



# East Barriere Lake

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## FIRESMART COMMUNITY ASSESSMENT REPORT

Prepared for  
Thompson Nicola Regional District

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## Summary of Recommendations – Abbreviated

The FireSmart program provides detailed guidelines and recommendations to reduce home ignition potential during a wildfire. The recommendations made in this report must be considered *in addition* to those contained in the FireSmart *Protecting Your Community from Wildfire* manual. The following summary of recommendations is taken from Section 7 of this report, where additional detail and rationale is provided. These recommendations are specific for the community of East Barriere Lake, but can be applied to any community with similar characteristics.

### Recommendations for East Barriere Lake

1. Reduce the amount of highly combustible plants used in landscaping, such as cedar and juniper shrubs and hedges within Zone 1 (<10m from the home). Refer to the *FireSmart Landscaping Guide* for recommended vegetation and landscaping materials
2. If conifers are retained in Zone 1, consider the following:
  - a. Remove all ladder fuels (i.e. low-lying branches) within 2m reach of the ground
  - b. Remove all branches in contact with the home
  - c. Increase spacing between conifers – preferably to 3m
3. Remove or store appropriately all combustibles in Zone 1 – including personal items such as trailers, recreational vehicles, tools, building materials, etc.
4. Apply FireSmart principles to any outbuilding within 15m of a structure
5. Zone 2 (10-30m) and Zone 3 (30-100m) should focus on the removal of ladder fuels and increasing horizontal continuity of combustible vegetation (i.e. conifers)
6. Fuels located on crown land within 100m of a resident's home should be assessed by a qualified professional to determine next course of action
7. Dead timber between 6.5km and 7.5km on the East Barriere FSR should be managed to reduce fuel loading on the ground
8. Remove firewood stacks from Zone 1 during times of wildfire threat
9. When away for lengths of time during high wildfire threat, consider items such as rattan door mats, flammable patio furniture, children's toys, trash cans, BBQs, etc. as combustibles and store away
10. Create a local FireSmart Board and Community Plan to maintain awareness and community participation

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## 1.0 Introduction

The FireSmart approach is designed to provide an effective management approach for preserving wildland living aesthetics while reducing community ignition potential during a wildland urban interface (WUI) fire. The program can be tailored for the adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum preparation for wildland fire. The following Community Assessment Report (CAR) is intended to be a resource for residents of East Barriere Lake for carrying out the recommendations and actions.

The CAR was developed by a trained Local FireSmart Representative (LFR). This assessment addresses the wildfire-related characteristics of East Barriere Lake. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on the specific homes, but examines the community as a whole.

Funding for the Thompson Nicola Regional District – East Barriere Lake – FireSmart project was provided through the Community Resiliency Investment program and was provided by the Union of BC Municipalities. The grant enabled the regional district to retain the services of Frontline Operations Group to conduct the project.

Community assessment was carried out on August 24, 2019 by Brittany Seibert, LFR.

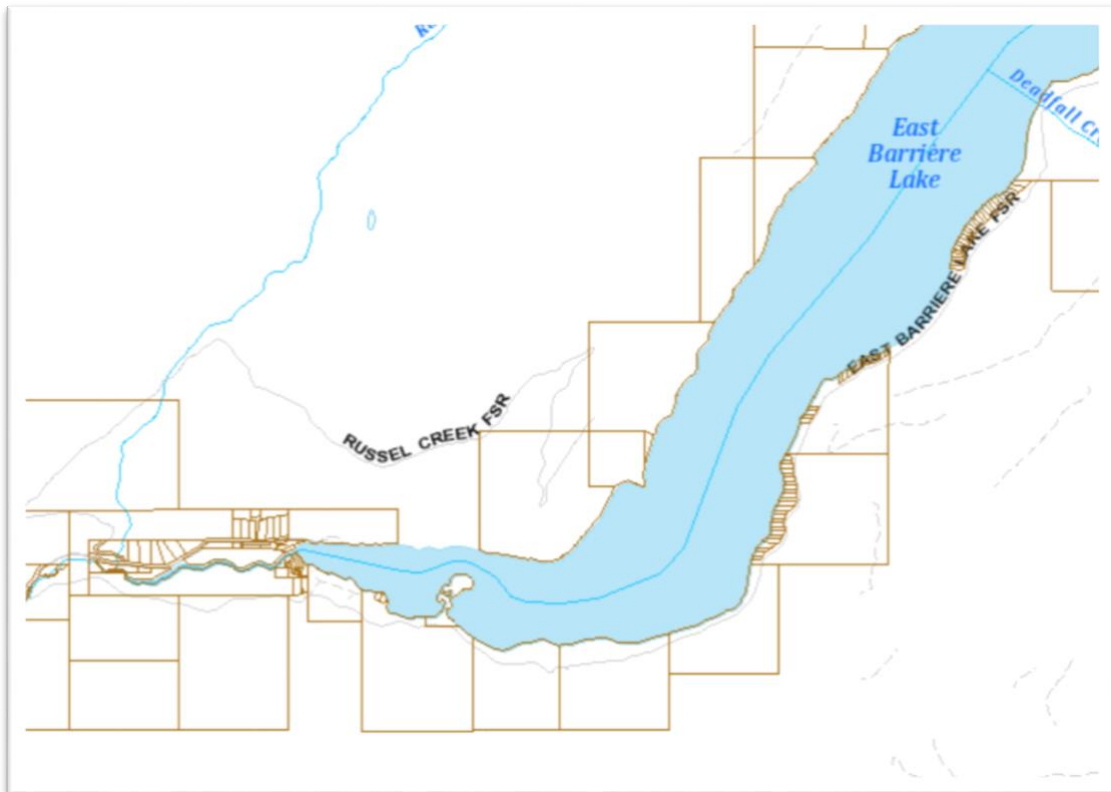


Figure 1 East Barriere Lake Community

## 2.0 Definition of Ignition Zone

East Barriere Lake is located in a wildfire environment. The wildland areas surrounding the community are typical ecosystems that have developed, historically, from frequent low intensity fires. With the introduction of modern forest protection policies, the typical fire cycle has been interrupted thus contributing to a host of cascading ecological effects including the buildup of forest fuels.

Wildfires will happen in the Thompson Nicola region – exclusion from wildfire is not a choice. In 2017 the province of British Columbia was subjected to one of the worst fire seasons in its history. Over 1.2 million hectares were burnt and roughly 65,000 residents were evacuated. The Thompson Nicola region alone saw one of the most devastating fires of that year, Elephant Hill. The fire discovered on July 6, 2017 continued to burn for another 76 days and consumed over 190,000 hectares. Over the course of the fire, over 120 homes were destroyed.

A house burns because of its relationship with everything in its surrounding home ignition. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with their house. This can be accomplished by interrupting the natural path a fire takes by clearing fuel from the home ignition. To accomplish this, flammable items such as excessive vegetation and flammable debris must be removed from the areas surrounding the structure. This will prevent ignition of fuel sources in proximity of the structure and prevent direct contact of flames with the home. Reducing the volume of fuels and reducing its ability to move vertically will affect the intensity of the wildfire as it nears the home.

Included in this assessment are observations made while visiting East Barriere Lake. The assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. East Barriere Lake residents can reduce the risk of structure loss during a wildfire by taking actions within their home ignition zones – which includes a house and its immediate surroundings within 100 metres (figure 2). Given the extent of these zones, the ignition zones of several homes sometimes overlap, and often spill over onto adjacent public or community land.

The results of the assessment indicate that wildfire behavior and subsequent losses will be dominated by the residential characteristics of this area. The good news is that residents will be able to substantially reduce their exposure to loss by addressing community vulnerabilities. Relatively small investments of time and effort will reap great rewards in wildfire safety.

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Figure 2 FireSmart Canada utilizes the concept of priority zones surrounding a home to help residents prioritize their hazard reduction efforts. A home's immediate surroundings (Zones 1 and 1a) are of immediate concern to the homeowner and should be targeted aggressively to reduce ignition hazards to the home.

### 3.0 Description of the Fire Environment

Wildland fire behavior is influenced by the interaction of three broad environmental factors: fuel, weather and topography. Collectively these factors describe the fire environment and determine the intensity and rate of spread of a wildland fire. A working knowledge of the factors that characterize the fire environment is helpful for building an awareness of hazard mitigation at the site level.

#### 3.1 Fuels

In the context of wildland fire, fuel refers to the organic matter involved in combustion. In Canada, wildland fuels are classified into 16 fuel types within the Canadian Forest Fire Behavior Prediction (FBP) System. The FBP system is informed by the Canadian Forest Fire Danger Rating System (CFFDRS), which is the primary tool to obtain predictive wildfire management intelligence used by agencies across Canada.

When dealing with the wildland-interface environment fuel can extend beyond the surrounding vegetation. Fuels can include a structure's composition, neighboring buildings, vehicles and other combustible materials found around the home – see section 6.3

##### 3.1.1 Fuel Layers

The structure and arrangement of fuels are described in terms of their horizontal and vertical continuity within three broad layers of the fuel complex – ground fuels, surface fuels and canopy (or aerial) fuels (Figure 3). Ground fuels occupy the *duff layer* and the uppermost portions of the soil mineral horizon. In general terms, the duff layer is comprised of decomposing organic material and is found beneath the litter layer and above the uppermost soil mineral horizon (A-horizon). The components of the duff layer

lack identifiable form due to decomposition (as opposed to the *litter layer*, which is composed of identifiable material).

The surface fuel layer begins above the duff layer and extends 2m vertically. Surface fuels are characterized by the litter layer (leaves, needles, twigs, cones, etc.) as well as plants and dead woody material up to a height of 2m. In some cases, surface fuels may act as *ladder fuels* that can carry fire from the surface fuel layer into the canopy layer.

Canopy fuels are the portions of shrubs and trees that extend from 2m above the duff layer, upwards to the top of the fuel complex. Certain tree species, such as several spruce species (*Picea sp.*) are characterized by branches extending down to the forest floor, whereby these lower branches act as ladder fuels. Other species, particularly those found in drier, fire-maintained ecosystems, such as Ponderosa pine, lack these ladder fuels and form a distinct separation between the surface fuel layer and canopy fuel layer.

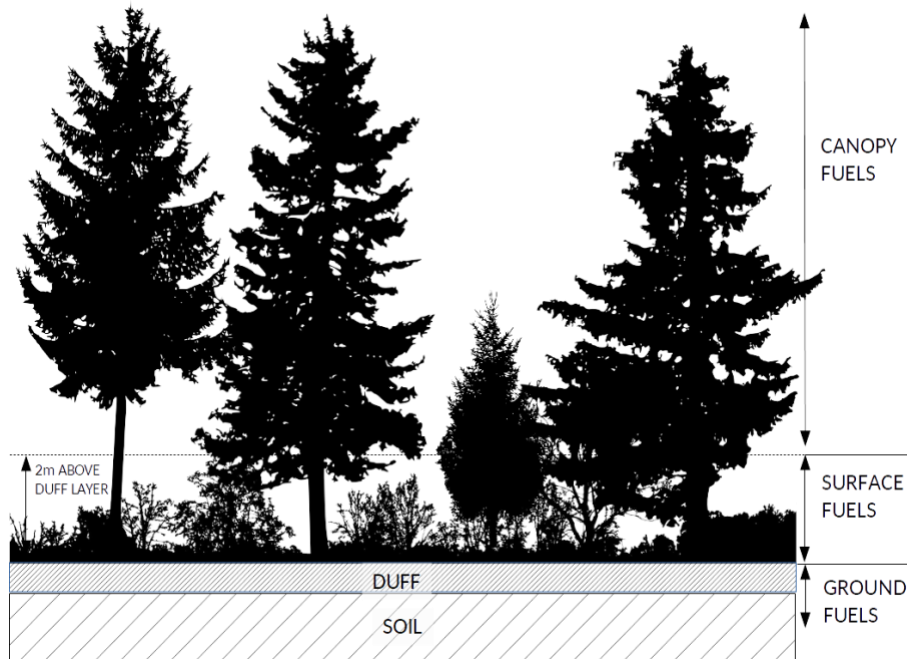


Figure 3 Wildland fuels can be described within three broad fuel layers: Ground fuels, surface fuels (to a height of 2m above the duff layer), and canopy fuels. Canopy fuels are also referred to as aerial fuels

### 3.1.2 Fuel Size

Wildland fuel can be further described in terms of relative size – so called *fine fuels* and *coarse* or heavy fuels. Fine fuels include leaves and conifer needles, grasses, herbs, bark flakes, lichen, twigs etc. Large branches, downed logs and other large woody material are considered coarse or heavy fuels. Fine fuels have a higher surface area to volume ratio than coarse fuels, and this characteristic influences the rate of drying and ease of ignition.

With a higher surface area to volume ratio than coarse fuels, fine fuels are more readily influenced by changes in environmental conditions (e.g. relative humidity, wind, precipitation etc.). As well, dead fine fuels react to changes in environmental conditions at a relatively faster rate than green (i.e. live) fine



fuels.

When available to burn, fine fuels ignite more easily and spread fire faster than coarser fuels. This characteristic makes fine fuels particularly susceptible to ignition from firebrands (or embers). Additionally, fine fuels are more susceptible to becoming firebrands – mobile ignition sources – as they are lighter and more easily made airborne. Finally, fine fuels take a shorter time to burn out than coarser fuels.

For any given fuel, the more there is and the more continuous it is, the higher the intensity of the fire will be and the faster the fire will spread.

## 3.2 Weather

Weather condition affect the moisture content of wildland fuels and influence the rate of spread and intensity of a wildland fire. Weather is the most dynamic element of the fire environment and the most challenging to assess and forecast. There are four main components of weather to consider when discussing wildland fire behavior: wind, temperature, relative humidity and precipitation.

### 3.2.1 Wind

Wind speed and direction influences the rate and direction of spread of a wildland fire. The application of wind on open flame has the effect of tilting the flame away from the wind, and, in the case of wildland fire, placing the flame into closer proximity (or contact) with downwind fuels thus contributing to fire spread.

Wind can also contribute to a preheating effect on fuel immediately downwind from open flame. Wind hastens the drying process of exposed fuel, with the rate of drying being a function of the surface to volume ratio. Having a relatively higher surface area to volume ratio, fine fuel moisture content is affected to a greater degree by wind when compared to coarse fuel.

Lastly, wind can also influence the ignition of a new wildland fire through its contribution to spotting. Ignited fine fuels – that have become airborne through rising thermal air – can be carried by wind over the course of large distances. These firebrands result in the ignition of new fuels cultivating in new fires.

### 3.2.2 Temperature and Relative Humidity

Temperature and relative humidity have a close and inverse relationship – as temperature increases, relative humidity decreases. This is because relative humidity is the percent of water vapor in the air compared to what would be present if it were saturated. As air is heated through increasing temperatures, its ability to hold more moisture also increases. However, without the introduction of more moisture the percentage decreases.

$$rH = \frac{\text{Amount of moisture currently in the air}}{\text{Amount of moisture air can hold}} \times 100$$

The moisture content of wildland fuel is constantly seeking to equalize with moisture content of the surrounding air. This effect is most pronounced in dead fuel. When the relative humidity is high, dead

fine fuels will readily absorb moisture from the air and conversely, when the relative humidity is low, dead fine fuels will readily give up moisture to the air.

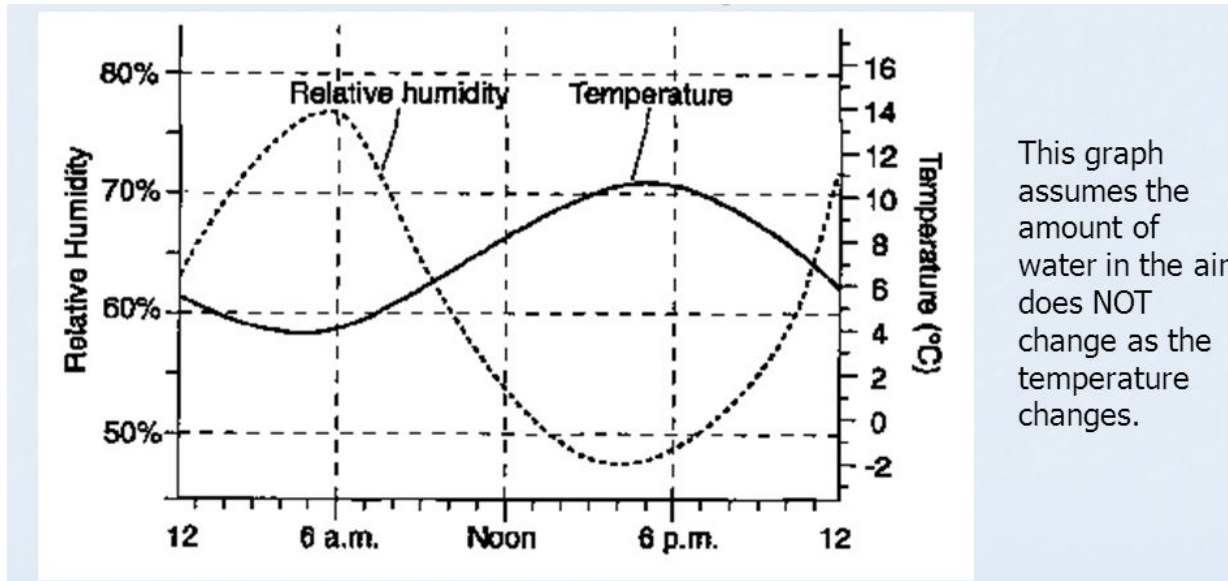


Figure 4 shows the relationship between temperature and relative humidity, as temperatures increase and the overall water content in the air does not change, relative humidity decreases. This affects fire behavior through the increased drying of fuels

### 3.2.3 Precipitation

The effect of moisture on wildland fuel is dependent on the size and state of the fuel. The moisture content of dead fine fuel is highly reactive to changes in relative humidity, precipitation and wind. Fine fuels require less precipitation to reach saturation than coarse fuels, and in turn, dry out at a faster rate.

Precipitation's arrival in the form of thunderstorms can inadvertently increase fire behavior, even if for short time. Thunderstorms can generate large influxes in wind through in and out flows, and downdrafts which have adverse effects on fire behavior.

### 3.3 Topography

In the context of the fire environment, topography refers to the shape and features of the landscape. Of all the topography factors in fire behavior, the primary importance for an understanding of fire behavior is slope. When all other factors are equal, a fire will spread faster up a slope than it would across flat ground. When a fire burns on a slope, the upslope fuel particles are closer to the flame compared to the downslope fuels. This pre-heating effect on upslope fuels contributes to fast upslope fire spread. As well, hot air rising along the slope tilts the flame uphill which further increasing the ease of ignition of upslope fuels.

Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can also influence fire spread and intensity. Slope aspect (i.e. the cardinal direction that a slope faces) determines the amount and quality of solar radiation that a slope will receive, which in turn influences plant growing conditions and drying rates.

## 4.0 Site Description

East Barriere Lake is located approximately 94km northeast of Kamloops, BC and 30km east of Barriere, BC. It is bordered by North Barriere Lake to the north, and Adams Lake to the south. The East Barriere Lake Recreational site is located on the northwest shoreline of the lake.

It includes an ~80 homes or cabins, many with outbuildings located on each property. The community is primarily located on the western half of the lake. The lake is accessed via the Barriere Lakes Rd/East Barriere Lake FSR from Barriere, BC. Majority of the community is located along East Barriere Lake FSR with a smaller neighborhood located at the end of Russel Creek FSR. All properties are accessed by individual, private driveways originating off of the FSR with exception to the strata community located on the southwest shore of the lake. Local knowledge may allow for secondary access and egress along FSRs within the region.

All structures feature a variety of ember accumulator features such as complex roof shapes, deck configurations and open (unsheathed) deck constructions and open carports. Lots are of varying sizes but mostly standard size and configuration, homes are separated from each other by 10-20m. Some natural vegetation on the properties has been retained with significant additions of planted trees, hedges and ornamental plants.

### 4.1 Fuel Type

Classifying fuel complexes in BC according to the FBP fuel types is an imperfect process, given the diversity of ecosystems in the province in comparison to the rest of Canada. When considering FBP fuel types for a particular fuel complex, the actual species composition is of less importance than the overall stand structure characteristics. The FBP fuel types referenced below specify. Certain species not found in BC (e.g. red pine and eastern white pine, etc.), however the overall structural characteristics of the fuel types share similarities with the East Barriere Lake site conditions. Herein lies the challenge of classifying certain BC forest types into a handful of FBP fuel types. In the East Barriere Lake area, the most appropriate FBP fuel types are:

#### 4.1.1 C5 Fuel Type\*

This fuel type is characterized by mature stands of red pine (*Pinus resinosa* Ait.) and eastern white pine (*Pinus strobus* L.) in various proportions, sometimes with small components of white spruce (*Picea glauca* (Mill.) B.S.P.) and old white birch (*Betula papyrifera* Marsh.) or aspen (*Populus* spp.). The understory is of moderate density, usually red maple (*Acer rubrum* L.) or balsam fir (*Abies balsamea* (L.) Mill.). A shrub layer, usually beaked hazel (*Corylus cornuta* Marsh.), may be present in moderate proportions. The ground surface cover is a combination of herbs and pine litter. The organic layer is usually 5–10 cm deep.



Figure 5 Example of C5 fuel type around East Barriere Lake

#### 4.1.2 M2 Fuel Type\*

This fuel type (and its "leafless" counterpart, M1) is characterized by stand mixtures consisting of the following coniferous and deciduous tree species in varying proportions: black spruce (*Picea mariana* (Mill.) B.S.P.), white spruce (*Picea glauca* (Moench) Voss), balsam fir (*Abies balsamea* (L.) Mill.), subalpine fir (*Abies lasiocarpa*(Hook.) Nutt.), trembling aspen (*Populus tremuloides* Michx.), and white birch (*Betula papyrifera* Marsh.). On any specific site, individual species can be present or absent from the mixture. In addition to the diversity in species composition, stands exhibit wide variability in structure and development, but are generally confined to moderately well-drained upland sites. M2, the second phase of seasonal variation in flammability, occurs during the summer. The rate of spread is weighted according to the proportion (expressed as a percentage) of softwood and hardwood components. In the summer, when the deciduous overstory and understory are in leaf, fire spread is greatly reduced, with maximum spread rates only one-fifth that of spring or fall fires under similar burning conditions.



Figure 6 Example of M2 fuel type around East Barriere Lake

\*Excerpt from the CFFDRs CBP

## 4.2 Fire Weather

There is very little information regarding the climatic zone of the East Barriere Lake area. It could be assumed based on location, elevation, and fuel type that the region is located in a transition zone from semi-arid to interior rainforest. Therefore, it would be probable to see warm summers with expected chances of precipitation and cold winters with moderate to heavy levels of snow.

### 4.3 Topography

East Barriere Lake located to the east of the Thompson River on the valley bottom. It is likely that the effect the local topography will have on wildland fire behavior is the funneling of valley winds. Though, it is more likely weather and fuel type are likely to play a larger role in fire behavior for this community.

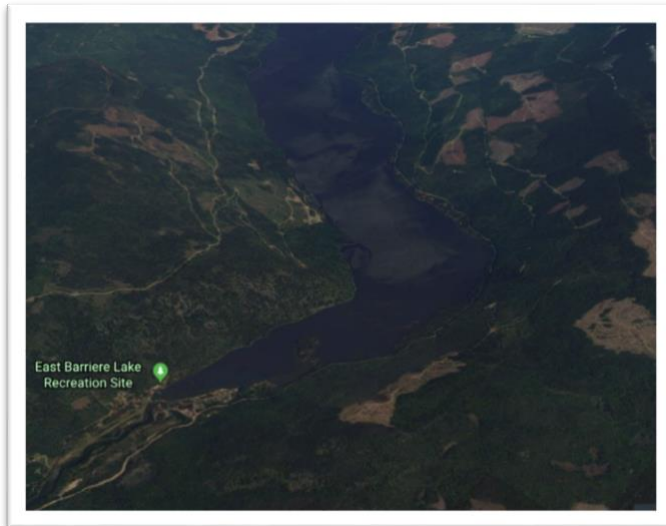


Figure 7 Satellite imagery of the East Barriere Lake community

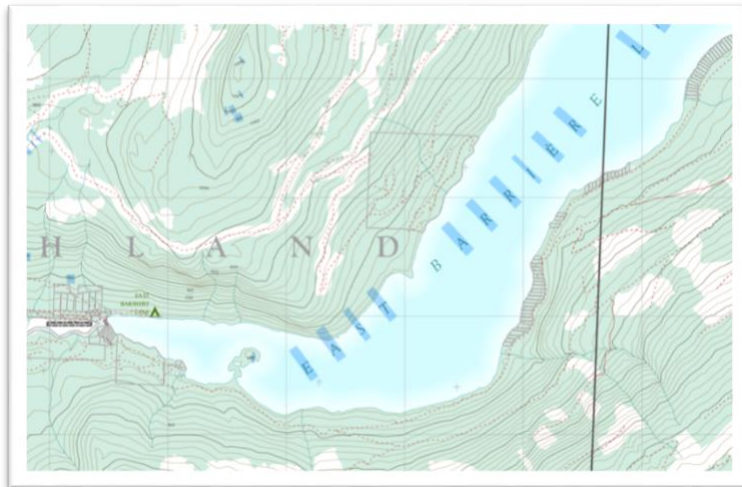


Figure 8 Contour map of the East Barriere Lake community

### 4.4 Human Ignition Potential

The potential of human ignition is existent within the community. Poorly attended or maintained campfires on private and public land (i.e. rec sites) is one of the most likely scenarios to result in a human-caused wildfire event. However, there is still risk of ignition resulting from recreational vehicle use, such as ATVs, and risk of ignition resulting from a structure fire. Several of the structures within the community are in close proximity to the forest stand – including adjacent ladder fuels. Should a structure ignite there is a real risk that it may ignite the forest stand surrounding it.

## 5.0 Assessment Process

The East Barriere Lake community was assessed by Local FireSmart Representative, Brittany Seibert, during her visit on August 24, 2019. The community and adjacent vegetation within a least a 100m radius was assessed and observations were recorded using the FCCRP Community Hazard Assessment Form (see Appendix 1). The assessment process noted a number of attributes that contribute both negatively and positively towards the risk of property damage/loss due to a wildfire event.

As part of the FireSmart project – funded by the TNRD – a FireSmart public talk was given on the same day at a local resident’s house in the East Barriere Lake community. The objective of the talk was to educate home owners on the use of the FireSmart Site and Structure Hazard Assessment Form to help identify and prioritize hazards as they relate to wildland fire and their homes. The invitation was open to all members of the community and was advertised through the TRND’s Facebook page and the East Barriere Lake Facebook page. There were 12 residents in attendance.

## 6.0 Observations and Issues

The following observations were noted during the community wildfire hazard assessment. See Appendix 1 to view the entire community wildfire hazard assessment form and notations.

### 6.1 Roof Assemblies

A home’s roof is the largest surface that is the most exposed to embers during a wildfire. Homes with a flammable wood shake roof have a much higher probability of igniting during a wildfire compared to a non-wood roofing system. Homes in the East Barriere Lake community were seen to have fire-rate roofing materials (mainly asphalt shingles). Roofs were in various states of cleanliness and condition. General rules are thumb are: 1) Clean roofs will mitigate the potential of burning debris that may challenge a roof’s fire resistance and reduce the chance of igniting another fuel source, 2) aging roofing begins to curl, peel and breakdown leading to exposure of the combustible wood underside. Organic material, such as moss, may begin to grow and can pose a risk to home ignition.

Other structures seen on individual properties (such as sheds) were seen to have wood shake roofs. The cause of concern for this is the potential of the outlying structure becoming a fuel source that can create embers or sustain enough radiant heat for home ignition. See section 6.3 for further detail



Figure 9 Roofs that are free and clear of debris help to mitigate the risk of home ignition

## 6.2 Building Exteriors

Risk factors associated with the exterior surface of a structure are less dependent on the characteristics of the exterior cladding system (e.g. stucco vs. cement board vs. vinyl siding etc.) and more dependent on the likelihood of direct flame contact and/or ember accumulation on the structure. Accumulated fuel along an exterior wall can negate the fire-resistant advantages that any particular exterior cladding system provides, should the fuel ignite. The removal of fuel accumulations along any exterior wall should be of much greater concern than the actual composition of the wall itself.

## 6.3 Nearby Combustibles

In the context of the structure and site hazard assessment, nearby combustibles refer to non-vegetative fuel, such as firewood, wood fences, sheds, vehicles etc. Outbuildings are of particular concern if they located within 15m (45ft) of the home. Outbuildings pose a threat to the ignition of a home because they are able to sustain extreme radiant heat for over longer periods of time. As well, the additional risk of firebrand production poses a risk to any nearby structure. Any outbuilding that is located within 15m (45ft) should have FireSmart principles applied to mitigate its potential to ignite.

Firewood is a serious fire danger as it will ignite and burn intensely during a wildfire event. Often firewood is located near the principal building and is often responsible for igniting interface buildings during a wildfire. It is recommended that firewood be stack a min. 10m away from the home during the wildfire season. A pre-caution to shoulder months as wildfire seasons has shown signs in recent years of burning earlier and later through the calendar year.

Direct flame contact is often thought of as the primary factor in home ignition and subsequent loss. However, recently it has become more apparent that ignition from firebrands is the most likely scenario. Because of this, innocuous items commonly found around the outside of a home may act as a combustible that could ignite the home. Flammable patio furniture (particularly seat cushions), sisal doormats and mats, or even a corn broom leaning against the house are all potential fuels that could ignite from ember accumulation.

## 6.4 Vegetation

Vegetation is assessed in three concentric zones around a home (Figure 2), with Priority Zone 1 (PZ-1) being the area occupying the first 10m (30ft) around the structure. More recently Zone 1a (PZ-1a), known as the non-combustible zone, has been added to distinguish the importance of the first 1.5m (4.5ft) from a structure. The quantity and condition of canopy, ladder and surface fuels are the key factors assessed.

In East Barriere Lake, the predominant native tree species are Cedar and Douglas fir. Several other species were seen within the PZ-1(a) including various deciduous, spruce, cedar and juniper shrubs and hedges. Deciduous species are the recommended vegetation to be planted within the PZ-1(a) as they are naturally resistive to intense wildland fire behavior. This is because the species lacks the ladder fuels for vertical fire growth, maintains a higher moisture content within its leaves, and has smooth, tight bark that makes it difficult for fire to climb.

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Conifer species pose a significant risk when found within the PZ-1(a). They offer easily accessible ladder fuels for wildland fire to reach the canopy and create large amounts of needle litter sustaining surface fire. Cedar and Juniper shrubs and hedges are also problematic from a home ignition perspective. These species are rich in organic volatile compounds and terpenes making them easily ignitable.

There is concern for increasing fuel loads along the FSR at kilometer 6.5 to 7.5. Standing dead timber, likely due to calcium previously used on the road, continues to decay and fall to the ground. This increase of ground fuels can result in increased fire intensities as it begins to take on slash pile characteristics.



Figure 10 Dead standing timber is found between the 6.5 and 7.5km mark. Trees are believed to have been killed by calcium from the road. Ground fuel loading will increase as trees continue to decay and eventually fall over.

Most homes in the East Barriere Lake community have overlapping zones. In many cases, one home's Zone 1 is the adjacent home's Zone 1. This is a common characteristic of higher-density WUI areas and it reinforces the view that many individual FireSmart efforts can increase the overall wildfire resilience of the entire neighborhood. Unfortunately, the same holds true when one (or more) homes aren't FireSmart and pose a threat to adjacent homes that are.



Figure 11 The East Barriere Lake community has both a close relationship with the surrounding forest and surrounding neighboring properties.



## 7.0 Recommendations

FireSmart seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a wildland urban interface (WUI) setting. Homeowners already balance their decisions about fire protection measures against their desire for certain flammable components on the properties. It is important for them to understand the implications of the choices they're making. These traces directly relate to the ignitability of their home ignition zones during a wildfire.

A home owner/community must focus attention on the home and surrounding area and eliminate the fires potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low-intensity fire that could occur around it, and by being conscious of the devastating effects of wind driven embers.

The following section of this report provides recommendations for consideration by the East Barriere Lake community concerning wildfire safety issues that were identified as priorities during the assessment:

- Removal of conifers and combustible plants within the Zone 1a (0-1.5m) and Zone 1 (1.5-10m) will significantly reduce the fire hazard rating for structures and properties within the community
  - Should the home owner choose to keep conifers within PZ-1(a) it is strongly recommended that low-lying branches (2m from ground) and pine needle debris are removed. Homeowners should also ensure to remove any branches in contact with the home itself and consider increasing horizontal continuity of conifers to 3m.
- Personal items such as trailers/RVs, recreational vehicles, tools, building materials, etc. are all considered combustible and should be stored appropriately or removed from zone 1 (>10m from home).
- Neighboring buildings such as sheds or detached garages located within 15m of the home should also be considered as a fuel source. It is recommended that they also have FireSmart mitigations done to and around them to prevent ignition.
- Fuel reduction in Zone 2 (10-30m) and Zone 3 (30-100m) should see trees spaced 3m apart and low-lying branches cut to above 2m. This will reduce the likelihood of fire transference through the crown and will help to keep fire along the ground with lower burning intensities.
  - Priority zones (up to 100m away from a home) that fall onto crown land should be assessed by a qualified professional to determine the next course of action.
- Fuel loads between the 6.5km and 7.5km mark should be managed. The several dead standing timber – potentially a resultant of calcium used on the road – pose a risk of increasing ground fuel loads as begin to fail and fall to the ground. Fuel loads, such as this, can result in slash pile fire behavior.

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- Homes with firewood stacks are reminded during wildfire season to have wood stacked a min. of 10m away from the structure. Firewood may be moved closer to the home during times of low wildfire threat (i.e. winter). During shoulder seasons attention should be given to changing weather conditions as wildfire seasons have demonstrated early and late burning periods in a calendar year.
- When fire weather is severe and the home is unoccupied, homeowners should remember not to leave flammable items outside. This includes rattan doormats, flammable patio furniture, children's toys and trash cans.

It is recommended that the community come together to create FireSmart Community Plan regardless of the community's intention to seek FireSmart Community Recognition status. A FireSmart Community Plan is generally a simple action plan, comprised of at least three agreed-upon, doable action items that will improve a community's wildfire readiness. The Community Plan can be modified with the passage of time and renewed with each new wildfire season.

### 8.0 Successful FireSmart Mitigations

When adequately prepared, a house can likely withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both FireSmart and compatible with the area's ecosystem. The FireSmart Communities program is designed to enable communities to achieve a high level of protection against wildfire loss even as a sustainable ecosystem balance is maintained.

Other than the replacement of an unrated wood roof or replacing a flammable deck, most FireSmart hazard mitigations around the home are inexpensive and straightforward. In many ways, hazard mitigation and spring yardwork go together and can be scheduled as such. Most often it is the small things that a homeowner attends to that can make a big difference in whether their home will survive during a WUI fire. The following are good examples of small steps that homeowners within the Thompson Nicola Regional District have put in place that make their homes – and subsequently their community – more resilient to wildfire:

#### 8.1 Fire-Resistant Roofing

Replacing a roof is one of the single-most expensive FireSmart improvements. The combination of a rate roof that is free of fuel accumulations is a big step to improving the survivability of a home during wildfire event.



*Figure 12 Fire-rated roofing material is proven to be highly resilient against home ignition during a wildfire event. Roof design can also contribute to mitigation of debris accumulation by minimizing valleys and pinch point where debris can be captured*

## 8.2 Landscaping

Simple landscaping changes to one's respective Zone 1 can make all the difference in preventing home ignition. Replacing bark mulch with rock, replacing conifers with deciduous, and utilizing low flammable plants within gardens are all great steps one can make towards increasing their home's resiliency. Maintaining a green lawn is the best standard however, a mowed lawn is still a fire-resistant lawn – grasses shorter than 10cm are less likely to burn intensely. Removal of dead leaves and pine needle litter will also help to reduce fuel sources within the yard.



*Figure 13 This home demonstrates several FireSmart landscaping attributes. The gravel provides a non-combustible surface creating a break from direct flame contact to the home. Conifers have been removed up to 10m away and ladder fuels have been cleared. Leafy, deciduous plants are the preferred vegetation to be found in zone 1.*

## 9.0 Next Steps

After reviewing the contents of this assessment and its recommendations, it is up to the East Barriere Lake community to determine whether or not they will implement the recommendations. The recommendations and FireSmart guidelines noted above are proven and time-tested to be effective in reducing the risk of wildfire losses. It is believed that there is great potential for the community and its residents to work together to reduce the wildfire threat quickly and substantially by acting to mitigate priority issues.

Should the East Barriere Lake community wish to seek FireSmart Community recognition status it is encouraged for them to contact the Local FireSmart Representative and to also create a FireSmart Board. A FireSmart Board is a multi-disciplinary group of volunteer representatives of the neighborhood or community who are responsible for driving the FireSmart initiative in their community and ensuring the recognition criteria are met.

If the report and the recommendations are accepted and recognition will be sought, the East Barriere Lake FireSmart Board will create agreed-upon, area-specific solutions to the FireSmart Community Assessment Report recommendations to prepare a FireSmart Community Plan in cooperation with their Local FireSmart representative and local fire agency personnel who may be acting as advisers.

If East Barriere Lake seeks to achieve the national recognition as a FireSmart Community, the following standards should be incorporated into its FireSmart Community Plan:

- Sponsor a local FireSmart Board that maintains the FireSmart Community program and recognition status
- Continue to work with the Local FireSmart Representative or enlist the assistance of a WUI specialist to complete a FireSmart Community Plan which identifies agree-upon, achievable local solutions
- Invest a minimum of \$2.00 annually per capita in its local FireSmart Events and activities and activities (work done by municipal employees or volunteers\*, using municipal or other equipment, can be included, as can provincial/territorial grants dedicate to that purpose).
- Hold a FireSmart Event (e.g. FireSmart Day) each year that is dedicated to a local FireSmart project.
- Submit an application form or annual renewal application form with supporting information to FireSmart Canada. This application or renewal process documents continuing participation in the FireSmart Communities Program with respect to the above criteria.

*\* Volunteer hours are calculated at a rate of \$21 per hour or at the rate of service being voluntarily given*

## 10.0 Signature of Local FireSmart Representative

Signed:	Date signed:	
<i>Brittany Seibert</i>	October 25, 2019	Brittany Seibert, LFR Frontline Operations Group, Ltd. Brittany@frontlineops.ca

## APPENDIX 1: Resources

- FireSmart Canada  
<https://www.firesmartcanada.ca>
- FireSmart British Columbia  
<https://firesmartbc.ca>
- FireSmart Begins at Home Assessment  
<https://firesmartbc.ca/wp-content/uploads/2019/07/FireSmart-Home-Assessment.pdf>
- FireSmart Canada Community Recognition Program (FCCRP)  
<https://firesmartbc.ca/resource/how-to-apply-for-the-firesmart-canada-community-recognition-program-fccrp/>  
<https://firesmartbc.ca/wp-content/uploads/2019/01/FCCRP-Application-Form-1.pdf>
- FireSmart Guide to Landscaping  
<https://www.firesmartcanada.ca/mdocs-posts/firesmart-guide-to-landscaping/>

APPENDIX 2: Community Wildfire Hazard Assessment form



This Community Wildfire Hazard Assessment form provides a written evaluation of the overall community wildfire hazard – the prevailing condition of structures, adjacent vegetation and other factors affecting the FireSmart status of a small community or neighbourhood. This hazard is based on the **hazard factors** and **FireSmart recommended guidelines** found in **FireSmart: Protecting Your Community from Wildfire** (Partners in Protection, 2003) and will assist the Local FireSmart Representative in preparing the FireSmart Community Assessment Report. **NOTE: Mitigation comments refer to the degree to which the overall community complies or fails to comply with FireSmart recommended guidelines with respect to each hazard factor**

<b>Community Name: East Barriere</b>		<b>Date: (mm/dd/yyyy) August 24, 2019</b>
<b>Assessor Name: Brittany Seibert</b>		<b>Accompanying Community Member(s):</b>
<b>Hazard Factor</b>	<b>Ref</b>	<b>Mitigation Comments</b>
<b>1. Roof Assemblies</b>		
a. Type of roofs ULC rated (metal, tile, asphalt, rated wood shakes) unrated (unrated wood shakes)	2-5 3-21	2 wood shake roofs seen – 1 home and 1 outbuilding Other homes all fire rated; mainly metal roofs with occasional asphalt
b. Roof cleanliness and condition <i>* Debris accumulation on roofs/in gutters; curled damaged or missing roofing material; or any gaps that will allow ember entry or fire impingement beneath the roof covering</i>	2-6	Most main structure roofs predominantly clean, several outbuildings however have build-up of debris on roofs. Likelihood of debris build up due to high population of vacationers = unlikely owners spending much time fuel managing property in combination with dense overstory. Condition of roofs also variable.
<b>2. Building Exteriors</b>		
<b>2.1 Materials</b>		
a. Siding, deck and eaves	2-7 2-8 2-9	Various mixture of exterior siding. Rough estimate would be 50/50 for fire rated sidings. Several homes seen with variant sidings of mainly fire-resistant lower portions and non-fire resistant above. Variety of deck compositions and designs. Eaves appear to be closed, however several cabins/homes hard to see from road
b. Window and door glazings (single pane, sealed double pane)	2-10	50/50 of newer buildings on lake. Likely most buildings have double paned windows and tempered glass porch doors. Some older cabins, and outbuildings potentially to have single paned windows

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<p>c. Ember Accumulator Features (scarce to abundant)</p> <p><i>* Structural features such as open eaves, gutters, unscreened soffits and vents, roof valleys and unsheathed crawlspaces and under-deck areas</i></p>		<p>All structures have a variety of ember accumulator features including roof shapes, deck configurations, open and unsheathed deck construction and gutters. Decks are likely to be the main ember accumulator</p>
<p>d. Nearby Combustibles – firewood, fences, outbuildings</p>	<p>2-11</p>	<p>Firewood prevalent within community. Most firewood seen stacked w/in 10m of structure and often adjacent. Some properties seen with trailers, RVs, boats and ATVs (etc). Almost all properties seen have some outbuilding. Occasional propane tanks also seen in the yard</p>

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Hazard Factor	Ref	Mitigation Comments
<b>3. Vegetation</b>		
<b>3.1 PZ-1: Vegetation - 0 - 10m from structure Page Reference 3-5</b>		
a. Overstory forest vegetation (treated vs. untreated)	2-14	Mainly mature cedar or mature douglas fir. Trees proximity to the lake are considered to be in a riparian zone and require permits for removal.
b. Ladder fuels (treated vs untreated)	2-17	No ladder fuels seen below mature cedar and douglas fir. Very little seen in regards to combustible shrubs or plants in non-combustible zone
c. Surface fuels-includes landscaping mulches and flammable plants (treated vs untreated)	2-16	Majority of properties with grass that is well maintained: low growth (<15cm) and watered. Many non-vegetative fuel sources within non-combustible zone (i.e. firewood)
<b>3.2 PZ-2: Vegetation - 10 - 30m from structures Page Reference 3-9</b>		
a. Forest vegetation (overstory) treated vs untreated	2-14	See zone 1
b. Ladder fuels treated vs untreated	2-17	Mainly deciduous brush below canopy top, intermixing of dense pockets of immature douglas fir
c. Surface fuels treated vs untreated	2-16	Sparse grass and thick duff layer
<b>3.3 PZ-3: Vegetation - 30 - 100m from structures Page Reference 3-13 Provide mitigation comments on the prevailing PZ3 fuel type</b>		
a. Light fuel-deciduous–grass, shrubs	2-16	Sparse grasses and deciduous shrubs, thick duff layer



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Hazard Factor	Ref	Mitigation Comments
b. Moderate fuel - mixed wood – light to moderate surface and ladder fuels, shrubs	2-17	Majority of the forest stand surrounding community is C5 Cedar stand with very little ladder fuels. Mainly deciduous brush along forest floor. Occasional pockets of douglas fir along road side (uphill)
c. Heavy fuel - coniferous - moderate to heavy surface and ladder fuels, shrubs	2-14	C5 Cedar forest predominantly surround lake. M2 to the west of the lake, pocket of mixed conifer (mainly douglas fir) on NW corner. Mixture of douglas fir, pine, cedar and occasional spruce
d. Logging slash, dead/down fuel accumulations	2-16	Logging located to the SE of the NW corner of lake (along creek)
e. Diseased forest – without foliage vs with foliage		6.5km mark to 7.5 km. Dead cedar. Local knowledge said may be due to calcium used on road as dead cedar only on downhill side. 600 trees have been removed prior but several dead still remain.
f. Fuel islands within community - treated vs untreated		N/A
<b>4. Topography</b>		
<b>4.1 Slope (within 100m of structures)</b>		
a. Slope - Flat or < 10 %, 10 – 30% or >30%	2-19	20%
<b>4.2 Buildings setback on slopes &gt;30 %, position on slope Provide mitigation comments on items a – c as applicable</b>		
a. Setback from top of slope > 10m, or bottom of slope – valley bottom. b. Buildings located mid-slope c. Setback from top of slope <10m, or upper slope	2-12	Most homes on properties around the lake are located on the bottom of slope near the lake. On the NW side of the lake there are approx. 5 properties above slope. 3 appear to be situated on a flat bench while the other two would be affect by slope based on their position

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Hazard Factor	Ref	Mitigation Comments
<b>5. Infrastructure - Access / Egress, Roads, Driveways and Signage</b>		
5.1 Access Routes – Road Layout To FireSmart Recommended Guideline?		
a. Single Road or Looped Road	3-28	Single road access
5.2 Roads- width, grade, curves, bridges and turnarounds		
a. To FireSmart Recommended Guideline?	3-30	N/A
5.4 Fire Service Access / Driveways - Grade, Width/Length, Turnarounds		
a. To FireSmart Recommended Guideline?	3-30	N/A
5.5 Street Signs / House Numbers		
a. To FireSmart Recommended Guideline?	3-30	N/A
<b>6. Fire Suppression - Water Supply, Fire Service, Homeowner Capability</b>		
6.1 Water Supply		
a. Fire Service water supply – hydrants, static source, tender or no water supply	3-32	Lake would be main water source
6.2 Fire Service		
a. Fire Service < 10 minutes or > 10 minutes, no fire service	2-25	N/A; Kamloops base closest BCWS (1hr)
6.3 Homeowners Suppression Equipment		
a. Shovel, grubbing tool, water supply, sprinklers, roof-top access ladder	3-28	Home owners likely to have basic suppression tools such as shovels

Hazard Factor	Ref	Mitigation Comments
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7. Fire Ignition and Prevention - Utilities, Chimneys, Burn Barrel / Fire Pit, Ignition Potential		
7.1 Utilities		
a. To FireSmart Recommended Guideline?	2-24	N/A
7.2 Chimneys, Burn Barrel / Fire Pit		
a. To FireSmart Recommended Guideline?	2-22	N/A
7.3 Ignition Potential Provide mitigation comments on items a – d as applicable		
a. Topographic features adversely affect fire behaviour b. Elevated probability of human or natural ignitions c. Periodic exposure to extreme fire weather or winds d. Other	2-21	Elevated human ignitions d/t campfires on both private and public land. Rec site located on northwest shore of lake, as well appears to have 10 cabins Lots of evidence of off-road vehicle use as well Slope likely to carry fire away from homes, however still potential for cross lake embers if winds prevail
<b>General Comments</b>		

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