



WILDLAND FIRE RISK ASSESSMENT

Bray Lake Property
Township of Machar
December 2023



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.



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ENVIRONMENTAL SOLUTIONS INC.

December 8, 2023
RS# 2020-053

Frank Polsinelli and Nghi Nguyen

Via email: frank.polsinelli@lrcustom.com

SUBJECT: Wildland Fire Risk Assessment – Bray Lake, Township of Machar

Dear Mr. Polsinelli and Mr. Nguyen,

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.

Al Shaw, M.Sc.
Principal / Senior Ecologist

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1 BACKGROUND

RiverStone Environmental Solutions Inc. (hereafter, “RiverStone”) was retained by Mr. Frank Polsinelli and Mr. Nghi Nguyen, through Mr. Tom Harsani, to complete an Environmental Impact Study (EIS) and Wildland Fire Risk Assessment (WFRA) required by the Township of Machar as part of a consent application for a severance to create twenty (20) new single residential lots on a property located on Bray Lake in the Township of Machar (hereafter, “Township”). The EIS component of the project has been submitted under separate cover by RiverStone dated April 2023. The subject property is approximately 162 hectares (400 acres) in size with approximately 2,438 metres (8,000 feet) of shoreline and is legally described as Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound (**Figure 1**).

It is our understanding that the WFRA is required to further the application for severance to address the potential for wildland fire risk. Mapping provided by Ministry of Natural Resources and Forestry (MNRF) has identified potentially hazardous forest types requiring evaluation for wildland fire risk on portions of the subject property. Policy 3.1.8 of the 2020 Provincial Policy Statement (PPS) requires that development shall generally be directed to areas outside of lands that are unsafe for development due to the presence of hazardous forest types for wildland fire, and that development within hazardous forest types may only be permitted where risks are mitigated. To assess on-site forest types for wildland fire risk, and (where appropriate) mitigate identified wildland fire risks, this WFRA has been carried out in accordance with the Wildland Fire Risk Assessment and Mitigation Reference Manual (MNRF 2017) (hereafter, “MNRF Reference Manual”) in support of the Provincial Policy Statement, 2020, as described below in **Section 2**.

2 METHODOLOGY

2.1 Level 1 and Level 2 Wildfire Risk Assessment

The process for undertaking a WFRA is outlined in Chapter 5 of the MNRF Reference Manual (2017). The overall purpose of a WFRA is to evaluate a site to determine: 1) whether there is potential for wildland fire risk (i.e., is forest present), and if so 2) what level of risk exists (i.e., are hazardous forest types present). A Level 1 WFRA involves screening a property using background information, including current aerial photographs and online mapping tools such as the Natural Heritage Areas web application that includes information from the Natural Heritage Information Centre (NHIC). MNRF’s generalized wildland fire hazard mapping was also reviewed and consists of satellite imagery (e.g., Landsat) and the provincial Forest Resources Inventory. MNRF’s generalized wildland fire hazard mapping is coarse and must be refined (where wildland fire potential is identified) based on a detailed investigation of on-site forest types.

If the results of a Level 1 assessment indicate that forest (and particularly hazardous forest types) are present, or have the potential to be present, a more detailed Level 2 assessment is required. A Level 2 assessment involves a site investigation to further assess forest characteristics. Key elements of this site assessment include:

- Mapping forest composition and dominant vegetation (e.g., fuel types) to assess wildland fire risk;
- Describing forest conditions (e.g., presence of disease, storms) which may contribute to fire risk;
- Describing forest stand density (e.g., tree spacing, etc.) which may contribute to fire risk; and,
- Confirming the presence and characteristics of ladder fuels (e.g., conifer species with low branches) and ground fuel (e.g., dense shrub layer, coarse woody debris) accumulation.

The site investigation should occur during snow-free conditions to improve ground visibility and allow an accurate assessment of ground fuel accumulation. The Level 2 assessment area should encompass the entire subject property and (where possible) lands within 100 m of and building locations if proposed.

If the results of the site investigation confirm the presence of hazardous forest types, and development activities (e.g., construction of a dwelling, etc.) are proposed within or immediately adjacent to hazardous forest types, it must then be determined whether wildland fire risk can be sufficiently mitigated. Mitigation measures may involve surface fuel reduction (i.e., removal of downed woody debris), thinning to increase spacing between trees, pruning of ladder fuels, and/or building design/structural modifications. Where fire risk cannot be sufficiently mitigated (e.g., where the presence of significant natural heritage feature inhibits vegetation management techniques, etc.), development should generally be directed to other portions of the property that do not contain hazardous forest types for wildland fire.

2.2 Site Investigation

Based on the initial desktop assessment it was determined that portions of the subject property are mapped by the province as “moderate” with the majority of the property mapped as “low” wildland fire hazard as per the MNR’s generalized mapping. Thus, a Level 2 WFRA is required as part of the severance application for the subject property considered herein. Site features were assessed on four (4) separate visits in the spring/summer of 2020 by Al Shaw (Principal/Senior Ecologist), Craig Mann (Ecologist/Arborist) and Jenn LeMesurier (Ecologist/Arborist). The site investigations involved characterizing forest types as described in **Section 2.1**. Representative photographs taken during the site investigation are assembled in **Appendix 1**, depicting the assessment of forest type and ground fuel.

2.3 Limitations of Assessment

Organic matter (living or dead) is fuel that will ignite and burn under suitable conditions (i.e., in the presence of heat and oxygen). By extension, all forested areas have the potential to burn and pass fire to neighbouring areas irrespective of their internal characteristics (e.g., species, composition, structure, etc.) and overall risk categorization (e.g., extreme, high, moderate, low, etc.). Mitigation measures such as siting a building envelope outside of hazardous forest types, implementing vegetation management strategies, and incorporating fire-resistant materials into building design will lower, but will not eliminate fire risk, particularly in landscapes with significant amounts of natural cover (e.g., Canadian Shield). The mitigation measures incorporated into this report are aimed at minimizing the potential for uncontrollable wildland fire behaviour (which has the greatest likelihood of causing catastrophic property damage or loss of human life), rather than minimizing the potential for low-intensity ground fires that spread along the forest floor (via leaves, needles, duff, etc.).

3 WILDLAND FIRE RISK ASSESSMENT

3.1 General Site Conditions and Land-uses

The subject property is located on the western shores of Bray Lake and is accessed via Riding Ranch Road that is located on the western edge of the property. The property is approximately 162 ha (400 acres) in area and is currently developed with a cottage dwelling, bunkie, sauna, and pile/post dock in the central portion of the property. The property is bordered by similar seasonal residential

properties, and vacant land. The property is largely undeveloped with upland forest communities, wetland habitat scattered throughout, rock barrens, and watercourses.

3.2 Vegetation Communities

Existing vegetation communities on the subject property were assessed during the on-site investigations. A desktop exercise was undertaken to approximately map forest community boundaries using background information sources and current aerial photographs; the mapped forest communities were then ground-truthed and boundaries updated following the site investigation. The proposed severed lot general forest community mapping in accordance with Wester et al. (2015) is provided on **Figure 2**.

3.2.1 Terrestrial Vegetation Communities

G051Tt Dry to Fresh, Coarse: Hemlock-Cedar Conifer

The riparian shoreline areas, and the majority of the western side of the subject property contains a forest community that is dominated by Eastern Hemlock (*Tsuga canadensis*). These areas contain relatively low vegetation diversity due to the low nutrient and moisture holding capacity of the substrates. Other vegetation species that were noted within this community include Balsam Fir (*Abies balsamea*), Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*), Yellow Birch (*Betula alleghaniensis* var. *fallax*), Red Maple (*Acer rubrum*), Striped Maple (*Acer pensylvanicum*), Beaked Hazelnut (*Corylus cornuta*), Canada Mayflower (*Maianthemum canadense*), Spinulose Wood Fern (*Dryopteris carthusiana*), Partridgeberry (*Mitchella repens*), Tree Groundpine (*Lycopodium dendroideum*), Club Moss Species (*Lycopodium* sp), Wild Sarsaparilla (*Aralia nudicaulis*), and Drooping Woodland Sedge (*Carex arctata*). Common mosses and lichens were also present throughout this community in areas where there was exposed rock. This community was present along much of the riparian area of the shoreline. Species within these areas also included Leatherleaf (*Chamaedaphne calyculata*), Sweetgale (*Myrica gale*), Three-way Sedge (*Dulichium arundinaceum*), Canada Bluejoint (*Calamagrostis canadensis*), White Meadow-sweet (*Spiraea alba* var. *alba*), Broadleaf Cattail (*Typha latifolia*), Common Sheep Sorrel (*Rumex acetosella*), Black-girdle Bulrush (*Scirpus atrocinctus*), Marsh St. Johnswort (*Triadenum virginicum*), and Water-horehound (*Lycopus* sp).

G058Tt Dry to Fresh, Coarse: Maple Hardwood

The central portion of the subject property is dominated by Sugar Maple and is best classified as Maple Hardwood. Rich soils in this area support a canopy of mature Sugar Maple, American Beech (*Fagus grandifolia*), and White Birch (*Betula pendula*), with some Eastern Hemlock. Balsam Fir, Yellow Birch, Red Maple, and Black Cherry were also present. Understory species include Striped Maple, Northern Starflower (*Trientalis borealis*), Wild Sarsaparilla, Spinulose Wood Fern, Red Trillium (*Trillium erectum*), White Trillium (*Trillium grandiflorum*), New York Fern (*Thelypteris noveboracensis*), Canada Mayflower, Hobble Bush (*Viburnum lantanoides*), Red Raspberry (*Rubus occidentalis*), Rose Twistedstalk (*Streptopus lanceolatus*), Bearded Shorthusk (*Brachyelytrum erectum*), Indian Pipe (*Monotropa uniflora*), Cinnamon Fern (*Osmunda cinnamomea*), and Common Lady Fern (*Athyrium filix-femina* ssp. *angustum*).

3.2.2 Wetland Vegetation Communities

G130Tt Intolerant Hardwood Swamp

Throughout the subject property, there are forested wetland pockets that are hydrologically connected with the watercourses that lead toward Bray Lake. The best classification for this community type is an intolerant hardwood swamp dominated by Black Ash (*Fraxinus nigra*). Other tree species include Yellow Birch, Red Maple, and Sugar Maple. The herbaceous layer is dense and includes Sensitive Fern (*Onoclea sensibilis*), Spotted Jewelweed (*Impatiens capensis*), Horsetail Species (*Equisetum sp.*), Interrupted Fern (*Osmunda claytoniana*), Fringed Sedge (*Carex crinita var. crinita*), Canada Bluejoint, and Wood-sorrel Species (*Oxalis sp.*).

G142N Mineral Meadow Marsh

Along the western boundary of the subject property there are three wetlands that are best classified as mineral meadow marsh vegetation communities. These areas are located near Riding Ranch Road, and include some pockets of open water wetland, but are dominated by herbaceous vegetation with sporadic tree growth. Vegetation species include: Joe-pye-weed Species (*Eupatorium sp.*), Canada Bluejoint, White Meadow-sweet, Leatherleaf, Broadleaf Cattail, Black Raspberry, Eastern White Pine (*Pinus strobus*), Red Maple, Black Spruce (*Picea mariana*), Marsh St. Johnswort, and Harlequin Blue Flag (*Iris versicolor*).

3.3 Wildfire Risk Assessment

According to the MNRF Reference Manual (p. 8) hazardous forest types are those that, under dry conditions, would likely exhibit high to extreme wildland fire behaviour should a fire ignite. The following **forest types** are considered by MNRF to exhibit high to extreme wildland fire risk:

- Natural conifer forests and unmanaged conifer plantations including those that contain White Spruce (*Picea glauca*) or Black Spruce (*Picea mariana*);
- Jack Pine (*Pinus banksiana*) and Balsam Fir (*Abies balsamea*) tree species;
- Immature Red Pine (*Pinus resinosa*) and Eastern White Pine (*Pinus strobus*); and
- Mixedwood forests with more than 50 per cent conifer cover, including Jack Pine, White Spruce (*Picea glauca*), Balsam Fir, and immature Red Pine or White Pine.

The following **forest conditions** are associated with high to extreme wildland fire risk:

- Vegetation that has sustained storm or insect damage or is diseased;
- Trees that are close to one another (high density) within conifer forests; and
- An abundance of ground fuel accumulation (e.g., large amount of woody debris, branches and or needle litter on the ground)

The assessment of wildland fire risk is provided in **Figure 2** and is based on RiverStone's desktop and on-site assessment of forest conditions on the subject property. MNRF's general wildland fire hazard mapping is also included on **Figure 2** for reference, along with the proposed severance lines.

The MNRF mapping suggests that that the property is classified as potentially hazardous (moderate and low wildfire hazard risk). Based on the site assessment, the subject property contains areas of conifer dominated forest communities that include Eastern Hemlock. These communities are typically located along the shoreline and adjacent to wetland communities. Trees within these communities are well established and mature which has created a sparse understory. Table 4-1 of the MNRF Reference

Manual indicates that stands of Cedar, Hemlock, and Tamarack are typically considered low risk for wildland fire. Considering the mature species present, the lack of downed woody debris to provide ladder fuel, and lack of lower branching on mature trees, the conifer communities should be considered moderate to low risk for wildland fire. Deciduous forest communities and wetlands dominated by hardwood species and marsh conditions should be considered low.

4 WILDLAND FIRE RISK MITIGATION

As described in **Section 3.3** and shown on **Figure 2**, the subject property contains moderate to low risk forest types for wildland fire. The 2020 PPS requires that development be directed to areas outside of hazardous forest types for wildland fire. Where development is considered/permitted within hazardous forest types, mitigation measures must be implemented to reduce the risks of wildland fire. Note that our assessment characterised the entire property as moderate to low risk; however, all development within forested landscapes are at some risk and mitigation is recommended by the Province, even within the lowest risk category.

Figure 2 shows the provincial mapping as well as the results of RiverStone's wildland fire risk assessment. While there is currently no detailed development plans proposed for each of the severed lots, there is an expectation for future development to occur on each of the created lots. A key component of wildland fire mitigation is related to clearing of vegetation in the area surrounding buildings in hazardous forest types. Should a fire start, having a cleared buffer around buildings and accessory structures would reduce the risk of fire affecting the structures. The removal of trees, particularly close to natural heritage features (such as the lake shoreline, wetland and associated buffer, habitat of species at risk, vernal pools), would be counter to the protection measures put in place for these features, and would conflict with conservation goals. The MNRF has recognized the conflict, noting in the reference manual that "the implication for wildland fire policies is that if wildland fire mitigation measures such as vegetation manipulation are proposed, and they would result in negative impacts, then such mitigation measures cannot be applied". This rationale is to be applied to all natural heritage features identified on the subject lands for any future development proposed for the severed lot. RiverStone did not identify any natural heritage features on the subject property that would require protection with buffers/setbacks

The following sections detail the ways in which the severance and future development should proceed on the proposed severed lot to minimize wildland fire risks.

4.1.1 Building Envelope Siting

Where possible, the preferred approach for mitigating wildland fire risk is to situate buildings in the lowest hazardous forest types (i.e., avoidance). In this case, the portions of the proposed severed lot that contain pine plantation that has been classified as within the extreme / high category for wildland fire. Therefore, meaning any future development on the proposed severed lot should carefully follow the recommended mitigation outlined below.

4.1.2 Vegetation Management

Vegetation (both living and dead) is the fuel that ignites and burns during wildland fires; by extension, vegetation management is a useful tool to reduce fuel accumulation. Surface fuels occur on the forest floor and include downed woody debris, leaf litter, needles, duff, brush piles, and grass. Ladder fuels include regenerating saplings and sub-canopy coniferous trees/shrubs, and dead understory branches that provide vertical continuity between surface fuels and the forest canopy. Dense arboreal lichens

(e.g., *Usnea* spp., etc.) and peeling/flaking bark may also facilitate fire movement into the forest canopy. Fuels may also be classified based on how quickly they ignite and whether they are fully consumed by fire.

As noted in the MNRF Reference Manual, vegetation management techniques are employed to create a defensible space where fire cannot jump to adjacent trees or structures, that surrounds a building or structure based on priority zones. Priority Zone 1 encompasses an area 10 m around the building and is the most critical in terms of creating and maintaining defensible space. Priority Zones 2 and 3 extend between 10 m and 30 m, and from 30 m to 100 m, respectively. The MNRF Reference Manual recognizes that in most cases vegetation management in Priority Zones 1 and 2 is sufficient to mitigate wildland fire risk to acceptable levels (i.e., vegetation management in Priority Zone 3 is required only in rare circumstances).

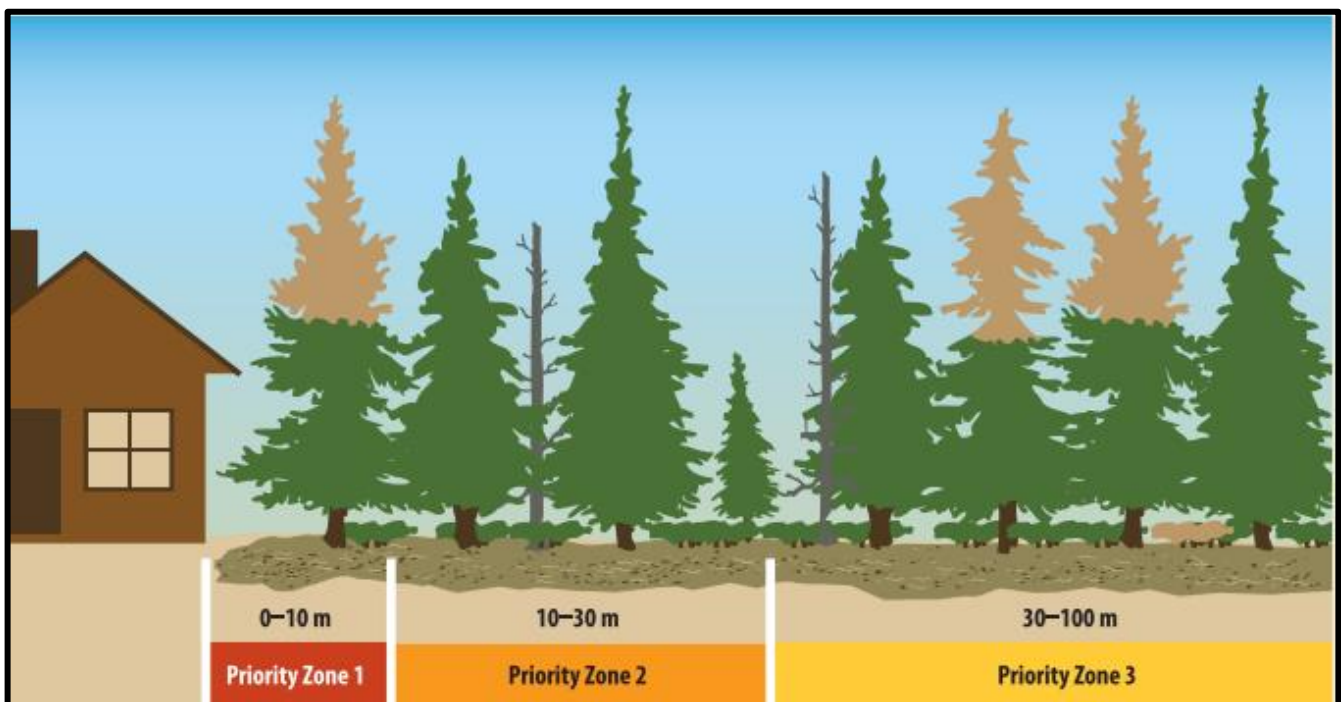


Figure 7.1 from MNRF Wildland Fire Risk Assessment and Mitigation Reference Manual (2017)

Based on the assessment, the proposed severed lot contains extreme/high risk forest types; however, future development is permissible in these areas with vegetation management recommended to reduce risk. RiverStone recommends implementation of the following vegetation management measures to further reduce wildland fire risk for any future building envelopes proposed within the proposed severed lot on **Figure 2**.

- **Remove conifer species (e.g., Pine, Spruce, Balsam Fir, Hemlock, etc.) of all sizes (i.e., canopy trees, sub-canopy trees, seedlings, saplings) that occur within Priority Zone 1 (10 m). Individual conifers occurring beyond 10 m of a building envelope (i.e., in Priority Zone 2), but having branches that encroach within Priority Zone 1, should be pruned such that no branches extend within Priority Zone 1. It is expected that very little tree removal will be required to satisfy this recommendation as the area adjacent to the building (Priority Zone 1) will generally be cleared to permit construction access to the building envelope as well as for the septic systems.**

- **Remove all downed woody debris (e.g., rotting logs, sticks, etc.) within Priority Zone 1 (10 m).**
- **Prune all deciduous tree branches within Priority Zone 1, that overhang the building envelope.**
- **Any manicured grass/lawn installed in Priority Zone 1 should be maintained regularly (i.e., mowed, watered, etc.).**
- **Hydro services will be provided to the proposed severed lots through a combination of underground and aboveground wires. It is recommended that vegetation around the hydro poles and overhead wires be kept clear by a qualified person to prevent branches from coming into contact with wires. We expect that this will fall under the authority of the hydro provider.**
- **Any trees planted for landscaping purposes within Priority Zone 1 should be low fire risk native deciduous species (e.g., Maple, Oak, Poplar, Birch, etc.). Fire-resistance in deciduous trees and shrubs is conferred by their greater leaf moisture, minimal deadwood, well-spaced branches, and water-like sap. No conifer species (native or otherwise) should be planted within Priority Zone 1.**
- **Within Zone 2 (10 -30 m from buildings), all conifer trees are to be thinned so that tree crowns are 3- 6 m apart with removal of dead woody debris.**
- **Any replanting within Zone 2, is to be completed with hardwood tree and shrub species native to the local area.**
- **Consider non- or low-combustible landscaping options for garden beds and walkways such as gravel mulch or composted bark chips (rather than plant-based mulch). Keep gardens and planted vegetation away from building envelopes to the extent possible. Locate brush piles outside of Priority Zone 1.**

4.1.3 Building Design

RiverStone's recommended mitigation measures outlined in **Section 4.1.1** and **4.1.2** are largely aimed at reducing the spread of fire to proposed dwellings on the proposed lots via conduction (i.e., direct contact with flames) or radiant heat from burning trees and vegetation. Wind-dispersed embers released during a wildland fire that contact the roof or sides of buildings are a separate risk factor that is more appropriately mitigated via building design. The vegetation management techniques outlined in **Section 4.1.2** (which reduce the potential for high-intensity crown fires) are expected to decrease, but not eliminate, the release of embers to low levels; as such, RiverStone recommends the consideration (rather than prescription) of fire-resistant construction materials during building design as below:

- **Consider incorporating fire resistant construction materials as part of building design (e.g., roofing, siding, windows, and doors, etc.). FireSmart Canada's guidelines for home construction are provided as a reference in Appendix 2.**

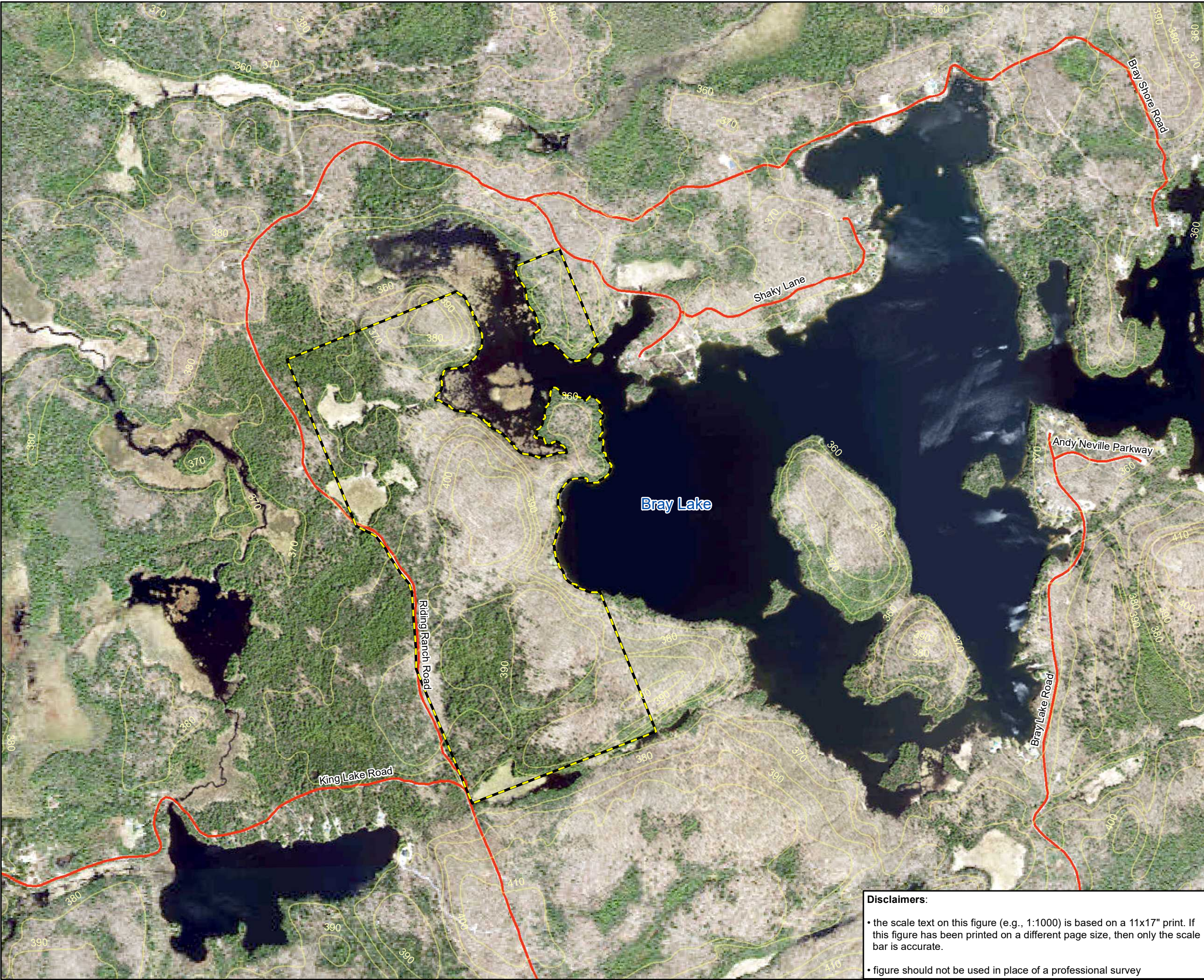
5 CONCLUSIONS

Based on desktop-based and on-site assessment of forest types and characteristics on the subject property, and contingent upon implementation of the recommendations outlined in **Section 4**, RiverStone has determined that the identified wildland fire risks associated with the proposed

severance application can be mitigated to an acceptable levels according to Provincial Guidelines. It is noted that development within the forest will always have some level of risk that cannot be fully mitigated. Based on the assessment contained herein, the proposed application is considered consistent with s. 3.1.8 of the 2020 PPS and Township of Machar Official Plan policy. We advise that the recommendations contained in this report be incorporated into any relevant development agreements or conditions of development approval for the subject property that are subsequently enforced with appropriate by-laws.

6 **REFERENCES**

MNR. 2017. Wildland Fire Risk Assessment and Mitigation Reference Manual in support of the Provincial Policy Statement, 2014 .



Legend

Ontario Base Mapping (OBM)

- Roads
- 5 m Contours

Planning Boundaries

- Subject Property

Orthorectified aerial photo - spring 2018

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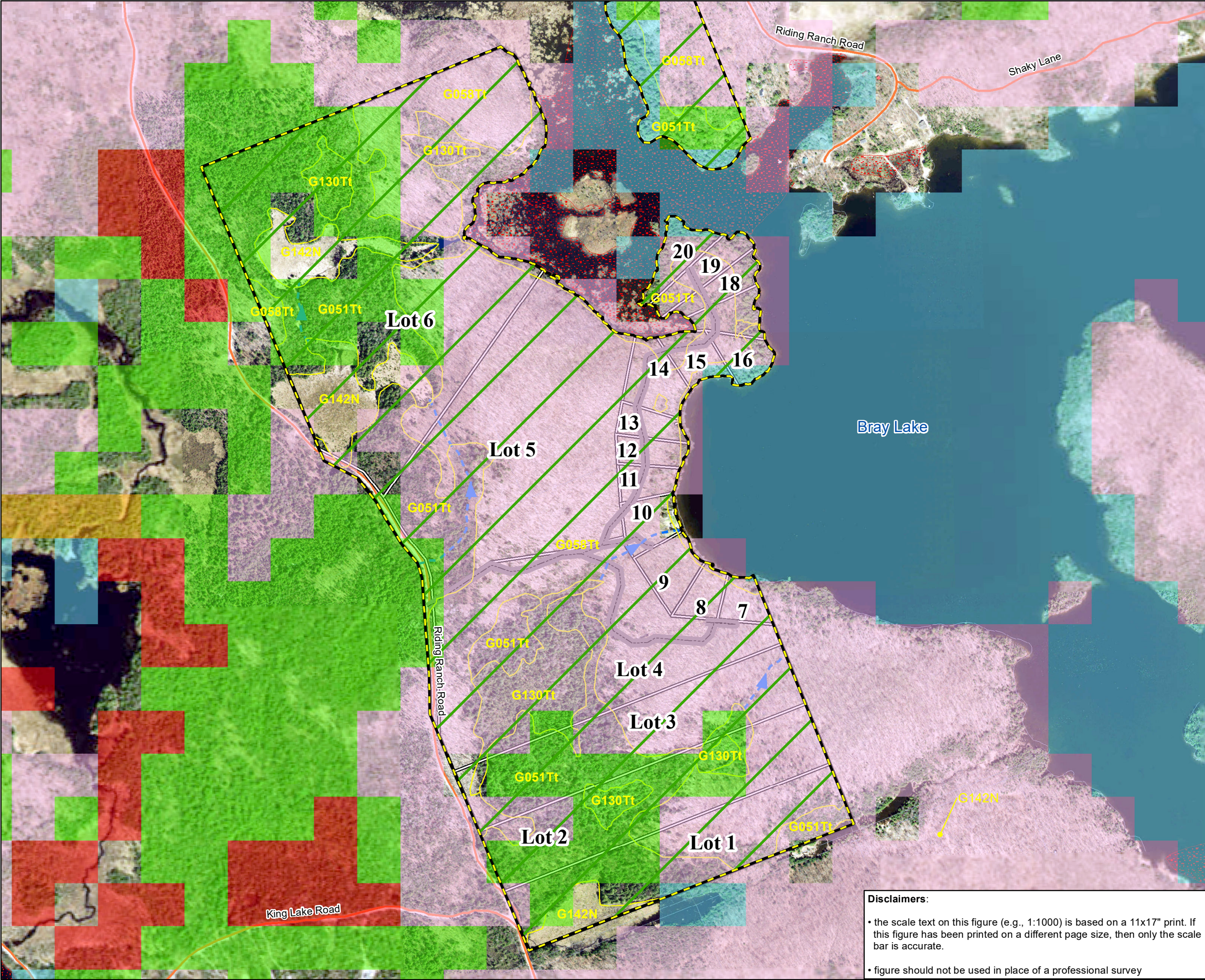
Figure 1. Location Of Subject Property.
1791 Riding Ranch Road .Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound

Prepared for: Frank Polsinelli and Nghi Nguyen

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

Features with Recognized Natural Heritage Value - Identified by RiverStone

- Intermittent Watercourse
- Permanent Watercourse
- Shoreline

Ecological Communities

- G051Tt: Dry to Fresh, Coarse: Hemlock-Cedar Conifer
- G058Tt: Dry to Fresh, Coarse: Maple Hardwood
- G130Tt: Intolerant Hardwood Swamp
- G142N: Mineral Meadow Marsh

Proposed Development and Site Alteration

- Right-of-Way
- Lot Lines

Wildland Fire Risk Rating - Identified by MNRF

- Extreme - C1, C2, C4
- High - C3, M2>50%, M4
- Pine Needs Evalutaion - C5, C6
- Low - D1, M2<25%
- Water
- Moderate - M2 >25% - <50%

Wildland Fire Risk Rating - Identified by RiverStone

- Moderate/Low Risk

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
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Figure 2. Wildland Fire Risk Assessment.
1791 Riding Ranch Road .Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound

Prepared for: Frank Polsinelli and Nghi Nguyen

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- figure should not be used in place of a professional survey

Appendix 1. Select Photos from Site Visit





Photo 1. Existing cabin and bunkie development on subject property (June 25, 2020).



Photo 2. Existing sauna development on subject property (June 25, 2020).



Photo 3. Sugar Maple dominated forest community on subject property (June 25, 2020).



Photo 4. Sugar Maple dominated forest community on subject property (June 25, 2020).



Photo 5. Watercourse on subject property within Sugar Maple dominated forest community (June 25, 2020).



Photo 6. Watercourse on subject property within Sugar Maple dominated forest community (June 25, 2020).



Photo 7. Watercourse leading to shoreline of Bray Lake depicting rugged terrain on subject property (June 25, 2020).



Photo 8. Meadow marsh wetland community on subject property (June 25, 2020).



Photo 9. Riparian area of meadow marsh community on subject property (June 25, 2020).



Photo 10. Rock face within maple hardwood vegetation community on subject property (June 25, 2020).



Photo 11. Fish habitat characteristics existing development on subject property (July 14, 2020).



Photo 12. Type 1 fish habitat characteristics fronting the subject property (July 14, 2020).



Photo 13. Sandy substrates with abundant downed woody debris along shoreline of subject property (July 14, 2020).



Photo 14. Evidence of bass nests along shoreline of subject property (July 14, 2020).



Photo 15. Type 1 fish habitat within northern bay on subject property (July 14, 2020).



Photo 16. Intolerant hardwood swamp community on subject property (August 3, 2020).



Photo 17. Intolerant hardwood swamp community on subject property (August 3, 2020).

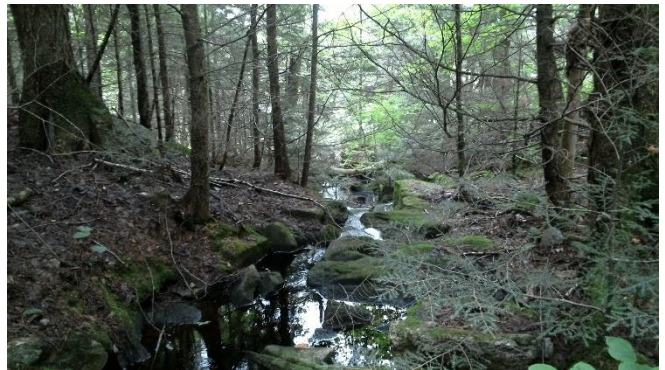


Photo 18. Permanent watercourse on subject property flowing from wetland communities to Bray Lake (August 3, 2020).

Appendix 2. FireSmart Home Construction Guidelines

The guidelines below were produced by FireSmart Canada and can be accessed here:
<https://firesmartcanada.ca/homeowners/home-construction/>

Roofing

The most **fire-resistant roofing** materials are metal, clay tile and asphalt shingles. Untreated wooden shakes and shingles provide no resistance to flames and sparks generated from a wildfire. Use only class A, B or C rated fire resistant roofing. **Clean debris from your roof annually.** Ensure your roof is free of combustible needles and leaves and there are no overhanging trees or branches that can provide fuel for airborne sparks and embers. Make sure your **chimney is to code** and has spark arrestor screens installed.

Siding

Materials such as stucco, metal, brick and concrete offer superior resistance to wildfire. Logs and heavy timber are less effective, and wood and vinyl siding offer very little protection.

Doors and Windows

Be sure to remove flammable forest fuels within 10 metres of glazed window and door openings. Tempered, thermal or smaller double-paned windows will provide far greater protection than single paned glass.

Eaves troughs

Eaves and vents are ready-made openings that can allow heat and embers to enter a building and ignite. Ensure eaves are closed in and screen all vents and soffits. Keep areas under decks and porches clear of debris and sheath the undersides with fire resistant materials.

Access

Make sure that fire fighters are able to approach your home in a safe manner. There are a few things you can do to improve their safety and help them find your home quickly:

- Make sure your driveway is wide enough to accommodate emergency vehicles so they have enough space to turn around
- Have your address, municipal fire number or lot number clearly visible for quickly identification by fire services
- Provide an emergency access route to and from your property
- Clear your driveway of trees to a distance of at least 3 metres on either side