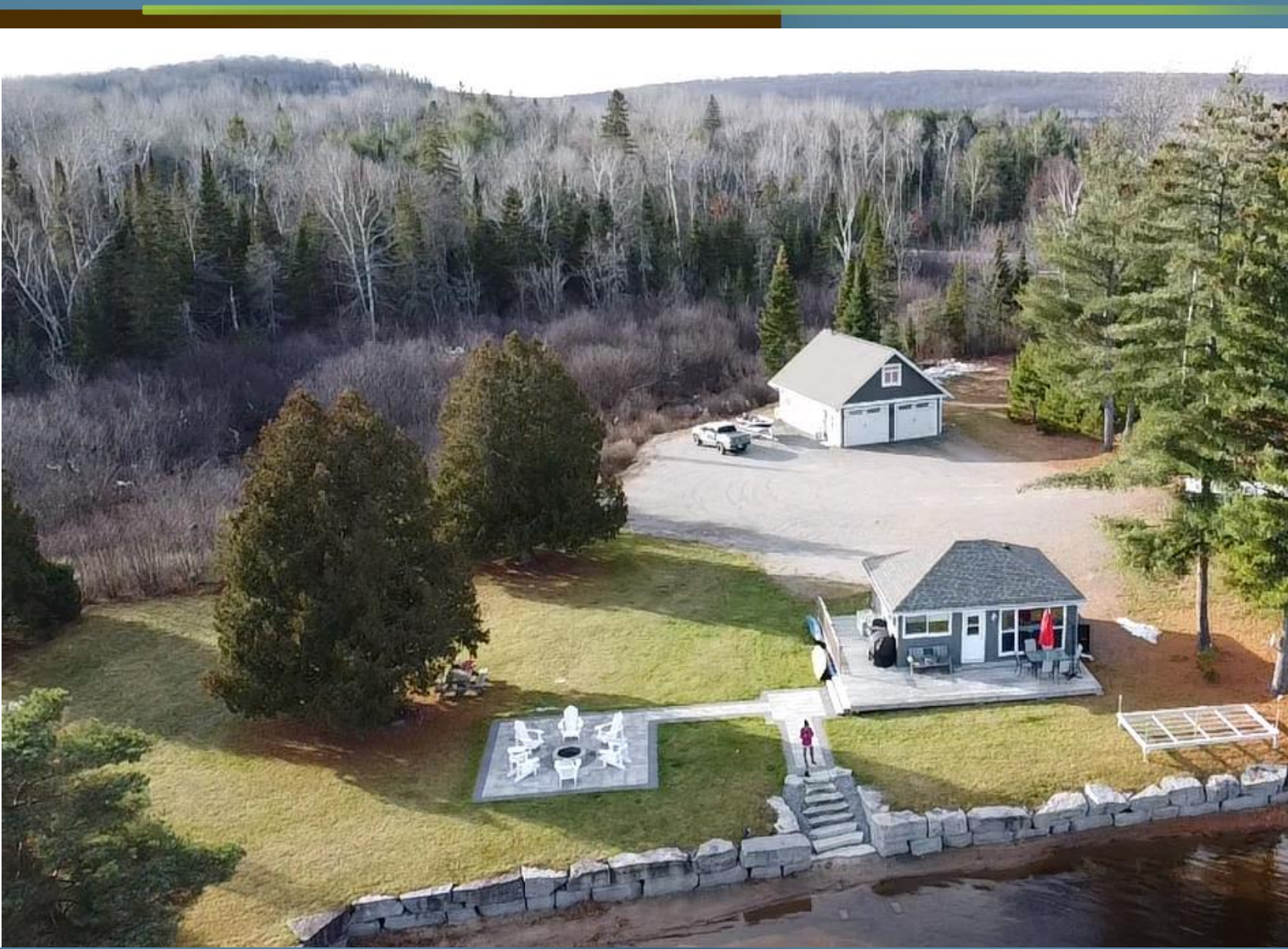




ENVIRONMENTAL IMPACT STUDY

192 Lake St. Peter Road
Municipality of Hastings Highlands
June 2024



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.



RIVERSTONE

ENVIRONMENTAL SOLUTIONS INC.

June 6, 2024
RS# 2023-268

Vanessa Archer
TD Consulting Inc.

Via phone: 705-879-3396

SUBJECT: Environmental Impact Study – 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings

Dear Mrs. Archer,

RiverStone Environmental Solutions Inc. is pleased to provide you with the attached report.

Please contact us if there are any questions regarding the report, or if further information is required.

Best regards,

RiverStone Environmental Solutions Inc.

Bev Wicks, Ph.D.
Principal / Senior Ecologist

REPORT SUMMARY

Type of Study Environmental Impact Study		Date June 6, 2024
Project Manager Bev Wicks	Legal Description 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings	Development Proposed Redevelopment of an existing dwelling within the shore road allowance.
	Approval Authorities County of Hastings	Owner/Agent Vanessa Archer
<p><u>Report Summary</u></p> <p>This Environmental Impact Study has been prepared to assess natural heritage features associated with a property located at 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings. The client is required to submit an EIS as part of an application to redevelop an existing dwelling within the shore road allowance. During the onsite review of existing conditions, it was determined that the subject property contained or is adjacent to:</p> <ol style="list-style-type: none"> 1) Wetlands, 2) Type 1 Fish habitat, 3) Frontage on a Lake Trout Lake at Capacity; and 4) Potential habitat of endangered and threatened species. <p>Potential impacts of the proposed application on the identified natural features and endangered and threatened species were evaluated. The recommendations contained within Section 5 of this report (reiterated below) are intended to mitigate potential negative impacts on the identified natural heritage features and species. Provided that mitigation measures are implemented appropriately, it is our opinion that the proposal can be accomplished without negative impacts to functions of key natural heritage features.</p>		

RECOMMENDATIONS

Wetlands

- **Final development plans should include eaves-trough that direct rooftop leaders away from wetlands/waterbodies into soakaway pits or infiltration trenches.**
- **Low Impact Development (LID) measures (permeable pavers, limited pathways) should be included, where feasible, in the development design to decrease any potential impact to the surrounding natural features.**
- **All hardened surfaces (e.g., driveways, patios, trails, shoreline access) should employ permeable materials (woodchips, pea gravel, permeable pavers or equivalent) that allow for infiltration of stormwater and prevent channelization. Surfaces should be graded to**

drain away from the wetland/shoreline and, where possible, into areas with deep soils and dense vegetation.

- **All development and site alteration must maximize the setback from the wetland, with efforts to achieve the required 30 m setback, as shown on Figure 3, and as required by Section 5.9.2 Municipality of Hastings Highlands Comprehensive Zoning By-law 2004-035.**
- **Existing vegetation within the wetland setback should be left in a natural state to maintain a vegetated buffer adjacent to the wetland.**
- **Restoration plantings of the wetland and shoreline buffers should be undertaken, and routine maintenance of these area must be discontinued. Recommendations for revegetation are included in Section 5.3.3.**
- **Debris from structure removal will not be placed within 30 m of wetland habitat.**
- **Implement sediment and erosion control measures as per applicable best management practices (Appendix 4) to isolate the development footprint, generally including the following measures.**
 - **Before native soils are exposed, sediment and erosion control works in the form of sediment fencing should be installed surrounding the development envelope.**
 - **Sediment fencing must be constructed of heavy material and solid posts and be properly installed (trenched in) to maintain its integrity during inclement weather events.**
 - **Additional sediment fencing and appropriate control measures must be available on site so that any breach can be immediately repaired.**
 - **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**
 - **An on-site supervisor should be responsible for daily inspections of the sediment and erosion control measures and record the time and date of inspections, the status of the mitigation measures, and any repairs undertaken.**
 - **Removal of non-biodegradable erosion and sediment control materials should occur once construction is complete, and the site is stabilized.**
- **Machinery should arrive on site in clean condition and be checked and maintained free of fluid leaks.**
- **Machinery must be refueled, washed, and serviced within the area isolated by sediment fencing.**
- **Locate all fuel and other potentially deleterious substances within the area isolated by sediment fencing, a minimum of 30 m from wetlands.**

- **Temporary storage locations of aggregate/fill material (where required) should be located within the area isolated by sediment fencing. This material is to be contained by heavy-duty sediment fencing, a minimum of 30 m from wetlands.**
- **Offloading of construction and aggregate/fill materials (where required) should be completed during fair weather conditions, a minimum of 30 m from wetlands.**
- **All stockpiled topsoil/overburden (where required) should be piled in low piles and stabilized as quickly as possible (e.g., erosion-prone areas covered with textile) to minimize the potential for runoff and wind erosion.**

Septic Location and Construction

- **The septic system must be installed within the location shown on Figure 3.**
- **Based on depth to bedrock, a Class IV sewage treatment structure, employing the use of a raised filter bed may be required, or the use of a tertiary treatment system with area bed.**
- **The Class IV sewage system must include phosphorous retention as part of effluent treatment.**
- **The final location and installation of the septic system must be completed by a licensed septic installer.**
- **Imported soils for septic construction must have a high ability to retain phosphorous, achieved by having high concentrations of iron and aluminium, with low concentrations of calcium carbonate.**

Alteration Within the Shoreline Buffer

- **Revegetation of the area illustrated in Figure 3 should be completed with a mix of native tree, shrub, and groundcover species. Maintenance of this area should be discontinued to allow natural regeneration to occur. Suggested species for the subject property are included in Table 3.**
- **All tree saplings should be planted 3 m apart to increase rooting and provide stabilization.**
- **Shrubs and groundcover should be installed between 0.3 and 1.5 m apart depending on size (small 0.3 m, medium 0.8 m, and large 1.5 m).**
- **All installed woody plants (i.e., trees and shrubs) should be native to Hastings Highlands and suitable to site conditions (e.g., light regime, moisture regime, etc.). Table 3 below lists tree, shrub, and groundcover species native to Hastings Highlands.**
- **All installed trees are recommended to be a minimum of 1.2 m (~4 ft) in height with a sufficiently developed root ball to sustain planting. Selecting trees of a variety of heights is strongly suggested.**
- **All tree installations should include rodent guards that are flush with the ground surface.**

- All installed shrubs are recommended to consist of potted materials in 1-3 gallon pots.
- Any woody plant root defects (e.g., girdling) should be corrected prior to installation.
- All woody plants should be installed such that the root crown/trunk flare is exposed above the soil surface to ensure proper oxygenation of the rooting zone (see Appendix 3 for Planting Guide).
- All installed woody plants should be watered (deep soaking) following installation.
- The optimal time for woody plant installations is the spring (i.e., May) or fall (i.e., mid-September to early-October).
- Revegetation areas are to be planted so that seasonal maintenance is not required and will be left to fill in and naturalize through succession.
- Groundcover planting “pods” can be created between tree and shrub plantings to naturalize and fill in open areas and create a naturalized look to the property. Suggested species for the subject property are included in Table 3.

Table 1. Vegetation native to Hastings Highlands. Shaded rows indicate species recommended for the subject property.

Common Name	Scientific Name	Form	Moisture Regime
Eastern White Pine	<i>Pinus strobus</i>	Conifer Tree	Dry to Moist – Shade to Sun
Red Pine	<i>Pinus resinosa</i>	Conifer Tree	Dry to Fresh – Sun
Eastern White Cedar	<i>Thuja occidentalis</i>	Conifer Tree	Fresh to Moist – Shade to Sun
Eastern Hemlock	<i>Tsuga canadensis</i>	Conifer Tree	Fresh to Moist – Shade
White Spruce	<i>Picea glauca</i>	Conifer Tree	Dry to Fresh – Sun
Balsam Fir	<i>Abies balsamea</i>	Conifer Tree	Fresh to Moist – Shade
Tamarack	<i>Larix laricina</i>	Conifer Tree	Fresh to Moist – Sun
White Birch	<i>Betula papyrifera var. papyrifera</i>	Deciduous Tree	Dry to Moist – Sun
Red Maple	<i>Acer rubrum</i>	Deciduous Tree	Dry to Moist – All
Northern Red Oak	<i>Quercus rubra</i>	Deciduous Tree	Dry to Fresh – Sun
White Oak	<i>Quercus alba</i>	Deciduous Tree	Dry to Fresh – Sun
Yellow Birch	<i>Betula alleghaniensis</i>	Deciduous Tree	Fresh to Moist – Shade
Sugar Maple	<i>Acer saccharinum</i>	Deciduous Tree	Dry to Moist – Shade
Black Cherry	<i>Prunus serotina</i>	Deciduous Tree	Dry to Fresh – Sun

Silver Maple	<i>Acer saccharinum</i>	Deciduous Tree	Fresh to Moist – Sun
Trembling Aspen	<i>Populus tremuloides</i>	Deciduous Tree	Dry to Fresh – Sun
Nannyberry	<i>Viburnum lentago</i>	Tall Shrub	Moist to Wet – All
Northern Wild Raisin	<i>Viburnum cassinoides</i>	Tall Shrub	Moist to Wet – Sun
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	Tall Shrub	Fresh to Moist – Shade
Serviceberry	<i>Amelanchier spp.</i>	Tall Shrub	Dry to Fresh – All
Red-osier Dogwood	<i>Cornus stolonifera</i>	Tall Shrub	Dry to Wet – All
Choke Cherry	<i>Prunus virginiana</i>	Tall Shrub	Dry to Moist – Sun
Common Elderberry	<i>Sambucus canadensis</i>	Tall Shrub	Fresh to Moist – Sun
Hardhack	<i>Spiraea tomentosa</i>	Low Shrub	Fresh to Moist – Sun
Narrow-leaved Meadowsweet	<i>Spiraea alba</i>	Low Shrub	Dry to Moist – Any
Bush Honeysuckle	<i>Diervilla lonicera</i>	Low Shrub	Dry to Moist – Sun
Sweet Gale	<i>Myrica gale</i>	Low Shrub	Moist to Wet – Sun
Bunchberry	<i>Cornus canadensis</i>	Herb	Fresh to Moist – Shade
Common Strawberry	<i>Fragaria virginiana</i>	Herb	Dry to Fresh – Sun
Wintergreen	<i>Gaultheria procumbens</i>	Herb	Dry to Moist – Shade
Spinulose Wood Fern	<i>Dryopteris carthusiana</i>	Herb	Fresh to Moist – Shade
Marginal Wood Fern	<i>Dryopteris marginalis</i>	Herb	Fresh to Moist - Shade

Species at Risk

- **Any tree removals required to accommodate potential future development take place outside of the season in which endangered bats may be active, i.e., April 1 – Sept 30.**
- **If tree clearing must occur within the above-noted timing window, additional studies may need to be completed to confirm the presence or absence of SAR bats. These studies can include snag tree surveys and acoustic monitoring of the area where trees will be removed, by a qualified professional. If SAR bats may be impacted by the development proposal, the MECP should be contacted to determine if a permit would be required to proceed.**
- **Any lighting incorporated into the final building designs should be directed downwards and away from the open areas.**
- **The two cavity trees identified on Figure 3 must be retained.**

- **All development and site alteration occurring between April 1 to August 31 must be setback a minimum of 30 m from the cavity trees as shown on Figure 3. This will avoid disturbance adjacent to the trees during the breeding season.**
- **Existing vegetation within the tree retention buffer should be left in a natural state.**

Additional Natural Heritage Features and Functions

- **If vegetation removal is required (e.g., tree/shrub clearing, etc.) it should be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31). If vegetation removal occurs during this period, a nest survey should be conducted by a qualified biologist within 5 days of commencement of construction activities to identify and locate active nests of bird species (where present) covered by the federal *Migratory Birds Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*. If a nest is located or evidence of breeding noted, a mitigation plan should be developed to avoid any potential impacts on birds or their active nests or delaying tree removal activities until the conclusion of the nesting season.**
- **Tree removal should not occur within the tree retention buffer shown on Figure 3. If trees within the buffer must be cleared, additional studies may need to be completed to confirm the presence or absence of woodpecker species. These studies can include nesting surveys of the area where trees will be removed, by a qualified professional. If Pileated Woodpecker may be impacted by the development proposal, the Minister should be contacted to determine if a permit would be required to proceed.**

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1 BACKGROUND

RiverStone Environmental Solutions Inc. (hereafter “RiverStone”) was retained by Vanessa Archer, from TD Consultants, the agent for the property owner, to prepare an Environmental Impact Study (EIS) for submission with an application for redevelopment of a parcel located at 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings (hereafter “subject property”) (**Figure 1**). The property is currently developed with a dwelling, garage, dock, and fire pit. The remainder of the property is a combination of lawn and regenerating woodland. The property is accessible via Lake St. Peter Road. This EIS was requested to accompany the application for redevelopment of an existing dwelling adjacent to several natural heritage features that receive protection under the County of Hastings Official Plan, August 3, 2018. The scope requested for this project included an assessment of fish habitat, species at risk (SAR), watercourses, and wetland communities.

According to the Hastings Municipal Zoning Interactive Map the subject property is zoned Waterfront Residential (WR). Natural Heritage Areas mapping supplied by the Ministry of Natural Resources and Forestry (MNRF) indicates that the subject property is adjacent to an unevaluated wetland, and mapping supplied by Land Information Ontario indicates that the property is adjacent to a coldwater stream Papineau Creek, also known as Boulter Creek. Given the planning and regulatory context and the presence of natural heritage features on and adjacent to the subject property, it is our understanding that an EIS is required to accompany the application for redevelopment.

The purpose of this EIS is to delineate and characterize the current extent of natural heritage features and potential significant ecological functions on the subject property. We consider the data collected and assess the potential for the proposed development to result in a negative impact to any such features and functions. Based on the results of this assessment, we identify recommendations and/or requirements for avoidance, mitigation, offsetting, and/or additional authorizations as relevant to meet the intent of applicable planning policies and environmental regulations. Considering the scope outlined above, RiverStone submits this report in fulfillment of the requirements under the Hastings County Official Plan (August 3, 2018).

2 APPROACH AND METHODS

The general approach used to complete this scoped EIS involved the following:

1. Identify a study area in which to focus assessment efforts.
2. Assemble and review background biophysical information for the subject property and adjacent lands, to become familiar with any identified significant natural heritage feature (SNHF) and records of species at risk (SAR) prior to the site investigation.
3. Conduct a site investigation to field-verify the presence or absence of SNHFs, confirm the biophysical features and functions identified during background information gathering, and to collect additional field data (e.g., habitat information, etc.) that will assist with completing the report.
4. Determine the potential for negative impacts associated with implementation of the proposed development and provide recommendations on how identified negative impacts can be mitigated via avoidance, minimization, and/or compensation measures (as necessary).

5. Provide an assessment of consistency and conformity of the proposed development plan with applicable municipal, provincial, and federal environmental policies.

2.1 **Identification of Study Area**

The primary focus of this assessment is the subject property (**Figure 1**). Informally, the study area also incorporates a minimum 120 m radius around the limits of the proposed development, a measure that is intended to ensure appropriate consideration for natural heritage features and functions of adjacent lands, consistent with direction in the Natural Heritage Reference Manual (NHRM) under the Provincial Policy Statement (PPS). The study area may also include consideration for adjacent privately-owned lands; however, assessment of such areas is informal and limited to a desktop review.

2.2 **Information Sources Used to Assess Site Conditions**

Background biophysical information pertaining to the subject property and adjacent lands (i.e., lands up to 120 m of the subject property, or other as relevant) was collected from a variety of sources. These include:

- **County of Hastings Official Plan** (Approved and modified August 3, 2018) for natural features mapping including:
 - Appendix 6 – Natural Heritage System
- **County of Hastings Municipal Zoning Interactive Map** for applicable zoning and environmental protection areas mapping
- **Ministry of the Environment, Conservation and Parks (MECP) information request** for occurrences of species at risk in and adjacent to the subject property, response not yet received.
- **MNRF Natural Areas Mapping and Natural Heritage Information Centre (NHIC) database** regarding information on occurrences of species at risk (SAR), provincially tracked species, and natural heritage features near the subject property (squares: 17QL3222) accessed September 13, 2023, at:
https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA
- **Ontario Reptile and Amphibian Atlas, Ontario Nature** database regarding records of reptiles and amphibians that have been observed within the vicinity of the subject property (squares: 17QL32, accessed September 13, 2023, at:
<https://www.ontarioinsects.org/herp/index.html?Sort=47&area2=squaresCounties&records=all&myZoom=8&Lat=41.34&Long=-82.22>
- **Ontario Butterfly Atlas, Toronto Entomologists' Association** database regarding records of butterflies that have been observed within the vicinity of the subject property (squares: 17QL32, accessed September 13, 2023, at: <https://www.ontarioinsects.org/atlas/>
- **Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001-2005** (Cadman et al. 2007) regarding birds that were documented to be breeding near the subject property between 2001-2005 (squares: 17TQL32, at:
<https://www.birdscanada.org/birdmon/onatlas/findsquare.jsp>

- **Government of Canada Aquatic Species at Risk Map** regarding records of aquatic species at risk within the vicinity of the subject property, accessed September 13, 2023, at <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>
- **MNRF Fish ON-Line database** regarding fisheries records for downstream waterbodies, accessed September 13, 2023, at lioapplications.lrc.gov.on.ca/fishonline/Index.html?viewer=FishONLine.FishONLine&locale=en-CA
- **Government of Ontario Aquatic Resource Area Line Segment** database for watercourse records adjacent to the property, accessed September 13, 2023, at <https://geohub.lio.gov.on.ca/datasets/lio::aquatic-resource-area-line-segment/explore?location=48.627337%2C-84.834657%2C5.00>
- **eBird Online Database** regarding citizen science observations documented in the vicinity of the subject property accessed September 13, 2023, at <https://ebird.org/hotspots>
- **iNaturalist Mapping and Online Database** regarding citizen science observations documented in the vicinity of the subject property accessed September 13, 2023, at https://inaturalist.ca/observations?nelat=45.323272885048105&nelng=-79.18489230455809&place_id=any&subview=map&swlat=45.31497441832327&swlng=-79.22057641329222&threatened
- **Species at Risk Ontario List** as provided by the Ministry of the Environment, Conservation and Parks: <https://www.ontario.ca/page/species-risk-ontario> (last accessed November 2023)
- **Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E, January 2015** as provided by the Ontario Ministry of Natural Resources and Forestry: <https://dr6j45jk9xcmk.cloudfront.net/documents/4774/schedule-5e-jan-2015-access-ver-final-s.pdf>
- **Digital Ontario Base Maps (OBMs; 1:10,000).**
- **On-site investigations** by RiverStone staff (see **Section 2.3**)

2.3 Site Investigation

2.3.1 General Approach

The results of background information gathering outlined above in **Section 2.2** helped direct on-site data collection activities associated with a site investigation carried out on November 15, 2023, by B. Howe (Ecologist, OWES Certified Wetland Evaluator). Data collection was focussed on identifying natural features that exist on the property as well as site physical features (i.e. topography, slope). Representative site photos taken during this investigation are assembled in **Appendix 1**. Overall, the level of effort expended on-site was deemed appropriate to document the features and functions with recognized status given the location and scale of the proposed development.

Evidence for the presence of a species or use of an area was determined from visual and/or auditory observation (e.g., song, call) and observation of nests, tracks, burrows, browse, skins, and scats. General vegetation mapping was completed to provide information regarding the likelihood that plant species of conservation interest may be present (for example, most rare plants have strong affinities for specific ecological communities). Additionally, if a potentially rare plant not in flower was encountered, then a second site visit would have been conducted during the appropriate season for

flowering or fruiting to confirm identification. This approach acceptably minimizes the risk that rare plant species would have gone undetected.

Natural features of interest (e.g., SAR habitat, vegetation community boundaries) were delineated in the field with a tablet with highly accurate built in GPS. Features of interest were photographed, and all information collected was catalogued for future reference. Photographs representative of onsite conditions are provided in **Appendix 1**.

2.3.2 Terrain, Drainage, and Soils

Geology is a significant factor in the formation of soil, the physical characteristics of a watershed, and ultimately surface water quality. The bedrock and overlying deposits influence surface runoff and infiltration, directly influencing the nutrient balance of receiving water bodies. Knowledge of the existing terrain in a study area is important in understanding how a property and its associated natural environment will respond to development pressures. The geophysical setting of the property was reviewed using OBMs, soils mapping, and aerial photography, and subsequently verified on-site visually.

2.3.3 Vegetation Communities

The vegetation communities on the subject property were mapped according to the Great Lakes-St. Lawrence (GLSL) Ecosite Fact Sheets (Wester *et al.* 2015), otherwise known as the “Provincial” ELC system. The GLSL Ecosite factsheets represent refinements and a synthesis of several different protocols for describing vegetation communities (primarily forests) within Ecoregions 4 and 5 previously prepared by the Ministry of Natural Resources and Forestry (MNRF) in the 1990’s. ELC defines ecological units or “Ecosites” based on a hierarchy of influence involving several physical factors including climate (temperature, precipitation), flooding, disturbance regimes, and substrate (depth, texture, moisture, nutrients). ELC provides a common language to describe vegetation communities, which in turn facilitates the identification of vegetation communities likely to support features or functions of conservation interest.

Each Ecosite code consists of three (3) components. The first component is a 1-digit geographic range code; all Ecosites within the GLSL geographic range begin with the letter “G”. The second component is a 3-digit Ecosite number that corresponds to a specific vegetation community. The third component is a 1- or 2-digit vegetation cover modifier indicating whether the dominant vegetation is tall-treed (Tt), low-treed (Tl), shrub (S), not woody (N), or not vegetated (X). For example, “G153N” refers to a rock barren community that is dominated by non-woody vegetation occurring within the Great-Lakes St. Lawrence geographic range.

Plant nomenclature is generally consistent with the Southern Ontario Vascular Plant Species List, Third Edition (Bradley, 2013) except where updates that postdate publication of the list are noted in the Integrated Taxonomic Information System database.

2.3.4 Wildlife Surveys

2.3.4.1 Habitat-based Approach

RiverStone’s primary approach to site assessment is habitat-based. We first focus on evaluating the potential for significant features and species within an area of interest, prior to undertaking any targeted assessments or surveys. An area is considered potential habitat if it satisfies several criteria, usually specific to a species, but occasionally characteristic of a broader group (*e.g.*, several species of

turtles use sandy shorelines for nesting, several species of bats use cavity trees as day roosts and maternity sites, etc.). If habitat features are demonstrably absent from a study area, then targeted surveys would not be considered warranted to further support conclusions of the assessment. Physical attributes of a site that can be used as indicators of its potential to function as habitat for a species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren, coldwater stream), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007b), published and unpublished documents, and direct experience.

2.3.1 Targeted Wildlife Assessment

Where appropriate, RiverStone explores further species-specific assessments in accordance with applicable standard methods and protocols. Targeted survey efforts may be undertaken due to one or more triggers, such as a specific request from an approval authority, an existing record for a species of interest, or a limitation to a habitat-based assessment (e.g., limited property access). Given the scoped nature of this study, targeted survey methodologies were only undertaken for fish habitat. All potential habitat functions are estimated based on review of background information and on-site habitat structure, as discussed above.

2.3.1.1 Fish Habitat Assessment

To appropriately assess fish habitat along lake frontages, the following recommendations for completing a fisheries assessment have been made by DFO and MNR:

1. Confirm the presence or absence of fish habitat,
2. Identify any potential fisheries features including watercourses and seasonally flooded areas, and assess their importance in terms of supporting fisheries functions,
3. Determine the fish communities located at a specific site and understand the life-cycle requirements, and
4. Determine the sensitivity of the fish habitat on a site-specific basis.

Fish habitat assessments are completed using the most recent classification criteria established by the MNR as per the Natural Heritage Reference Manual (OMNR 2010). The three key fish habitat types are described in **Table 2** and differ based on their sensitivity to development and overall productive capacity for fish. Fish habitat mapping, fisheries records, thermal regime, and the known fish community of a lake or watercourse are used in conjunction with site-specific field evaluation, to determine what areas should be considered Type 1 or Type 2 habitat in any waterbody. Development is generally directed away from highly sensitive habitats.

Our field approach for fish habitat is also habitat-based. That is, we do not conduct site visits to observe fish use of the shoreline habitat over their entire life cycle to conclude whether the habitat is used or is significant. Instead, we conduct a site visit during the time of year when habitat features are visible, to document feature characteristics and types (**Table 2**).

While some habitats are specifically used by individual species at key times in their life history (e.g., rocky wind-swept shoals exposed to wind used by lake trout for spawning), other habitats are used by several species at various important times in their development (e.g., aquatic vegetation is used by

various species for spawning, nursery, and/or feeding habitat). Characteristics of the lake shoreline that relate to habitat use by fish include substrate type, slope / water depth, presence of woody debris / fallen trees and large boulders, aquatic vegetation, confluence with watercourses, and exposure to the wind. During our assessment, these features are surveyed from land and/or the water, taking note of the key habitat features described above.

Table 2. Classification of Fish Habitat Types

Classification Type	Description
Type 1	Habitats have high productive capacity, are rare, in space and/or time, are highly sensitive to development, or have a critical role in sustaining fisheries (e.g., spawning and nursery areas for some species, and ground water discharge areas for summer and/or winter thermal refuges).
Type 2	Habitats are moderately sensitive to development and, although important to the fish population, are not considered critical (e.g., feeding areas and open water habitats of lakes).
Type 3	Habitats have low productive capacity or are highly degraded, and do not currently contribute directly to fish productivity. They often have the potential to be improved significantly (e.g., a portion of a waterbody, a channelized stream that has been highly altered physically).

2.3.2 Significant Natural Heritage Feature Assessment

Where necessary, the potential presence of NHFs is evaluated using existing background mapping and/or assessed in accordance with provincial guidance documents, e.g., NHRM. The potential presence/absence of relevant species of conservation interest, such as endangered and threatened species, are assessed using a combination of the background information review outlined in **Section 2.2** and the habitat-based approach outlined in **Section 2.3.1**. Our assessment of Natural Heritage Features is provided in **Section 4** of this report.

2.3.2.1 *Species at Risk – Endangered and Threatened Species*

For the purposes of identifying species that warrant consideration during design and implementation of the proposed development plan, endangered, and threatened species include those designated as “endangered” or “threatened” under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act, 2007*. These species are considered within the local Official Plan and Provincial Policy Statement as SAR.

RiverStone’s approach to site assessment is primarily habitat-based. The assessment included a thorough review of the available information, site visits, and assessment of findings. The results of these assessments are provided below in **Section 4.2** and in **Appendix 2**.

2.3.3 Watercourses/Drainage Features

Initial review of aerial photography informed assessment of watercourses on the subject property. The watercourses was assessed for indicators of flow permanency, habitat characteristics and connection between features according to the Ontario Stream Assessment Protocol. All relevant drainage features were photographed and catalogued for inclusion in this report.

2.3.4 Wetlands

Initial review of aerial photography and provincial data layers informed assessment of wetlands on the subject property. No provincially significant wetlands have been identified on or adjacent to the property. Onsite, wetlands were assessed for habitat characteristics and connection between features according to the Ontario Wetland Evaluation System (Northern Region). Aerial photography and a survey-grade GPS receiver capable of 2 m accuracy was used to delineate wetland boundaries, and all relevant features were photographed and catalogued for inclusion in this report.

2.4 Impact Assessment and Mitigation

To carry out a rigorous and defensible ecological assessment of potential impacts associated with the proposed development, RiverStone employs the following approach.

1. *Predict* impacts to features and species of conservation interest on the subject property and adjacent lands based on the proposed development plan (from construction to post-completion), including both direct (*e.g.*, vegetation clearance) and indirect (*e.g.*, light pollution, encroachment post-development) impacts.
2. *Evaluate the significance* of predicted impacts to features and species of conservation interest based on their spatial extent, magnitude, timing, frequency, and duration.
3. *Assess the probability or likelihood* that the predicted impacts will occur at the level of significance expected (*e.g.*, high, medium, low probability).

In instances where the potential for negative impacts to features or species of conservation interest exist, ecologically meaningful mitigation measures are offered to avoid, minimize, and/or compensate for such impacts. RiverStone's impact assessment and recommended mitigation measures are provided in **Section 5**.

2.5 Assessment of Conformance with Applicable Environmental Policies

To assess whether the application is consistent or complies with the relevant municipal, provincial, and federal requirements with respect to the natural environment, the following policies (*e.g.*, statutes, regulations, plans, guidance documents, etc.) that may be applicable to the proposed application were considered during both the field investigations and the impact analysis. An assessment of the proposed development's consistency and conformity with these policies is provided in **Section 6**.

- Federal *Fisheries Act*, R.S.C. 1985, c. F-14, amended on 2019-08-28 including:
 - *Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations*, S.O.R/2013-191
 - Fish and Fish Habitat Protection Policy Statement (August 2019)
- Federal *Migratory Birds Convention Act*, S.C. 1994, c. 22, including:
 - Migratory Birds Regulations.
- *Provincial Policy Statement*, 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including:
 - Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (OMNR 2010)
- Provincial *Endangered Species Act*, 2007, S.O. 2007, c. 6, including:

- Ontario Regulation 230/08: Species at Risk in Ontario List
- Ontario Regulation 242/08: “Exemption Regulation”
- The Hastings County Official Plan (Approved and modified August 3, 2018)
- The Municipality of Hastings Highlands Bylaw 2004-035 Comprehensive Zoning Bylaw (Office Consolidation: September 2023)

3 BIOPHYSICAL FEATURES AND FUNCTIONS

3.1 General Site Conditions

The subject property is approximately 0.87 ha in area and is accessed from the north via Lake St. Peter Road. At the time of RiverStone’s November 15, 2023, site visit the property was developed with a dwelling, garage, dock, and fire pit. Portions of the existing garage are located within the shore road allowance. Approximately 45% of the study area has been cleared. The remainder of the property is undisturbed forest (approximately 20%) and regenerating forest (approximately 35%). The property is adjacent to Papineau Creek, a wetland, and Type 1 fish habitat (**Figure 2**). The entire property slopes gently (slopes < 15%) towards Lake St. Peter, a Lake Trout Lake at Capacity.

Due to discrepancies between the provincial and municipal property boundaries, all locations taken from the site plan are considered approximate. Natural heritage features were delineated and georeferenced on-site and are accurate. Existing vegetation communities and natural features are identified on **Figure 2**. Representative photographs taken during the site investigation are provided in **Appendix 1**.

3.2 Terrain, Drainage, and Soils

The subject property is situated within the southeastern portion of Ecodistrict 5E-9 (Algonquin Park). Bedrock within the area is Precambrian overlain with acidic glacial morainal material. Areas of bare bedrock are common at higher elevations and morainal deposits range from shallow to moderately deep. Faulting also occurs in the Ecodistrict and strongly influences local topography and drainage. Terrain in this Ecodistrict is otherwise dominated by large, rolling hills typical of the Algonquin Dome.

The subject property slopes gently (slopes < 15%) towards Lake St. Peter. The highest point on the property is within the regenerating woodland, and portions of the road allowance have been filled to level the property. Filling appears to be historic, with a recent overlay of gravel and cobble in the existing parking pad adjacent to the garage and in areas experiencing shoreline erosion. Natural soils on the property are sand to sandy loam.

Drainage on the property is via overland flow that either directly enters Lake St. Peter or enters Papineau Creek, which then empties into Lake St. Peter. Papineau Creek is a braided watercourse that flows along the edge of the historic fill (**Figure 2**).

3.3 Vegetation Conditions

Vegetation proximate to the shoreline and within the road allowance has been removed and replaced with lawn and garden plantings. Although an area of historic clearing has been replanted and allowed to regenerate, natural upland forest is only retained north of the driveway. Wetland vegetation is found along the western property line and fronting the property within Lake St. Peter. Ecological

communities were characterized and delineated through a combination of aerial photo analysis and field investigations; these communities are described below and mapped on **Figure 2**. Each description includes a list of representative plant species within each community. All species observed within the study area are considered common locally and provincially.

3.3.1 Terrestrial Vegetation Communities

3.3.1.1 Anthropogenic

A large area of the subject property and shore road allowance have been altered for anthropogenic uses. These areas have been mapped on **Figure 2** based on their dominant cover type (e.g., lawn, gravel). Vegetation is not present within the gravel areas, but the lawn contains Kentucky Bluegrass (*Poa pratensis*), Crabgrass species (*Digitaria sp.*), Virginia Strawberry (*Fragaria virginiana*), Common Mullein (*Verbascum thapsus ssp. thapsus*), Clover species (*Trifolium sp.*), and Orchard Grass (*Dactylis glomerata*). Individual landscaping trees and hedgerows include Eastern White Pine (*Pinus strobus*), White Spruce (*Picea glauca*), Eastern Hemlock (*Tsuga canadensis*), Balsam Fir (*Abies balsamea*), Trembling Aspen (*Populus tremuloides*), Northern Red Oak (*Quercus rubra var. rubra*), Eastern White Cedar (*Thuja occidentalis*), White Birch (*Betula papyrifera var. papyrifera*), Scots Pine (*Pinus sylvestris*), and Red Pine (*Pinus resinosa*).

The area north of the existing development and west of the driveway has primarily been replanted with Red Pine and has been allowed to naturalize. Other tree species within the canopy include Balsam Fir, White Birch, Northern Red Oak, White Spruce, Sugar Maple (*Acer saccharum*), Bigtooth Aspen (*Populus grandidentata*), Balsam Poplar (*Populus balsamifera*), Trembling Aspen, Red Maple (*Acer rubrum*), and American Beech (*Fagus grandifolia*). Groundcover includes Speckled Alder (*Alnus incana ssp. rugosa*), Pipsissewa (*Chimaphila umbellata ssp. cisatlantica*), Common Selfheal (*Prunella vulgaris ssp. vulgaris*), Northern Flat-topped White Aster (*Doellingeria umbellata var. pubens*), Bunchberry (*Cornus canadensis*), Orange Hawkweed (*Hieracium aurantiacum*), Common Mullein, White Meadowsweet (*Spiraea alba*), Goldenrod species (*Solidago sp.*), Wild Red Raspberry (*Rubus sachalinensis var. sachalinensis*), Virginia Strawberry, and Northern Bracken Fern (*Pteridium aquilinum var. latiusculum*).

3.3.1.2 G052Tt Dry to Fresh, Coarse: Spruce – Fir Conifer

This vegetation community is present in the northeast of the property. The canopy is dominated by Balsam Fir, with associated Eastern Hemlock, White Birch, Sugar Maple, Trembling Aspen, Bigtooth Aspen, and Eastern White Pine. Groundcover species include Pipsissewa, Northern Bracken Fern, Eastern Teaberry (*Gaultheria procumbens*), Virginia Strawberry, Bunchberry, Royal Fern (*Osmunda regalis var. spectabilis*), and Northern Wild Raisin (*Viburnum nudum var. cassinoides*).

3.3.2 Wetland Vegetation Communities

3.3.2.1 G134S Mineral Thicket Swamp

Papineau Creek flows through a mineral thicket swamp that borders the western side of the property and wraps around the shoreline frontage (**Figure 2**). The dominant species is Speckled Alder, with associated Red Maple, White Meadowsweet, and Sweetgale (*Myrica gale*). Other wetland vegetation includes Aster species (*Symphotrichum sp.*), Reed Canary Grass (*Phalaris arundinacea*), Sensitive Fern (*Onoclea sensibilis*), Fraser's Marsh St. Johnswort (*Triadenum fraseri*), Cattail species (*Typha sp.*), Three-way Sedge (*Dulichium arundinaceum var. arundinaceum*), Dark-green Bulrush (*Scirpus*

atrovirens), Marsh Cinquefoil (*Comarum palustre*), Leatherleaf (*Chamaedaphne calyculata*), Longleaf Pondweed (*Potamogeton nodosus*), American Eel-grass (*Vallisneria americana*), and Northern Pipewort (*Eriocaulon aquaticum*).

3.4 Wildlife Habitat Overview

Based on our observations, we expect that the subject property has the potential to support habitat for various species of wildlife that are typical to the Canadian Shield landscape. We would expect occurrences for general mammalian species, including White-tailed Deer (*Odocoileus virginianus*), Eastern Cottontail (*Silvilagus floridanus*), Raccoon (*Procyon lotor lotor*), Grey Squirrel (*Sciurus carolinensis*), etc. The site investigation documented evidence of North American Beaver (*Castor canadensis*), Eastern Chipmunk (*Tamias striatus*), Black-capped Chickadee (*Poecile atricapillus*), Canada Goose (*Branta canadensis*), Snow Bunting (*Plectrophenax nivalis*), Blue Jay (*Cyanocitta cristata*), and Brown Creeper (*Certhia americana*).

The NHIC database includes several local element occurrences for at-risk species on the surrounding landscape; however, we generally expect that the structure of on-site vegetation communities would be limiting to most of the listed species. An assessment of potential wildlife species and/or habitat features, including individuals of species at risk or other species of conservation concern, is provided in **Section 4** of this report within the context of NHFs.

3.5 Fish Habitat

The subject property contains frontage on Lake St. Peter and Papineau Creek. Lake St. Peter is a small lake surrounded by cottage development and Lake St. Peter Provincial Park, which provides public lake access and waterfront campgrounds. The lake drains to the south and is part of the Madawaska River watershed. The property is located on Lake St. Peter's north-western end. Substrates fronting the property are sand, with a sand bar extending along the outlet of Papineau Creek where sediment has been deposited. Both emergent and submerged aquatic vegetation are abundant surrounding the watercourse outlet, although some areas fronting the subject property lack vegetation. Slopes within the nearshore are gentle (slopes < 10 %) and the nearshore is very shallow. Deeper waters in the nearshore occur only in the channel where Papineau Creek outlets.

Lake St. Peter has been designated a Lake Trout Lake at Capacity by the MNRF. It does not have a history of stocking and has native populations of Brook Trout (*Salvelinus fontinalis*), Lake Trout (*Salvelinus namaycush*), Largemouth Bass (*Micropterus salmoides*), Pumpkinseed (*Lepomis gibbosus*), Rock Bass (*Ambloplites rupestris*), Smallmouth Bass (*Micropterus dolomieu*), White Sucker (*Catostomus commersonii*), Walleye (*Sander vitreus*), and Yellow Perch (*Perca flavescens*).

Papineau Creek outlets into Lake St. Peter immediately adjacent to the subject property. This creek also drains Lake St. Peter from its southern end, ultimately draining into the Madawaska River. Papineau Creek is a coldwater watercourse with Fish ON-Line database records for Brook Trout, Smallmouth Bass, and Yellow Perch.

Locations where watercourses enter waterbodies are considered Type 1 fish habitat because they provide important nutrient and thermal inputs, in addition to being a rare feature within the landscape. The size of the Type 1 fish habitat at the outlet is often proportional to the watercourse size and thermal regime. Papineau Creek is a coldwater watercourse, an uncommon thermal regime within the local landscape, and a large watercourse. Because of this, RiverStone considers Papineau Creek and the entire property frontage to be Type 1 fish habitat.

3.5.1 Lake Trout Lake at Capacity

Lake St. Peter is designated a Lake Trout Lake at Capacity in Section 5.9.6 of the Municipality of Hastings Highlands Comprehensive Zoning By-law (Consolidated). Lake Trout require habitat with low levels of nutrients, high dissolved oxygen levels, particularly through the winter months, and coldwater temperatures. Impacts to sensitive Lake Trout can result from increased anthropogenic activities (e.g., increased hardened surfaces, increased erosion, septic systems, and shoreline clearing) based on the relationship between nutrient loading, increased productivity (algae and macrophyte growth), and subsequent oxygen depletion caused by bacteria when material breaks down. Through decomposition, oxygen is consumed, reducing the amount of oxygen available for Lake Trout during the late summer/winter in the deeper waters of the lake. When the oxygen concentration in deep water falls below 7 mg/L, the lake is considered At Capacity for development.

The impact assessment and mitigation measures below (**Section 5**), focuses on potential impacts to water quality related to the proposed development on the subject property. The provincial policy for At Capacity lakes does not allow further lot creation on the lake, except under site specific conditions. However, as the proposed development is the redevelopment of an existing lot, development of the lot is permissible if water quality impacts can be appropriately mitigated.

4 NATURAL HERITAGE/HYDROLOGIC FEATURE ASSESSMENT

Based on the biophysical information collected during background information gathering, and the summarized existing conditions of the subject property as described above, **Table 1** below identifies all natural heritage features that are present (or potentially present) within the study area. RiverStone’s rationale for identifying such features is provided in the sections that follow.

Table 1. Summary of the Assessment of Natural Heritage Features included in the scope of work and identified within the Study Area.

Natural Heritage Feature	Presence/Absence within the Study Area
Wetlands	<i>Present. See Section 4.1</i>
Watercourses	<i>Present. See Section 4.2</i>
Fish Habitat	<i>Present. See Section 4.3</i>
Habitat of Endangered and Threatened Species	<i>Potentially Present. See Section 4.4</i>

Shaded rows denote NHF that are present or have the potential to be present within the study area.

4.1 Wetlands

The subject property is adjacent to a large wetland (**Figure 2**). This wetland surrounds Papineau Creek and is a thicket swamp dominated by Speckled Alder, transitioning to emergent non-woody plants where it meets Lake St. Peter. Overland flow on the property directly enters this wetland, and existing development is immediately adjacent to the feature. Potential impacts due to the proposed development are discussed further in **Section 5.1**.

4.2 Watercourses

Papineau Creek is a large watercourse immediately adjacent to the subject property. Overland flows on the property directly enter this feature, and braiding of the watercourse flows immediately against existing site alteration. Further discussion of this feature is provided in **Section 5.2**.

4.3 Fish Habitat

4.3.1 Type 1 Fish Habitat

During RiverStone's site investigation watercourse, wetland, and shoreline features were assessed to identify and classify fish habitat. The edge of these features adjacent to the subject property was delineated, and it was determined that fish habitat is present. **Section 3.5** explains RiverStone's rationale for classifying Papineau Creek and the entire property frontage as Type 1 fish habitat.

4.3.2 Lake Trout Lake at Capacity

Lake Trout depend on deepwater habitat with high dissolved oxygen levels and coldwater temperatures, and these habitat requirements are susceptible to degradation with increased anthropogenic activities (e.g., septic systems, shoreline clearing, increased erosion). These development related impacts are of particular importance to Lake Trout because of the relationship between increased nutrient loading, proliferation of algae and macrophyte growth, followed by oxygen depletion caused by bacteria during decomposition. Anthropogenic land uses can cause nutrient loading to Lake St. Peter and negatively impact Lake Trout habitat. Discussion of potential impacts is provided in **Section 5.3**.

4.4 Habitat of Endangered and Threatened Species

To assess the potential presence of individuals and/or habitat for endangered and threatened species within the study area, RiverStone staff conducted the following:

- Review of the list of species designated as endangered and threatened in Ontario, as per Schedules 2 and 3 of Ontario Regulation 230/08 [(Species at Risk in Ontario List (SARO List)], located here: <https://www.ontario.ca/laws/regulation/080230>. In our experience, the potential presence of most provincially endangered and/or threatened species can be ruled out based on their limited geographical ranges in the province and/or a lack of specific habitat conditions which they require to carry out key life processes.
- Review of the NHIC database for existing records of element occurrences for endangered or threatened species (data squares 17QL3222 and adjacent squares). Databases of iNaturalist, OBBA, and ORAA were also reviewed as of September 2023.
- On-site investigation undertaken in 2023, during which vegetation conditions were characterized for detailed habitat-based assessment.

Information from the above assessment process was used to inform a site-specific screening, as contained in **Appendix 2**. Through this screening twenty-two (22) species were identified that have the potential to be present or use vegetation communities on the subject property or on adjacent lands based on existing records and range mapping. This list of species was reduced to seven (7) species that had the potential to be present on the subject property based on habitat availability.

Blanding's Turtle (*Emydoidea blandingii*), Spotted Turtle (*Clemmys guttata*), and Ogden's Pondweed (*Potamogeton ogdenii*) may occur within wetland habitat on and adjacent to the subject property. Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Tri-colored Bat (*Perimyotis subflavus*), and Red-headed Woodpecker (*Melanerpes erythrocephalus*) may occur in treed habitat. These species are discussed below. Where relevant, potential development-related impacts to these species are discussed further in **Section 5**.

4.4.1 Blanding's Turtle (*Emydoidea blandingii*)

Blanding's Turtles are semi-aquatic and spend most of their time in aquatic habitats. Overwintering, breeding, and foraging all occur in water. They favor shallow, eutrophic waterbodies with soft organic substrates and abundant vegetation. They can occur in wetlands, slow-flowing rivers, and waterbodies but prefer ponds and marshes. On land, they can be found in sandy or rocky shorelines areas, forest clearings, and meadows. These areas are all potential nesting habitat, and Blanding's Turtles are known to make large overland movements. Their overwintering habitat is within soft substrates in shallow, unfrozen water (MECP, 2019).

Although there are no records for Blanding's Turtle within the study area, Papineau Creek and the associated wetland may provide general habitat and a movement corridor for this species. Neither feature is eutrophic and Papineau Creek flows quickly, making it unlikely that Blanding's Turtles would use this area for foraging. Potential impacts to these features due to the proposed development are discussed in **Section 5.4.1**.

4.4.2 Spotted Turtle (*Clemmys guttata*)

Spotted Turtles are semi-aquatic and require a mixture of terrestrial and aquatic habitats. They will consistently return to the same overwintering and spring aggregation sites, and the same core habitats. They use any aquatic habitat that provides shallow water, including anthropogenic ponds and channels. Terrestrial habitats must be adjacent to aquatic features, such as shorelines, beaches, rocky outcrops, upland forests, open fields, and meadows (Environment and Climate Change Canada, 2018).

Spotted Turtles spend 7 to 8 months in underwater hibernacula within woody vegetation and shallow water, where they are partially buried in soft substrates. They emerge in spring to mate within aquatic habitats, and nest in terrestrial habitats that contain diggable soils and full sunlight. They will nest in both natural features, muskrat lodges, and anthropogenic structures. Nest building mainly occurs during the night. Spotted Turtles also undergo a period of summer inactivity (estivation) where they bury themselves in wetlands and upland forests (Environment and Climate Change Canada, 2018).

There are no records for Spotted Turtle within the surrounding landscape. However, Papineau Creek provides a shallow channel that may be used by this species as general habitat, and the thicket swamp may provide hibernacula and estivation habitat. **Section 5.4.2** provides discussion of potential impacts to this habitat due to the proposed development.

4.4.3 Ogden's Pondweed (*Potamogeton ogdenii*)

Ogden's Pondweed is an annual, submerged plant whose Canadian population is only found within Hastings County. Its range is restricted by its preference for alkaline waters, which only occur in areas of marble bedrock. It prefers clear, slow-moving water and is found within streams, beaver ponds, and lakes (White, 2010). Papineau Creek and Lake St. Peters both provide appropriate habitat for this species. Potential negative impacts to this habitat due to the proposed development are discussed in **Section 4.4.3**.

4.4.4 Endangered Bat Species (*Myotis lucifugus*, *M. septentrionalis*, *Perimyotis subflavus*)

These species, assessed as a species guild (related species with similar habitat characteristics), include several bat species listed as endangered in Ontario. Bats are highly mobile; however, individuals and groups of the noted bat species are also recognized as having some degree of fidelity to suitable local

sites for daily and seasonal ‘roosting’ activities. While some species (*i.e.*, *Myotis lucifugus*) exhibit a preference for roosting in anthropogenic structures, natural roosting sites are also important. Natural roosting sites are generally associated with mature forests containing a sufficient density of large trees in various stages of decay, otherwise known as snags. Snags provide features such as cavities and/or loose bark, on which bats rely for shelter and thermoregulation throughout the active season.

Although only part of the subject property is treed, mature trees on the property provide cavities that may be used as roosting habitat by species at risk bats. Current direction from MECP prescribes that targeted surveys of treed habitats/snags are not necessary to quantify the quality/extent of potential habitat for endangered bat species IF a project would involve removal of only a small number of potential maternity or day roost trees in treed habitats (or none at all). This approach assumes that other appropriate mitigation measures (*i.e.*, timing windows) are employed to avoid impacts to individuals of endangered bat species. For our assessment, it is RiverStone’s opinion that potential significant habitat features for bats could occur and it is not possible to rule out the potential for *individuals* of endangered bat species (or other bat species) to be present during the active season in any individual trees (*i.e.*, through migration and regular daily movements). Further discussion, including an assessment of potential impacts to individuals of endangered bat species resulting from implementation of the proposed development, is provided in **Section 5.4.4**.

4.4.5 Red-headed Woodpecker (*Melanerpes erythrocephalus*)

Red-headed Woodpecker are found across the southern Shield region, where they nest in any habitat that has large trees with an open canopy, a sparse understory, and abundant snags. They prefer to nest in Trembling Aspen but are generalists that will nest in other deciduous species. In Ontario they are often found near beaver ponds and meadows but will also colonize recent burns and selectively logged areas (COSEWIC, 2018; Environment and Climate Change Canada, 2021).

Red-headed Woodpeckers consistently return to the same breeding habitat, where they create a new cavity or reuse a cavity made by another species (COSEWIC, 2018; Environment and Climate Change Canada, 2021). Two Trembling Aspen cavity trees were observed on the subject property that may provide nesting habitat for Red-headed Woodpecker. Potential negative impacts to this habitat are discussed in **Section 5.4.5**.

5 IMPACT ASSESSMENT AND RECOMMENDATIONS

The application that is being considered is for the redevelopment of the subject property. The property currently contains a dwelling, garage, dock, and fire pit (**Figure 3**). The proposed development includes the removal of the existing dwelling and construction of a new dwelling with an attached garage and new septic system (**Appendix 3**). The client does not own the shore road allowance.

RiverStone’s impact assessment below is intended to inform a review of the proposal by the appropriate approval authority. Our assessment is based on a review of existing conditions at the time of site investigations, as illustrated on **Figure 2** and in the photographic record contained in **Appendix 1**. The primary purpose of this report is to assess impacts and support impact mitigation for all features that receive protections under applicable environmental planning policies and regulations that were to be included in this scope of work. The potential for negative impacts on identified NHF is discussed in the sections below, and several recommendations are listed to support a scenario of no net negative impacts. In assessing and identifying potential negative impacts through a development process, it is important to highlight how the PPS defines negative impacts, *i.e.*:

“...degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities”

Importantly, as stated in Section 13.2 of the Natural Heritage Reference Manual (for Natural Heritage Policies of the PPS):

The PPS definition for “negative impacts” does not state that all impacts are negative, nor does it preclude the use of mitigation to prevent, modify or alleviate the impacts to the significant natural heritage feature or area”.

RiverStone’s impact assessment is intended to be reflective of the above guidance, with consideration for the integrity and function of each feature, and in acknowledgement that not all development and site alteration represents a negative impact. RiverStone’s property boundaries provided on figures are based on information provided by the proponent and should not be considered survey grade (*i.e.*, for reference purpose only).

5.1 Wetlands

RiverStone identified a thicket swamp adjacent to the subject property during our site investigation. In general, development and/or site alteration activities that occur in proximity to wetlands have the potential to cause negative impacts via the following pathways:

- Alterations of surface water and/or groundwater contributions that may result from;
 - Construction staging (*e.g.*, dewatering, etc.);
 - Increased post-construction coverage of impervious surfaces (*e.g.*, roads, roofs, etc.); and,
 - Permanent modifications to existing topography or drainage.
- Increased sediment and/or nutrient loadings to features via runoff exiting the development area from construction to post-completion of the project. This may adversely affect water quality via increased turbidity, nutrient enrichment, contamination by toxic substances, changes in pH, etc.;
- Direct loss of habitat through feature encroachment or other alterations; and
- Increased human activity/encroachment post construction, which may result in increased soil compaction, dumping, vandalism, or other disturbances.

The proposed development will involve the removal of an existing structure and the development of a new structure partially within the existing structure’s footprint. Impervious surfaces on the property are also anticipated to increase, as the proposed new dwelling will be larger. Disturbance of soils and alteration of flows will occur during structure removal and development.

Stormwater runoff from hardened surfaces, particularly rooftops, extensive flagstone patios, stairways, and walkways, has the potential to impact water quality and fish habitat in the long term. To address the potential for increased erosion and reduced nutrient uptake that results when vegetation is removed and hardened surfaces on a property increase, RiverStone would provide the following commentary. The potential for erosion can be reduced if concentrated flow from the rooftops is avoided by directing rooftop drainage through downspouts into in-ground infiltration chambers. Infiltration chambers are shallow excavations with perforated pipe cut in half, convex side up, covered with filter fabric and

topped with stone to create underground reservoirs. The runoff gradually percolates through the chamber and into the surrounding soil. The chambers reduce the volume of overland runoff, can provide groundwater recharge, and are able to remove suspended solids and phosphorous. The flow from infiltration chambers should be directed towards areas with heavy vegetation to increase nutrient uptake. Eves-trough should not be piped directly to the lake or wetland. Regarding the above, RiverStone recommends that:

- **Final development plans should include eves-trough that direct rooftop leaders away from wetlands/waterbodies into soakaway pits or infiltration trenches.**
- **Low Impact Development (LID) measures (permeable pavers, limited pathways) should be included, where feasible, in the development design to decrease any potential impact to the surrounding natural features.**
- **All hardened surfaces (e.g., driveways, patios, trails, shoreline access) should employ permeable materials (woodchips, pea gravel, permeable pavers or equivalent) that allow for infiltration of stormwater and prevent channelization. Surfaces should be graded to drain away from the wetland/shoreline and, where possible, into areas with deep soils and dense vegetation.**

To summarize, we do not expect that the proposed development will result in a negative impact to the wetland feature or its associated ecological and hydrologic functions. Any potential construction-related impacts to the wetland can be avoided through construction mitigation practices and avoidance measures. The following recommendations are provided with respect to the wetland feature:

- **All development and site alteration must maximize the setback from the wetland, with efforts to achieve the required 30 m setback, as shown on Figure 3, and as required by Section 5.9.2 Municipality of Hastings Highlands Comprehensive Zoning By-law 2004-035.**
- **Existing vegetation within the wetland setback should be left in a natural state to maintain a vegetated buffer adjacent to the wetland.**
- **Restoration plantings of the wetland and shoreline buffers should be undertaken, and routine maintenance of these area must be discontinued. Recommendations for revegetation are included in Section 5.3.3.**
- **Debris from structure removal will not be placed within 30 m of wetland habitat.**
- **Implement sediment and erosion control measures as per applicable best management practices (Appendix 4) to isolate the development footprint, generally including the following measures.**
 - **Before native soils are exposed, sediment and erosion control works in the form of sediment fencing should be installed surrounding the development envelope.**
 - **Sediment fencing must be constructed of heavy material and solid posts and be properly installed (trenched in) to maintain its integrity during inclement weather events.**

- **Additional sediment fencing and appropriate control measures must be available on site so that any breach can be immediately repaired.**
 - **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**
 - **An on-site supervisor should be responsible for daily inspections of the sediment and erosion control measures and record the time and date of inspections, the status of the mitigation measures, and any repairs undertaken.**
 - **Removal of non-biodegradable erosion and sediment control materials should occur once construction is complete, and the site is stabilized.**
- **Machinery should arrive on site in clean condition and be checked and maintained free of fluid leaks.**
 - **Machinery must be refueled, washed, and serviced within the area isolated by sediment fencing.**
 - **Locate all fuel and other potentially deleterious substances within the area isolated by sediment fencing, a minimum of 30 m from wetlands.**
 - **Temporary storage locations of aggregate/fill material (where required) should be located within the area isolated by sediment fencing. This material is to be contained by heavy-duty sediment fencing, a minimum of 30 m from wetlands.**
 - **Offloading of construction and aggregate/fill materials (where required) should be completed during fair weather conditions, a minimum of 30 m from wetlands.**
 - **All stockpiled topsoil/overburden (where required) should be piled in low piles and stabilized as quickly as possible (e.g., erosion-prone areas covered with textile) to minimize the potential for runoff and wind erosion.**

5.2 Watercourses

Papineau Creek is located adjacent to and west/southwest of the subject property. The creek is contained within a larger thicket swamp wetland and contains both fish and potential species at risk habitat. Development and/or site alteration activities that occur adjacent to this feature have the potential to cause negative impacts through the same pathways listed above for wetlands.

It is RiverStone’s opinion that potential construction-related impacts can be avoided through construction mitigation practices and avoidance measures. As Papineau Creek is located within wetland habitat and mitigation practices in **Section 5.1** will protect this habitat, RiverStone does not consider additional recommendations for this watercourse to be necessary.

5.3 Fish Habitat

Development and/or site alteration activities adjacent to shorelines (watercourses and lakes) have the potential to cause negative impacts to fish and fish habitat through similar methods as those listed above for wetlands. These pathways are:

- Stormwater runoff during construction activities.

- Modification of drainage patterns or flow rates.
- Inappropriately located sewage treatment systems that increase nutrient (phosphorous) loading to waterbodies.
- Increased runoff due to an increase in the extent of hard surfaces (e.g., rooftops, driveways, patios).
- Construction of in-water structures (e.g., culverts, docks, boathouses).
- Changes to in-water structural features (e.g., substrates, woody debris, aquatic vegetation).
- Changes to onshore structural features (e.g., removal of vegetation or soil, importation of aggregates).

The proposed development will involve a modification of drainage and runoff, installation of a new septic system, an increase in hardened surfaces, and increased development proximate to the lake. The development is proposed adjacent to Type 1 habitat and on a Lake Trout Lake at Capacity. Because mitigation planning for these aquatic natural heritage features involves similar actions, their impact assessment is provided under a single section.

Generally, all development and site alteration must be set back 30 m from the shoreline, as required by Section 4.2.4.4 of the Hastings County Official Plan and Section 5.9.2 of the Municipality of Hastings Highlands Comprehensive Zoning By-law. However, the existing dwelling is located within this setback. Redevelopment within this existing footprint is permissible with a minor variance from the Municipality. To improve the shoreline buffer and promote nutrient uptake to reduce migration to the lake RiverStone recommends that portions of the 30 m setback be revegetated.

5.3.1 Erosion and Sediment Migration

Impacts to fish and fish habitat can result from soil erosion that reaches a waterbody. Although the proposed development will require only minor grading, if any, there is potential for erosion to occur during construction periods when native soil is exposed or stockpiled. Recommendations have been provided above to protect wetlands from sediment impacts as a result of erosion. These recommendations also apply to the Lake St. Peter shoreline. Sediment and erosion control measures should be installed along the shoreline as shown on **Figure 3** and described in **Appendix 4**. Activities and materials that have the potential to harm water quality (i.e., fuel/refueling equipment, construction debris) should also be completed/stored within the area isolated by sediment fencing a minimum of 30 m from the shoreline. Vegetation within the fish habitat setback (see **Figure 3**) should be maintained and enhanced.

5.3.2 Septic System Location and Construction

As mentioned above in **Section 4.3.2**, Lake Trout are highly sensitive to changes in dissolved oxygen, which may result from nutrient loading. Development on Lake Trout Lakes in Ontario is guided by the Lakeshore Capacity Assessment Handbook (LCAH), which provides methodology for calculating the amount of additional development a lake can sustain before water quality reduces past a critical threshold. Lake St. Peter is an At Capacity Lake Trout Lake, meaning that additional development on the lake is prohibited. However, this does not prevent redevelopment of existing properties or septic systems. The proposed development includes the replacement of the existing septic system with a new system located further from aquatic habitat. Improperly located or operated septic systems can be a source of phosphorous entering surface waters, and the Ontario Building Code (OBC) identifies constraints to consider when locating Class IV septic tank/leaching bed systems. Physical

characteristics of a site that can constrain the placement of these systems include soil conditions, slope conditions, and site drainage as well as minimum setbacks from watercourses, waterbodies, and wells.

To maximize nutrient uptake and removal of bacteria, the OBC requires that septic systems be set back a minimum of 15 m from surface waters. However, Section 5.9.2 of the Comprehensive Zoning Bylaw requires a greater setback of 30 m. This setback is consistent with best management practices in the LCAH and is achieved by the proposed location shown on **Figure 3**. The proposed septic location was also reviewed for drainage and is on slopes less than 10%, which will give effluent sufficient time to be absorbed as it moves through the bed. The proposed location avoids steep slopes (slopes greater than 20% are unsuitable for leaching beds), provides adequate distance from the waterbody, and will allow the greatest opportunity for nutrient uptake by plants and soil before the plume reaches the lake. Therefore, RiverStone recommends:

- **The septic system must be installed within the location shown on Figure 3.**
- **Based on depth to bedrock, a Class IV sewage treatment structure, employing the use of a raised filter bed may be required, or the use of a tertiary treatment system with area bed.**
- **The Class IV sewage system must include phosphorous retention as part of effluent treatment.**
- **The final location and installation of the septic system must be completed by a licensed septic installer.**
- **Imported soils for septic construction must have a high ability to retain phosphorous, achieved by having high concentrations of iron and aluminium, with low concentrations of calcium carbonate.**

RiverStone also recommends the following best management practices be employed to properly use and maintain the new septic system:

- Ensure the effluent filter on the septic tank is serviced regularly.
- Have the system pumped out every two to three years, depending on use.
- Never dump grease, oil, or fats into the drain.
- Do not use a garbage disposal system.
- Be conscious regarding the amount of water and waste dumped at one time.
- Never do more than two loads of laundry in one day.
- Practice water conservation (use low flow toilets and showerheads).

A typical septic system that is properly designed, installed, and maintained on suitable soil is as effective as a sophisticated sewage treatment plant. A large proportion of the phosphorous flowing into a septic tank is effectively removed by settling and subsequent pumping of the tank. The phosphorous in septic tank outflow is typically 85% soluble orthophosphate. This soluble portion of phosphorous is well retained in soils with specific chemical properties, including low buffering capacity (low levels of calcium carbonate (CaCO₃)), and elevated aluminium and iron content.

By using a leaching bed constructed with these recommended soils, maintaining the recommended setback between the leaching bed and waterbodies, and maintaining and enhancing the shoreline buffer, there will be negligible potential for septic generated phosphorous to reach Lake St. Peter and degrade water quality for Lake Trout.

5.3.3 Alteration Within the Shoreline Buffer

Both the County of Hastings Official Plan and the Municipality of Hastings Highlands Official Plan require that the 30 m setback along watercourses and waterbodies remain undisturbed and naturally vegetated. These vegetated buffers play an important role in reducing flow velocities and sediment deposition into receiving water bodies, reducing the potential for negative impacts to water quality (Barling and Moore, 1994).

Shoreline vegetation on the subject property has been substantially altered and is not in compliance with Municipal and County policies. Existing development occurs within these setbacks, and the proposed development will occur almost entirely within the setbacks. However, due to site constraints, it is not possible to move the proposed development further from sensitive natural heritage features. Also, RiverStone understands that as a Waterfront Residential property some access to the Lake St. Peter shoreline is desired. Section 5.9.3 ii) a) of the Municipality of Hastings Highlands Official Plan permits up to 25% of the shoreline frontage or 23 m, whichever is lesser, to be utilized for shoreline development. This will permit retention of the existing pathways and firepit area, although a minor variance will likely be required for dwelling development. The remainder of the setbacks must be revegetated as shown on **Figure 3**. RiverStone provides a site preparation and planting guide in **Appendix 5** and the following replanting recommendations:

- **Revegetation of the area illustrated in Figure 3 should be completed with a mix of native tree, shrub, and groundcover species. Maintenance of this area should be discontinued to allow natural regeneration to occur. Suggested species for the subject property are included in Table 3.**
- **All tree saplings should be planted 3 m apart to increase rooting and provide stabilization.**
- **Shrubs and groundcover should be installed between 0.3 and 1.5 m apart depending on size (small 0.3 m, medium 0.8 m, and large 1.5 m).**
- **All installed woody plants (i.e., trees and shrubs) should be native to Hastings Highlands and suitable to site conditions (e.g., light regime, moisture regime, etc.). Table 3 below lists tree, shrub, and groundcover species native to Hastings Highlands.**
- **All installed trees are recommended to be a minimum of 1.2 m (~4 ft) in height with a sufficiently developed root ball to sustain planting. Selecting trees of a variety of heights is strongly suggested.**
- **All tree installations should include rodent guards that are flush with the ground surface.**
- **All installed shrubs are recommended to consist of potted materials in 1-3 gallon pots.**
- **Any woody plant root defects (e.g., girdling) should be corrected prior to installation.**

- All woody plants should be installed such that the root crown/trunk flare is exposed above the soil surface to ensure proper oxygenation of the rooting zone (see Appendix 3 for Planting Guide).
- All installed woody plants should be watered (deep soaking) following installation.
- The optimal time for woody plant installations is the spring (i.e., May) or fall (i.e., mid-September to early-October).
- Revegetation areas are to be planted so that seasonal maintenance is not required and will be left to fill in and naturalize through succession.
- Groundcover planting “pods” can be created between tree and shrub plantings to naturalize and fill in open areas and create a naturalized look to the property. Suggested species for the subject property are included in Table 3.

Table 3. Vegetation native to Hastings Highlands. Shaded rows indicate species recommended for the subject property.

Common Name	Scientific Name	Form	Moisture Regime
Eastern White Pine	<i>Pinus strobus</i>	Conifer Tree	Dry to Moist – Shade to Sun
Red Pine	<i>Pinus resinosa</i>	Conifer Tree	Dry to Fresh – Sun
Eastern White Cedar	<i>Thuja occidentalis</i>	Conifer Tree	Fresh to Moist – Shade to Sun
Eastern Hemlock	<i>Tsuga canadensis</i>	Conifer Tree	Fresh to Moist – Shade
White Spruce	<i>Picea glauca</i>	Conifer Tree	Dry to Fresh – Sun
Balsam Fir	<i>Abies balsamea</i>	Conifer Tree	Fresh to Moist – Shade
Tamarack	<i>Larix laricina</i>	Conifer Tree	Fresh to Moist – Sun
White Birch	<i>Betula papyrifera</i> var. <i>papyrifera</i>	Deciduous Tree	Dry to Moist – Sun
Red Maple	<i>Acer rubrum</i>	Deciduous Tree	Dry to Moist – All
Northern Red Oak	<i>Quercus rubra</i>	Deciduous Tree	Dry to Fresh – Sun
White Oak	<i>Quercus alba</i>	Deciduous Tree	Dry to Fresh – Sun
Yellow Birch	<i>Betula alleghaniensis</i>	Deciduous Tree	Fresh to Moist – Shade
Sugar Maple	<i>Acer saccharinum</i>	Deciduous Tree	Dry to Moist – Shade
Black Cherry	<i>Prunus serotina</i>	Deciduous Tree	Dry to Fresh – Sun
Silver Maple	<i>Acer saccharinum</i>	Deciduous Tree	Fresh to Moist – Sun
Trembling Aspen	<i>Populus tremuloides</i>	Deciduous Tree	Dry to Fresh – Sun

Nannyberry	<i>Viburnum lentago</i>	Tall Shrub	Moist to Wet – All
Northern Wild Raisin	<i>Viburnum cassinoides</i>	Tall Shrub	Moist to Wet – Sun
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	Tall Shrub	Fresh to Moist – Shade
Serviceberry	<i>Amelanchier spp.</i>	Tall Shrub	Dry to Fresh – All
Red-osier Dogwood	<i>Cornus stolonifera</i>	Tall Shrub	Dry to Wet – All
Choke Cherry	<i>Prunus virginiana</i>	Tall Shrub	Dry to Moist – Sun
Common Elderberry	<i>Sambucus canadensis</i>	Tall Shrub	Fresh to Moist – Sun
Hardhack	<i>Spiraea tomentosa</i>	Low Shrub	Fresh to Moist – Sun
Narrow-leaved Meadowsweet	<i>Spiraea alba</i>	Low Shrub	Dry to Moist – Any
Bush Honeysuckle	<i>Diervilla lonicera</i>	Low Shrub	Dry to Moist – Sun
Sweet Gale	<i>Myrica gale</i>	Low Shrub	Moist to Wet – Sun
Bunchberry	<i>Cornus canadensis</i>	Herb	Fresh to Moist – Shade
Common Strawberry	<i>Fragaria virginiana</i>	Herb	Dry to Fresh – Sun
Wintergreen	<i>Gaultheria procumbens</i>	Herb	Dry to Moist – Shade
Spinulose Wood Fern	<i>Dryopteris carthusiana</i>	Herb	Fresh to Moist – Shade
Marginal Wood Fern	<i>Dryopteris marginalis</i>	Herb	Fresh to Moist - Shade

5.4 Habitat of Endangered and Threatened Species

As per Section 10 of the ESA, areas of identified habitat for any endangered or threatened species are protected from destruction, unless otherwise authorized. Additionally, Section 9 of the ESA protects individuals of endangered or threatened species, prohibiting individuals from being killed, harmed, or harassed without appropriate authorizations. In many (but not all) cases, mitigation planning is sufficient to ensure that development can occur in a manner that is consistent with the above provisions. The following section(s) provide an assessment of potential impacts to any endangered or threatened species considered relevant to the development application, as determined through our screening exercise (**Appendix 2**) and subsequent assessment in **Section 4.4**.

5.4.1 Blanding's Turtle (*Emydoidea blandingii*)

Although turtles were not observed during RiverStone's site assessment and Blanding's Turtles have not been recorded near the subject property, there is potential for wetland habitat adjacent to the property to provide overwintering and general habitat for Blanding's Turtle.

Section 5.1 provides recommendations to protect wetland habitat, and RiverStone does not provide additional recommendations to protect Blanding's Turtle or their potential habitat.

5.4.2 Spotted Turtle (*Clemmys guttata*)

Papineau Creek and the surrounding wetland have the potential to provide hibernacula, estivation, and general habitat for Spotted Turtles. Although Spotted Turtles do not have a General Habitat Description, they have similar habitat preferences to Blanding's Turtles. Due to habitat protection being based on wetland habitat, which will be protected by the recommendations in **Section 5.1**, RiverStone does not recommend further measures.

5.4.3 Ogden's Pondweed (*Potamogeton ogdenii*)

This aquatic plant may be found within Papineau Creek and Lake St. Peter. The measures recommended above in **Section 5.1** and **5.3** to protect wetland and fish habitat should be sufficient to prevent negative impacts to aquatic habitat and water quality. RiverStone does not recommend additional mitigation measures for this species.

5.4.4 Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tricolored Bat (*Perimyotis subflavus*)

All Myotis species in Ontario, and the Tricolored Bat, are designated endangered per O. Reg. 230/08 under the ESA. Little Brown Myotis, and Northern Myotis utilize dark, sheltered tree cavities within snag trees as roosting sites to shelter from inclement weather and gestate their young (Humphrey et al. 2019). Tricolored Bat utilize clumps of dead vegetation and peeling tree bark for the same purposes. Individuals (i.e., non-reproductive females and males) of bat species may roost in smaller diameter trees and other spaces (e.g., beneath house siding, etc.) that are not typically occupied by maternity colonies (Humphrey et al. 2019).

Mature trees on the subject property contain cavities that may be used by these bat species. For such scenarios, common direction from MECP regarding impact avoidance for individuals of endangered bats includes strict adherence to vegetation removal timing windows. By limiting the timing window in which trees can be removed to outside of the active season for bats, development activities can avoid incidental harm to individuals of endangered bat species. Assuming implementation of appropriate tree removal timing windows, there is no expectation that the proposal will result in any negative impacts to individuals of endangered bat species. Recommendations are clarified as follows:

- **Any tree removals required to accommodate potential future development take place outside of the season in which endangered bats may be active, i.e., April 1 – Sept 30.**
- **If tree clearing must occur within the above-noted timing window, additional studies may need to be completed to confirm the presence or absence of SAR bats. These studies can include snag tree surveys and acoustic monitoring of the area where trees will be removed, by a qualified professional. If SAR bats may be impacted by the development proposal, the MECP should be contacted to determine if a permit would be required to proceed.**
- **Any lighting incorporated into the final building designs should be directed downwards and away from the open areas.**

5.4.5 Red-headed Woodpecker (*Melanerpes erythrocephalus*)

RiverStone identified two trees on the subject property that contain cavities appropriate for nesting by woodpecker species (**Figure 2**). These trees provide potential nesting habitat for Red-headed Woodpecker and should not be removed during the proposed development. RiverStone recommends:

- **The two cavity trees identified on Figure 3 must be retained.**
- **All development and site alteration occurring between April 1 to August 31 must be setback a minimum of 30 m from the cavity trees as shown on Figure 3. This will avoid disturbance adjacent to the trees during the breeding season.**
- **Existing vegetation within the tree retention buffer should be left in a natural state.**

5.5 Additional Natural Heritage Features and Functions

The proposed development plan will result in disturbance within the subject property. The following measures are recommended to further reduce the potential for adverse effects of development on the property's features and functions, particularly migratory breeding birds:

- **If vegetation removal is required (e.g., tree/shrub clearing, etc.) it should be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31). If vegetation removal occurs during this period, a nest survey should be conducted by a qualified biologist within 5 days of commencement of construction activities to identify and locate active nests of bird species (where present) covered by the federal *Migratory Birds Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*. If a nest is located or evidence of breeding noted, a mitigation plan should be developed to avoid any potential impacts on birds or their active nests or delaying tree removal activities until the conclusion of the nesting season.**
- **Tree removal should not occur within the tree retention buffer shown on Figure 3. If trees within the buffer must be cleared, additional studies may need to be completed to confirm the presence or absence of woodpecker species. These studies can include nesting surveys of the area where trees will be removed, by a qualified professional. If Pileated Woodpecker may be impacted by the development proposal, the Minister should be contacted to determine if a permit would be required to proceed.**

6 CONFORMANCE WITH APPLICABLE ENVIRONMENTAL POLICIES

The following summarizes the environmental legislation and policies that are relevant to the proposal being evaluated here and describes how the recommendations provided in this report will permit the proposed land-use changes and comply with these provisions.

6.1 Federal Fisheries Act (R.S.C., 1985, amended 2019-08-28)

The Federal Fisheries Act states that:

34.4 (1) No person shall carry on any work, undertaking or activity, other than fishing, that results in the death of a fish.

35. (1) No person shall carry on any work, undertaking or activity that results in harmful alteration, disruption, or destruction of fish habitat.

DFO further states that “under subsection 35(1) a person may carry on such works, undertakings or activities without contravening this prohibition, provided that they are carried on under the authority of one of the exceptions listed in subsection 35(2), and in accordance with the requirements of the appropriate exception. In most cases, this exception would be Ministerial authorizations granted to proponents in accordance with the *Authorizations Concerning Fish and Fish Habitat Protection Regulations*.”

The recommendations included in this report will direct development and site alteration away from the lakeshore and prevent negative impacts to water quality. It is the opinion of RiverStone that activities proposed on the property will not contravene the *Fisheries Act*, and that an Authorization under the Section 35(2) is not likely required. Should however, during this project, situations arise and lead to occurrences that result in a HADD, persons responsible for the project have a “duty to notify” DFO, take corrective actions, and provide written reports under Section 38 of the *Act*.

6.2 Federal Migratory Birds Convention Act, 1994 (MBCA)

Part 1, Section 5 of the Migratory Birds Regulations under the *Migratory Birds Convention Act, 1994* (MBCA) prohibits the disturbance or destruction of nests, eggs, or nest shelters of a migratory bird. The provincial *Fish and Wildlife Conservation Act, 1997* (FWCA) extends the protection of bird nests and eggs to species that are not listed under the Migratory Birds Regulations (e.g., Corvids).

For most migratory bird species, nest protections under the MBCA apply for the duration of time that a nest is occupied; however, protections extend beyond the period of occupation for several species that may be common locally, including Pileated Woodpecker, Green Heron, and Great Blue Heron, amongst others (see Schedule 1 under the Act for the full list). For the species listed under Schedule 1, specific conditions must be met in order to damage/remove a nest, including providing notice to the Minister, and demonstrating that the nest has not been occupied by an applicable species for a time period specified under Schedule 1.

Based on our on-site assessment, there is evidence of potential nesting on the property by Pileated Woodpecker. RiverStone has recommended the retention of these cavity trees. If the removal of these trees is determined to be required, additional nest surveys will be required. If any vegetation removals are determined to be required, restricting clearing of vegetation for any current or future proposed development to times outside of the period of April 1 to August 31 inclusive, will avoid destruction of other species’ nests and prevent contravention of Section 5 of the regulations. If vegetation removal must occur during this period, a nest survey should be conducted by a qualified avian biologist prior to commencement of construction activities to identify and locate active nests of migratory bird species covered by the MBCA or FWCA. If a nest is located or evidence of breeding noted, then a mitigation plan should be developed to address any potential impacts on migratory birds or their active nests. Mitigation may require establishing appropriate buffers around active nests or delaying construction activities until the conclusion of the nesting season.

6.3 Provincial Endangered Species Act (2007)

The ESA protects designated endangered and threatened species in Ontario from being killed, harmed, or harassed (s. 9) or having their habitat damaged or destroyed (s. 10). **Section 4.4** identified one or more species or its habitat having the potential to occur within or adjacent to the study area.

Section 5.4 provided a subsequent discussion of potential impacts to such species and/or associated habitat features, should those species be present within or adjacent to the study area. Based on this assessment, and assuming full implementation of mitigation measures (where recommended), it is RiverStone's opinion that no endangered or threatened species or their regulated habitat are expected to be negatively impacted by implementation of the proposed development. On this basis, there is no expectation that the proposed development will result in a contravention of the ESA. It is noted that this assessment does not represent 'clearance' with respect to ESA compliance. It remains a proponent's continued and sole responsibility to ensure that a project does not result in a contravention to the ESA.

6.4 Provincial Policy Statement, 2020, pursuant to the Planning Act, R.S.O. 1990, c. P.13.

The Provincial Policy Statement (PPS) is promulgated under the *Planning Act* and provides direction to municipalities on matters of provincial interest related to land-use planning. The PPS was updated in 2020. Municipal OP's must be consistent with the PPS. The PPS instructs (s. 2.1.1) that *natural features and areas shall be protected for the long term* and that (s. 2.1.2):

The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

The PPS prohibits development and site alteration within the following significant natural heritage features in Ecoregion 5E (s.2.1.4):

- Significant Wetlands
- Significant Coastal Wetlands

These features were not identified on or adjacent to the subject property.

The PPS also prohibits development and site alteration within the following natural heritage features in Ecoregion 5E (s. 2.1.5) *unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:*

- Significant wildlife habitat;
- Significant Areas of Natural and Scientific Interest (ANSI)
- Non-Significant Coastal Wetlands

No ANSIs or coastal wetlands are located on or adjacent to the subject property and SWH was not requested in the scope of this report. Based on the assessment provided herein, it is RiverStone's opinion that development and site alteration would be permissible and consistent with policy 2.1.5. if the recommended mitigation measures are followed.

The PPS does not permit development and site alteration in fish habitat (s. 2.1.6) or the habitat of endangered and threatened species (s. 2.1.7) except in accordance with federal and provincial requirements, respectively. Fish habitat and potential habitat of endangered and threatened species has been addressed through avoidance or mitigation planning in **Sections 5.3** and **5.4**.

Finally, with respect to lands adjacent to significant natural heritage features, the PPS requires that (s. 2.1.8):

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

In considering the aforementioned PPS policies, RiverStone has determined that the proposed development is consistent with the natural heritage provisions outlined in section 2.1 of the 2020 PPS.

6.5 The Hastings County Official Plan (Approved and modified by the Ministry of Municipal Affairs August 3, 2018)

The preceding sections discuss how the proposed land use change would comply with federal and provincial legislation and policy. Hastings County has policies that address how development will occur in relation to significant and general natural heritage and biophysical features.

Section IV – Sustainable Natural Environment & Resources

4.2.4 Fish Habitat

4.2.4.1 Fish habitat provides food, cover and conditions for successful reproduction and support of a species throughout its lifecycle. Lakes, rivers, streams, ponds, shoreline areas and many wetlands provide fish habitat. Intermittent and seasonally flooded areas can also provide important habitat for some fish species at certain times of the year. In addition, in-water structures such as logs, stumps and other woody debris, pools and riffle areas, riparian and aquatic vegetation and ground water recharge/discharge areas also provide habitat. Habitat includes the watercourses that act as corridors that allow fish to move from one area to another.

4.2.4.3 New development and/or site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements. New development and/or site alteration shall not be permitted on adjacent lands within 120 metres of fish habitat unless it has been determined in an approved Environmental Impact Statement (EIS) pursuant to Part A – Section 7.8.6 of this Plan that there will be no negative impacts on the natural features or its ecological functions.

Interpretation: RiverStone has completed an assessment of aquatic habitats adjacent to the subject property to determine the location and extent of fish habitat. No development is proposed within fish habitat. The recommendations provided in **Section 5** address potential negative impacts to fish habitat due to the proposed development.

4.2.4.4 A minimum 30 metres setback along watercourses to protect fish habitat shall be required to remain undisturbed and naturally vegetated.

Interpretation: The proposed development will occur within the 30 m setback. RiverStone has provided recommendations in **Section 5** to minimize negative impacts to Papineau Creek.

4.2.4.6 The policies of Part A – Section 5.4.5 apply to development and/or site alteration along Waterfront areas and are intended to ensure sensitive development adjacent to fish habitat in the County will not negatively impact on natural features or their ecological functions.

Interpretation: The recommendations in **Section 5** address potential negative impacts to fish habitat due to the proposed development.

4.2.5 Lakes Managed for Lake Trout

4.2.5.2 The County and Member Municipalities shall permit development to take place adjacent to lakes managed for lake trout and their associated streams only in a manner that has no adverse effects on habitat essential to the maintenance of a healthy lake trout fishery.

Interpretation: RiverStone considers the proposed development permissible and does not anticipate negative impacts if the recommendations within **Section 5** are adhered to.

4.2.5.4 Lakes Managed for Lake Trout denoted with the symbol ‘LTL-AC’ on Table A – 4.2 are considered to be at capacity and future development upon such lakes is generally prohibited except in accordance with the policies of this Plan.

Interpretation: Lake St. Peter is listed under Table A – 4.2 as a Lake Trout Lake at Capacity. Redevelopment of the subject property is in accordance with the policies of this Plan.

4.3.2 Habitat of Endangered and Threatened Species

4.3.2.1 New development and/or site alteration shall not be permitted in habitat of endangered or threatened species, except in accordance with provincial and federal requirements.

4.3.2.6 Where a proposed development is deemed to have the potential to be located within or adjacent to and/or impact upon a habitat of an endangered and/or threatened species, the owner/proponent may be required to retain a qualified person to undertake a site evaluation report in accordance with Part A – Section 7.8.8 of this Plan. Where potential habitat is identified, a more detailed Environmental Impact Statement (EIS) may be required in accordance with Part A – Section 7.8.6 of this Plan prior to obtaining any necessary planning approvals. The MNRF shall be consulted to approve delineations of habitat for endangered and threatened species. The results of the reports or studies shall be implemented as appropriate through such mechanisms as the zoning by-law, development agreement, site plan agreement and/or conditions of approval.

4.3.2.7 The removal of vegetation shall be minimized within habitat of endangered and threatened species. New development and/or site alteration will not be permitted within the habitats of endangered and threatened species unless it has been determined in an approved Environmental Impact Statement (EIS) and in consultation with the appropriate agencies that the development and/or site alteration can be accommodated in accordance with provincial and federal requirements.

Interpretation: RiverStone has completed this EIS, in part, to address the potential for endangered and threatened species and their habitat to be present on the subject property. The recommendations included in **Section 5.4** are intended to direct development away from areas of sensitive habitat and to mitigate potential impacts.

7.8.6 Environmental Impact Statement (EIS)

7.8.6.1 Development that takes place adjacent to environmentally sensitive lands may adversely affect its features or functions. Development that is proposed on adjacent lands shall be permitted provided a satisfactory completed Environmental Impact Statement is submitted demonstrating that there will be no negative impacts to the environmental feature or the ecological function for which the area is identified. The measures of adjacency found within Table A7.1 shall be used:

7.8.6.2 An Environmental Impact Statement (EIS) describes a proposed development or activity, and examines the possible, probable, or certain effects of that proposal on the environment. An EIS should be comprehensive in its treatment of the subject matter, objective in its approach and examine the potential environmental consequences of carrying out or not carrying out that proposal. An EIS should be constructive for interested members of the public and for Councils in arriving at an informed land use planning decision. An EIS should also explore possible alternatives to the project that might maximize the benefits while minimizing the adverse impacts.

7.8.6.3 Where required by the policies of this Plan or as required by the County, Member Municipality or other agency through the development review process, an Environmental Impact Statement (EIS) will be completed by a qualified person in the relevant environmental field of study, prior to the related department's approval and/or commencement.

7.8.6.4 An Environmental Impact Statement (EIS) will:

- a) Provide a description of the proposed development, site alteration or land use activity and its purpose, including site planning details, a general location map, proposed buildings, existing land uses and plans showing the existing vegetation, site topography, drainage, soils and fish and wildlife habitat areas;
- b) In consultation with the MNRF and/or the applicable conservation authority, map the precise location of the wetland area/boundary to be zoned EP or EP-W and identify all significant features/area within the area where development is proposed;
- c) Undertake an ecological site assessment providing information on the environmental quality, uniqueness and character of the site in question;
- d) Assess the potential direct and indirect impacts of proposed development to significant features/areas such as alterations to micro-climate or hydrological regimes, disconnections in natural corridors and linkages among natural heritage areas or features, and long-term discharges or withdrawals affecting air, water or soil;
- e) A review of alternative locations and forms of the proposed development including a recommendation of a preferred option;
- f) Demonstrate that there will be no negative impacts on the natural features or on their ecological functions, including no loss of wetland functions or contiguous wetland rea, no net loss of fish habitat by identifying any measures which mitigate or compensate for any possible negative impacts; and,
- g) Contributions towards advancement of the intent, goals and objectives of this Plan such as improvement or enhancements of the natural heritage resources and habitats, land conveyances to a public authority, collection, monitoring or sampling of data;
- h) Provide a thorough field inventory, mapping of species and features on site including identification of vegetation communities using the Ecological Land Classification (ELC) system, general location information regarding species at risk occurrences, life and earth science features, and complete lists of flora and fauna species and features that were observed on site;

- i) Identify if suitable habitat exists on the site for species at risk (those listed on the Species at Risk in Ontario list) known to occur in the area or observed on site;
- j) Describe the survey methods and level of effort undertaken including the dates, weather conditions and number of field visits/surveys and demonstrate that assessments were conducted using appropriate methodologies at the appropriate time of year;
- k) Review the ecological functions of the natural features on site and evaluate the significance of all predicted positive and negative impacts to the natural features and associated ecological functions; and
- l) Conclude with an independent professional opinion as to whether or not the net impacts of the development and/or site alteration after mitigation are negative, and whether the development proposal is consistent with the intent of the Provincial Policy Statement.

Interpretation: RiverStone submits this report in accordance with the above recommendations. Negative impacts to natural heritage features and functions are not anticipated if the recommendations within this report are adhered to.

6.6 Municipality of Hastings Highlands Bylaw 2004-035 Comprehensive Zoning Bylaw (Office Consolidation: September 2023)

5.9 Lands Adjacent to Waterbodies, Watercourses, Embankments, Floodplains and Environmentally Sensitive Lands

Notwithstanding anything in this By-law, no permit shall be issued for any building to be constructed within those areas outlined in subsections 5.9.1, 5.9.2 and 5.9.3 herein without the prior written approval of the Conservation Authority, the Ministry of Natural Resources and/or the Canadian Parks Service having jurisdiction.

5.9.2 Notwithstanding anything in this By-law, no development, site alteration or septic tank installation including the weeping tile field shall be located or occur:

- i. Within 30 metres (98.4 ft) of the high water mark of a waterbody or watercourse, notwithstanding that such waterbody or watercourse is not shown on any Schedule forming part of this By-law; and
- ii. Within 30 metres (98.4 ft) of the toe or top of shoreline or non-shoreline cliff, bluff, or bank that is a steep and/or unstable slope; and
- iii. Within 30 metres (98.4 ft) of an Environmental Protection Wetland Zone

Interpretation: The proposed development will occur within 30 m of the high water mark of a waterbody. Recommendations within **Section 5** of this report are intended to mitigate negative impacts due to development proximate to the high water mark.

5.9.3 Shoreline Activity and Waterfront Use

- iii. It is prohibited to alter or remove the natural vegetation within the 30 metre (98.4 ft) vegetative buffer to any shoreline of a waterbody or watercourse, except:

- a. 25% of the shoreline frontage or up to 23 metres (75 feet), whichever is the lesser, for linear shoreline residential development;
- e. For pruning necessary to maintain the health of vegetation and trees, the removal of diseased or dangerous trees, and removal of noxious weeds or invasive plants which have been identified and deemed as such by the Province of Ontario.

Interpretation: The existing 30 m setback is not naturally vegetated. **Section 5.3.3** of this report provides recommendations to revegetate this area and achieve compliance with Municipal policy.

5.9.4 Development that is proposed on lands adjacent to Environmentally Sensitive Lands shall be permitted provided that a satisfactorily completed Environmental Impact Statement, prepared in accordance with Section 7.8.6 of the Official Plan is submitted and approved by the Municipality in consultation with the Ministry of Northern Development, Mines, Natural Resources and Forestry, the Ministry of Environment, Conservation, and Parks, the Conservation Authority and/or other appropriate authority. The following measures of adjacency shall be used:

Habitat of endangered and threatened species 120 metres (393.7 ft)

Inland Lake Trout Lakes (at capacity) on the Canadian Shield 300 metres (984.2 ft)

Fish Habitat 120 metres (393.7 ft)

Interpretation: RiverStone has completed this EIS in accordance with the requirements within Section 7.8.6 of the County of Hastings Official Plan. RiverStone's definition of adjacent lands is consistent with the measures of adjacency above.

Section 10 – WR – Waterfront Residential Zone

10.3 Zone Regulations

c) Vegetative Buffer Adjacent to the Shoreline

- i. A natural vegetative buffer strip 30 metres (98.4 ft) in width shall be maintained

Interpretation: The existing 30 m setback is not naturally vegetated. **Section 5.3.3** of this report provides recommendations to revegetate this area and achieve compliance with Municipal policy.

This report has been submitted to address the various applicable natural heritage protection policies of the Municipality's OP. While not considered comprehensive/exhaustive, the list of policies above and associated interpretation is provided to support the approval authority in their review of the application for development.

7 CONCLUSIONS

This scoped EIS provides characterization of the natural environment occurring within and adjacent to the subject property and provides the details of the development plan. Potential negative impacts were assessed with recommendations for preventive, avoidance, and mitigation measures where appropriate.

Based upon the findings presented in this report, RiverStone has determined that the proposed application is consistent with the applicable policies and legislation, provided that the

recommendations contained in **Section 5** are implemented in full. We advise that the recommendations in this report be incorporated into the development agreements for the subject property.

8 REFERENCES

- 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, Ontario Nature, Toronto.
- COSEWIC.** 2018. COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.
- Environment and Climate Change Canada.** 2018. Recovery Strategy for the Spotted Turtle (*Clemmys guttata*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. ix + 61 pp.
- Environment and Climate Change Canada.** 2021. Recovery Strategy for the Red-headed Woodpecker (*Melanerpes erythrocephalus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. viii + 118 pp.
- Government of Ontario.** 2019. Lakeshore Capacity Assessment Handbook: Protecting Water Quality in Inland Lakes. Accessed December 1, 2023, at <https://www.ontario.ca/document/lakeshore-capacity-assessment-handbook-protecting-water-quality-inland-lakes>.
- Henson, B. L. and K. E. Brodribb.** 2005. Great lakes conservation blueprint for terrestrial biodiversity, volume 2: ecodistrict summaries. 344 pp.
- Humphrey, Christy and Heather Fotherby.** 2019. Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. vii + 35 pp. + Appendix. Adoption of the Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (*Myotis septentrionalis*), and the Tri-colored Bat (*Perimyotis subflavus*) in Canada (Environment and Climate Change Canada 2018).
- Ministry of the Environment, Conservation and Parks.** 2019. Recovery Strategy for the Blanding's Turtle (*Emydoidea blandingii*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. iv + 6 pp. + Appendix. Adoption of the Recovery Strategy for Blanding's Turtle (*Emydoidea blandingii*), Great Lakes/St. Lawrence population, in Canada (Environment and Climate Change Canada 2018).
- Ministry of the Environment, Conservation and Parks.** 2021. General Habitat Description for the Blanding's Turtle (*Emydoidea blandingii*). Government of Ontario.
- OMNR.** 2000. Significant wildlife habitat technical guide. Fish and Wildlife Branch (Wildlife Section) and Science Development and Transfer Branch, 151 pp. + 18 appendices.
- OMNR.** 2007. Regulatory Guidelines for Managing the Lake Trout Recreational Fishery in Ontario.

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OMNR. 2010. Natural heritage reference manual for natural heritage policies of the provincial policy statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

OMNRF. 2014. Significant Wildlife Habitat Mitigation Support Tool. Ontario Ministry of Natural Resources and Forestry. 533 pp.

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White, D. J. 2010. Recovery Strategy for Ogden's Pondweed (*Potamogeton ogdenii*) in Ontario. Ontario Recovery Strategy Series. Prepared for Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 14 pp.



Legend

Ontario Base Mapping (OBM)

- Roads
- 5 m Contours

Planning Boundaries

- Subject Property

Features with Natural Heritage Value - Identified by the Province

Wetland, Significance (OMNRF)

- Not evaluated per OWES

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
1:10,000	2023-268	Dec 14, 2023	JG

0 150 300 Metres

Figure 1. Location Of Subject Property
 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings


Prepared for: Vanessa Archer

Inset: General Location Of Subject Property

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey





Legend

Ontario Base Mapping (OBM)

- Roads

Planning Boundaries

- Subject Property

Biophysical Features+Functions-RiverStone

Ecological Communities

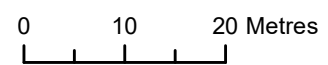
- ANTH_G - Anthropogenic – Gravel
- ANTH_L - Anthropogenic – Lawn
- ANTH_R - Anthropogenic – Revegetated
- G052Tt - Dry to Fresh, Coarse: Spruce-Fir Conifer
- G134S - Mineral Thicket Swamp

Features with Natural Heritage Value - Identified by RiverStone

- Woodpecker Nest
- Shoreline
- Papineau Creek
- Type 1 Fish Habitat
- Wetland

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
1:750	2023-268	Feb 26, 2024	JG




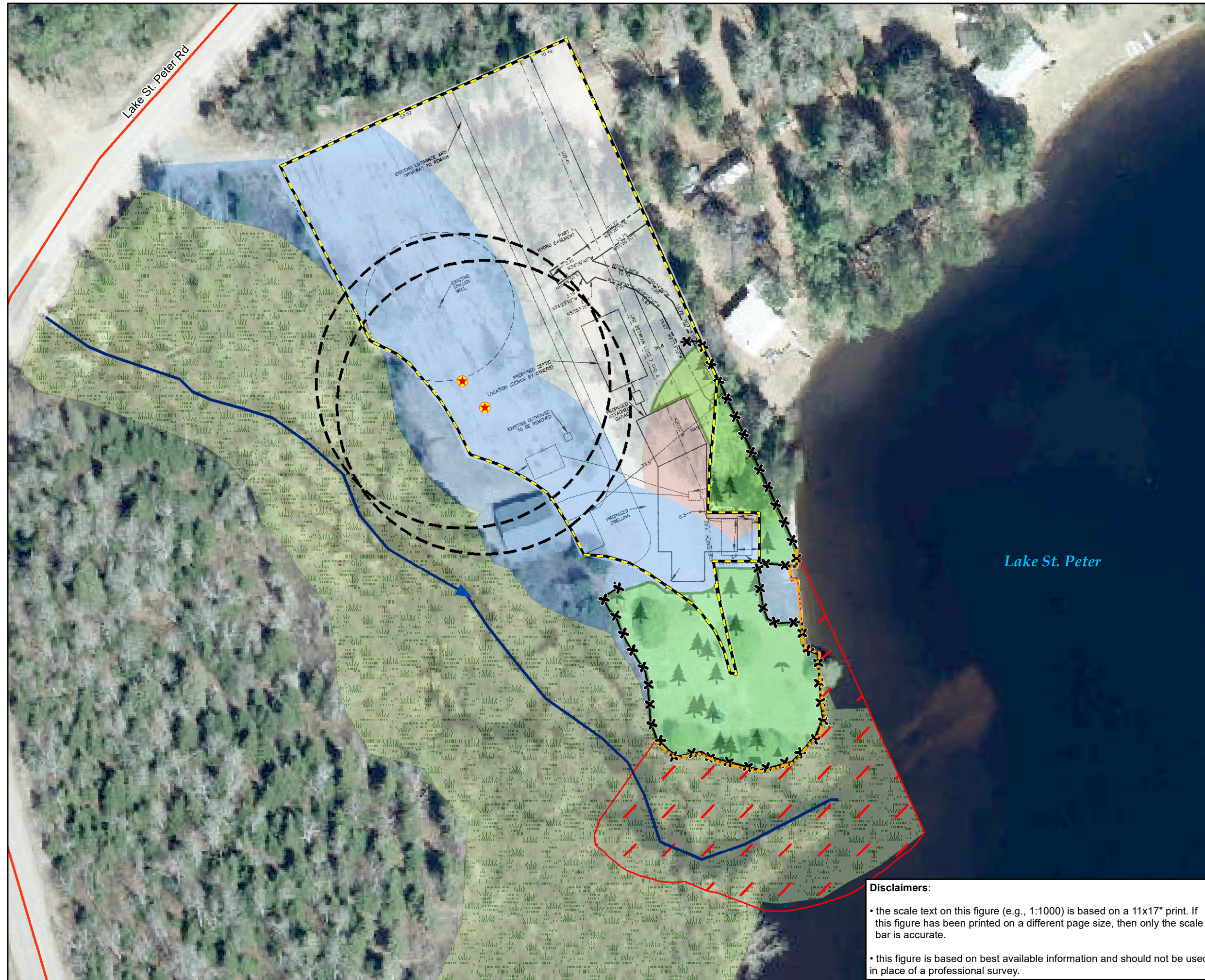


Figure 2. Existing Conditions
 192 Lake St. Peter Road, Municipality of Hastings
 Highlands, County of Hastings

Prepared for: Vanessa Archer

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey



Legend

Ontario Base Mapping (OBM)

— Roads

Planning Boundaries

▭ Subject Property

Features with Natural Heritage Value - Identified by RiverStone

★ Woodpecker Nest

— Shoreline

▶ Papineau Creek

▭ Type 1 Fish Habitat

▭ Wetland

Development Setbacks Required by Municipality

▭ 30 m Wetland Setback (5.9.2 Municipality of Hastings Highlands Comprehensive Zoning Bylaw 2004-035 (Consolidated))

▭ 30 m Fish Habitat Setback (4.2.4.4 Hastings County Official Plan, December 2017)

Measures Recommended by RiverStone to Prevent and/or Reduce Impacts

✕✕ Erosion And Sediment Control Fencing

▭ Revegetation Area

▭ 30 m Tree Retention Buffer

Proposed Development and Site Alteration

Site Plan Provided by Client:
 TD Consulting Inc.
 Proposed Site Plan
 Project No: 023-884
 Drawing No: SP-1
 Date: September 2023

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
1:750	2023-268	Feb 26, 2024	JG

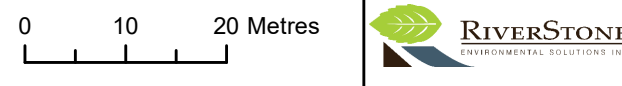


Figure 3. Proposed Development And Recommendations
 192 Lake St. Peter Road, Municipality of Hastings Highlands, County of Hastings

Prepared for: Vanessa Archer

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- this figure is based on best available information and should not be used in place of a professional survey.

Appendix 1. Select Photos from Site Visit





Photo 1. G052TT Dry to Fresh, Coarse: Spruce – Fir Conifer typical of the subject property (November 15, 2023).



Photo 2. G134S Mineral Thicket Swamp typical of the subject property and adjacent lands (November 15, 2023).



Photo 3. The existing garage and adjacent Papineau Creek wetland (November 15, 2023).



Photo 4. Area of proposed septic bed (November 15, 2023).



Photo 5. Current development on the subject property (November 15, 2023).



Photo 6. Location of proposed cottage redevelopment (November 15, 2023).



Photo 7. Woodpecker nest cavity on the subject property (November 15, 2023).



Photo 8. Outlet of Papineau Creek into Lake St. Peter adjacent to the subject property frontage (November 15, 2023).



Photo 9. Fish habitat fronting the subject property (November 15, 2023).



Photo 10. Shoreline of the subject property (November 15, 2023).

Appendix 2. Assessment of Habitat of Endangered and Threatened Species



Species	ESA Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the study area.	Is suitable habitat present within the study area.	Is suitable habitat present within lands adjacent to the study area.	Discussion of relevance to proposal
American Ginseng (<i>Panax quinquefolius</i>)	END	American Ginseng requires well-drained but moist acidic to neutral soils overlying limestone or marble bedrock. They are obligate understory plants found in undisturbed mature deciduous and mixed forests, and occasionally in coniferous forests and swamps.	YES	NO	NO	NO	The subject property does not contain undisturbed deciduous forests or calcareous soils. No further assessment is provided.
Bank Swallow (<i>Riparia riparia</i>)	THR	The Bank Swallow is a small aerial insectivore bird that nests colonially in burrows they excavate within banks. Colonies will nest in bluffs, riverbanks, aggregate pits, roadside embankments, and topsoil piles near open habitat that provides a steady source of insects. Colony sites must also be near roosting areas in wetland, reed, or cane beds.	YES	NO	NO	UNKNOWN	The subject property does not contain the exposed banks required by Bank Swallows. No further assessment is provided.
Black Ash (<i>Fraxinus nigra</i>)	END	The Black Ash grows everywhere in Ontario except the Far North. These trees require moisture, and are commonly found in northern swampy woodlands, from eastern Manitoba, throughout Ontario, and as far east as Newfoundland.	YES	YES, NHIC and iNaturalist Records	YES	YES	Although appropriate habitat is present on and adjacent to the subject property Black Ash were not observed during RiverStone's site assessment. No further assessment is provided.
Blanding's Turtle (<i>Emydoidea blandingii</i>)	THR	Blanding's Turtle are semi-aquatic and use wetland habitats with shallow water and abundant vegetation. Their habitat includes a broad range of wetlands, forest clearings, and meadows. They breed in aquatic habitat and nest in open natural and anthropogenic upland areas.	YES	NO	YES	YES	The subject property and adjacent lands contain wetland habitat and adjacent upland habitat that is appropriate for Blanding's Turtles. Further discussion is provided in the report.
Bobolink (<i>Dolichonyx oryzivorus</i>)	THR	Nests and forages in meadows, grasslands, hayfields, and pastureland. Fields must have 25% or less woody plant cover. They typically require large fields (>4ha) and avoid small, fragmented habitats. They also avoid habitat within 75 m of a forest edge.	YES	NO	NO	NO	The subject property and adjacent lands do not contain grassland habitat required by Bobolink. No further assessment is provided.
Butternut (<i>Juglans cinerea</i>)	END	Butternut is shade intolerant and grows in rich, moist, well-drained loams often along streambanks. Butternut is also found in well-drained gravel sites. It is often found at forest edges where it can access abundant sunlight.	YES	NO	NO	NO	The subject property does not contain appropriate soils for Butternut. This species was also not observed during RiverStone's site assessment. No further assessment is provided.
Chimney Swift (<i>Chaetura pelagica</i>)	THR	The Chimney Swift historically nested and roosted in large hollow trees, rock walls, and other vertical surfaces. They now use human-made structures like uncapped chimneys and have high site fidelity to nesting chimneys. 95% of nests are within 1 km of a waterbody.	YES	YES, OBBA	NO	NO	The subject property and adjacent lands do not contain chimneys appropriate for use by Chimney Swifts. No further assessment is provided.
Eastern Hog-nosed Snake (<i>Heterodon platirhinos</i>)	THR	Eastern Hog-nosed snakes require a mosaic of habitats with sandy, well-drained soil and open vegetation close to water with a supply of American Toads. Their Ontario distribution is limited by climate and soil to the French River/Lake Nipissing and Carolinian areas.	YES	NO	NO	NO	The subject property does not provide open vegetation close to water or other habitats used by Eastern Hog-nosed Snakes. No further assessment is provided.

¹Highlighted species are present on or are likely to be present on the subject property.

Species	ESA Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the study area.	Is suitable habitat present within the study area.	Is suitable habitat present within lands adjacent to the study area.	Discussion of relevance to proposal
Eastern Meadowlark (<i>Sturnella magna</i>)	THR	Nests and forages in meadows, grasslands, shrubby fields, hayfields and pastureland. Prefers habitat with >80% grass cover. Needs a minimum of 5 ha of continuous habitat.	YES	NO	NO	NO	The subject property and adjacent lands do not contain grassland habitat required by Eastern Meadowlark. No further assessment is provided.
Eastern Prairie White-fringed Orchid (<i>Platanthera leucophaea</i>)	END	The Eastern Prairie Fringed Orchid grows in open fens and wet prairies within southern Ontario. They require high sun exposure as well as high moisture. Populations are sparse, with most locations well documented.	YES	NO	NO	NO	The subject property and adjacent lands do not contain open fen or wet prairie habitat. No further assessment is provided.
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	END	Eastern Small-footed Myotis overwinter in caves and mines in Ontario and do not disperse far from their hibernacula during the summer. They can be found roosting in rocky habitats singly or in groups but will also use human structures as day roosts. They are aerial insectivores and forage in forests, rocky habitats, and ponds.	YES	NO	NO	NO	The subject property and adjacent lands do not contain rocky habitats required by Eastern Small-footed Myotis. No further assessment is provided.
Eastern Whip-poor-will (<i>Antrostomus vociferus</i>)	THR	The Eastern Whip-poor-will forages in open natural and anthropogenic habitats and nests in semi open forests and forest edges with well-drained soils and moderate vegetation cover. Habitat immediately at the nest will be a short herbaceous plant, shrub, or sapling providing cover and shade with nearby perches for adults.	YES	NO	NO	NO	The subject property and adjacent lands do not contain open habitat appropriate for Eastern Whip-poor-will. No further assessment is provided.
Least Bittern (<i>Ixobrychus exilis</i>)	THR	Breeds in large marshes within Southern Ontario. Creates nest platforms from tall, dense emergent vegetation within 10m of water and prefers Typha spp. Will use other emergent vegetation. Needs 200 ha of wetland for nesting and foraging but does not need to be continuous wetland. Prefers complexes of smaller wetlands. Will avoid marshes surrounded by >30% forest cover or containing large trees.	YES	NO	NO	NO	The large marshes required by this species are not present on the subject property or in the surrounding landscape. No further assessment is provided.
Lesser Yellowlegs (<i>Tringa flavipes</i>)	THR	Lesser Yellowlegs migrate through southern Ontario, stopping in wetlands, flooded fields, river and lake shorelines, and sewage lagoons. They prefer marshes dominated by Softstem Bulrush and Smooth Cordgrass. During migration they form flocks ranging from a few dozen to several thousand birds. They may form mixed flocks with Greater Yellowlegs and Solitary Sandpiper.	YES	NO	NO	NO	Although the subject property and adjacent lands contain shoreline habitat, marsh habitat is not present. No further assessment is provided.
Little Brown Myotis (<i>Myotis lucifugus</i>)	END	Their hibernacula are within caves and abandoned mines, wells, and tunnels. Maternity colonies are within a few kilometers of hibernacula within snag trees, rock crevices, exfoliating tree bark, and anthropogenic structures. Roosts and swarming sites are in similar areas around the hibernacula.	YES	NO	YES	YES	The subject property and adjacent lands contain mature trees appropriate for roosting by Little Brown Myotis. Further assessment is provided in the report.

¹Highlighted species are present on or are likely to be present on the subject property.

Species	ESA Status	General Description of Habitat and Range	Is the study area within the current known range of the species.	Do applicable databases contain records for this species within or adjacent to the study area.	Is suitable habitat present within the study area.	Is suitable habitat present within lands adjacent to the study area.	Discussion of relevance to proposal
Northern Myotis/Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	END	Northern Myotis are found below the tree line in Canada and are mostly absent from the prairies. They use live and dead trees near water in forest habitats when active and migrate to caves and abandoned mines for hibernation.	YES	NO	YES	YES	The subject property and adjacent lands contain mature trees appropriate for roosting by Northern Myotis. Further assessment is provided in the report.
Ogden's Pondweed (<i>Potamogeton ogdenii</i>)	END	Ogden's Pondweed is an annual, submerged aquatic plant with threadlike rigid stems and no rhizome. They are found only in Hastings County in Ontario. They grow in clear, slow moving water within streams, beaver ponds, and lakes. They prefer alkaline water.	YES	YES, NHIC	YES	YES	The subject property and adjacent lands contain clear, slow-moving water habitat required by Ogden's Pondweed. Further assessment is provided in the report.
Red-Headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	END	The Red-headed Woodpecker lives in open woodland and woodland edges and is often found in parks, golf courses and cemeteries. These areas typically have many dead trees, that the bird uses for nesting and perching. The Red-headed Woodpecker is found across southern Ontario, where it is widespread but rare.	YES	NO	YES	YES	The regenerating woodland within the subject property is currently an open woodland that may provide appropriate habitat for Red-headed Woodpecker. Further assessment is provided in the report.
Small White Lady's-slipper (<i>Cypripedium candidum</i>)	END	Small White Lady's-slipper is found in Hastings County and on Walpole Island First Nation. They grow on moist, imperfectly drained, calcareous sandy loam to loam soils in remnant prairie or savannah, or in fens. They require periodic fire or grazing disturbance.	YES	NO	NO	NO	The subject property and adjacent lands do not contain calcareous soils or fens. No further assessment is provided.
Spotted Turtle (<i>Clemmys guttata</i>)	END	The Spotted Turtle uses a mix of terrestrial and aquatic habitats. Aquatic habitats include wetlands, ponds, vernal pools, creeks, streams, sheltered bay edges, stormwater ponds, and man-made channels. Their terrestrial habitats are shorelines, rocky outcrops, upland forests, open fields, and meadows.	YES	NO	YES	YES	The subject property and adjacent lands contain wetland and watercourse habitat appropriate for Spotted Turtle. Further assessment is provided in the report.
Suckley's Cuckoo Bumble Bee (<i>Bombus suckleyi</i>)	END	Suckley's Cuckoo Bumble Bee is a nest parasite of the Western Bumble Bee and Yellow-banded Bumble Bee. It is mainly a western species but has occasional records throughout Ontario. They are habitat generalists found in most areas Ontario, and generalist nectar foragers. The bees they parasitize tend to build nests in abandoned rodent burrows.	YES	NO	NO	NO	The subject property does not contain rodent burrows used by the host species of the Suckley's Cuckoo Bumble Bee. No further assessment is provided.
Tricolored Bat (<i>Perimyotis subflavus</i>)	END	The Tri-colored Bat have a scattered distribution and are found as far north as Sudbury. They are found in a variety of forested habitats They overwinter alone in caves and mines and roost in dead vegetation clumps and lichen in forested habitats near water.	YES	NO	YES	YES	The subject property and adjacent lands contain mature trees appropriate for roosting by Tricolored Bat. Further assessment is provided in the report.

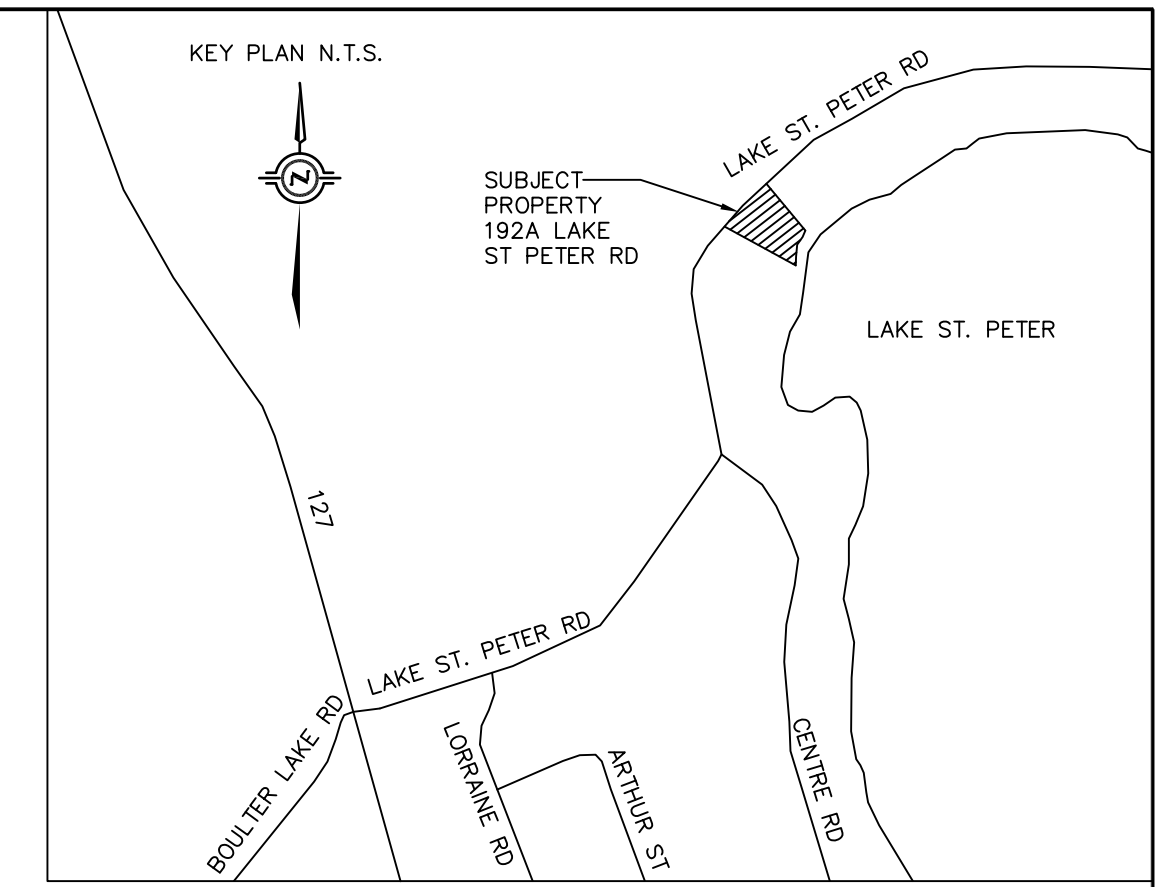
¹Highlighted species are present on or are likely to be present on the subject property.

Appendix 3. Site Plan





Partially outside property boundary?

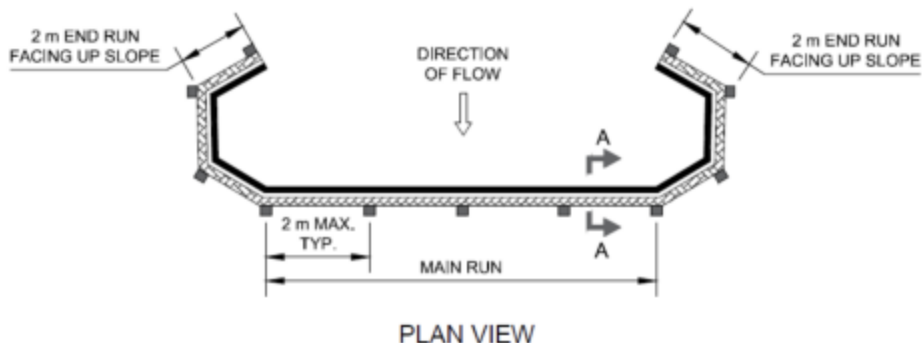
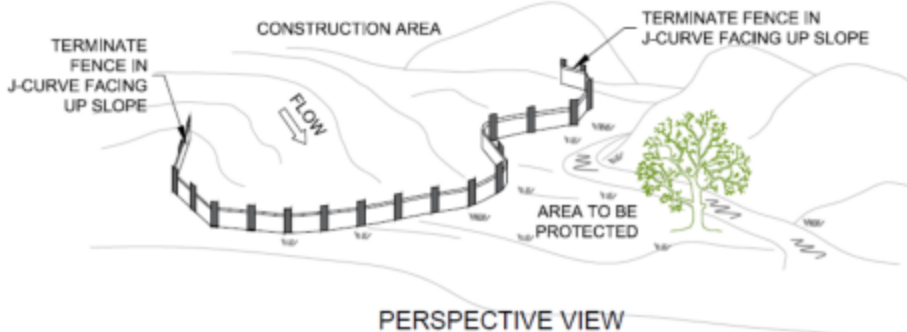


SITE STATISTICS			
CURRENT ZONING: WATERFRONT RESIDENTIAL			
	PERMITTED	EXISTING	PROPOSED
MIN. LOT AREA	4000m ²	5427.86m ²	5427.86m ²
MIN ROAD FRONTAGE	46.0m	64.01m	64.01m
MIN. WATER FRONTAGE	46.0m	60.89m±	60.89m±
MIN. WATER SETBACK	30.0m	11.4m±	14.4m±
MIN. FRONT YARD	20.0m	102.5m	76.8m
MIN. REAR YARD	30.0m	1.5m	0.2m
MIN. INT. SIDE YARD	3.0m	1.2m/1.2m	1.3m/1.2m
MIN. GROSS FLOOR AREA	74.3m ²	46.0m ²	391.73m ²
MAX. LOT COVERAGE	30%	2.2%	7.2%
MAX. HEIGHT	11.0m	4.0m±	7.0m±

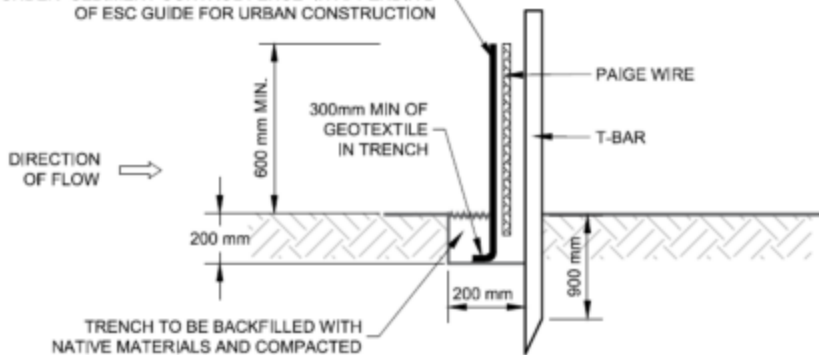
№:	DATE	DESCRIPTION	BY
REVISIONS			
PROJECT TITLE:			
192A LAKE ST. PETER ROAD PART OF LOTS 7 & 8 CONCESSION 7, PL21R6089 TOWNSHIP OF MCLURE, COUNTY OF HASTINGS			
DRAWING TITLE:			
PROPOSED SITE PLAN			
			
<small>155 St David St Lindsay, Ontario K9V 4Z6</small>			
DRAWN BY: VA		PROJECT Nº:	
DESIGNED BY: TD		023-884	
APPROVED BY: TD		DRAWING Nº:	
DATE: SEPT 2023		SCALE: 1:200	
SP-1			

Appendix 4. TRCA Sediment and Erosion Control Fencing





NON-WOVEN GEOTEXTILE FABRIC AS PER SPECIFICATIONS LISTED UNDER "SEDIMENT CONTROL FENCE" IN APPENDIX B OF ESC GUIDE FOR URBAN CONSTRUCTION



NOTE: THIS DETAIL REPRESENTS AN IDEAL SCENARIO. SITE CONDITIONS VARY AND EROSION AND SEDIMENT CONTROL MEASURES SHOULD BE TAILORED FOR EACH SITE AND PROJECT

	TRCA ESC DESIGN DETAIL	SCALE N.T.S.	REV 1	DATE MARCH 2019
	DRAWING TITLE SEDIMENT FENCE (UNFROZEN CONDITIONS)			DWG NO 03

DISCLAIMER: TORONTO AND REGION CONSERVATION AUTHORITY (TRCA) IS NOT LIABLE FOR INFORMATION SHOWN ON THIS DRAWING. PLEASE USE IT FOR REFERENCE ONLY

Figure B2-3a: Design detail for sediment control fence (unfrozen conditions).

Appendix 5. Site Preparation and Planting Guide



SITE PREPARATION AND PLANTING GUIDE

There are several steps you can take to successfully implement your re-vegetation plan and ensure that your plants are ecologically functional. The following information will guide you through good site preparation, selection of healthy plants, and proper planting techniques to increase the chance of successful establishment of your new plants.

Soil Improvement and Selection

Where a structure or vegetation has been removed from the property, new soil must be brought in for planting. A clay-loam soil is preferred to triple mix along shorelines as it has less nutrients and less risk of contaminating a neighboring water body. Imported topsoil should be locally sourced to avoid importing noxious weeds. Large garden and aggregate centers can often supply soils in bulk and delivery may be available to your site. When bringing new soil into a planting area, it is best to dump it on the new site, rake it out slightly above the preferred grade level, and let it settle for 1-3 days. Do not let exposed soils sit for more than a week as you increase the chance of recruiting weeds. If working with native soils, remove grass and other non-native vegetation from the re-vegetation area. Most plant roots grow horizontally over a distance 2-3 times the width of the root ball. As such, it is important to amend the soil adjacent to a planting site as well, if required.

Plant Selection

Look for species that have full, healthy foliage with no obvious signs of pest damage or disease when choosing plants for your project. For container stock, carefully remove the container and check to make sure that the roots appear full and healthy. The roots should not be entwined in the bottom of the container; this is a sign that the plant is “root bound” and it will be very difficult to get the plant to establish in the ground. Containerized plants are preferred to burlap wrapped or bare roots trees. You will often have a higher rate of establishment and faster growth. At times, transplanting trees and shrubs from natural areas or areas that are going to be destroyed may be an appropriate source for plant material. Plants should never be removed from the riparian area of a lake or stream and should only be from private land on which there is consent. Deciduous trees and shrubs should be transplanted in the early spring before the leaves come out, or in the fall after leaves have dropped. Transplanting of conifers should be limited to the spring. Trees and shrubs no larger than 60 cm in height should be selected, as larger, more established trees often do not transplant well. Extra care should be taken when digging trees to ensure the entire root ball and native soil is retained. Herbaceous material may be transplanted as well, but do not transplant while plants are in flower and they must be planted in similar conditions to what they were growing in.

Timing

Fall and spring are the best times of year to install new plants as soil temperatures are cool and there are often regular rains to water new plants. Environmental timing restrictions for your project may restrict plant installation to a less desirable period, such as midsummer. Plants installed during midsummer will need to be watered more regularly.

Table 1. When to plant new stock

Vegetation Type	Material Type	Time of Year (April to November)							
		April	May	June*	July*	August*	September	October	November
Trees & Shrubs	Bareroot		■	■					
	Potted or Burlap		■	■	■	■	■	■	■
Seed	Dormant Wildflower Seed		■	■	■				
	Dormant Native Grass Seed							■	■
Herbaceous Plants	Seedling Plugs		■	■	■		■	■	■
	Potted Mature Plants		■	■	■	■	■	■	■

*Caution should be used when planting during high summer temperature months due to extra watering requirements.

Table adapted from *Conservation Halton Landscaping and Tree Preservation Guidelines (April 2010)*

Planting Techniques

Container stock can be planted at any time throughout the growing season; however, if it is planted during the summer months, extra watering will be required. The following planting instructions are applicable to trees, shrubs, and perennials.

Remove the soil in the planting area to create a hole that is twice as wide and at least as deep as the root ball of the plant. If the native topsoil has been removed from the area or if the planting site has been filled with subsoil material such as sand or fill, amend the area with at least 30 cm of clay-loam soil or local topsoil.

When working with container plants invert the container and hold the stem of the plant with one hand and gently pull the lip of the container. You may need to tap the sides of the container with a shovel to free it from the root ball. For larger containers, cut the container on two sides from the lip to the bottom and trim broken or circling roots from the base of plant. When working with balled or bur lapped trees and shrubs, cut the top string and roll the burlap halfway down the root ball. If the root ball has a wire basket, fold or cut the wire loops so that the remaining wire will be below ground level. It is not necessary to remove the entire wire basket.

Fill the bottom half of the hole with your soil. Position the plant so that the top of its root ball is at or slightly above grade. If the surrounding soils offer poor drainage, it is important to keep the top of the root ball above grade. Bury half of the root ball with planting mix and add a handful of bonemeal for average size plants in 2 gallon pots. Water the hole and let the soil settle before finishing to backfill the root ball. Create a deep basin of soil around the plant to encourage water retention. Water the area heavily but slowly on planting day to charge the soil and allow for settling prior to mulching.

Mulching and Weed Control

The use of organic mulch will enhance the health of your project area by retaining water, reducing evaporation, and limiting irrigation requirements. Mulch also supports a variety of beneficial insects and soil organisms that control pests and disease and allow for better nutrient and water uptake. Most weeds are pioneer species in bare

soil and the use of mulch can greatly reduce weed seed germination. It is standard practice to apply a 4-7 cm layer of bark mulch around the base of the plant. Be sure to keep mulch away from the stem to prevent decay and rodent damage. Composted pine mulch is preferred over a cedar or coloured mulch. In areas where weeds are a bigger concern, lay overlapping sheets of cardboard or newspaper around the base of the plant and soak them with water prior to applying the mulch layer. This technique, commonly referred to as “sheet mulching”, prevents existing weed seeds and roots from sprouting. The paper fiber will break down in a year or so, adding humus to the soil. Imported topsoil can sometimes have a “seed bank” of non-native grasses and herbs. When a garden is first established it may have a flush of weeds in the first growing season. Hand weeding in the first and second year before weeds go to seed, will increase the success of your plant material and reduce maintenance in the future.

Tree Planting Diagram

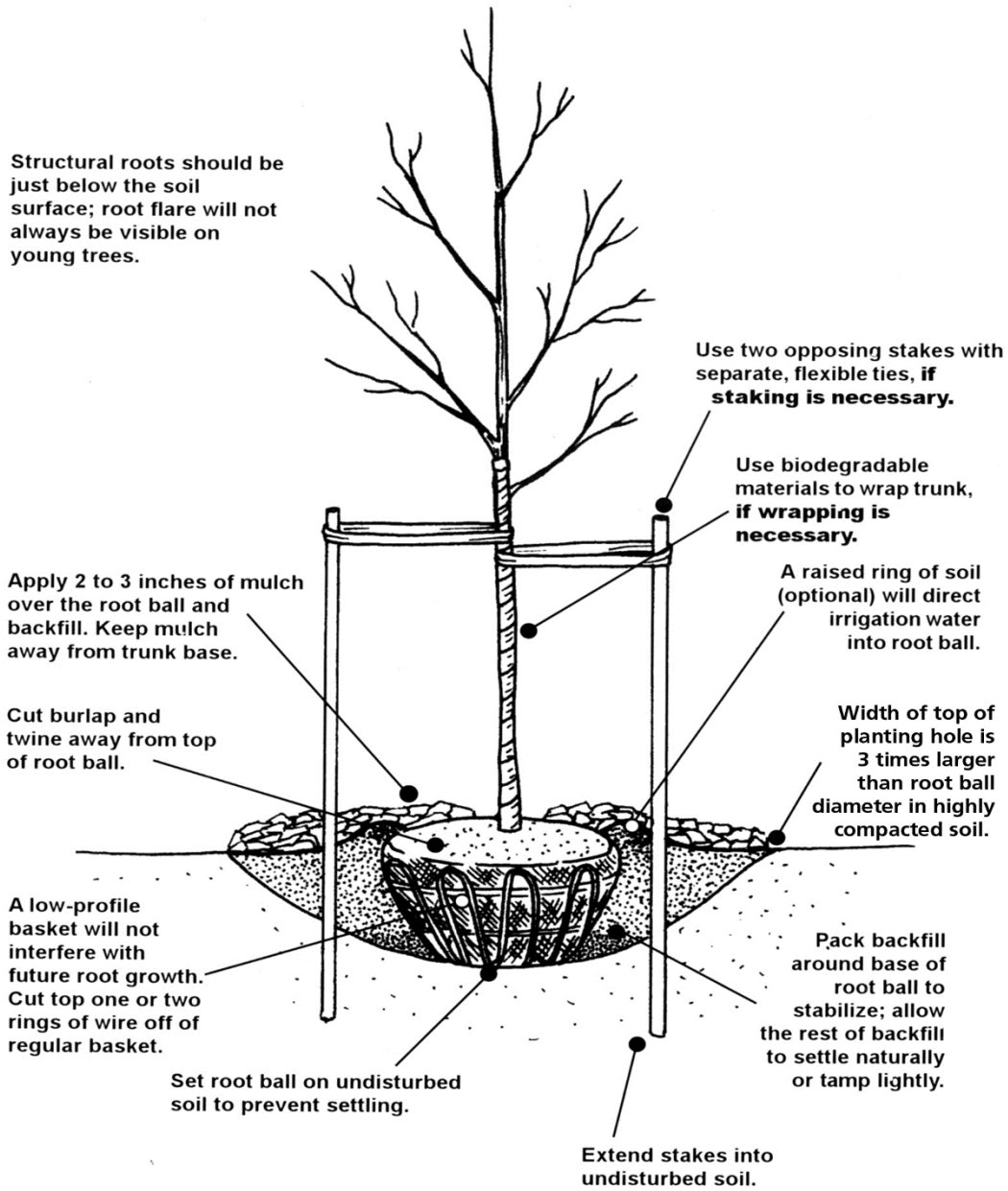


Figure 1. Diagram for planting container or burlap wrapped trees and shrubs. Source (http://chicagorainharvesting.files.wordpress.com/2011/05/trees_mortonarbdiagram.jpg)

Watering

The most important plant care activity throughout the first growing season is regular watering. Even the most drought tolerant plants can die during extended dry periods if the roots are not established. During the first summer, water plants at least once weekly under normal weather conditions. More frequent watering may be required during very hot seasons; depending on the soil type and exposure of your site you may need to water thoroughly every 3-4 days. To verify whether your soil needs watering, pull back some of the mulch in the planting area and assess the topsoil; if the topsoil is dry, watering is required. Ensure that water is filtering down into the soil and that it is reaching to the roots. Regular watering during the first growing season encourages deep root growth. When plants are deeply rooted, they are better able to draw moisture from the soil in times of drought.

Protection

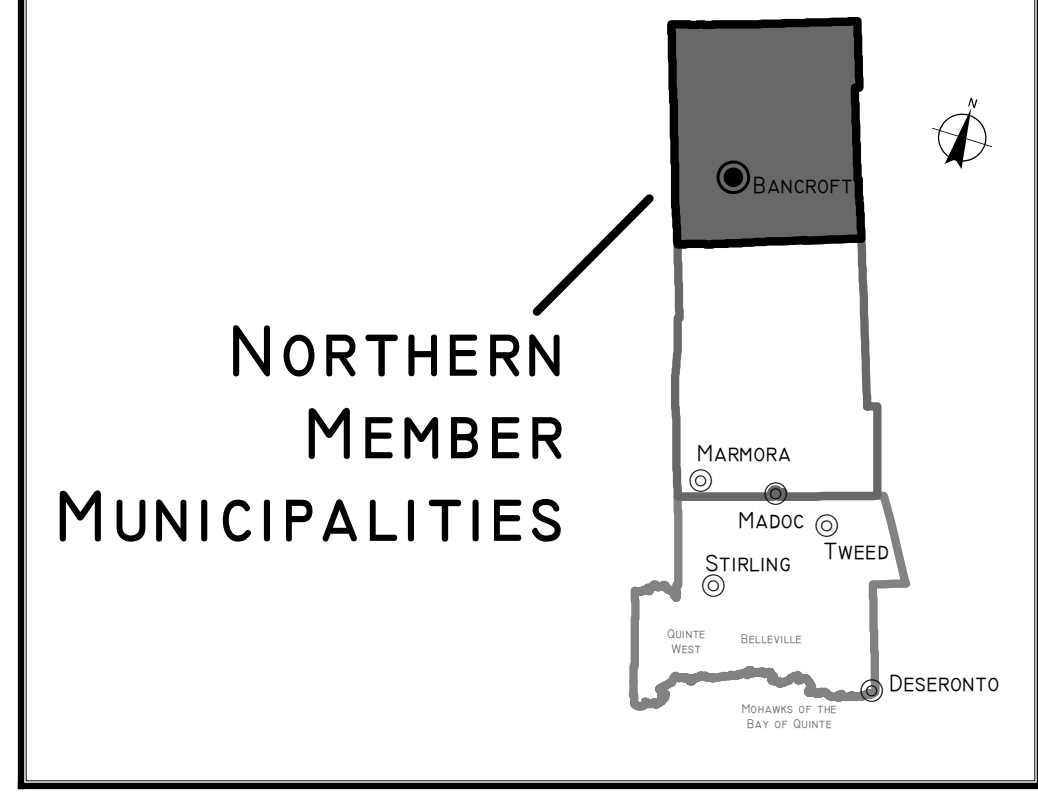
In some areas, you may need to protect trees and shrubs from rodent and/or beaver damage. In the winter, rodents can severely damage young trees and shrubs by chewing the bark at the base the plant. A plastic mesh tube buried to a depth of 3-5 cm will generally help reduce this type of damage. For beaver protection, pound stakes into the ground outside of the root zone and fence the area off with chicken wire to a height of at least 1 m. Deer will also browse on young trees and shrubs, making it very difficult to provide protection. In the winter months, young conifer species can be wrapped with burlap until they exceed typical browsing height. It is very difficult to exclude deer during the summer months; therefore, the best protection is to use plant species that the deer do not favor. Talk to your consultant or a local supplier about deer resistant plant species.

Appendix 6. Relevant Schedules



HASTINGS COUNTY OFFICIAL PLAN

LAND USE DESIGNATIONS OP-A SCHEDULE



THIS IS TO CERTIFY THAT THIS MAP WAS ADOPTED AS OFFICIAL PLAN SCHEDULE OP-A OF THE COUNTY OF HASTINGS OFFICIAL PLAN 2017-0030. PLOT DATE: 12/18/2017 SIGNING DATE: 12/19/2017

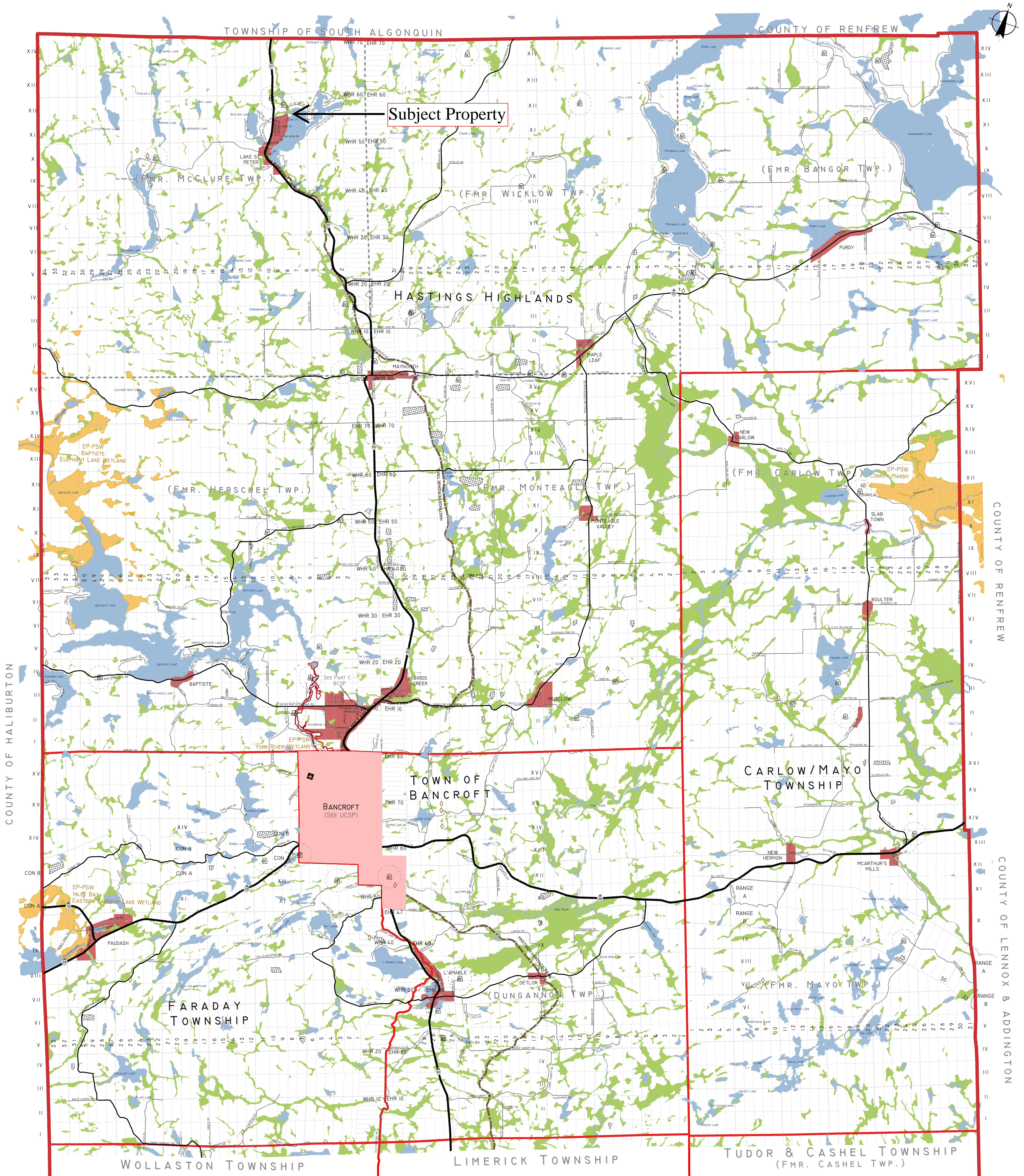
JIM DUFFIN, C.A.O.-CLERK OF HASTINGS COUNTY
RODNEY COONEY, WARDEN OF HASTINGS COUNTY

THIS SCHEDULE FORMS A PART OF THE COUNTY OF HASTINGS OFFICIAL PLAN AND MUST BE READ IN CONJUNCTION WITH THE WRITTEN TEXT. VISIT WWW.HASTINGSCOUNTY.COM FOR THE FULL OFFICIAL PLAN. PLEASE REFER TO SECONDARY PLAN SCHEDULES FOR DETAILED MAPPING OF URBAN AREAS. SOME SPECIAL POLICY AREAS MAY ALSO HAVE DETAILED MAPS WITHIN THE TEXT.

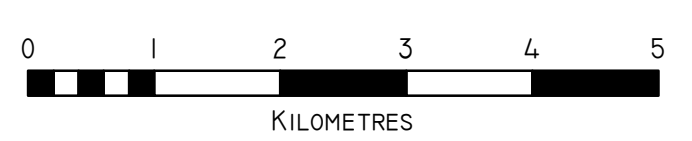
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June 22, 2018

- LAND USE DESIGNATIONS**
- PRIME AGRICULTURE
 - RURAL/WATERFRONT
 - ENVIRONMENTAL PROTECTION
 - ENVIRONMENTAL PROTECTION - PROVINCIALY SIGNIFICANT WETLAND
 - EXTRACTIVE (LARGE SITE)
 - EXTRACTIVE (SMALL SITE)
 - URBAN
 - HAMLET
 - WATERBODY
 - WELLHEAD PROTECTION AREA
 - INTAKE PROTECTION ZONE
 - ISSUES CONTRIBUTING AREA
 - WELL HEAD PROTECTION AREA - E
 - WASTE MANAGEMENT
 - SITE SPECIFIC POLICY AREA (LARGE SITE)
 - SITE SPECIFIC POLICY AREA (SMALL SITE)
 - ENGINEERED FLOODLINE
- GEOGRAPHIC FEATURES**
- NON OFFICIAL PLAN AREA
 - LOT & CONCESSION LINE
 - GEOGRAPHIC TOWNSHIP BOUNDARY
 - MUNICIPAL BOUNDARY
 - COUNTY BOUNDARY
- INFRASTRUCTURE**
- HIGHWAY (PROV. & FMR. PROVINCIAL)
 - COLLECTOR ROAD (FORMER COUNTY)
 - MUNICIPAL ROAD
 - RAILWAY
 - HASTINGS HERITAGE TRAIL
 - TRANSCANADA TRAIL
 - AIRFIELD

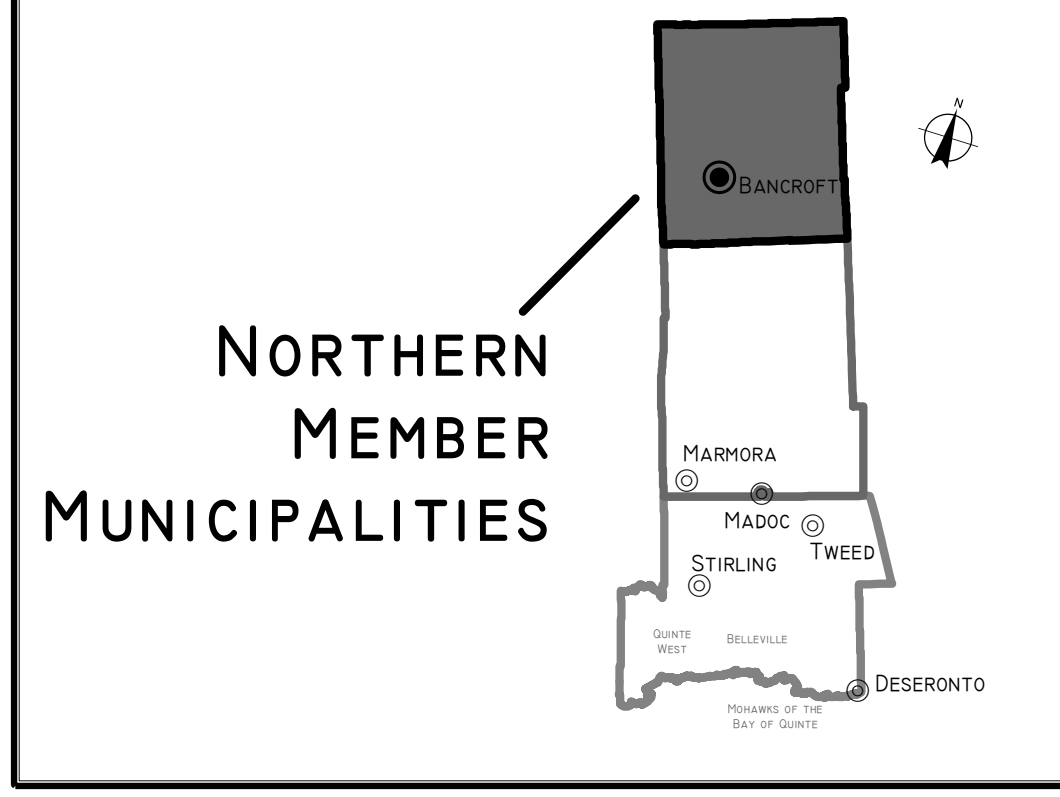


SEE CENTRAL "OP-A" SCHEDULE



HASTINGS COUNTY OFFICIAL PLAN

NATURAL HERITAGE FEATURES & AREAS OP-B SCHEDULE



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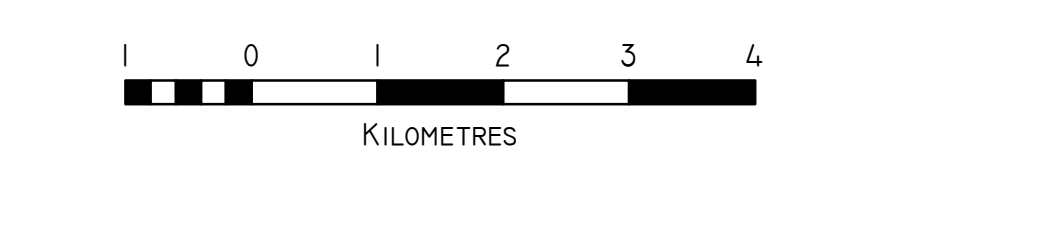
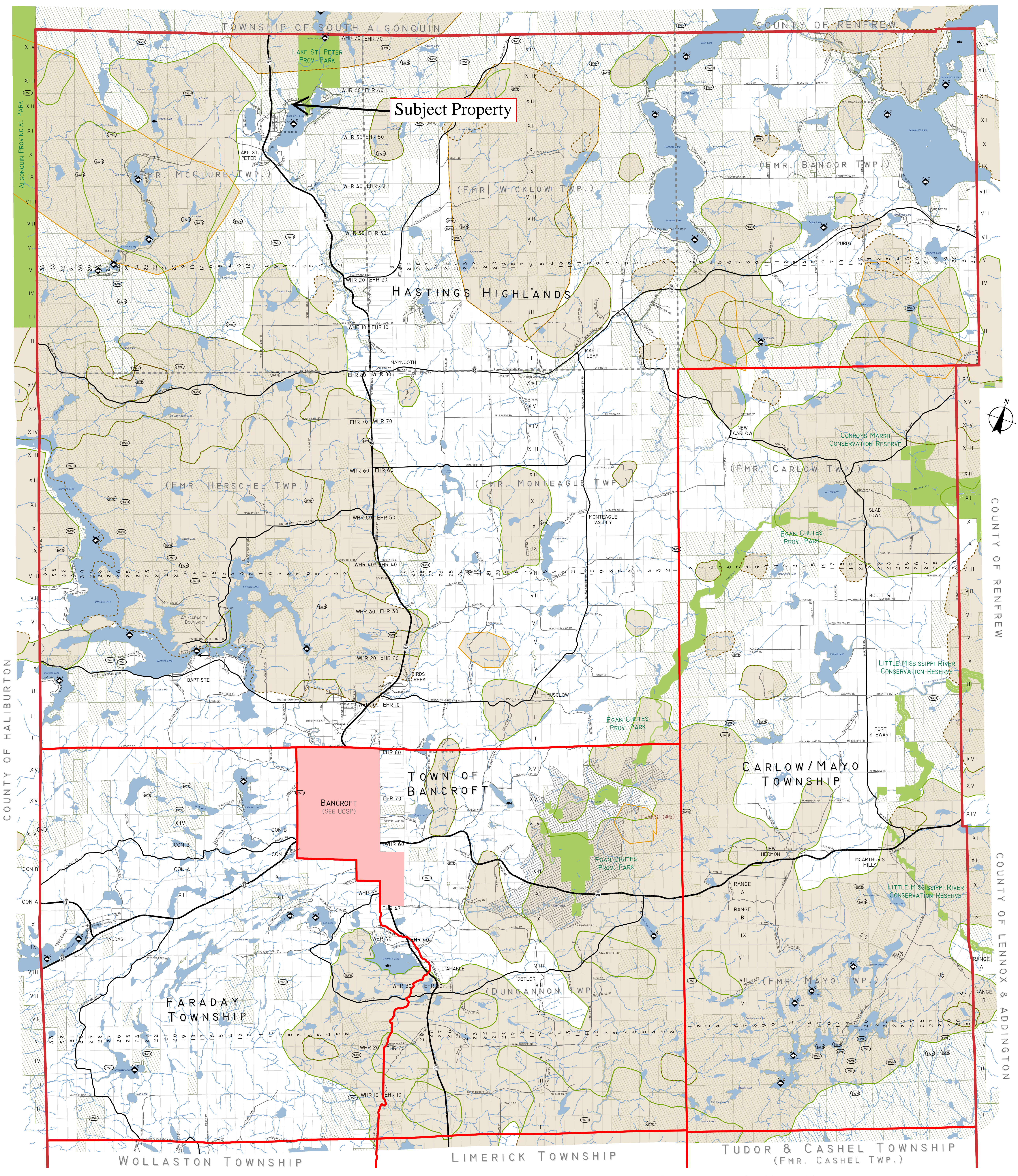
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June 22, 2018

- NATURAL HERITAGE FEATURES**
- SIGNIFICANT WOODLAND
 - AREAS OF NATURAL OR SCIENTIFIC INTEREST (EP-ANSI)
 - AREAS OF NATURAL & SCIENTIFIC INTEREST (SMALL SITE)
 - SIGNIFICANT VALLEYLAND
 - CONSERVATION AUTHORITY LAND
 - PROVINCIAL PARKS & CONSERVATION RESERVES
 - CROWN LAND
 - SIGNIFICANT WILDLIFE HABITAT
 - DEER YARD (STRATUM 1)
 - DEER WINTERING AREA (STRATUM 2)
 - MOOSE EARLY WINTERING AREA
 - SIGNIFICANT WILDLIFE HABITAT (SMALL SITE)
 - LAKE TROUT LAKE AT CAPACITY (LTL-AC)
 - LAKES MANAGED FOR LAKE TROUT (LTL-C)
- GEOGRAPHIC FEATURES**
- STREAM/CREEK
 - BOUNDARY OF ECOREGION 6E (SEE 4.3.5)
 - WATERCOURSE & WATERBODY
 - NON OFFICIAL PLAN AREA
 - URBAN SECONDARY PLAN AREA
 - LOT & CONCESSION LINE
 - GEOGRAPHIC TOWNSHIP BOUNDARY
 - MUNICIPAL BOUNDARY
 - COUNTY BOUNDARY
- INFRASTRUCTURE**
- HIGHWAY (PROV. & FMR. PROVINCIAL)
 - COLLECTOR ROAD (FORMER COUNTY)
 - MUNICIPAL ROAD



SEE CENTRAL "OP-B" SCHEDULE