



Scoped Environmental Impact Study

17 Fire Route 109 Nogies Creek,
Twp. of Trent Lakes

Andrew Mayhew

February 21, 2023

➔ The Power of Commitment



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File name	11229055-01-RPT-17 Fire Route 109 Scoped EIS
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Project name	17 Fire Route 109, Trent Lakes - Scoped EIS
Document title	Scoped Environmental Impact Study 17 Fire Route 109, Trent Lakes- Scoped EIS
Project number	12583818

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	01	Candice Talbot	Amanda Smith, Senior Biologist		Chris Ellingwood Senior Biologist		December 13, 2022

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1. Introduction

1.1 Background

GHD Limited has been retained to complete a Scoped Environmental Impact Study for a demolition of an existing cottage, and construction of a 2-storey dwelling with attached garage and holding tank at 17 Fire Route 109 in the Municipality of Trent Lakes in Peterborough County.

The Municipality of Trent Lakes requires an EIS prior to the approval of the redevelopment of the lot. The key issue being the proximity to the banks of Nogies Creek and an unevaluated wetland on the west side of the road.

The property is adjacent to an unevaluated wetland, fish habitat, and the shoreline of the creek. In accordance with the Growth Plan, a Natural Heritage Evaluation is required as the location is outside of a settlement area but within the Growth Plan policy area. The NHE contains many of the same elements of an EIS that is required by the Municipality of Trent Lakes. The main purpose is to evaluate the development proposal in relation to potential impacts on the key natural heritage and key hydrologic features and their ecological functions.

1.2 Location and Site

The subject property is located at 17 Fire Route 109 in the Municipality of Trent Lakes, County of Peterborough. The Site is known as Part Lot 23, Concession 16 and will be referred to as 'Site' from here on. The Site is rectangular in shape fronting, is 0.10 ha on Nogies Creek with unevaluated wetland west of FR 109, and within 10m of the property line (**Figure 1**).

1.3 Scope and limitations

This report has been prepared by GHD for Andrew Mayhew and may only be used and relied on by Andrew Mayhew for the purpose agreed between GHD and Andrew Mayhew as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Andrew Mayhew arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Study Rationale

This section identifies federal, provincial and other regulatory legislation, policies, official plans (OPs) and official plan amendments that are applicable and relevant to the Site and the immediate vicinity. This includes policies that triggered the study. These documents may identify Species at risk, natural features and habitats or other features relevant to this study.

1.4.1 Federal Legislation

1.4.1.1 Fisheries Act, 1985 (R.S.C., 1985, c. F-14)

The purpose of the Fisheries Act is to maintain healthy, sustainable and productive Canadian fisheries through the prevention of pollution, and the protection of fish and their habitat. The Fisheries Act provides protection provisions for fish and fish habitat in the form of standards, codes of practice, and guidelines for projects in and near water. These provide guidance on how to avoid and mitigate impacts to fish and fish habitat and comply with the Fisheries Act to avoid causing the death of a fish or harmful alteration, disruption or destruction (HADD) of fish habitat from your work, undertaking or activity.

Projects affecting waterbodies that support fish and fish habitat must comply with the provision of the Fisheries Act. The proponent is responsible for determining if the project is likely to cause impacts to fish and fish habitat and if these impacts can be avoided or mitigated. The proponent must gather information on the type and scale of impact on the fishery and determine if the impacts will result in the death of fish or a HADD of fish habitat. A Request for Review (RFR) should be submitted to Fisheries and Oceans Canada (DFO) if impacts cannot fully be avoided. Following DFO review, if it is determined that the impacts cannot be avoided or mitigated and will result in death of fish or a HADD of fish habitat, an authorization under Subsection 35 (2) of the *Fisheries Act* must be obtained from the DFO. Projects that have the potential to obstruct fish passage or affect flows needed by fish require an authorization.

1.4.1.2 Migratory Birds Convention Act

The purpose of the Migratory Birds Convention Act (MBCA 1994) is to implement the Convention by protecting and conserving migratory birds — as populations and individual birds — and their nests.

No work is permitted to proceed that would result in the destruction of active nests (i.e., nests with eggs or young birds) or the wounding or killing of bird species protected under the MBCA and/or Regulations under that Act.

1.4.2 Provincial Legislation

1.4.2.1 Endangered Species Act, 2007

The purposes of the Ontario Endangered Species Act (ESA 2007) are to:

1. To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge;
2. To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk;
3. To promote stewardship activities to assist in the protection and recovery of species that are at risk. 2007, c. 6, s. 1. (Government of Ontario, 2019)

The ESA clearly defines the five classifications of species status as extinct, extirpated, endangered, threatened, or special concern, and provides guidelines on the process of species status determination.

Regulations made under this Act include: Ontario Regulation 230/08 and 242/08. Ontario Regulation 230/08 provides the list of Species at Risk (SAR) in Ontario, which is updated regularly. This list was most recently consolidated on August 1, 2018 (Government of Ontario, 2018). Species status provided in the list is assessed by an independent body, the Committee on the Status of Species at Risk in Ontario (COSSARO), based on the best-available science and Aboriginal Traditional Knowledge.

General habitat protection is afforded to all species listed as endangered or threatened. General habitat descriptions are technical, science-based documents that have been developed for some of the species that are most likely to be affected by human activity (Government of Ontario 2020). Further information including a Recovery Strategy or Management Plan is required for each listed species, on a timeline dictated by the species status.

Ontario Regulation 242/08 explains possible exemptions to the ESA and details on how the purpose of the ESA is to be carried out.

1.4.2.2 Provincial Policy Statement, 2020

The Provincial Policy Statement, 2020 (PPS) is the statement of the Ontario government's policies on land use planning. It applies province-wide (in the province of Ontario) and provides provincial policy direction on land use planning. Municipalities use the PPS to develop their official plans and to guide and inform decisions on other planning matters. The PPS is issued under Section 3 of the Planning Act and all decisions affecting land use planning matters 'shall be consistent with' the Provincial Policy Statement (Government of Ontario, 2020).

Portions of Sections 2.1.4-2.1.8 of the Provincial Policy Statement (PPS 2020) apply to this project.

- 2.1.4 *Development and site alteration shall not be permitted in:*
 - a. *significant wetlands in Ecoregions 5E, 6E and 7E1; and*
 - b. *significant coastal wetlands.*
- 2.1.5 *Development and site alteration shall not be permitted in:*
 - a. *significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;*
 - b. *significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
 - c. *significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
 - d. *significant wildlife habitat;*
 - e. *significant areas of natural and scientific interest; and*
 - f. *coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*
- 2.1.6 *Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*
- 2.1.7 *Development and site alteration shall not be permitted in the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*

1.4.2.3 Growth Plan for the Greater Golden Horseshoe, 2019

The 2019 Growth Plan for the Greater Golden Horseshoe is a strategic, long-range, comprehensive and integrated approach to guide future growth in Ontario. It includes planning for infrastructure, land use, economic development and population health (OMMAH 2019).

A Natural Heritage System for the Growth Plan has been mapped by the Province to A Place to Grow: Growth Plan for the Greater Golden Horseshoe 2019 came into effect on May 16, 2019 replacing the Growth Plan for the Greater Golden Horseshoe support long-term planning for the protection of region's natural heritage and biodiversity (OMMAH 2019). Municipalities have been directed to incorporate the Natural Heritage System (NHS) as an overlay in official plans and to apply appropriate policies to maintain, restore, or enhance its diversity and connectivity as well as its ecological and hydrological functions. However, provincial mapping of the NHS does not apply until it has been implemented in the applicable upper or single-tier official plan (OMMAH 2019).

The Site is designated as a Recreation Dwelling Area as per the Trent Lakes Official Plan. As neither official plan currently incorporates the provincially identified NHS, the policies of the Growth Plan 2019 relating to the natural heritage system do not apply to this development application.

The Growth Plan (2019) also includes direction relating to the protection of water resource systems, including key hydrologic features (KHF) and their functions (Sections 4.2.1, 4.2.3). Outside of settlement areas, development or Site alteration is not permitted in key hydrologic features, such as wetlands. Additionally, in lands adjacent to KHF,

proposals for new development or Site alteration within 120m of these features requires that a Natural Heritage Evaluation be conducted. The presence of wetlands and watercourse adjacent to the Site therefore trigger this EIS. This report combines the requirements of an NHE report with the County and Township requirements for an Environmental Impact Assessment/Study.

1.4.3 Local and Other Regulatory Bodies

1.4.3.1 County of Peterborough Official Plan (consolidated to March 2020)

The County requires the completion of an Environmental Impact Assessment as per section 4.1.3.1 of the Official Plan.

1.4.3.2 Municipality of Trent Lakes Official Plan Amendment (OPA No. 46 - adoption of the Township of Galway-Cavendish and Harvey Official Plan)

The Site is located within an identified Recreational Dwelling Area (Schedule 'A1-1' – Nogies Creek Land Use & Transportation Plan Harvey, Township of Galway-Cavendish & Harvey Official Plan). Section 5.1.10 describes the land use policies associated with natural environmental features and areas, such as wetlands, fish habitat and significant habitat of endangered and threatened species. The presence of natural environmental features on and/or adjacent to the Site acts as triggers for this Environmental Impact Study. The Township's requirements for an EIS are described in Section 5.1.10.3 of the Official Plan.

1.4.3.3 Kawartha Region Conservation Authority and Ontario Regulation 186/06

The Site is located within the jurisdiction of the Kawartha Region Conservation Authority. Under the Conservation Authorities Act, Ontario Regulation 186/06, *Regulation of Development Interference with Wetlands and Alterations to Shorelines and Watercourses* is applicable. A watercourse is present within the Study Area, and therefore O.Reg 186/06 applies to the proposed development.

1.5 Other Resources Referenced

Prior to field surveys, background information for the Site and surrounding lands from a variety of sources were reviewed to provide context for the setting and sensitivity of the Site. Background information sources included:

1.5.1 Data Sources

- Aerial imagery
- MNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make-a-map tool (2021)
- Ontario Breeding Bird Atlas data (Bird Studies Canada, (BSC) 2001-2005 field data)
- Ontario Ministry of Natural Resources Fish-On Line, Fish Species List (OMNR, 2022)
- Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2022)

1.5.2 Literature and Resources

- Natural Heritage Reference Manual (MNRF, 2010)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp. (OMNRF, 2015)

1.6 Description of Development

The proposed development is for the demolition of an existing 1 story cottage and construction of a 1-storey dwelling, attached garage, driveway, and septic holding tank. The Site plan has been provided in **Appendix A**. The existing frame Bunkie, attached deck and metal shed will be removed. The existing floating dock will be retained.

1.6.1 Scope of Report

The main scope of this EIS report is: to confirm the boundaries of key natural features (e.g. the wetlands, watercourse) on the property; to confirm and identify the ecological function of any such features; to determine whether any Species at Risk and/or their habitats occur on the Site; and, to develop appropriate buffers and mitigation measures to prevent impacts of the development on these features and their functions

This report will only deal with the suitability of the Site from a biological perspective and the constraints due to the presence of the key natural heritage features. Any other approvals or constraints due to zoning, flood and fill regulations, health regulations, archaeology, slope stability studies, minimum distance separation or other approvals for the municipality and other agencies are the responsibility of the owner.

2. Study Methods

2.1 General Approach

Our approach to preparation of the EIS will consist of three phases.

In the first phase, available information background information on the Site including recent aerial photography, key natural features and GIS mapping was compiled and reviewed.

The second phase consisted of one Site visit by our terrestrial/wetland and fisheries biologists to collect site-specific information and confirm data obtained from background and literature reviews. On Site surveys included Ecological Land Classification (ELC) mapping, vegetation community boundaries, wildlife corridors and linkages and presence of significant species including Species at Risk, and aquatic habitat assessments.

The final phase consisted of preparing a Scoped EIS report based upon both the literature review and field surveys completed according to applicable legislation and policies (as outlined in Section 1.4). The EIS report was designed to identify natural heritage features, assess their functions, and provide recommendations to mitigate any potential predicted impacts from the proposed development.

2.2 Study Site Methodology

2.2.1 Physical Site Characteristics

Site characteristics were assessed during field visits. This assessment included general documentation of existing disturbances, current property use, age of vegetation cover, topography and natural features.

2.2.2 Biophysical Inventory

2.2.2.1 Vegetation

All vegetation encountered in the study was inventoried during the Site visit. Delineation and classification of the vegetation community types was based on the Ecological Land Classification for Southern Ontario (Lee et al., 1998).

General notes on disturbance, topography, soil types, soil moisture and state of each community were also compiled. All vegetation communities in the Site were included.

Rare, significant or uncommon species were searched for. Species significance or rarity on a national, provincial, regional or local level was based on published literature and standard status lists. These included SARA (2021), COSEWIC (2021), SARO (2018) and Cuddy et al. (1991).

2.2.2.2 Birds and Wildlife

While GHD was on Site conducting surveys for vegetation communities (e.g., surveys of vegetation communities), observations of any wildlife encountered on Site were recorded (including mammals, amphibians and reptiles). Documentation included notes about the species detected, their location and the type of encounter (i.e., direct sightings and indirect evidence such as calls, tracks, scat, burrows, dens, trails and browse).

2.2.2.3 Fish and Aquatic Habitat

An Aquatic habitat assessment was conducted using standardized provincial aquatic protocols (e.g. Ontario Stream Assessment Protocol). Aquatic habitat was quantified and characterized based on local substrate composition, vegetation, flow influence and condition, sediment transport, cover, channel morphology, groundwater indicators, riparian habitat, barrier presence and form, land use and landscape influences, human modifications and unique features. Shoreline assessments were completed by walking the shoreline and conducting visual surveys.

2.2.2.4 Wetlands

Wetland boundaries were determined by GHD biologists certified to conduct wetland evaluations under the Ontario Wetland Evaluation System, third edition, version 3.3, southern manual (2014). Biologists first reviewed aerial photographs and available wetland mapping, including MNRF GIS database layers.

2.2.2.5 Significant Wildlife Habitat (SWH)

Prior to the Site visit, a candidate list of SWH features were determined based on the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, 2015. During Site visit, GHD biologists looked for evidence of those candidate significant wildlife habitat features (i.e., to determine presence/absence). Upon compiling field data, further consideration was given to which candidate SWHs could be confirmed as present on the property.

3. Survey Results

The following section presents GHD Site-specific survey data only. Supporting information, the background review and other sources of information will be presented and discussed in Section 4.0 – Discussion and Analysis.

3.1 Physical Site Characteristics

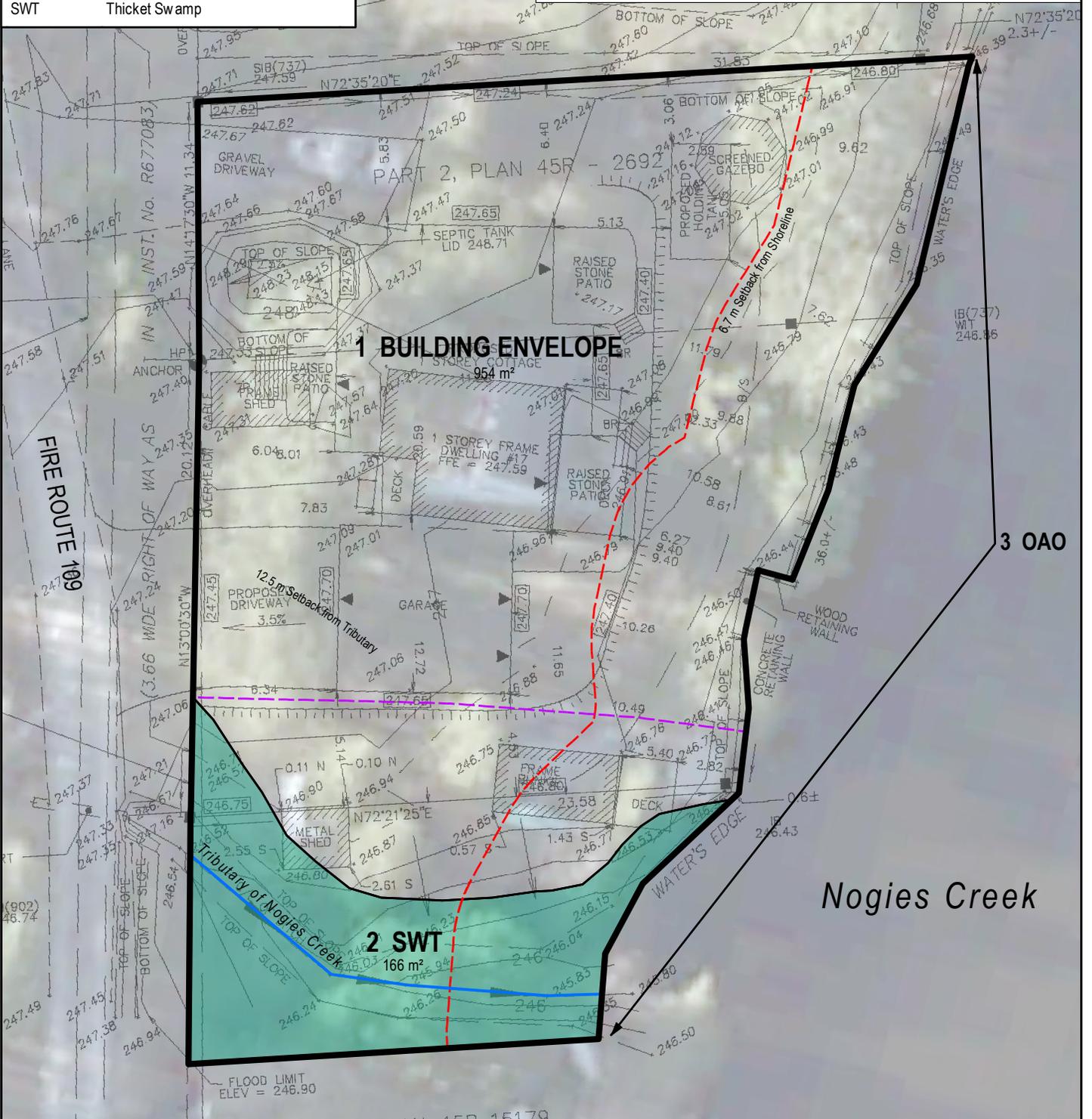
The Site was approximately 0.2 acres in size and is predominantly open lawn with a few trees and a line of spruce and cedar trees. Topography was relatively flat, as are all of the adjacent lots, with shoreline frontage on Nogies Creek. Currently, the lot contains a cottage, three sheds and a dock. A wetland outlet (watercourse) is located south of the Site and an unevaluated wetland was located west of FR 109, directly across the road from the property.

ELC Types - 1st Approximation
 Ecological Land Classification for Southern Ontario: First Approximation and Its Application, 1998.

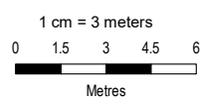
ELC Code	Vegetation Type Description
OAO	Open Water Aquatic
SWT	Thicket Swamp

Legend

- Tributary (Coe Fisher Cameron, 2022)
- - - 6.7 m Setback from Shoreline
- - - Variable Seback from Tributary
- Site Limit
- Vegetation Community
- Wetland Community



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 17 Fire Route 109, Bobcaygeon, ON
 Municipality of Trent Lakes
 Scoped Environmental Impact Study
**Vegetation Communities
 & Constraints**

Project No. 12583818
 Revision No.
 Date Dec 14, 2022

Figure 1

3.2 Biological Inventories

3.2.1 Vegetation

3.2.1.1 Level of Effort

The vegetation communities were delineated within the Site according to methodologies outlined in Section 2.2.2.1. A summary of the level of effort and environmental conditions have been provided in **Table 1**.

Table 1 *Vegetation Surveys - Level of Effort*

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs.)
May 18, 2022	Ecological Land Classification (ELC)	12°C, Cloud cover 100%, Beaufort Wind Scale 0, Drizzle-rain	11:20AM	2

3.2.1.2 ELC Code Descriptions

A total of 3 vegetation communities were identified within the Site. Each community is described below and illustrated on **Figure 1**.

A total of 46 plant species were identified during field surveys. The dominant species in each community are described below and a complete plant list is found in **Appendix B**.

Community 1 Building Envelope (ELC Code: N/A)

This community included the maintained lawn area in addition to the short, graveled driveway and buildings on the Site and hosted several tree species in addition to the common weed species often found growing in lawns, as well as some shoreline vegetation. Tree species in this community are limited to species that appear to have been planted, these species are a line of white spruce (*Picea alba*), and eastern white cedar (*Thuja occidentalis*) along the road frontage. Trembling aspen (*Populus tremuloides*) and American elm (*Ulmus americana*), and additional white spruce were noted to be growing along the shoreline. Other vegetation included: Kentucky bluegrass (*Poa pratensis*), common yarrow (*Achillea millefolium*), wild strawberry (*Fragaria virginica*), red clover (*Trifolium pratense*) and goutweed (*Aegopodium podagraria*) (**Photo 1**).



Photo 1: Community 1 – Building envelope (Photo Date: May 18, 2022)

Community 2 Watercourse Easement (ELC Code: SWT)

Located south of Community 1 and outside of the Site property boundary is a watercourse easement. The watercourse easement drains the wetland to the west before outletting into Nogies Creek. The vegetation identified adjacent the watercourse includes red-osier dogwood (*Cornus sericea*), American elm, white spruce, tussock sedge (*Carex stricta*), sensitive fern, silver maple (*Acer saccharinum*), Canada bluejoint grass (*Calamagrostis canadensis*), water horsetail and marsh bedstraw (*Galium palustre*) (Photo 2).



Photo 2: Watercourse easement (Photo Date: May 18, 2022)

Community 3 Open Aquatic – Nogies Creek (ELC Code: OAO)

This community contains the open aquatic portion of the shoreline and the associated vegetation found here. Several floating, submerged and emergent species have been identified including: frog's-bit (*Hydrocharis morsus-ranae*, bullhead pond-lily (*Nuphar variegata*), Eurasian water-milfoil (*Myriophyllum spicatum*), and tussock sedge (**Photo 3**).



Photo 3: Shoreline (Photo Date: May 18, 2022)

3.2.2 Birds and Wildlife

Eight bird species were identified by sight and sound during the Site visit on May 18, 2022. Species typical of this ecoregion were identified and included: Nashville warbler (*Leiothlypis ruficapilla*), Magnolia warbler (*Setophaga magnolia*), yellow warbler (*Setophaga petechia*), black-and-white warbler (*Mniotilta varia*), ruby-throated hummingbird (*Archilochus colubris*), northern flicker (*Colaptes auratus*), northern cardinal (*Cardinalis cardinalis*) and an eastern phoebe (*Sayornis phoebe*) nest with eggs on one of the light fixtures of a shed.

Other species identified on the property included a green frog (*Lithobates clamitans*) on the shoreline and an eastern chipmunk (*Tamias striatus*).

3.2.3 Significant Wildlife Habitat

The following candidate significant wildlife habitat were identified as potentially present on Site: Turtle nesting Areas, Habitat for Special Concern and Rare Wildlife species, and Bat Maternity Roost Colonies.

3.2.4 Fish and Aquatic Habitat

3.2.4.1 Level of Effort

Surveys for fish and aquatic habitat were conducted in the Site on May 18th, 2022, along the Site shoreline of Nogies Creek (**Figure 1**). The survey was conducted following the methodologies outlined in Section 2.2.2.4. A summary of the level of effort and environmental conditions at the time of assessment have been provided in **Table 2**.

Table 2 Fish and Aquatic Habitat Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (Person hrs.)
May 18, 2022	Aquatic Habitat Assessment of Shoreline	12°C, Cloud cover 100%, Beaufort Wind Scale 0, Drizzle-rain	11:20 AM	2

3.2.4.2 Aquatic Habitat

The shoreline of Nogies Creek within the Site was classified into one habitat zone. Habitat zones were determined and differentiated based on presence of barriers, substrate composition, channel morphology, riparian habitat, percent in-stream cover, hydrological connection and unique features. The habitat zone location has been illustrated in **Figure 1** and habitat characteristics have been summarized in **Appendix C**.

During the time of the assessment, the riparian habitat was mowed with minimal natural riparian vegetation. The northern portion of the shoreline contained mature coniferous trees. The shoreline was modified with a small wood retaining wall, patio stones and cobble substrates (**Photo 4**). The shoreline contained swimming access, bunkie and deck.

The in-water substrate was dominated by cobble near shore and silt further into the channel supporting aquatic vegetation. The in-water cover was considered minimal containing emergent and submergent aquatic vegetation. The aquatic vegetation community was dominated by bullhead pond lily (*Nuphar variegata*), common coontail (*Ceratophyllum demersum*), eurasian watermilfoil (*Myriophyllum spicatum*), water celery (*Vallisneria americana*) and *Potamogeton spp.* Refer to Section 3.2.1 Vegetation Communities for the riparian habitat details.

An unnamed tributary to Nogies Creek was identified south of the southern property line with a watercourse easement. This feature was entirely outside of the Site property boundary.



Photo 4: Habitat Zone 1, showing shoreline protection and riparian habitat (Photo Date: May 18, 2022)

4. Discussion and Analysis

4.1 Species and Communities

4.1.1 Vegetation

GHD found no plant species that were classified as federally and/or provincially rare in the Site (SARA 2022; COSEWIC 2021; COSSARO 2021). Additionally, no regionally rare plant species (Riley, 1989) were detected on Site.

None of the ecological communities (i.e., ELC ecosites or vegetation communities) found in the study are considered provincially rare (NHIC, 2021).

4.1.2 Unevaluated Wetland

One unevaluated wetland was identified 10 m outside the Site property boundary, separated from the Site by Fire Route 109, a gravel road. The wetland was a fresh white pine- oak mixed forest. Species identified in this wetland included eastern white cedar, white birch (*Betula papyrifera*) and an understory of speckled alder (*Alnus rugosa*). Other plant species identified included water horsetail (*Equisetum fluviatile*), dwarf scouring rush (*Equisetum scirpioides*), sensitive fern (*Onoclea sensibilis*), red baneberry (*Actaea rubra*), cinnamon fern (*Osmunda cinnamomea*), Canada mayflower (*Maianthemum canadensis*) and early meadow-rue (*Thalictrum dioicum*). Due to the road separating this wetland from the Site itself, no buffer was proposed from the wetland.

4.1.3 Birds and Wildlife

None of the bird species detected during GHD's Site visit are considered significant at the national and/or provincial level (SARA 2021; COSEWIC 2020; COSSARO 2021). Additionally, none of the birds identified during the visit were considered regionally rare. Area-sensitive species are those that require a minimum area of suitable habitat to successfully breed.

No other species identified are significant on a national, provincial, or regional scale.

Data from other sources has also been used to understand birds and wildlife that may be present on the Site or in the neighbouring area during breeding season.

The Ontario Breeding Bird Atlas (OBBA) records for the 10 km by 10km square that overlaps the property (17TPK94) included 7 bird species that listed nationally or provincially as species at risk (COSSARO 2018; SARA 2019; COSEWIC 2019). These records were, eastern wood-pewee (*Contopus virens*), barn swallow (*Hirundo rustica*), wood thrush (*Hylocichla mustelina*), Canada warbler, bobolink (*Dolichonyx oryzivorus*), and eastern meadowlark (*Sturnella magna*). Appropriate habitat was not present for any of these listed species except for barn swallow, which could nest on any of the structures on Site. A thorough search of the property found no evidence of past barn swallow nests on any of the structures.

The Ontario Natural Heritage Information Centre (NHIC) 1x1km square summary for the property (17PK9741) lists only Canada warbler with a record in this square. No habitat was identified for his species on the Site, but habitat may be present in the adjacent wetland (Community 2).

The NHIC square lists 5 reptile and amphibian species with records in the area, these include eastern milksnake (*Lampropeltis triangulum*), Midland painted turtle (*Chrysemys picta marginata*), western chorus frog (*Pseudacris maculata*), common five-lined skink (*Plestiodon fasciatus*), and snapping turtle (*Chelydra serpentina*). Habitat for these species is limited to basking habitat on the shoreline for turtle species. Hibernacula for snakes, and breeding habitat for frogs was not identified.

4.2 Natural Features

4.2.1 Unevaluated Wetlands

The Site is in vicinity of an unevaluated wetland across FR 109 to the west. The wetland outlets adjacent to the south property line in the form of a small watercourse out-letting into Nogies Creek. The wetland was not within 750 meters of any Provincially Significant Wetlands, with the closest PSW being 1.3 km to the south (Nogies Creek Mouth Wetland Complex).

4.2.2 Significant Wildlife Habitat

Significant wildlife habitat often occurs within other natural heritage features and areas covered by Policy 2.1 of the Provincial Policy statement (e.g., significant wetlands). Therefore, identification and evaluation of significant wildlife habitat is best undertaken after other natural heritage features have been identified (Natural Heritage Reference Manual, 2010).

GHD analyzed the information collected from the ecological communities on the Site using the criteria for Significant Wildlife Habitat in Ecoregion 6E (2015) and identified four (4) potential candidate SWH on the property: Turtle Nesting Area, Bat Maternity Colonies, and Special Concern and Rare Wildlife Species.

None of these candidate SWH were identified to be occurring on the property. GHD did not identify any predated turtle nests from the current year or previous years. None of the trees on the property presented ideal bat maternity cavity trees, and none of the species identified are Special Concern or rare (S1-S3) (**Table 3**).

Table 3 Candidate Significant Wildlife Habitat on Site

Significant Wildlife Habitat			
Seasonal Concentration of Animals: Areas where wildlife species occur annually in aggregations at certain times of the year. Sometimes a high concentration of a given species, or several species, within small areas. In spring and fall, such areas may provide resting and feeding habitat for migratory species. May also serve as overwintering habitat			
Candidate Wildlife Habitat	Habitat Criteria and Requirements for Confirmation	Was SWH confirmed?	Probability of Occurrence & Explanation
Bat Maternity Colonies	<p>Maternity colonies can be found in tree cavities, vegetation and often buildings.</p> <p>Maternity colonies can be found in mature deciduous or mixed forest stems with >10/ha large diameter trees (i.e., >25cm)</p> <p>Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2</p> <p>Confirmed use of colony by >10 big brown bat and/or >5 adult female silver-haired bats</p>	Not confirmed to be occurring on Site.	No contiguous woodland on Site. No appropriate trees with the preferred levels of decay. Buildings were checked for bat access points and evidence of bat droppings. None identified.
Specialized Wildlife Habitat			
<ol style="list-style-type: none"> Areas that support wildlife species with highly specific habitat requirements Areas with exceptionally high species diversity or community diversity Areas that provide habitat that greatly enhances a species' survival 			
Candidate Wildlife Habitat	Habitat Criteria and Requirements for Confirmation	Was SWH confirmed?	Probability of Occurrence & Explanation
Turtle Nesting Areas	<p>Best nesting habitats for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals.</p> <p>For an area to function as a turtle- nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas.</p> <p>Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.</p>	No	<p>The Site is adjacent Nogies Creek. The Site did not show any evidence of turtle nesting. No predated nests or spent turtle eggshells were noted.</p> <p>No sand and gravel patches were on the Site.</p>
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)			
<ol style="list-style-type: none"> Areas that support wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Excludes the habitats of Endangered or Threatened Species. 			
Candidate Wildlife Habitat	Habitat Criteria and Requirements for Confirmation	Was SWH confirmed?	Probability of Occurrence & Explanation
Special Concern and Rare Wildlife Species	<p>Presence of special concern and provincially rare (S1-S3, SH) plant or wildlife species.</p> <p>Assessment must be conducted in the peak breeding season for those species.</p>	No	No rare (S1-S3, SH) species or Special Concern species were identified on the Site.

4.2.3 Fish and Aquatic Habitat

Aquatic Habitat

Nogies Creek provides direct and indirect fish habitat for a wide diversity of fish species within the watercourse. Specifically, it provides: food supply, cover, overwintering, spawning habitat, nursery habitat, hydrological and nutrients inputs. Therefore, the Fisheries Act applies to the Site.

No critical habitat for Aquatic Species at Risk (DFO, 2022) was identified within the Site.

Fish Community

Nogies Creek fish community is composed of fish species that prefer cold, cool and warm water thermal regimes. Cumulatively, 8 fish species have been documented in Nogies Creek and represent the following families: *Lotidae*, *Catostomidae*, *Centrarchidae*, *Cyprinidae*, *Esocidae*, and *Percidae*. The fish species are common to Lake Ontario watershed and are widely distributed throughout southern Ontario (**Appendix D**).

The literature review found no provincially and/or nationally rare aquatic species documented within the Site (COSSARO, 2021; COSEWIC, 2021; DFO, 2022). The Nogies Creek fish species list was obtained from MNRF (OMNRF, 2022; OMNRF, 2022) and has been provided in **Appendix D**.

5. Impact Assessment and Recommendations

The following section provides a description of the predicted impacts that may result from the proposed development (**Table 4**). It also identifies mitigation measures to be implemented to avoid and/or minimize adverse effects to the natural environment features within or near the project. A full list of mitigation measures has been provided in Section 7 of this report.

5.1 Species and Communities

5.1.1 Birds and Wildlife

To follow the Migratory Birds Convention Act, clearing of vegetation and demolition of structures should occur outside of the core breeding bird period, which extends from April 1 to August 30. An active nest of an eastern phoebe was identified on the property on a shed, therefore showing the site is breeding bird habitat. If demolition and vegetation clearing is to occur within this window, a qualified avian biologist should be contacted and visit the Site to clear the area and ensure no destruction of nests occur.

To prevent and deter turtles, frogs, and snakes from entering the building envelope to bask and/or excavate nests, exclusion fencing should be erected around the limits of disturbance, particularly along the shoreline. The fencing should be erected before Site disturbance occurs and left up during and after the construction process until the Site is revegetated and soils stabilized.

5.1.2 Wetland

Off-site wetland was identified west of 17 Fire Route 109 gravel road and the existing disturbed cottage lot. A buffer is not proposed for the off-site wetland, given the existing gravel road currently separates the feature from the existing cottage lot and the proposed development will not encroach any further into the wetland feature. However, the development is still required to protect this wetland from the proposed development during construction due to its close proximity.

The creation of exposed soils, construction activity and use of heavy equipment has the potential to allow sediment laden runoff to enter the lake and the wetland. During construction, mitigation measures are recommended to prevent sediment from entering the lake or the wetland. This includes the proper installation of a heavy-duty silt fence along the entire shoreline and watercourse easement of the construction envelope prior to any Site preparation activities. Construction equipment, grading and vehicle access may disturb the existing soils and allow fine particulates to move during rainfall events. The silt fence will protect the wetland and the watercourse and their associated functions including fish habitat as well as prevent reptiles and amphibians from entering the construction envelope.

No impacts on the features and functions identified for the Wetland and Nogies Creek are anticipated provided the recommendations are implemented.

5.1.3 Fish and Aquatic Habitat

The proposed development will avoid all in-water work and maintain the existing minimum development setback of 6.7m from Nogies Creek. The development setback includes the cottage and decking. Therefore, there is no proposed encroachment on the existing watercourse setback from Nogies Creek.

To due to Site constraints, the proposed holding tank is located 7.62 m from Nogies Creek. To minimize impacts to water quality and ultimately fish habitat, it recommended that the holding tank is relocated further from Nogies Creek to increase the watercourse buffer as much as feasible. GHD recommends planting the shoreline with native vegetation to enhance the riparian function, especially adjacent to the holding tank.

The existing bunkie and shed located along the southern Site property boundary will be removed. These structures were located within approximately 5 m of an off-Site unnamed tributary to Nogies Creek. Removal of the structures will increased the overall development setback from 5 m to 12.51 m. GHD recommends planting the removed structure footprint with native vegetation to stabilize the disturbed soils and enhance the watercourse riparian function.

No significant impacts to fish or fish habitat are anticipated from the proposed cottage redevelopment provided existing watercourse setbacks are maintained and the mitigation measures and recommendations are implemented as outlined in this report. A detailed sediment and erosion control plan must be prepared for all construction activities to ensure disturbed soils are not transported off-site and do not negatively impact aquatic life, fish, and fish habitat.

To further protect fish and fish habitat and ensure the project complies with the PPS, Official Plan and Conservation Authorities Act and Fisheries Act, additional recommendations have been provided in Section 7.0. These recommendations should be incorporation into the project detailed design.

Table 4 *Impact Assessment and Recommendation Summary*

Feature or Function	Impact to Feature of Function	Mitigation	Residual Effect
Birds and Wildlife	Possible habitat destruction, loss of turtle and bird nesting habitat	Installation of exclusion/silt fencing from April 1 to October 30 prevent wildlife, especially turtles, from entering area of disturbance. No removal of vegetation between April 1 – August 30.	None anticipated
Wetland	Possible sediment disturbance during construction.	Installation of exclusion/silt fencing around area of development if heavy equipment will be used. Vigilance for wandering turtles individuals during nesting season.	None anticipated
Fish and Aquatic Habitat <i>Nogies Creek</i>	Potential for disturbed sediment to move offsite into Nogies Creek.	No in-water work. Maintain existing watercourse setback Recommendation of native shoreline plantings within watercourse buffer adjacent to the proposed septic holding tank. Silt fencing installed around perimeter of development envelope and detailed SEC plan. Comply with DFO Measures to Protect Fish and Fish Habitat.	None anticipated
Fish and Aquatic Habitat <i>Tributary of Nogies Creek</i>	Potential for disturbed sediment to move offsite into tributary of Nogies Creek.	No in-water work. Maintain a minimum 12.5 m watercourse setback Recommendation of native shoreline plantings within bunkie ad shed footprints after removal. Silt fencing installed around perimeter of development envelope and detailed SEC plan. Comply with DFO Measures to Protect Fish and Fish Habitat.	None anticipated

6. Policies and Legislative Compliance

The following section describes how the proposed development will be in conformance with the relevant federal, provincial and other regulatory legislation, policies, official plans and OP amendments that are applicable and relevant to the study area and the immediate vicinity.

6.1 Federal Legislation

6.1.1 Migratory Birds Convention Act

The core breeding period in Ontario for migratory birds under the MBCA for Bird Conservation Region 13 (i.e., the one the Site lies within) extends from April 1 to August 30 (Environment and Climate Change Canada, 2014). As such clearing of the trees and other vegetation for development cannot occur during this timing window.

6.1.2 Fisheries Act

The proposed development will avoid all in-water works and implement the *DFO Measures to Protect Fish and Fish Habitat*. The project undertakings will: prevent the death of fish, maintain riparian vegetation, carry out work on land only, maintain fish passage, ensuring proper sediment control, and prevent entry of deleterious substances in water. Therefore, the proposed development is in compliance with the Fisheries Act and further project review by DFO is not required.

6.2 Provincial Legislation

6.2.1 Endangered Species Act, 2007

No Provincially threatened or endangered species were identified on the Site during field visits. Records from the general area identified several species (mentioned earlier) that could potentially use the property. Several recommendations are made to mitigate any negative effects to a species at risk if they are found on-site.

6.2.2 Provincial Policy Statement, 2020

The Site contains wetland and shoreline, therefore Sections 2.1.4, 2.1.5, 2.1.6, 2.1.7 and 2.1.8 of the PPS apply. Section 5 and 7 of this report, contains recommendations that allow the proposed development to proceed in a manner consistent with these sections of the Provincial Policy Statement (PPS). The Site does not contain coastal wetlands, and valleylands or ANSI's.

6.2.3 Growth Plan for the Greater Golden Horseshoe, 2020

The Site falls within the GGH plan area; however the County of Peterborough has not defined an NHS on Site. The proposed severance will meet the key hydrologic feature policies within settlement areas, (s. 4.2.3.1 and 4.2.4.1) and maintaining the existing vegetation protection zone (VPZ).

6.3 Local and Other Regulatory Bodies

6.3.1 County of Peterborough

This EIS has been prepared in accordance with direction provided in the County of Peterborough Official Plan for such studies (i.e., Section 4.1.3.1 General). This EIS follows the Country of Peterborough Official Plan as it demonstrates:

a) no development has been proposed in wetlands or watercourses and there will be no negative impacts on other natural features or ecological functions for which the area is identified as long as the recommendations and mitigation measures outlined in Section 7.0 are implemented.

6.3.2 Municipality of Trent Lakes Official Plan Amendment (OPA No. 46 adoption of the Township of Galway-Cavendish and Harvey Official Plan

The development is proposed outside of the natural heritage features and the existing buffers. The watercourse setback of 30 m cannot be achieved due to the small lot size. However, as the lot is an existing cottage lot, the proposed development will not exceed the existing development wetland and watercourse setbacks. Therefore, the current setbacks from the natural features will be maintained and no further encroachment into the buffer will occur, as per OP 5.1.10.11 Water Setbacks. In addition, GHD has recommended the post-construction setbacks/riparian habitat will be enhanced through natural revegetation and native plantings within the existing buffer.

If the mitigation measures and recommendations outlined in Section 7.0 of this EIS are implemented correctly, there will be no impact to the fish and fish habitat or wetland as a result of the proposed redevelopment.

6.3.3 Kawartha Region Conservation Authority (KRCA) and Ontario Regulation 167/06

The proposed development is in compliance with the KRCA and Ontario Regulation 167/06. No development will occur within the wetlands or watercourse on the Site. The current setbacks from the natural features will be maintained and no further encroachment into the buffer will occur (Refer to Section 5.1. for details). Recommendations have been made in section 7 in order to prevent any impacts to the features or functions.

7. Summary of Recommendations

7.1 General

1. Prior to any Site preparation activities, erosion and sediment control measures should be installed around the perimeter of the construction envelope to ensure sediment laden runoff does not enter interfere with adjacent wetland. The silt fence should be inspected and maintained throughout the construction phase and remain in place until the soils are stabilized and re-vegetated. It will also act as a barrier to turtles.
2. Any tree clearing required for construction access prior to construction will be completed outside the Breeding Bird timing window of April 1st to August 30th.
3. Obtain relevant permits from the County and Conservation Authority.
4. Create downspouts that spill out onto grassed or gravel surfaces off the roofs. This will convey the rainfall captured by the roof to the ground where it can infiltrate.
5. The proposed dwelling will maintain the existing development setback of 6.7m from Nogies Creek.
6. The proposed dwelling will not exceed the 12.5m buffer from the tributary of Nogies Creek.
7. No in-water works.

7.2 Species at Risk

1. In the active season for turtles (April 1-October 30) a thorough sweep shall be done of the area before beginning work to ensure no individuals are injured and/or killed.
2. Silt fencing installed must not have an open plastic mesh or netting as backing that could lead to entanglement of wildlife.

7.3 Sediment and Erosion Control

1. A heavy-duty reinforced silt fence will be installed and maintained along development envelope boundary. This line should be surveyed and staked in the field prior to any Site preparation activities.
2. All sediment and erosion control products will be selected for the Site based on the manufacturer's product specifications. Product installation and maintenance will follow the manufactures guidelines.
3. All sediment and erosion control measures shall be inspected daily during the construction phase and periodically afterwards to ensure they are functioning properly. The sediment and erosion control measures must be maintained and upgraded as required. Sediment fence shall be checked regularly to ensure they are maintained and working properly. Accumulated silt and debris will be removed from the fence and Site after every precipitation event.
4. Construction will be undertaken during normal weather conditions, to the extent possible, and will avoid large precipitation events to minimize the risk of sedimentation off-Site.
5. In the event that sediment and erosion control measures are not functioning, the construction supervisor shall order the work to be stopped. No further work shall be carried out until the construction methods and/or the sediment control plan is adjusted to address the sediment/erosion problem(s). Such occurrences should be document by the Site inspector and provided to a qualified biologist.

7.4 Fish Protection (DFO measures to protect fish and fish habitat)

1. No work in or near water to avoid killing fish by means other than fishing.

2. Any new development (cottages/houses, septic, garage) locations will not exceed the pre-existing cottage locations to protect the natural feature form and function.
3. The Project Manager/Contractor shall not allow any deleterious substances as defined in the Fisheries Act (such as silt), caused by the work, to enter or re-enter the watercourse.
4. No use of explosives in or near water.
5. Should work conditions change such that it is possible that fish or fish habitat may potentially be negatively impacted, all works shall cease until the problem has been corrected or authorization has been obtained from the appropriate authorities.
6. Maintain riparian vegetation.
7. Carry out all works and activities by avoiding all work in or near water. No placement of fill or the temporary or permanent structures below the high water mark.
8. No disturbance of bank material or building structures in the area than may result in erosion or scouring.
9. Always maintain fish passage.
10. Prevent soil compaction using mats and pads.

7.5 Operation of Machinery

1. No machinery shall enter the shoreline or watercourse.
2. All heavy equipment, machinery, and tools required for the work shall be regularly inspected, maintained and operated to avoid leakage of fuels and liquids and shall be stored in a manner that prevents any deleterious substance from entering the soil or nearby watercourses.
3. Vehicle and equipment refuelling and/or maintenance shall be conducted within a defined staging area 30 m from any waterbody. If 30 m is not achievable a portable spill containment berm may be used. Portable spill containment berms can be rented by companies such as Wise Environmental Solution Inc (W.I.S.E, 2017).
4. Any part of a vehicle and/or equipment entering the water will be free of fluid leaks and externally cleaned/degreased to prevent deleterious substances from entering the water.
5. Any stockpiled materials will be stored and stabilized away from the water above the high-water mark at a minimum of 30 m. Stockpiles will be enclosed by sediment fencing or installed down gradient for the purpose of preventing movement of sediment away from the stockpile.
6. An emergency spill kit shall be kept on Site and employed immediately should a spill occur. In the case of a spill, the Ontario Spill Action Center shall be notified immediately at 1-800-268-6060. All provincial and federal regulations shall be adhered to.
7. Maintain an adequate supply of clean-up materials on-site. Construction crews will be fully trained in their use to ensure timely and effective responses to spill incidents.

7.6 Concrete Leachate

1. Concrete leachate is alkaline and highly toxic to fish and aquatic life. Measures will be taken to prevent any incidence of concrete or concrete leachate from entering any waterbody.
2. Ensure that all works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials (concrete) will not be deposited, directly or indirectly (sediments, debris, concrete, concrete fines, wash or contact water) into any waterbody.
3. All concrete, sealants or other compounds used for this project shall be utilized according to the appropriate Product Technical Data Sheet, stating guidelines and methods for proper use, and provided by the manufacturer of the product.

8. Conclusion

GHD Limited has prepared this Scoped Environmental Impact Study report to address potential environmental interactions associated with a proposed cottage development on 17 fire Route 109, Municipality of Trent Lakes, Peterborough County.

Natural features identified in or adjacent to the study area included fish and fish habitat, wetland, and a watercourse.

The proposed development will maintain the existing watercourse buffers at a minimum. It is recommended that the watercourse buffers are enhanced by allowing natural regeneration of native plants and/or native plantings. Mitigation measures have been recommended for candidate significant wildlife habitat, birds and wildlife and aquatic habitat.

Construction within the proposed development envelope will result in no significant negative impacts on the functions of identified natural features provided the recommendations outlined in Sections 5 and 7 are implemented. GHD's recommendations have been made to address potential impacts to natural features and/or their functions during the Site preparation, construction and post construction period. Additional discussions with the County of Peterborough and KRCA are required to ensure appropriate permitting processes are followed.

9. References

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Appendices

Appendix A

Site Plan

CIVIC ADDRESS: 17 FIRE ROUTE #109
 OWNER: MAUREEN MCCULLOUGH AND ANDRE MAYHEW
 BUILDER:
 BUILDING PERMIT No. _____
 ROLL No. _____

FOR CONSTRUCTION PURPOSES ONLY

SITE GRADING PLAN OF
PART OF LOT 23
CONCESSION 16
 GEOGRAPHIC TOWNSHIP OF HARVEY
 MUNICIPALITY OF TRENT LAKES

SCALE 1 : 200



COE FISHER CAMERON, A DIVISION OF J.D. BARNES LIMITED
 © COPYRIGHT 2022

METRIC DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND:

- - FOUND SURVEY MONUMENT
- - SET SURVEY MONUMENT
- SIB - STANDARD IRON BAR
- IB - IRON BAR
- 250.50 PROPOSED ELEVATION
- 249.36 GROUND ELEVATION
- SLOPE
- SWALE
- F.F.E. - FIRST FLOOR ELEVATION
- T.B.W. - TOP OF BASEMENT WALL
- T.B.S. - TOP OF BASEMENT SLAB
- T.G.S. - TOP OF GARAGE SLAB
- T.G.W. - TOP OF GARAGE WALL
- U.F. - UNDERSIDE OF FOOTING
- HP - HIGH POINT
- DS - DOWNSPOUT
- B/S - BOTTOM OF SLOPE
- T.S. - TOP OF ENGINEERED SLAB

GENERAL NOTES:

1. DRAINAGE SHALL BE SELF-CONTAINED ON SITE BY THE CONSTRUCTION OF SWALES OR DRAIN TO A PROTECTED OUTLET. DRAINAGE SHALL NOT IMPACT ADJACENT PROPERTIES.
2. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT MIGRATION OF SILT AND SEDIMENT FROM THE SUBJECT LOT TO ANY ADJACENT LOT, INCLUDING MUNICIPAL RIGHT-OF-WAY. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT SILT AND SEDIMENT LADEN SURFACE WATER DOES NOT ENTER ANY WATERCOURSES OR ENVIRONMENTALLY SENSITIVE AREA, EITHER OVERLAND OR THROUGH THE STORM DRAINAGE SYSTEM. THE OWNER/BUILDER SHALL COMPLY WITH ALL DIRECTIVES ISSUED BY ANY OF THE ENVIRONMENTAL AGENCIES.
3. INTERIM GRADING MEASURES MAY BE REQUIRED DURING BUILDING CONSTRUCTION TO ENSURE THAT DRAINAGE DOES NOT ADVERSELY AFFECT THE NEIGHBOURING PROPERTIES. ROUGH GRADING OF THE PROPERTY SHALL BE COMPLETED SUCH THAT DRAINAGE IS CONTAINED ON SITE OR CONTROLLED TO A PROTECTED OUTLET.
4. ALL DOWNSPOUTS AND OTHER DRAINAGE DISCHARGE POINTS SHALL DISCHARGE ONTO A SPLASH PAD OR APPROVED EQUIVALENT.
5. SUMP PUMP DISCHARGE POINTS MUST BE WHOLLY WITHIN PRIVATE PROPERTY.
6. THE OWNER/BUILDER IS RESPONSIBLE FOR OBTAINING UTILITY AND SERVICING LOCATES PRIOR TO ANY WORKS.
7. ALL DISTURBED AREAS ARE TO BE SODDED OR SEEDED OVER A MINIMUM OF 150MM OF TOPSOIL OR APPROVED EQUIVALENT.
8. THE OWNER/BUILDER MUST OBTAIN A ROAD OCCUPANCY PERMIT FROM PUBLIC WORKS PRIOR TO ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE.
9. NO ELEVATIONS WILL BE LESS THAN 0.15m BETWEEN FINAL GRADE AND TOP OF FOUNDATION WALL.
10. A COPY OF THE 'REVIEWED BY ENGINEERING' LOT GRADING AND DRAINAGE PLAN IS TO BE ON SITE FOR REFERENCE AT ALL TIMES DURING CONSTRUCTION.
11. THE SUBMISSION OF THIS PLAN REPRESENTS THAT OWNER HEREBY ACKNOWLEDGES THAT ANY GRADING CHANGES THAT OCCUR THROUGH THE CONSTRUCTION THAT RESULT IN ADVERSE EFFECTS TO EXISTING ADJACENT PROPERTIES WILL RESULT IN AN AS-CONSTRUCTED SITE GRADING PLAN WILL BE REQUIRED.
12. BUILDER TO ENSURE MINIMUM OVERBURDEN FOR FROST PROTECTION ON FOOTINGS.
13. SWALES WITH LESS THAN 2% SLOPE HAVE POTENTIAL FOR PONDING WATER.
14. FOUNDATION TO BE STEPPED FROM REAR WALKOUT AROUND SIDES OF HOME. NO ELEVATIONS WILL BE LESS THAN 0.15m BETWEEN GROUND AND T.B.W.

NOGIES CREEK
 (TRIBUTARY OF PIGEON LAKE)
 MAINTAINED ELEV = 246.10
 FLOOD ELEV = 246.90

ZONING	SR-PA	F.F.E.	249.30
LOT AREA	902.61 SQ. m.	T.B.W.	249.00
PROPOSED BUILDING AND GARAGE AREA	179.22 SQ. m.	T.S.	247.80
EXISTING GAZEBO AREA	11.5 SQ. m.	T.G.S.	247.70
EXISTING BUNKIE AREA	15.9 SQ. m.		
EXISTING BUNKIE DECK AREA	7.7 SQ. m.		

No.	DATE	DESCRIPTION
REVISIONS		
SHEET 1		

ELEVATIONS:

ELEVATIONS SHOWN HEREON ARE GEODETIC DERIVED BY GPS OBSERVATIONS AND ARE REFERRED TO A NAIL IN A HYDRO POLE HAVING AN ELEVATION OF 247.66m (CGVD-1928:1978).

DATED: _____ GERALD G. HICKSON
 ONTARIO LAND SURVEYOR

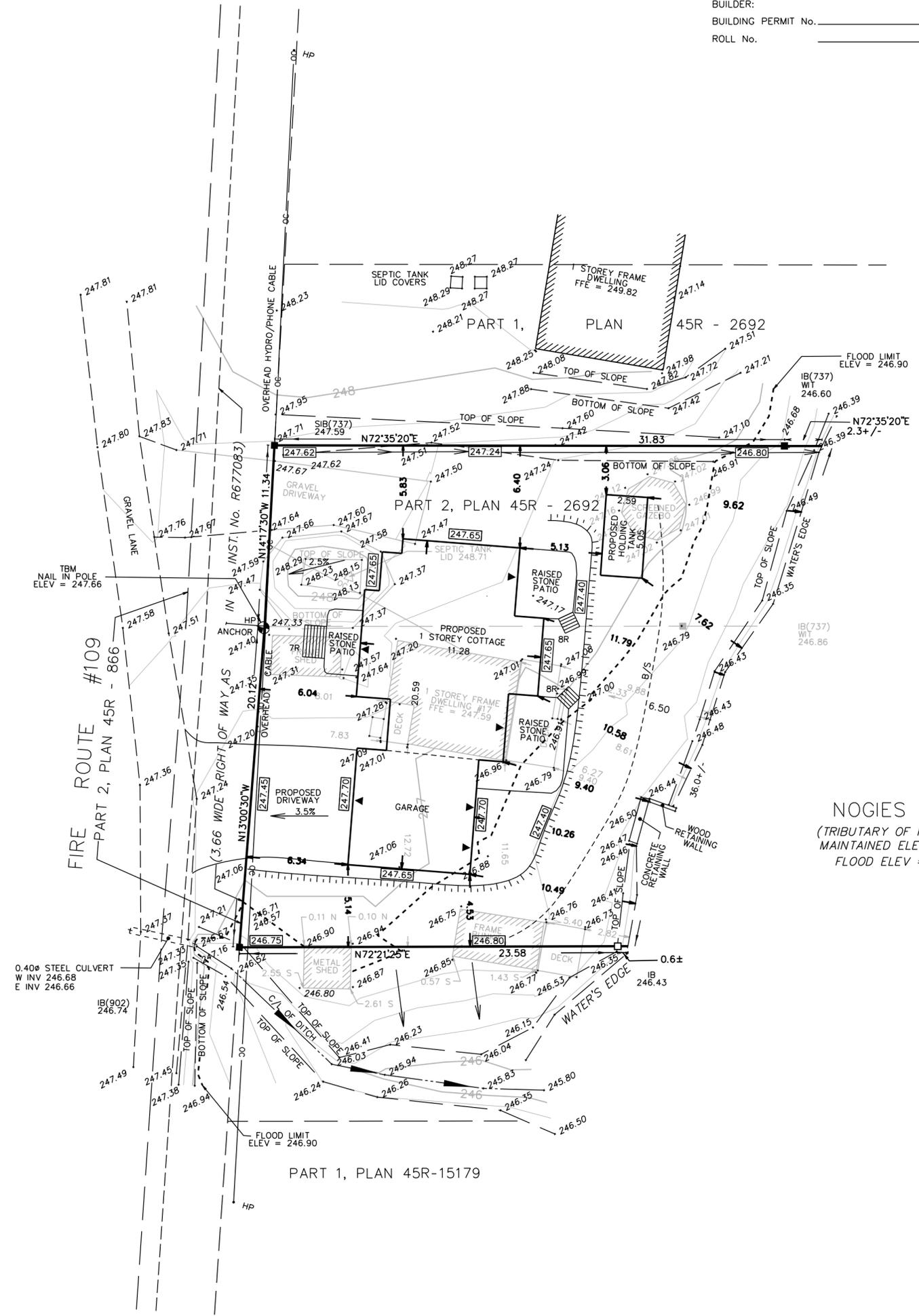
COE FISHER CAMERON
 LAND SURVEYORS
 A Division of J.D. Barnes Limited
 3 COMMERCE PLACE, UNIT 201, LINDSAY, ON K9V 0N5
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PLOTTED: 1/24/2022	DATED: 01/24/2022	



LOT 23 CONCESSION 16
 FIRE ROUTE #109
 PART 2, PLAN 45R - 866



Appendix B

List of Significant Species by Community

APPENDIX A Plant Species by Community

Families and genera for the plant species found in this appendix are listed in taxonomic order. The species are listed alphabetically by scientific name within each genus.

Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimbürger 1982) and trees (Farrar 1995).

Total: Number of communities where plant species was recorded
X : Plant species recorded

Common Name	Scientific Name	Total	COMMUNITY NUMBER		
			1	2	3
HORSETAIL FAMILY	EQUISETACEAE				
field horsetail	<i>Equisetum arvense</i>	1	X		
water horsetail	<i>Equisetum fluviatile</i>	1		X	
WOOD FERN FAMILY	DRYOPTERIDACEAE				
sensitive fern	<i>Onoclea sensibilis</i>	1		X	
PINE FAMILY	PINACEAE				
white spruce	<i>Picea glauca</i>	1		X	
CYPRESS FAMILY	CUPRESSACEAE				
eastern white cedar	<i>Thuja occidentalis</i>	2	X	X	
WATER-LILY FAMILY	NYMPHACEAE				
small yellow pond-lily	<i>Nuphar microphylla</i>	1			X
HORNWORT FAMILY	CERATOPHYLLACEAE				
common coontail	<i>Ceratophyllum demersum</i>	1			X
BUTTERCUP FAMILY	RANUNCULACEAE				
Canada anemone	<i>Anemone canadensis</i>	1	X		
wild columbine	<i>Aquilegia canadensis</i>	1	X		
early meadow rue	<i>Thalictrum dioicum</i>	1		X	
ELM FAMILY	ULMACEAE				
American elm	<i>Ulmus americana</i>	1		X	
WAX-MYRTLE FAMILY	MYRICACEAE				
sweet gale	<i>Myrica gale</i>	1		X	
BIRCH FAMILY	BETULACEAE				
speckled alder	<i>Alnus rugosa</i>	1		X	
BUCKWHEAT FAMILY	POLYGONACEAE				
great water dock	<i>Rumex orbiculatus</i>	1		X	

Common Name	Scientific Name	Total	COMMUNITY NUMBER		
			1	2	3
VIOLET FAMILY	VIOLACEAE				
long-spurred violet	<i>Viola rostrata</i>	1	X		
WILLOW FAMILY	SALICACEAE				
pussy willow	<i>Salix discolor</i>	1	X		
MUSTARD FAMILY	BRASSICACEAE				
watercress	<i>Nasturtium officinale</i>	1		X	
ROSE FAMILY	ROSACEAE				
woodland strawberry	<i>Fragaria vesca</i>	1	X		
PEA FAMILY	FABACEAE				
red clover	<i>Trifolium pratense</i>	1	X		
WATER-MILFOIL FAMILY	HALORAGACEAE				
Eurasian water-milfoil	<i>Myriophyllum spicatum</i>	1			X
DOGWOOD FAMILY	CORNACEAE				
red-osier dogwood	<i>Cornus stolonifera</i>	2		X	X
GRAPE FAMILY	VITACEAE				
wild grape	<i>Vitis riparia</i>	1	X		
MAPLE FAMILY	ACERACEAE				
silver maple	<i>Acer saccharinum</i>	1		X	
CARROT FAMILY	APIACEAE				
goutweed	<i>Aegopodium podagraria L.</i>	1	X		
Queen-Anne's lace	<i>Daucus carota</i>	1	X		
MINT FAMILY	LAMIACEAE				
heal-all	<i>Prunella vulgaris ssp. Lanceolata</i>	1	X		
FIGWORT FAMILY	SCROPHULARIACEAE				
turtlehead	<i>Chelone glabra</i>	1	X		
MADDER FAMILY	RUBIACEAE				
white bedstraw	<i>Galium mollugo</i>	1	X		
marsh bedstraw	<i>Galium palustre</i>	2	X	X	
ASTER FAMILY	ASTERACEAE				
field pussytoes	<i>Antennaria neglecta</i>	1	X		
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	1	X		
chicory	<i>Cichorium intybus</i>	1	X		
dwarf fleabane	<i>Conyza ramosissima</i>	1	X		
early goldenrod	<i>Solidago juncea</i>	1	X		
arrow-leaved aster	<i>Symphyotrichum urophyllum</i>	1	X		
FROG'S-BIT FAMILY	HYDROCHARITACEAE				
frog's-bit	<i>Hydrocharis morsus-ranae</i>	1			X
water celery	<i>Vallisneria americana</i>	1			X
PONDWEED FAMILY	POTAMOGETONACEAE				
Berchtold's pondweed	<i>Potamogeton berchtoldii Fieber</i>	1			X

Common Name	Scientific Name	Total	COMMUNITY NUMBER		
			1	2	3
SEDGE FAMILY	CYPERACEAE				
yellow sedge	<i>Carex flava</i>	1	X		
meadow sedge	<i>Carex granularis</i>	1	X		
tussock sedge	<i>Carex stricta</i>	3	X	X	X
GRASS FAMILY	POACEAE				
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	1		X	
poverty oatgrass	<i>Danthonia spicata</i>	1	X		
fowl meadow grass	<i>Poa palustris</i>	1		X	
Kentucky blue grass	<i>Poa pratensis</i>	1	X		
BUR-REED FAMILY	SPARGANIACEAE				
broad-fruited bur-reed	<i>Sparganium eurycarpum</i>	1			X

Total Number of Plant Species 46

26 16 9

**Number of Plant
Species Per Community**

Appendix C

Fish Habitat

Detailed Aquatic Habitat Observations- Habitat Zone 1

Feature Type	Flow Condition	Percent Substrate Composition	Percent Instream Cover	Percent Canopy Cover (%)	Overhead Cover (%)	Watercourse Hydrology	Average Water Depth (m)	Sediment Transportation	Bank Attributes
Watercourse- Defined Channel	Minimal and flowing during freshet condition	2% boulder 30% cobble 10% gravel 18% sand 40% silt	5% Emergent vegetation 5% submergent vegetation	0-24	None	100% flats	0.2-0.7	Minimal instream bank erosion from wave action and boat wake	Modified, shoreline stabilization using wood and cobble

Appendix D

Fish Community

Fish Community- Nogies Creek, OMNRF Fish ON-Line (2022).

Family Name	Common Name	Scientific Name	Thermal Preference
<i>Lotidae</i>	Burbot	<i>Lota lota</i>	Coldwater
<i>Cyprinidae</i>	Common Carp	<i>Cyprinus carpio</i>	Warmwater
<i>Centrarchidae</i>	Largemouth Bass	<i>Micropterus salmoides</i>	Warmwater
<i>Esocidae</i>	Muskellunge	<i>Esox masquinongy</i>	Warmwater
<i>Centrarchidae</i>	Pumpkinseed	<i>Lepomis gibbosus</i>	Warmwater
<i>Centrarchidae</i>	Rock Bass	<i>Ambloplites rupestris</i>	Coolwater
<i>Catostomidae</i>	White Sucker	<i>Catostomus commersonii</i>	Coolwater
<i>Percidae</i>	Yellow Perch	<i>Perca flavescens</i>	Coolwater

