	Figure: A.6

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

APPENDIX B

Site Photographs

Site Photograph 1 – Buckthorn Deciduous Shrub Thicket (THDM2-6)

Site Photograph 2 – Dry -Fresh Calcareous Bedrock Mixed Thicket (THMR1)

Site Photograph 3 – Dry – Fresh Calcareous Bedrock Coniferous Thicket (THCR1)

Site Photograph 4 - Fresh – Moist Mixed Thicket (THMM2)

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Development 5400 Appleton Side Road Almonte, Ontario	**APPENDIX B** File No. 100011.069	**Site Photographs**

Site Photograph 5 – Mineral Deciduous Thicket Swamp (SWTM5)

Site Photograph 6 – Ash Mineral Deciduous Swamp Inclusion (SWDM2)

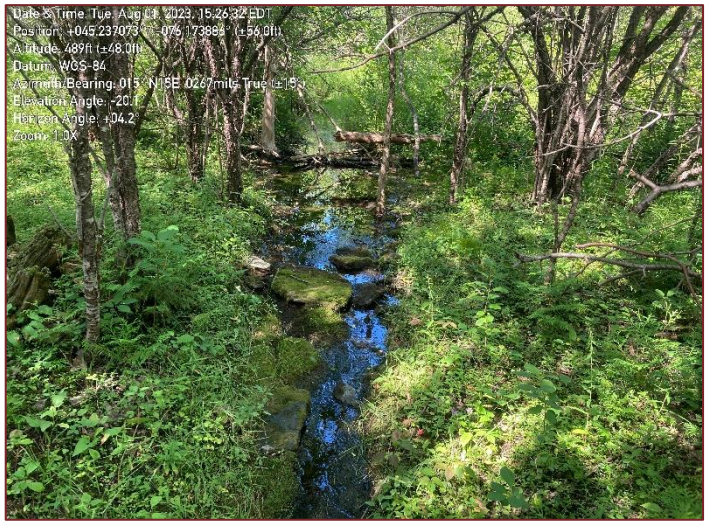
Site Photograph 7 – Mixed Shallow Aquatic Inclusion (SAM-1)

Site Photograph 8 – Fresh – Moist Mixed Meadow (MEMM4)

Site Photograph 9 – Fresh – Moist Forb Meadow (MEFM4)

Site Photograph 10 – Dry to Fresh White Cedar Coniferous Forest (FOCM2-2)

Site Photograph 11 – Fresh to Moist White Cedar Coniferous Forest (FOCM4-1)



Site Photograph 12 – Unnamed Watercourse

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Development 5400 Appleton Side Road Almonte, Ontario	**APPENDIX B** File No. 100011.069	**Site Photographs**

Site Photograph 13 – Unnamed Watercourse

Site Photograph 14 – Unnamed Watercourse

Site Photograph 15 – *Candidate* Reptile Hibernaculum

Site Photograph 16 – Evidence of Deer Remains within THMM2

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Proposed Development 5400 Appleton Side Road Almonte, Ontario	**APPENDIX B**	**Site Photographs**
		File No. 100011.069	

APPENDIX C

Report Summary Tables

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJCENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
Alder flycatcher	*Empidonax alnorum*	S5B	Heard calling
American crow	*Corvus brachyrhynchos*	S5	Heard calling
American goldfinch	*Spinus tristis*	S5	Heard calling
American robin	*Turdus migratorius*	S5	Heard calling
Black-and-white warbler	*Mniotilta varia*	S5B	Heard calling
Black-capped chickadee	*Poecile atricapillus*	S5	Heard calling
Blue jay	*Cyanocitta cristata*	S5	Heard calling
Cedar waxwing	*Bombycilla cedrorum*	S5	Heard calling
Chipping sparrow	*Spizella passerina*	S5B,S3N	Heard calling
Common grackle	*Quiscalus quiscula*	S5	Heard calling
Common raven	*Corvus corax*	S5	Heard calling
Common yellowthroat	*Geothlypis trichas*	S5B,S3N	Heard calling
Eastern phoebe	*Sayornis phoebe*	S5B	Heard calling
Eastern towhee	*Pipilo erythrophthalmus*	S4B,S3N	Heard calling
*Eastern whip-poor-will	*Antrostomus vociferus*	S4B	Heard calling
Field sparrow	*Spizella pusilla*	S4B,S3N	Heard calling
Gray catbird	*Dumetella carolinensis*	S5B,S3N	Heard calling
Great crested flycatcher	*Myiarchus crinitus*	S5B	Heard calling
House wren	*Troglodytes aedon*	S5B	Heard calling
Killdeer	*Charadrius vociferus*	S4B	Heard calling
Nashville warbler	*Leiothlypis ruficapilla*	S5B	Heard calling
Northern cardinal	*Cardinalis cardinalis*	S5	Heard calling
Northern flicker	*Colaptes auratus*	S5	Heard calling
Northern mockingbird	*Mimus polyglottos*	S4	Heard calling
Ovenbird	*Seiurus aurocapilla*	S5B	Heard calling
Owl	*Strigidae sp.*	NA	Scat observed
Red-breasted nuthatch	*Sitta canadensis*	S5	Heard calling
Red-eyed vireo	*Vireo olivaceus*	S5B	Heard calling
Red-winged blackbird	*Agelaius phoeniceus*	S5	Heard calling
Song sparrow	*Melospiza melodia*	S5	Heard calling
White-breasted nuthatch	*Sitta carolinensis*	S5	Heard calling
White-throated sparrow	*Zonotrichia albicollis*	S5	Heard calling
Yellow-bellied sapsucker	*Sphyrapicus varius*	S5B,S3N	Heard calling
Yellow warbler	*Setophaga petechia*	S5B	Heard calling
Amphibian Species			
American toad	*Anaxyrus americanus*	S5	Heard calling
Blue-spotted salamander	*Ambystoma laterale*	S4	Observed on-site
Gray treefrog	*Dryophytes versicolor*	S5	Heard calling
Green frog	*Lithobates clamitans*	S5	Heard calling
Northern leopard frog	*Lithobates pipiens*	S5	Heard calling
Spring peeper	*Pseudacris crucifer*	S5	Heard calling
Western chorus frog	*Pseudacris maculata*	S4	Heard calling
Reptilian Species			
Eastern gartersnake	*Thamnophis sirtalis sirtalis*	S5	Observed on-site
Mammalian Species			
Big brown bat	*Eptesicus fuscus*	S4	Picked up on echo device
Coyote	*Canis latrans*	S5	Scat observed
Eastern cottontail	*Sylvilagus floridanus*	S5	Observed on-site
Hoary bat	*Lasiurus cinereus*	S4	Picked up on echo device
Red squirrel	*Tamiasciurus hudsonicus*	S5	Observed on-site
Silver-haired bat	*Lasionycteris noctivagans*	S4	Picked up on echo device
Weasel	*Mustelid sp.*	NA	Observed on-site
White-tailed deer	*Odocoileus virginianus*	S5	Bones, scat, and tracks observed

Notes:
* Denotes a Species at Risk
Subnational Conservation Status Ranks:
S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline
S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline
S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline
S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline
S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline
Qualifiers:
S#B - Conservation status refers to the breeding population of the species
S#N -Conservation status refers to the non-breeding population of the species
S#M - Migrant species, conservation status refers to the aggregating transient population of the species

TABLE C.2
SCREENING RATIONAL FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	Yes	The woodland size threshold for the Mississippi Mills Planning Area is 20 ha, based on the NHRM criteria of 15 - 30% woodland coverage in the land area. The fresh to moist white cedar confierous forest (ELC FOCM4-1) present on-site is part of an approximately 60 ha area contiguous woodland. Further, this 60 ha area of woodland is mapped as significant on the Mississippi Mills Official Plan.
Ecological Functions		
a) Woodland Interior	Yes	The woodland interior size threshold for the Mississippi Mills Planning Area is 2 ha, based on the NHRM criteria of 15 - 30% woodland coverage in the land area. The 60 ha of contiguous forest has an approximate interior area of 13 ha. Approximately 0.4 ha occurs on-site.
b) Proximity	Yes	The woodland as it occurs on-site has an ephemeral watercourse bisecting north to south.
c) Linkages	No	The woodlands are not part of a mapped natural heritage system nor do they provide a connecting link between two other significant features.
d) Water Protection	Yes	Woodlands on-site encompass an ephemeral watercourse, mixed aquatic community, and a swamp inclusion.
e) Diversity	No	Woodlands on-site do not exhibit significant species diversity.
Uncommon Characteristics	No	Woodlands on-site do not exhibit unconmmon or significant characteristics.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

TABLE C.3
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS

Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Stopover and Staging Areas	No	No suitable ELC codes on-site to support either terrestial or aquatic waterfowl stopover ad staging area habitat. No indicator species observed during field investigations. Waterfowl stopover and staging areas are rare and typically well know. Sites identified are usually only one of a few in the eco-district.
Shorebird Migratory Stopover Area	No	Site does not contain appropriate ELC code to support shorebird migratory stopover habitat. No indicator species observed throughout the field invesitgations. High quality shorebird stopover habitat is extremely rare and typically has a long history of use.
Raptor Wintering Area	No	Site lacks suitable ELC code for lowland component of raptor wintering area. No indicator species observed throughout the field investigations.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	The coniferous forest on-site and within the study area has potential to provide bat roosting habitat. A snag density survey was completed as part of the 2023 field investigations and the FOCM4-1 community was shown to have less than 10 snags per ha.
Turtle Wintering Area	No	Observations from the 2023 field investigations revealed the on-site wetlands, ephmeral watercourse, and pooling to have insufficient depths throughout the season to support turtle overwintering.
Reptile Hibernaculum	Yes	Potential reptile hibernaculum on-site. A single indicator species was observed throughout the 2023 field investigations.
Colonial Bird Nesting Habitat	No	No suitable ELC codes on-site to support colonial bird nesting habitat. No indicator species were observed on-site.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopver Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.

Deer Yarding Areas and Winter Congregation Areas	No	Suitable coniferous stands are not present on-site. As outlined in the the Signficant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer managment are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no Stratum I deer yards, Stratum II deer yards, or winter congregation areas have been identified on-site or within the broader study area. The closest deer yard to site is a patch of Stratum I deer yard located approximately 2 km northeast of site.

TABLE C.4
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	Suitable combination of upland and lowland habitats to support waterfowl nesting are not present on-site. No indicator species observed during 2023 field investigations. Lowland habitats on-site unlikely to support waterfowl presence and higher quality habitat conditions available in the greater study area.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	Site may have presence of appropriate forest habitats, however the adjacent wetland and watercourse do not provide suitable habitat conditions for foraging raptors. No indicator species or stick nests observed during the 2023 field investigations.
Woodland Nesting Raptor Habitat	No	Suitable sized >30 ha stand of appropriate forest ELC code on-site and within study area. However, no interior habitat present once a 200 m buffer is applied from the woodland edge. No indicator species or stick nests observed during the field investigations.
Turtle Nesting Habitat	No	Site lacks suitable combination of ELC codes to support turtle nesting habitat. No areas of exposed sandy soil observed during the field investigations.
Seeps and Springs	Yes	A single seep was identifed on-site during the field investigations.
Woodland Amphibian Breeding Habitat	Yes	The wetlands on-site are within 120 m of woodlands and were observed to have evidence of amphibian breeding (tadpoles, eggmasses) throughout the 2023 site investigations.
Wetland Amphibian Breeding Habitat	No	No suitable wetland habitat greater than 120 m from woodlands present on-site or within the study area.
Woodland Area-Sensitive Bird Breeding Habitat	No	Suitable sized >30 ha stand of appropriate forest ELC code on-site and within study area. The following indicator species, yellow-bellied sapsucker, ovenbird, and red-breasted nuthatch, were heard calling during the breeding bird surveys However, no interior habitat present once a 200 m buffer is applied from the woodland edge.

TABLE C.5
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	No suitable wetland ELC code present on-site to support marsh breeding bird habitat.
Open Country Breeding Bird Habitat	No	No appropriate cultural meadow ELC code on-site to support open country breeding bird habitat.
Shrub/Early Successional Breeding Bird Habitat	No	Thicket habitat on-site not of the appropriate cultural series. Surrounding land use includes actively used pasture and argricultural fields.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	NHIC 1km^2 data grids encompassing site report occurrence records for the following species: Eastern wood-pewee, grasshopper sparrow, and wood thrush. eBird occurrence data indicate common nighthawk within the study area. Habitat on-site is likely to support the presence of monarch butterfly and yellow banded bumblebee in a transient manner. No other species of special concern were observed during the field investigations.

TABLE C.6
SCREENING RATIONALE FOR HABITATS OF SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No confirmed wetland amphibian breeding habitat on-site. No amphibian movement corridors identified on-site by the OMNRF.
Deer Movement Corridor	No	No winter deer yards have been identified on-site by the OMNRF.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian				
Bank Swallow	Threatened	Colonial nester, burrows in eroding silt, to sand banks, sand pit walls, etc.	Low	No suitable sandy bank or pit habitat present within the study area.
Barn Swallow	Special Concern	Nests in barns and other semi-open structures. Forages over open fields and meadows.	Low	Suitable foraging habitat may be present on-site and within the study area. eBird occurrence records within 1 km of site. Species not encountered during the field investigations.
Bobolink	Threatened	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Moderate	Potentially suitable grass habitat within the study area. NHIC occurrence record within 1 km of site. Species not encountered during the field investigations.
Canada Warbler	Special Concern	Prefers wet forests with dense shrub layers	Low	Suitable wet forest habitat not present on-site. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Cerulean Warbler	Threatened	Prefers mature deciduous forest habitat.	Low	No suitable mature deciduous forest habitat present within the study area.
Chimney Swift	Threatened	Nests in traditional-style open brick chimneys.	Low	No potential nesting structures present within the study area.
Common Nighthawk	Special Concern	Nests in a variety of open sites: beaches, fields and grave rooftops.	Moderate	Suitable open habitat present on-site within the study area. eBird occurrence record within the study area. Species was not encountered during the field investigations.
Eastern Meadowlark	Threatened	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Moderate	Suitable grassland habitat present within the study area. NHIC occurrence within 1 km of site. Species was not encountered during the field investigations.
Eastern Whip-poor-will	Threatened	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	High	Open mixed woodlands with exposed bedrock present on-site. No occurrence records within 1 km of site. Species was heard on-site during the field investigations.
Eastern Wood-Pewee	Special Concern	Woodland species, often found near clearings and edge habitat.	Moderate	Potentially suitable woodland edge habitat present within the study area. NHIC occurrence records within 1 km of site. Species was not encountered during the field investigations.
Evening Grosbeak	Special Concern	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Low	Large coniferous forest habitat present within study area. No occurrence records within 1 km of site. Species was not encountered during the field investigations.
Golden Eagle	Endangered	Nests on remote, bedrock cliffs, overlooking large burns, lakes or tundras	Low	Site lacks suitable upland habitat adjacent to lowland or open aquatic habitat to support golden eagle presence.
Golden-winged Warbler	Special Concern	Ground nesting, edge species. Breeds in successional scrub habitats surrounded by forests.	Low	Potentially suitable scrub habitat surrounded by forest within the study area. No occurrence records within 1 km of site. Species was not encountered during the field investigations.
Grasshopper Sparrow	Special Concern	Ground-nesting grassland species. Prefers fields with low sparse vegetation on sand, alvars or poor soils.	Moderate	Suitable field habitat within study area. NHIC occurrence record within 1 km of site. Species was not encountered during the field investigations.
Henslow's Sparrow	Endangered	Prefers open, moist, tallgrass fields.	Low	Potentially suitable moist grass habitat within study area. No occurrence records within 1 km of site. Species was not encountered during the field investigations.
Least Bittern	Threatened	Prefers marshes, shrub swamps, usually near cattails	Low	Potentially suitable shrubby swamp within the study area. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Loggerhead Shrike	Endangered	Prefers grazed pastures with short grass and scattered shrubs, especially hawthorn.	Moderate	Suitable grazed pasture habitat present within study area. NHIC occurrence record within 1 km of site. Species not encountered during the field investigations.
Olive-sided Flycatcher	Special Concern	Forest edge species, forages in open areas from high vantage points in trees.	Low	Forest edge habitat present within study area. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Peregrine Falcon	Special Concern	Nests on cliffs near water and on more anthropogenic structures such as tall buildings, bridges, and smokestacks.	Low	Site lacks suitable upland habitat adjacent to lowland or open aquatic habitat to support peregrine falcon presence.
Red-headed Woodpecker	Endangered	Prefers open deciduous woodlands, particularly those dominated by oak and beech.	Low	Prefered woodland habitat not present within study area. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Rusty Blackbird	Special Concern	Wet wooded or shrubby areas (nests at edges of Boreal wetlands)	Low	Potential wet wooded habitat present within study area. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Short-eared Owl	Threatened	Ground nester, prefers open habitats, fields and marshes.	Low	Potential open habitat within study area. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Wood Thrush	Special Concern	Prefers deciduous or mixed woodlands.	Moderate	Suitable woodland habitat present within study area. NHIC occurrence record for species within 1 km of site. Species was not encountered during the field investigations.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Mammalian				
Eastern small-footed Myotis	Endangered	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	No on-site structures for roosting by Eastern small-footed Myotis. Potentially suitable anthropogenic structures and foliage within study area.
Little Brown Myotis	Endangered	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	No on-site structures for roosting by Little Brown Myotis. Potentially suitable anthropogenic structures and foliage within study area.
Northern myotis (Northern Long-eared Bat)	Endangered	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	No on-site structures for roosting by Northern myotis . Potentially suitable anthropogenic structures and foliage within study area.
Tri-colored Bat	Endangered	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	No on-site structures for roosting by Tri-colored Bat. Potentially suitable anthropogenic structures and foliage within study area.
Reptilian				
Blanding's Turtle	Threatened	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Moderate	Suitable forest habitat may be present on-site. Wetland and aquatic habitat on-site unlikely to support turtle presence. NHIC and iNaturalist occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Eastern Musk Turtle	Special Concern	Wetlands. Highly aquatic habtiats.	Low	Wetland and aquatic habitat on-site unlikely to support turtle presence. No occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Eastern Ribbonsnake	Special Concern	Marshy edges of wetlands and watercourses.	Low	Suitable riparian habitat present on-site. No occurrence records within 1 km of site. Species not encountered during the field investigations.
Northern Map Turtle	Special Concern	Highly aquatic species, found only in lakes and large rivers.	Low	Wetland and aquatic habitat on-site unlikely to support turtle presence. No occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Snapping Turtle	Special Concern	Highly aquatic species, found in a wide variety of wetlands, water bodies and watercourses.	Low	Wetland and aquatic habitat on-site unlikely to support turtle presence. No occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Spotted Turtle	Endangered	Secretive wetland species.	Low	Wetland and aquatic habitat on-site unlikely to support turtle presence. No occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Wood Turtle	Endangered	Primarily terrestrial forest species. Associated with clear, gravelly streams.	Low	Wetland and aquatic habitat on-site unlikely to support turtle presence. No occurrence records within 1 km of site. Species not encountered during the targeted turtle basking surveys.
Plants				
American Ginseng	Endangered	Rich, moist, relatively mature deciduous forests.	Low	No mature deciduous forest present within study area.
Black Ash	Endangered	Predominantly a wetland species, found in swamps, floodplains and fens.	High	Suitable wetland habitat conditions present on-site. No occurrence records within 1 km of site. Species observed on-site during field investigations.
Butternut	Endangered	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	Low	Potentially suitable forest habitat present on-site. No occurrence records within 1 km of site. Species not encountered during field investigations.
Lichens				
Pale-bellied Frost Lichen	Endangered	Grows on the bark of hardwood trees such as white ash, black walnut, American elm and ironwood. Can also be found growing on fence posts and boulders.	Low	Species believed to be extirpated from the Ottawa area.
Fish				
American Eel	Endangered	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day.	Low	No fish habitat on-site or within the study area.
Bridle Shiner	Special Concern	Prefers clear water with abundant vegetation over silty or sandy vegetation	Low	No fish habitat on-site or within the study area.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Channel Darter	Special Concern	Prefers clear water with abundant vegetation over silty or sandy vegetation	Low	No fish habitat on-site or within the study area.
Lake Sturgeon	Endangered	Large lakes and rivers. Forages in cool water, 4-9m deep over soft substrates. Spawns in shallower, fast-flowing areas over rocks or gravel.	Low	No fish habitat on-site or within the study area.
Northern Brook Lamprey	Special Concern	Prefers shallow areas with warm water. Larvae burrows in soft substrate for up to 7 years.	Low	No fish habitat on-site or within the study area.
River Redhorse	Special Concern	Prefers fast-flowing, clear rivers over rocky substrate	Low	No fish habitat on-site or within the study area.
Silver Lamprey	Special Concern	Larvae live 4-7 years in burrows, preference to soft substrate.	Low	No fish habitat on-site or within the study area.
Insects				
Bogbean Buckmoth	Endangered	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Prefered wetland plant species not present within study area.
Gypsy Cuckoo Bumble Bee	Endangered	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known population is in Pinery Provincial Park
Monarch Butterfly	Special Concern	Caterpillars require milkweed plants confined to meadow and open areas. Adult butterflies use more diverse habitat with a variety of wildflowers	Moderate	Suitable foraging habitat present on-site. Milkweed observed during the field investigations.
Mottled Duskywing	Endangered	Larval food plant (New Jersey Tea) found in sandy areas and alvars.	Low	Sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated
Rusty-patched Bumble Bee	Endangered	Habitat generalist	Low	Currently the only known population is in Pinery Provincial Park
Traverse Lady Beetle	Endangered	Habitat generalist	Low	No new records of Traverse Lady Beetle in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Requires mature moist deciduous woods with larval host plant toothwort.	Low	Necessary vegetation and toothwort plant not present on-site or within study area
Yellow-banded Bumble Bee	Special Concern	Habitat generalist; mixed woodlands, variety of open habitat	Moderate	Suitable foraging habitat present on-site. Species not observed during the field investigation.

APPENDIX D

Headwater Drainage Feature Assessment

November 13, 2023 File: 100011.069

Chello Building Corp.
c/o NOVATECH
240 Micheal Cowpland Drive
Ottawa, Ontario
K2M 1P6

Attention: Chello Building Corp., c/o NOVATECH

Re: Headwater Drainage Feature Assessment
Proposed Dementia Village and Retirement Community
5400 Appleton Side Road
Part of Lot 15, Concession 11, Geographic Township of Ramsay
Lanark County, Ontario

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Chello Building Corp., c/o NOVATECH Engineers, Planners and Landscape Architects (NOVATECH), to carry out a Headwater Drainage Feature Assessment (HDFA) in support of the proposed 8.1 hectare (ha) dementia village/retirement community for the 24.64 ha property located on Part of Lot 15, Concession 11, Geographic Township of Ramsay, Lanark County, Ontario, hereafter referred to as the “subject property”. This memo provides a summary of the HDFA results based on the completion of all three seasonal HDF site investigations.

1.1 Purpose

The proponent is seeking a to develop a senior residential home and other future residential development on an approximately 24.64 ha vacant property near the town of Almonte, Ontario. The proposed senior home is anticipated to occupy 8.1 ha of the southern portion of the existing property and to front Appleton Sideroad. The proposed development will require water, sanitary and storm servicing including a stormwater management facility. The development will include one new 24-meter right-of-way street extending east from the Appleton Side Road and Industrial Drive intersection. The proposed development will consist of a 4-storey Long-Term Care Facility (192 beds) including surface parking, and a 4-storey seniors apartment building (66 units) with surface and underground parking. Additionally, the development will include a dementia village (8 pods with 84 beds and a community center building) and 21 semi-detached blocks (42 townhouse units).

Stormwater management for the property will entail the creation of a stormwater management pond in the southernmost corner of site. Details of the design of the stormwater management pond are not available at this time as it is to be determined during the draft plan of subdivision

stage. As part of the design requirements, the stormwater management pond will provide the mandatory 80% minimum removal of total dissolved solids prior to discharge. The proposed pond will be connected to the existing Appleton Side Road ditch. Full details regarding the site servicing and stormwater management are provided by NOVATECH under separate cover.

As a component of the Environmental Impact Statement (EIS) completed in accordance with Section 5.5.1 of the Lanark County Official Plan (2012) and Section 3.1 of the Mississippi Mills Official Plan (2005), a headwater drainage feature assessment was conducted to aid in the assessment of surface water features on the subject property and within 120 metres of the site. The subject property and identified HDFs are illustrated on Figure A.2 in the Attachments.

This HDF report is principally focus on identifying, evaluation and assessing impacts to headwater drainage features on the adjacent lands for the proposed plan of development, specifically as it relates to impact assessment of the HDFs on the subject property and within a 120-metre buffer, henceforth referred to as the "study area".

1.2 Policy Context and Objective

Under Section 28 (1) of the Conservation Authorities Act, conservation authorities have the ability to define the definition of a watercourse, which is defined under Section 28 (5) of the Act as "*An identifiable depression in the ground in which a flow of water regularly or continuously occurs*". Headwater drainage features are defined as "*non-permanently flowing drainage features that may not have defined bed or banks; they are first-order and zero-order intermittent and ephemeral channels, swales and connected to headwater wetlands, but do not include rills or furrows*". According to conservation authorities in Ontario, headwater drainage features meet the definition of a watercourse.

The objective of the work presented herein is twofold; 1) to identify headwater drainage features on-site and within the study area; and 2) to evaluate and classify identified headwater drainage features in accordance with "Evaluation, Classification and Management of Headwater Drainage Features Guidelines" developed by Toronto Region Conservation Authority and the Credit Valley Conservation (TRCA/CVC, 2014), including recommended mitigation and conservation measures.

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather background information relating to headwater drainage features (HDFs) on-site.

Information relating to the presence and assessment of headwater drainage features on-site was obtained from the following sources:

- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA/CVC, 2014);
- Ontario Stream Assessment Protocol, Section 4, Module 11 (OSAP, 2017);
- Land Information Ontario (OMNR, 2011);
- Mississippi Valley Conservation Authority Geoportal (RVCA, 2020);
- Make a Map: Natural Heritage Areas (OMNRF, 2014); and
- Ontario Flow Assessment Tool (OMNRF, 2020).

2.2 Field Investigations

Field data collection for HDFs on-site followed the protocol outlined in Section 4: Module 11, “Unconstrained Headwater Sampling” from the Ontario Stream Assessment Protocol (Stanfield, 2017).

Three field investigations were undertaken to evaluate the headwater drainage feature identified adjacent to the subject property. Field investigations completed in support of this HDFA are outlined in Table 2.1 below.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	HDF Visit Number
May 9, 2023	09:45 – 17:00	10°C, Light Cloud (15%), Beaufort 3, no precipitation	1
May 15, 2023	10:50 – 14:45	17°C, Moderate Cloud (50%), Beaufort 4, no precipitation	2
Aug 1, 2023	13:30 – 16:30	21°C, Moderate Cloud (50%), Beaufort 4, no precipitation	3

Data collected during the site investigations included flow conditions, sediment transport, feature roughness, riparian and feature vegetation, as well as upstream and downstream site features. As outlined in the OSAP manual for assessing headwater drainage features, three site visits were completed.

Assessment and classification of the headwater drainage features on-site followed the protocols outlined in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines manual (TRCA/CVC, 2014). Functions of the headwater drainage feature that were evaluated included hydrology, vegetation, fish and fish habitat, and terrestrial habitat. Mitigation and management recommendations provided for HDFs are based on the results of the classification.

3.0 HEADWATER DRAINAGE FEATURES ASSESSMENT

3.1 Site Characteristics

The approximately 24.64 ha property currently consists of comprised of coniferous and mixed forest, coniferous and deciduous thickets, meadows, and swamps. The study area is located within the Cartwrights Creek – Mississippi River quaternary watershed, within the Mississippi River - Central Ottawa River tertiary watershed and is under the jurisdiction of the Mississippi Valley Conservation Authority (MVCA).

Through a review of aerial imagery from the MVCA Geo Portal (Undated) as well as Information Ontario (LIO), all surface drainage within the study area flows towards the Mississippi River.

Based on the desktop review and site investigations completed, 12HDFs have been identified within the study area adjacent to the subject property.

It should be noted that the HDFs identified herein are reflective of naturalized channel conditions and are associated with the drainage of on-site and off-site wetlands. The HDFs identified are labelled as H1A-S1 through H1A-S9, H1B-S1 through H1B-S2, and H1C, and are illustrated on Figure A.2.

The HDFs identified are described in more detail, including summaries of collected field data, in the subsections below.

3.1.1 H1A

H1A is a headwater drainage feature that occurs along the northwestern property boundary of the site. H1A originates centrally on-site where it appears to provide drainage for a wetland. H1A has a naturalized channel along most of its extent, losing definition in the southern portion of site where it opens into a field. H1A has an approximate length of 250 m. H1A was observed to have limited connectivity to other surface water features, with the only observed connectivity being to other isolated headwater drainage features.

Differences in flow conditions and riparian vegetation were observed throughout the different reaches of the feature. As such, H1A has been further divided into H1A-S1 through to H1A-S9. Due to the observed differences in flow and riparian vegetation, each segment is evaluated as an individual feature in the subsections below.

3.1.1.1 H1A-S1

The feature was noted as having little to no definition and was observed to have minimal flow during the first investigation and was dry by the second investigation. Scrubland vegetation was present within H1A-S1, and riparian vegetation was dominated by scrubland.

3.1.1.2 H1A-S2

The feature was noted as having a defined natural channel and was observed to have minimal flow during the first investigation and was dry by the second investigation. H1A-S2 lacked any feature vegetation, with riparian vegetation dominated by scrubland.

3.1.1.3 H1A-S3

The feature was noted as having a defined natural channel and was observed to have minimal flow during the first investigation and was dry by the second investigation. H1A-S3 lacked any feature vegetation, with riparian vegetation dominated by forest.

3.1.1.4 H1A-S4

The feature was noted as having a defined natural channel and was observed to have minimal flow during the first investigation and was dry by the second investigation. H1A-S4 lacked any feature vegetation, with riparian vegetation dominated by scrubland.

3.1.1.5 H1A-S5

The feature was noted as having a defined natural channel and was observed to have minimal flow during the first investigation and was dry by the second investigation. H1A-S5 lacked any feature vegetation, with riparian vegetation dominated by mostly forest.

3.1.1.6 H1A-S6

The feature was noted as having a defined natural channel and was observed to have standing water throughout all three field investigations. Wetland vegetation was present within H1A-S6, with riparian vegetation dominated by scrubland. While water was present in H1A-S6, levels were noted to continually decrease throughout the season.

3.1.1.7 H1A-S7

The feature was noted as having a defined natural channel and was observed to have minimal flow throughout all three field investigations. H1A-S7 lacked any feature vegetation, with riparian vegetation dominated by scrubland. While water was present in H1A-S7, levels were noted to continually decrease throughout the season.

3.1.1.8 H1A-S8

The feature was noted as having a defined natural channel and was observed to have interstitial flow during the first field investigation and standing water throughout the remaining two investigations. H1A-S8 lacked any feature vegetation, with riparian vegetation dominated by scrubland. While water was present in H1A-S8, levels were noted to continually decrease throughout the season.

3.1.1.9 H1A-S9

At this point, H1A opens into a mixed shallow aquatic ecosite. The feature was noted as having a defined natural channel and was observed to have standing water throughout all three field investigations. Wetland vegetation was present within H1A-S9, with riparian vegetation dominated by forest. While water was present in H1A-S9, levels were noted to continually decrease throughout the season.

3.1.2 H1B

H1B is a headwater drainage feature that originates off-site, entering the property from the northwest. H1B is channelized under a gravel pedestrian pathway via a small diameter culvert. . H1B has a naturalized channel throughout its extent, eventually meeting with H1A on-site. H1B was observed to have limited connectivity to other surface water features, with the only observed connectivity being to other isolated headwater drainage features.

Differences in flow conditions and riparian vegetation were observed throughout the different reaches of the feature. As such, H1B has been further divided into H1B-S1 and H1B-S2. Due to the observed differences in flow and riparian vegetation, each segment is evaluated as an individual feature in the subsections below.

3.1.2.1 H1B-S1

H1B is a headwater drainage feature that originates off-site, entering the property boundary from the northwest. The feature was noted as having a defined natural channel and was observed to have minimal flow throughout all three field investigations. H1B-S1 is modified by a culvert under the gravel pathway. H1B-S1 lacked any feature vegetation, with riparian vegetation dominated by scrubland. While water was present in H1B-S1, levels were noted to continually decrease throughout the season.

3.1.2.2 H1B-S2

H1B-S2 is a headwater drainage feature that originates on-site, originating near the northwestern property boundary. The feature was noted as having a defined natural channel and was observed to have minimal flow throughout all three field investigations. Meadow vegetation was present within H1B-S2, with riparian vegetation dominated by wetland. While water was present in H1B-S2, levels were noted to continually decrease throughout the season.

3.1.3 H1C

H1C occurs at the end of H1A, connecting midway between segment H1A-S9 and the mixed shallow aquatic ecosite. During the site investigations, H1C was investigated as one continuous feature and was not broken up into segments by site-break triggers.

H1C was observed to have minimal flow during the first investigation and was dry by the second field investigation. Meadow vegetation was present within H1C, and riparian vegetation was dominated by forest.

4.0 CLASSIFICATION

All HDFs on-site were classified following the narrative for each element of HDF evaluation (hydrology, riparian habitat, fish and fish habitat, and terrestrial habitat) as presented in Part 2 of the Evaluation, Classification and Management of HDFs guidance document (TRCA/CVC, 2014). The flow chart illustrated in Figure 1 below and the data collected during site investigations. The classification of the twelve HDFs was used to determine management recommendations presented in Section 5 below.

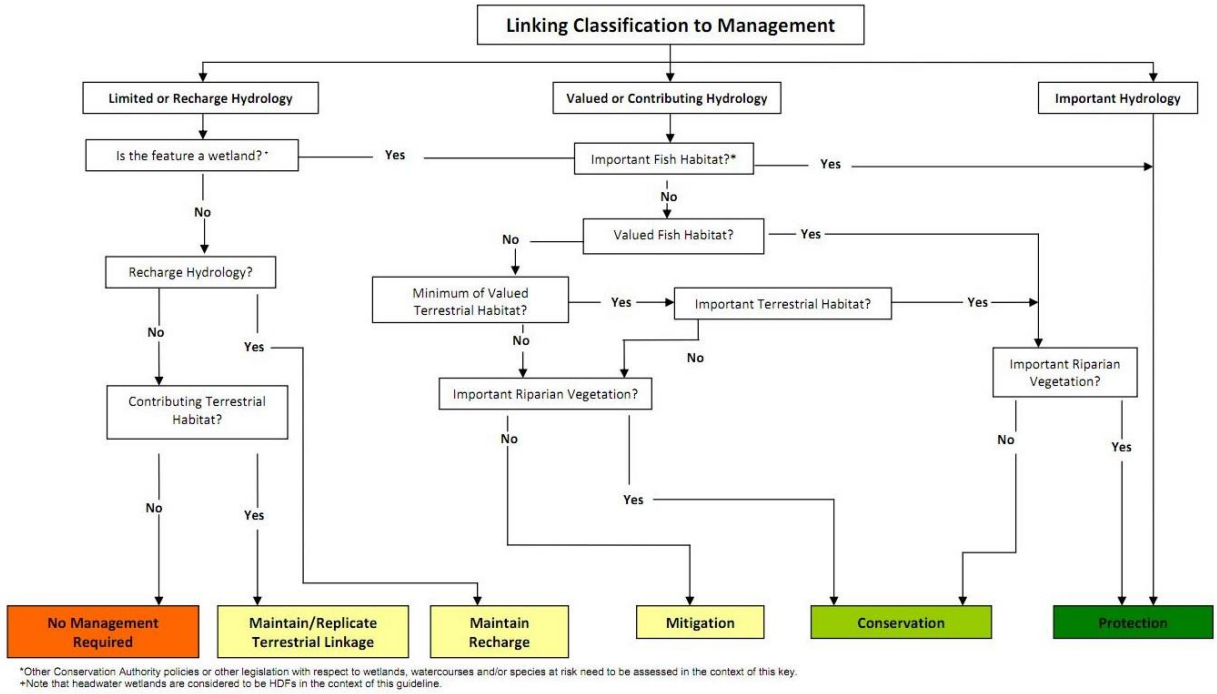


Figure 1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

H1A-S1, H1A-S2, H1A-S3, H1A-S4, H1A-S5, and H1C had minimal flow during the first investigation and were dry by the second and third investigations, indicating contributing intermittent hydrology, with no valued fish habitat, contributing terrestrial habitat, and important riparian vegetation. As such H1A-S1 through H1A-S5 and H1C were classified as requiring **conservation.**

H1A-S6, H1A-S7, H1A-S8, H1A-S9, H1B-S1, and H1B-S2 was observed to be wet throughout all three field investigations, with a minimum of minimal flow throughout, indicating important intermittent hydrology, with no valued fish habitat, contributing to important terrestrial habitat, and important riparian vegetation. As such H1A-S6 through H1A-S9 and H1B-S1 through H1B-S2 were classified as requiring **protection**.

Table 4.1 below provides a high-level summary for the evaluation and the classification outcome of all HDFs on-site. Management recommendations are provided in Section 5 below.

Table 4.1 Summary of HDF Classification and Management Recommendations

HDF	Step 1		Step 2	Step 3	Step 4	Management Recommendation
	Hydrology	Modifiers	Fish Habitat	Terrestrial Habitat	Riparian Vegetation	
H1A-S1	Contributing		Contributing	Contributing	Important - Scrubland	Conservation
H1A-S2	Contributing		Contributing	Contributing	Important - Scrubland	Conservation
H1A-S3	Contributing		Contributing	Contributing	Important - Forest	Conservation
H1A-S4	Contributing		Contributing	Contributing	Important - Scrubland	Conservation
H1A-S5	Contributing		Contributing	Contributing	Important - Forest	Conservation
H1A-S6	Important		Contributing	Important	Important - Scrubland	Protection
H1A-S7	Important		Contributing	Contributing	Important - Scrubland	Protection
H1A-S8	Important		Contributing	Contributing	Important - Scrubland	Protection
H1A-S9	Important		Contributing	Important	Important - Forest	Protection
H1B-S1	Important	Culvert	Contributing	Contributing	Important - Scrubland	Protection
H1B-S2	Important		Contributing	Contributing	Important - Wetland	Protection
H1C-S1	Contributing		Contributing	Contributing	Important - Forest	Conservation

5.0 MANAGEMENT RECOMMENDATIONS AND MITIGATION MEASURES

In accordance with the guidance document (TRCA/CVC, 2014), HDFs classified as important functions required **protection**; these are typically features characterized by important hydrology, fish habitat and/or riparian vegetation. Based on the classification in Section 4 above, H5C has been field verified to provide important hydrology, fish habitat and/or riparian vegetation, as such **protection** is required for this feature.

As outlined in the guidance document, protection management includes: protecting or enhancing the existing feature and its riparian zone corridor, maintaining the hydroperiod, incorporate shallow groundwater and base flow protection techniques (e.g. infiltration treatment), use natural channel design techniques or wetland design to restore or enhance existing habitat features, realignment is not generally permitted, and design and locate the stormwater management system to avoid impacts to the feature (TRCA/CVC, 2014).

In accordance with the guidance document (TRCA/CVC, 2014), HDFs classified as valued functions require **conservation**; these are typically features characterized by contributing hydrology, and important riparian vegetation. Based on the classification in Section 4 above, H4 has been field verified to provide important riparian habitat, as such **conservation** is required for this feature.

As outlined in the guidance document, conservation management includes maintaining, relocating, and/or enhancing the existing feature and riparian zone corridor; restoring lost functions through enhanced lot level controls; maintaining or replacing on-site flows using mitigation measures; maintaining or replacing external flows; and feature must remain connected to downstream features (TRCA/CVC, 2014).

In addition to the management recommendations outlined above, the following mitigation measures are provided by GEMTEC in order to minimize or eliminate potential impacts to water quality;

- Any future construction should maintain a minimum of 30 m setback from all HDF requiring protection, conservation and/or management, and permanent watercourses on-site.
- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.

- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- The development plan should include lot-side swales and/or roadside ditches designed to promote infiltration.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high-water mark.
- Any temporary storage of aggregate material shall be set back from the high-water mark.

6.0 SUMMARY

A headwater drainage feature assessment was completed and twelve HDFs were identified on-site, identified as H1A-S1 through H1A-S9, H1B-S2 through H1B-S2, and H1C. Conservation is required for H1A-S1, H1A-S2, H1A-S3, H1A-S4, H1A-S5, and H1C, based on contributing hydrology and important riparian vegetation. Conservation management should include: maintaining, relocating and/or enhancing the existing features or riparian zone corridor; restoring lost functions through enhanced lot level controls; maintaining or replacing on-site flows through mitigation; maintaining or replacing external flows and maintaining connectivity with downstream features. Protection is required for H1A-S6, H1A-S7, H1A-S8, H1A-S9, H1B-S1, and H1B-S2, based on important hydrology and riparian vegetation. Protection should include protecting or enhancing the existing feature and its riparian zone corridor, maintaining the hydroperiod, incorporate shallow groundwater and base flow protection techniques (e.g. infiltration treatment), use of natural channel design techniques or wetland design to restore or enhance existing habitat features, realignment is not generally permitted, and design and locate the stormwater management system to avoid impacts to the feature.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Luca Fiorindi, B.A., Dip
Junior Biologist

Drew Paulusse, B.Sc.
Senior Biologist

7.0 REFERENCES

Credit Valley Conservation and Toronto Region Conservation Authority (CVC/TRCA). 2014. Evaluation, Classification and management of Headwater Drainage Features Guidelines. TRCA Approval July 2013, Finalized January 2014.

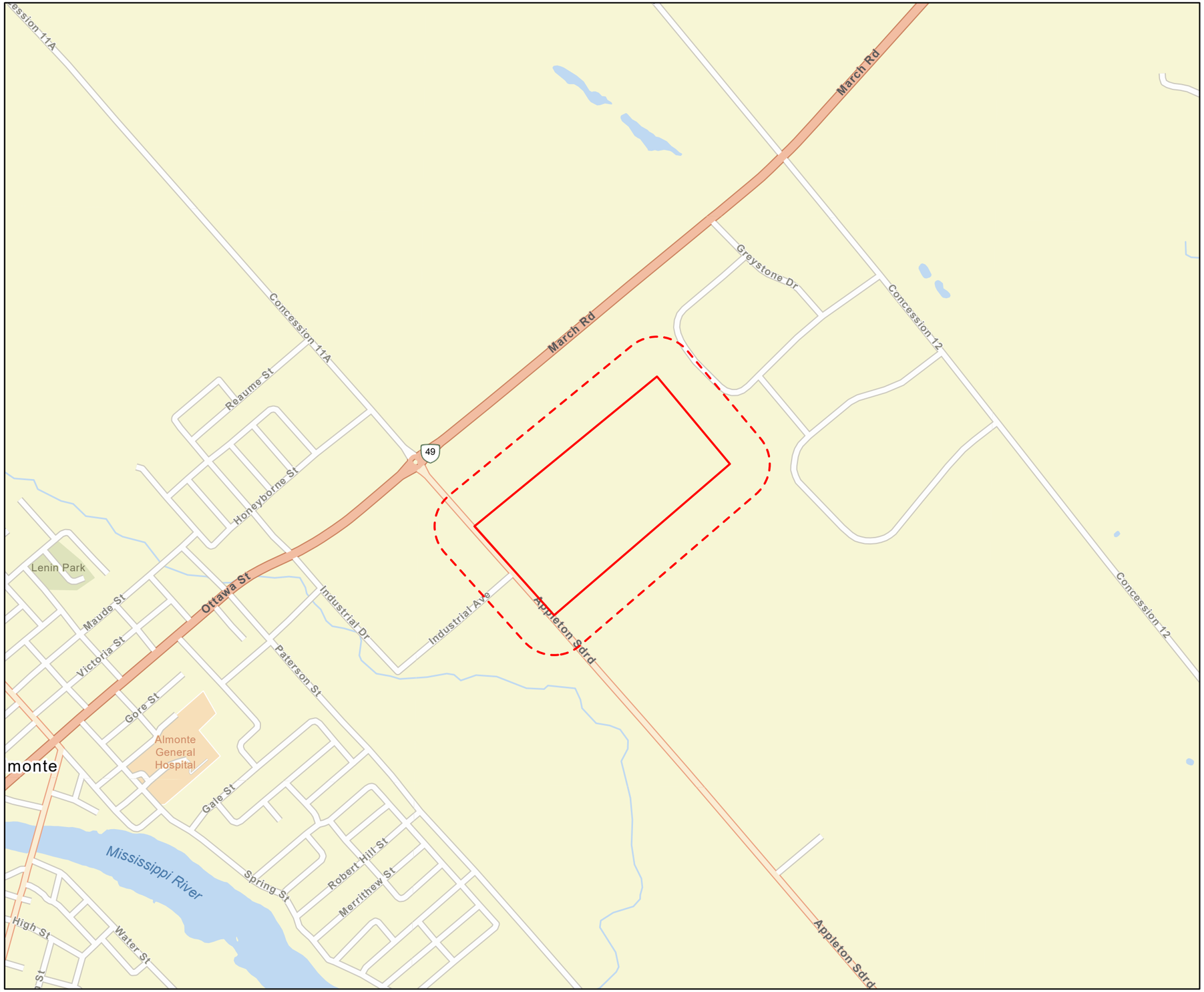
Ontario Ministry of Natural Resources (OMNR). 2011. Land Information Ontario (LIO).

Mississippi Valley Conservation Authority. Mississippi Valley Conservation Authority Public Geo Portal, Undated). Accessed October, 2023. Available online: https://mvc.on.ca/development-permits/interactive-property-map/

Stanfield, L (Ed.). 2017. Ontario Stream Assessment Protocol. Version 10. Ontario, Canada.

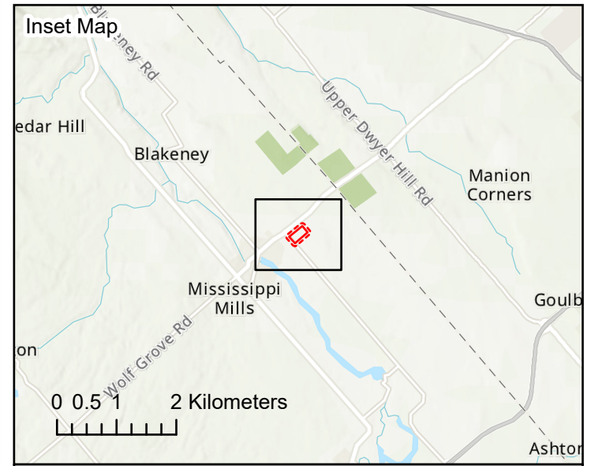
ATTACHMENTS

A – Figure A.1: Site Layout
A – Figure A.2: Headwater Drainage Feature Assessment



Legend

- Property Boundary
- Study Area



Scale
1:12,000
0 90 180 360 540 720 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location
5400 Appleton Sideroad
Almonte, Ontario

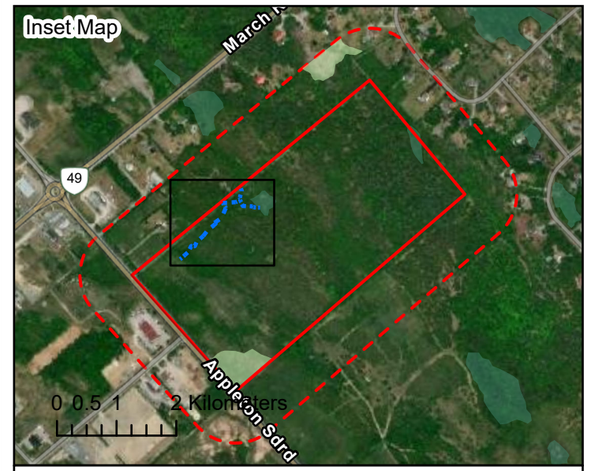
Drwn By:	Chkd By:	
C.Z.	L.F.	Site Location

Date: October 2023	Rev.	
	0	Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
World Street Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- MVCA Wetlands
- Local Wetlands
- Headwater Drainage Feature



Scale

1:800

0 6 12 24 36 48 Meters

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive,
Ottawa, ON K2K 2A9
T: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Client:	Project:
Novatech	100011.069

Location

5400 Appleton Sideroad
Almonte, Ontario

Drwn By:	Chkd By:	
C.Z.	L.F.	Headwater Drainage Features

Date: October 2023	Rev.	
	0	Figure: A.2

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Imagery: Maxar, Microsoft
Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

APPENDIX E

MNRF General Habitat Descriptions – Eastern Whip-poor-will

General Habitat Description for the Eastern Whip-poor-will (*Caprimulgus vociferous*)

A general habitat description is a technical document that provides greater clarity on the area of habitat protected for a species based on the general habitat definition found in the Endangered Species Act, 2007. General habitat protection does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry out their life processes. A general habitat description also indicates how the species' habitat has been categorized, as per the policy "Categorizing and Protecting Habitat Under the Endangered Species Act", and is based on the best scientific information available.

HABITAT CATEGORIZATION

1	Nest and the area within 20 m of the nest
2	The area between 20 m and 170 m from the nest or centre of approximated defended territory
3	The area of suitable habitat between 170 m and 500 m of the nest or centre of approximated defended territory

Category 1

Whip-poor-will nests and the area immediately around the nest (i.e., 20 m) are highly sensitive features supporting the species' reproduction life cycle and have the lowest tolerance to alteration. These are areas the species depends on for egg laying, incubation, feeding, resting and rearing of young. Whip-poor-wills do not construct a traditional nest as eggs are laid directly on leaf litter (Peck and James 1983). Nests require tree cover, shade, sparse ground cover, and proximity to open areas for foraging on flying insects (Eastman 1991, Reese 1996, Wilson and Watts 2008). These features are important to nesting site suitability. A 20 m distance from the nest is important to maintain the microclimate and vegetation features around the nest. Whip-poor-wills exhibit nest site fidelity (Cink 2002).

It is important to note that Whip-poor-will nests are rarely identified, due to their cryptic nature. It is inadvisable to search for Whip-poor-will nests as this may inadvertently jeopardize the nesting site and/or offspring. However, if a nest is identified, it and the area within 20 m shall be categorized as Category 1.

Category 2

The area between 20 m and 170 m of the nest or centre of approximated defended territory is included in Category 2 and is considered to have a moderate level of tolerance to alteration. This area includes the species' defended territory and is depended upon for nesting, rearing young, feeding, and resting. Territories have been found to range between 3 – 11 ha, averaging 4 – 5 ha (Fitch 1958, Hunt 2009). However, recent research in Ontario has shown that defended Whip-poor-will territories are approximately 9 ha in size, (i.e., approximately 170 m from the nest or centre of approximated defended territory) (English, pers. comm. 2011).

Suitable breeding habitats generally include open and half treed areas and often exhibit a scattered distribution of treed and open space. Structure is known to be an important factor in habitat selection (Garlapow 2007, Wilson and Watt 2008, Hunt 2009). Perching and roosting sites are important features found within this area. During the day, adults will lay motionless on a roost site (or nest) and become active only at dusk (Cink 2002). Perches have been reported to be used repeatedly, night after night (Cink 2002). Roosts are typically located in forest habitat on a low branch or directly on the ground (Mills 2007).

This area can also support additional nesting opportunities. Double brooding is common for this species, with a 32-day average interval between clutches (Cink 2002). Different nest sites are generally used for the second brood but are usually within 80 m of the first site (Cink 2002).

Category 3

The area of suitable habitat between 170 m and 500 m of the nest site or centre of approximated defended territory is included in Category 3 and is considered to have a high level of tolerance to alteration. This area supports various life processes, primarily feeding. Whip-poor-wills forage only at dawn or dusk but can forage all night during moonlit nights. Whip-poor-wills are seldom found greater than 500 m from nest sites based on unpublished field data collected in Kansas over 10 summers, from a study of 20 pairs (Cink pers. comm. 2012). Whip-poor-wills that range greater than 500 m from nest sites are likely females that have abandoned the territory due to loss of a mate (Cink, pers. comm. 2012). The area between 170 m and 500 m from a nest site may incorporate larger forest tracts that support additional foraging opportunities.

Activities in Eastern Whip-poor-will habitat

Activities in general habitat can continue as long as the *function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed.*

Generally compatible:

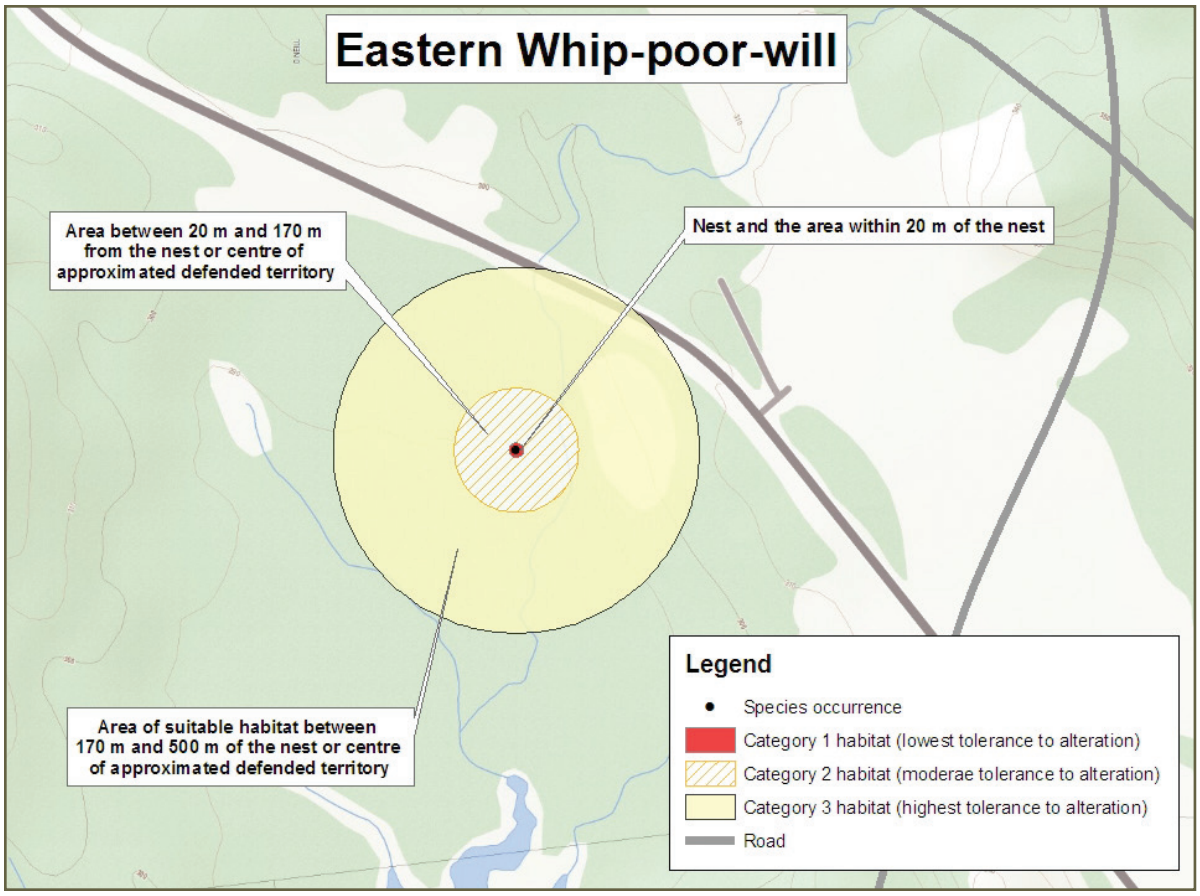
- Hiking and non-motorized vehicle use of existing recreational trails.
- Normal use of existing roadways including access roads.
- Small-scale selective removal of individual trees.

Generally not compatible:*

- Large scale development or other activities that result in significant alteration or clearing of vegetation.
- Indiscriminate application of pesticides within habitat.

* If you are considering an activity that may not be compatible with general habitat, please contact your local MNR office for more information.

Sample application of the general habitat protection for Eastern Whip-poor-will



References

Cink, Calvin L. 2002. Eastern Whip-poor-will (*Antrostomus vociferus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: *http://bna.birds.cornell.edu/bna/species/620doi:10.2173/bna.620*

Cink, C.L., pers. comm. 2012. *Telephone conversation with A. Chard*, March 13, 2012. Professor of Biology, Baker University, Baldwin City, Kansas.

Eastman, J. 1991. Whip-poor-will, pp. 252-253 in Brewer, R., G.A. McPeek, and R.J. Adams Jr., eds. The Atlas of Breeding Birds of Michigan. East Lansing, MI: Michigan State University Press, East Lansing, Michigan. 594pp.

English, P., pers. comm. 2011. *Conversation with C. Risley*, December, 2011. PhD Candidate, Trent University, Peterborough, Ontario.

Fitch, H.S. 1958. Home ranges, territories, and seasonal movements of vertebrates of the Natural History Reservation. Univ. of Kansas Publ. Mus. Nat. Hist. 11(3):63-326.

Garlapow, R.M. 2007. Whip-poor-will prey availability and foraging habitat: implications for management in pitch pine / scrub oak barrens habitats. Master dissertation, Univ. of Massachusetts, Amherst, Massachusetts. 47 pp.

Hunt, P.D. 2009. Whip-poor-will territory mapping at two New Hampshire sites. Nuttall Ornithological Club and Norcross Wildlife Foundation. 16 pp. Retrieved from the New Hampshire Audubon Online: *http://www.nhaudubon.org/wp-content/uploads/2011/05/2009-WPWI-report.pdf*

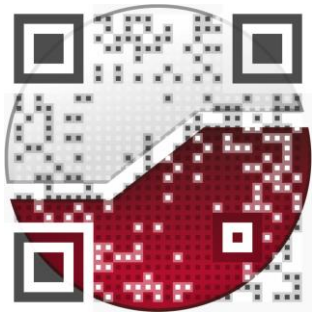
Mills, A. 2007. Whip-poor-will, pp. 312-313 in Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R Couturier, eds. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

Peck, G.K. and R.D. James. 1983. Breeding birds of Ontario, nidiology and distribution, Vol. 1: nonpasserines. Royal Ontario Museum, Toronto, 321 pp.

Reese, J.G. 1996. Whip-poor-will, pp. 194-195 in C.S. Robbins, ed. Atlas of the Breeding Birds of Maryland and the District of Columbia. Univ. of Pittsburgh Press, Pittsburgh, PA.

Wilson, M.D. and B.D. Watts. 2008. Landscape configuration effects on distribution and abundance of Whip-poor-wills. Wilson Journal of Ornithology 120: 778-183.

experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité