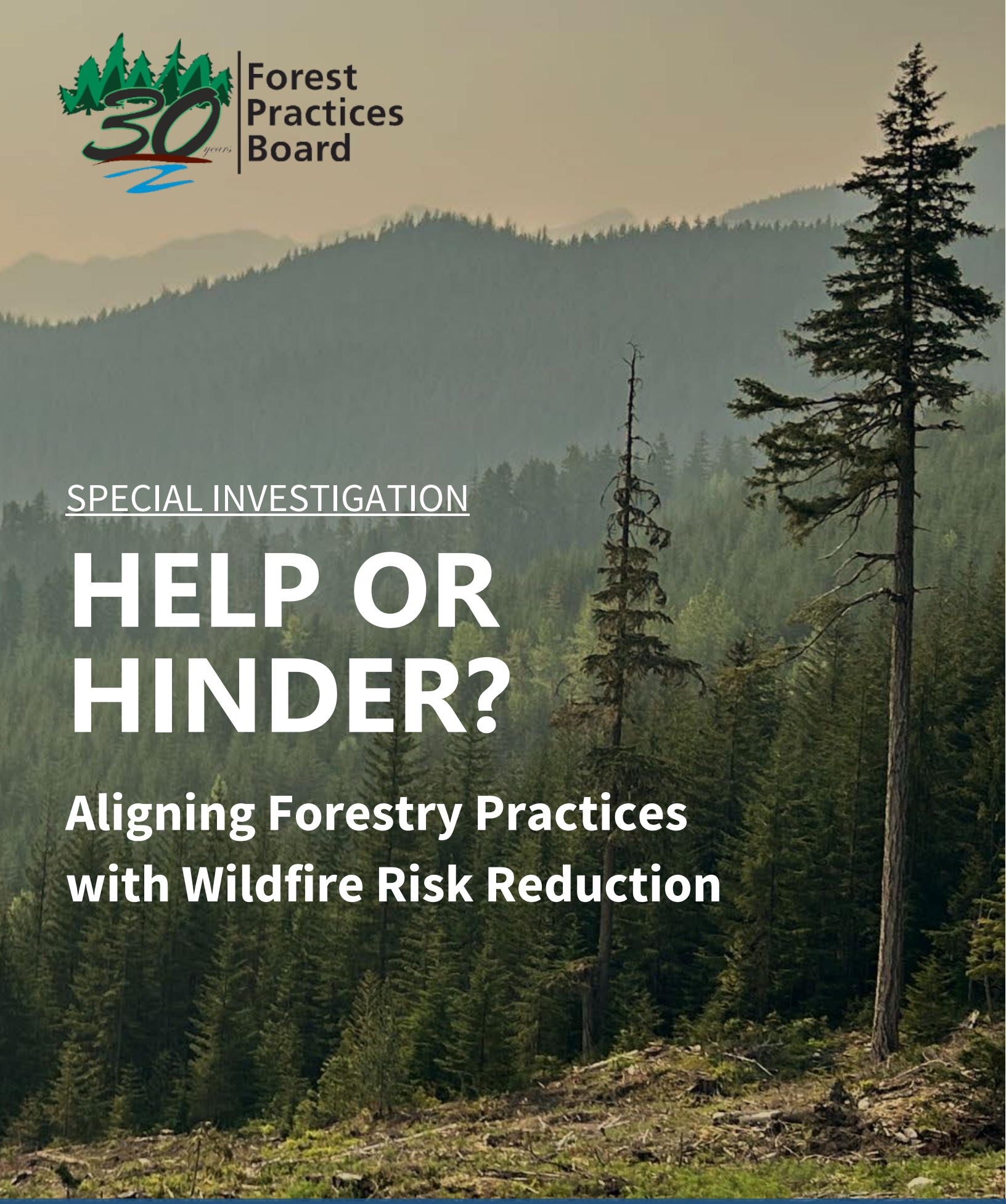
Forest Practices Board



SPECIAL INVESTIGATION

HELP OR HINDER?

Aligning Forestry Practices with Wildfire Risk Reduction

June 2025 SIR 56 www.bcfpb.ca

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COMMENTARY

Wildfires continue to pose a growing threat to communities in British Columbia (BC), and the role of forestry in mitigating that threat has never been more critical. This special investigation shows that regulated forestry activities are not achieving their full potential to reduce wildfire risk in the wildland-urban interface (WUI or interface). Yet it also highlights promising practices and a path forward—one that puts community safety at the centre.

Fire hazard assessments are a legal cornerstone of wildfire risk mitigation, but many are late, incomplete, or based on outdated methods. Few licensees use government's 2012 guidelines for hazard assessment. Yet the investigation found examples where assessments were clear, timely, and tied directly to fuel reduction strategies. Where professionals integrated risk assessment early in planning and followed through with prescribed abatement, fire hazards were reduced before they became seasonal liabilities. These examples show what's possible when assessments are used proactively.

Fire hazard abatement timelines are also an issue. Regulations allow up to 30 months to reduce fuel hazards—even in high-risk areas. However, strong examples of abatement emerged where licensees acted quickly and bundled abatement into harvest plans. These cases show timely action is feasible when licensees align planning, accountability and execution.

The *Open Burning Smoke Control Regulation* (OBSCR) regulates when burning can occur after areas are logged, especially near communities. This limits one of the most effective fuel reduction tools. Yet some licensees integrate OBSCR requirements, using custom venting forecasts or investing in air curtain burners. Supporting these approaches—and incentivizing other ways to utilize wood waste—can help balance public health with timely abatement.

Community wildfire risk reduction (WRR) plans are being developed across BC, but they're not always accessible and are seldom linked to licensee obligations. Still, where communities, land managers, and licensees were aligned, treatments were coordinated and effective. These examples show what can happen when everyone, including the forest sector, is aligned on risk reduction objectives.

Silviculture practices also remain disconnected from fire resilience goals. Fire management stocking standards have existed since 2016, yet adoption is low. Encouragingly, some professionals are beginning to design regeneration with fire behaviour in mind, even considering successional outcomes beyond free growing. These early shifts point the way toward more resilient forests.

Logging occurs at eleven times the rate of WRR treatments in the interface, yet is rarely planned with wildfire in mind. That said, some licensees have used harvest operations to support abatement by promptly addressing fuel hazards and managing access in high-risk areas. These cases show forestry's capacity to contribute to risk reduction when mitigation is considered.

In the end, this investigation highlights a system where responsibilities and incentives remain disconnected. But the knowledge, skills, and commitment already exist. The opportunity now is to connect them—to bring forestry and wildfire disciplines and practitioners together to create safer WUIs across all communities within BC.

RECOMMENDATIONS

Under section 131 of the *Forest and Range Practices Act* (FRPA), the Forest Practices Board is making the following recommendations to the provincial government:

1. **Set Proactive Fire Management Objectives**

   Establish proactive fire management objectives for the interface to reduce wildfire hazards rather than merely prevent hazard increases.

2. **Improve Legal Definitions and Transparency**

   Ensure the wildland-urban interface includes municipalities and other high-risk populated areas, and that maps depicting the legal interface are publicly available.

3. **Increase Public Accessibility of Wildfire Risk Reduction Plans**

   Create a centralized, public repository for community-scale wildfire risk reduction plans to support coordinated action, community advocacy, and cross-jurisdictional wildfire risk reduction.

4. **Strengthen Fire Hazard Abatement Timelines**

   Require abatement periods to follow an "as soon as practicable" standard to reduce prolonged wildfire vulnerability.

5. **Enhance Fire Hazard Assessment Guidelines**

   Revise and update the Ministry of Forests' 2012 fuel hazard assessment and abatement guidelines[1] to address current limitations and align with best practices in wildfire risk assessment.

Under section 132 of FRPA, the Board requests that government respond to these recommendations by November 30, 2025, indicating for each that they:

a) accept the recommendation and describe how they will address or have addressed them; or,

b) partially accept the recommendation and provide reasons why, and describe how they will address or have addressed them; or,

c) do not accept the recommendation and provide reasons why.

[1] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/hazard-assessment-abatement/bcws_hazard_assessment_abatement_guide.pdf

EXECUTIVE SUMMARY

This special investigation examines how regulated forestry activities help or hinder wildfire risk reduction (WRR) in the wildland-urban interface. While progress is evident, persistent challenges remain in fire hazard assessments, fire abatement practices and integration with broader WRR efforts.

Fire hazard assessments are a critical requirement for forestry activities, yet unclear definitions, poor implementation and outdated standards hinder their effectiveness. While fire hazards closer to the interface are required to be assessed and abated sooner than hazards farther away, municipalities—the province's most populated areas—are excluded from the legal definition of the interface, and maps defining the legal interface are not publicly accessible. Only 70 percent of the hazard assessments sampled in this investigation met legal content standards, and less than 25 percent were completed on time. The 2012 BC Wildfire Service's *Guide to Fuel Hazard Assessment and Abatement*[2] (the BCWS guide) provides a framework for fire hazard assessments but has limitations, and few licensees use them. Updating these guidelines and improving interface definitions would enhance the effectiveness of fire hazard assessments.

Fire hazard abatement efforts show both promising and problematic trends. Many licensees are helping reduce risk through effective chipping, piling, burning debris, and managing access in high-risk areas. However, regulatory and operational barriers continue to hinder progress. Failure to follow prescribed measures and long abatement timelines allow hazardous fuel loads to persist through multiple fire seasons. Sixteen percent of the cutblocks sampled did not meet legal abatement requirements, and another 21 percent required further work to meet requirements within the legal timeframe. In addition, regulatory compliance can be met without meaningfully reducing wildfire hazards, as long as industrial activities do not intensify fire behaviour or complicate suppression efforts. Regulatory restrictions related to smoke control and abatement costs presented the greatest obstacles to licensees reducing hazards quickly. Addressing these obstacles and creating economic incentives for fire hazard abatement would strengthen wildfire mitigation.

Wildfire risk reduction treatments are largely effective, but systemic barriers hinder their benefit. Plans are comprehensive, and over 90 percent of sampled treatments met surface fuel, ladder fuel, and debris reduction targets, showing that when WRR treatments are implemented, they help mitigate risk. However, approval delays and weak accountability to comply with fuel management prescriptions hinder implementation.

While some licensees help reduce risk by integrating wildfire considerations into stand management, fire management stocking standards remain underutilized—only 17 percent of licensees sampled have adopted them in regenerating stands. Broader adoption of these practices could significantly enhance resilience in regenerating stands.

[2] BC Wildfire Service was formerly the Wildfire Management Branch.

The scale of forestry activities in the interface presents both a challenge and an opportunity to help wildfire mitigation. Logging in the interface occurs 11 times more often than WRR treatments, yet it is not consistently planned with wildfire risk reduction in mind. While WRR treatments help by effectively overlapping with priority risk reduction areas, conventional harvesting almost never does, hindering potential benefits. Improved coordination between forestry operations and WRR planning could enhance wildfire resilience for communities at risk.

While progress is evident, the imbalance between helpful practices and regulatory barriers continues to hinder forestry's full potential as a wildfire mitigation tool. Addressing these gaps—aligning harvesting with fire risk reduction priorities, shortening abatement timelines, expanding fire-adaptive stocking, and improving access to WRR plans—could ensure that forestry activities help achieve greater wildfire resilience in the interface.

TERRITORIAL ACKNOWLEDGEMENT

Indigenous Peoples in BC have lived, stewarded, and relied on the land since time immemorial. The Forest Practices Board acknowledges and respects the many First Nations territories we work within.

This investigation took place within the territories of the Blueberry River First Nations, Doig River First Nation, Douglas First Nation, Esk'etemc, Halfway River First Nation, Horse Lake First Nation, Kwantlen First Nation, Lhtako Dene Nation, Lí̓lwat Nation, Lillooet Tribal Council, McLeod Lake Indian Band, Musqueam Indian Band, N'Quatqua First Nation, Neskonlith Indian Band, Nooaitch Indian Band, Northern Secwépemc te Qelmúcw, Saulteau First Nations, Samahquam First Nation, Skatin Nations, Squamish Nation, St'át'imc Chiefs Council, Stó:lō Nation, Sts'ailes, Stswecem'c Xgat'tem First Nation, T'it'q'et First Nation, Tsleil-Waututh Nation, Upper Nicola Band, West Moberly First Nations, Whispering Pines/Clinton Indian Band, Williams Lake First Nation, and Xat'sull First Nation.

The Forest Practices Board recognizes the distinct and ongoing relationships these Nations have with their territories and affirms the importance of reflecting Indigenous knowledge, priorities, and rights in forest and wildland fire stewardship.

GLOSSARY

Canopy Base Height (CBH)[i] describes the average height from the ground to the bottom of the canopy. Specifically, it is the lowest height in a stand at which there is sufficient forest canopy fuel to propagate fire vertically into the canopy. This definition incorporates ladder fuels such as lichen, dead branches, and small trees.

Canopy Bulk Density (CBD)[i] describes the density of available canopy fuel in a stand. It is defined as the mass of available canopy fuel per canopy volume unit, typically measured as kg/m^3. CBD estimates are used to determine the threshold spread rate or surface wind speed to determine the likelihood of active canopy (or crown) fire.

Fuel Break means (a) a barrier or a change in fuel type or condition or (b) a strip of land that has been modified or cleared to prevent fire spread.[3]

Fuel hazard means the potential fire behaviour, without regard to the state of weather or topography, based on the physical fuel characteristics, including fuel arrangement, fuel load, condition of herbaceous vegetation and the presence of ladder fuel.[4]

Kilowatts per metre (Kw/m) is a measure of fire intensity as energy output rate per unit of fire front.[ii] Measured at the front or head of a fire, this is often called Head Fire Intensity. The Canadian Forest Fire Danger Rating System uses these values to help predict and categorize fire behaviour based on factors such as fuel type and wind conditions.

Ladder fuels provide vertical continuity between the surface fuels and canopy fuels in a forest stand, contributing to the ease of torching and crowning (e.g., tall shrubs, small-sized trees, bark flakes, tree lichens).[iii]

Lop and Scatter are when slash is cut into smaller pieces and scattered so coarse woody debris lies flatter on the forest floor.[iv]

Qualified holder is a person who has a valid cost sharing or service agreement in place with BC Wildfire Service or is the holder of a specified licence under the *Forest Act* and is required to pay annual rent under the *Annual Rent Regulation*.

Shaded fuel breaks are strategically implemented treatments designed to modify fire behaviour, facilitating wildfire suppression efforts. These treatments reduce surface fuels, increase the height to the base of live crowns through ladder fuel removal, and decrease crown bulk density by thinning the canopy.[v]

Wildfires are any natural-caused or unplanned human-caused fires that are burning in and consume natural fuels: forest, brush, tundra, grass, etc. Also include escaped prescribed fires.[iii]

Wildland Fire is any fire burning in and consuming natural fuels: forest, brush, tundra, grass, etc. Includes wildfires and prescribed fires.[iii]

[3] Section 1 of the *Wildfire Regulation*.
[4] Section 1 of the *Wildfire Regulation*.

Wildland-Urban Interface is where homes and other human developments meet or are intermixed with wildland fire fuels.[iii] This report refers to the wildland-urban interface as the WUI or the interface.

Wildfire Threat Assessment is a stand-level evaluation of forest fuel hazards that validates and refines strategic wildfire threat ratings, guides fuel treatment planning, and quantifies threat reduction in the interface.

Wildfire Risk Reduction are activities to decrease ignition, modify fire behaviour, and protect values through fuel management and forest resilience. Key actions include reducing surface fuels, increasing canopy base height, managing tree density, promoting deciduous cover, and retaining fire-resistant trees to limit fire spread and intensity.

INTRODUCTION

Wildfire is a natural and integral part of many of BC's ecosystems. While it can have ecological benefits, if it is too severe or in the wrong place, it can degrade ecosystems and threaten life, infrastructure and societal values. Eliminating wildfire is not an option, nor is it desirable. Risk reduction activities are preventative measures designed to mitigate the occurrence and impact of catastrophic wildfires.

The highest consequences of catastrophic fire occur where the forest meets communities—the wildland-urban interface (the WUI or interface). The size of a fire and the rate at which it spreads through the landscape depend on fuel, topography and weather. While topography and weather are out of our control, managing forest and grassland fuels, combined with wildfire suppression can help mitigate catastrophic fires.

As of 2021, approximately 2.1 million hectares in the interface were classified as having high or extreme wildfire risk.[5] In the four worst wildfire years between 2017 and 2023, more than 200 000 people were affected by an evacuation order or alert in BC.[vi] As of 2021, over one million people in BC live in communities with high or extreme wildfire risk, including approximately 22 percent of BC's First Nation population.

Forestry activities, such as targeted harvesting, shaded fuel breaks,[vii] post-harvest hazard abatement, and silviculture practices to promote fire-resilient forests, can actively mitigate wildfire risks. When coordinated, these activities can become effective strategies that form the backbone of landscape fire management.[viii] Currently, most of these risk-reduction activities are concentrated near communities. The *Forest and Range Practices Act* (FRPA) and the *Wildfire Act* can be used to compel forest tenure holders to carry out these risk-reduction activities.

Commercial logging is not primarily designed to reduce wildfire risk, though certain practices can effectively reduce wildfire risk. Over the past decade, logging has been the main forestry activity in the interface, occurring at a rate 11 times higher than treatments specifically aimed at wildfire risk reduction. Unlike logging, WRR treatments are designed to reduce surface fuels, increase canopy base height, manage tree density, promote deciduous species, and retain fire-resistant trees to limit fire spread and intensity. Between 2014 and 2023, approximately 175 700 hectares were logged in the interface, compared to just 16 200 hectares treated specifically for wildfire risk.[6]

Past Forest Practices Board (Board) audits and investigations have shown that forestry practices can support or undermine WRR efforts. The Board wanted to understand how risk reduction efforts are integrated into forestry planning and practices. For those communities most vulnerable to wildfire in BC, this special investigation examined how FRPA and the *Wildfire Act* positively or negatively affected wildfire risk in the interface.

[5] This introductory analysis of wildfire risk, area logged, and wildfire risk reduction treatments is based upon the BC Wildfire WUI Human Interface Buffer.
[6] Area of WRR treatment only includes where mechanical or hand treatment operations were completed.

Objectives

Evaluate how activities subject to FRPA and the *Wildfire Act* help or hinder WRR efforts within the interface. The Board evaluated forestry activities in high wildfire-risk interface areas, focusing on forest harvesting, regeneration, and WRR treatments carried out between June 2019 and June 2022 across three natural resource districts. These districts are the Sea to Sky (Coast Area, South Coast Region), Cariboo-Chilcotin (South Area, Cariboo Region), and Peace (North Area, Northeast Region).

BACKGROUND

Who, Where and When: The Legal Framework for Wildfire Risk Reduction

This section explains the laws and policies that guide forestry activities toward reducing wildfire risk in the interface. The Board assessed forestry activities to determine whether the policies that govern hazard assessment and abatement, silviculture practices, and WRR treatments were followed and effectively carried out.

Fire Hazard Assessments and Abatement Requirements for Industrial Activities

Fire hazard assessment and abatement are legally required for industrial activities such as timber harvesting. The *Wildfire Act* governs who, where and when a fire hazard is to be assessed and abated. The *Wildfire Regulation* sets timelines for assessing and abating fire hazards based on who conducts the industrial activity and its proximity to what the Board calls the 'legal interface'[7] (see textbox on Page 3).

[7] Section 1 of the *Wildfire Act* (local government definition); section 11(2)(a) of the *Wildfire Regulation* specifies the area inside or within two kilometres of the boundaries of improvement districts, water improvement districts or fire protection districts.

Fire hazards must be assessed and abated sooner if they are in the legal interface.

A fire hazard assessment must be completed for industrial and prescribed activities on or within one kilometre of forest or grassland if the activity creates or increases a fire hazard or when notified by an official.[8] Industrial activities include operating equipment or machinery related to road construction, timber harvesting, and silviculture treatments.[9] Fire hazard assessments must be completed within prescribed intervals (Table 1) and include an assessment of the fuel hazard and its associated risk of a fire starting or spreading.[10] If industrial activity is expected to cease longer than the prescribed interval, an assessment must be completed by the date operations stop.

The timing of fire hazard assessment requirements for qualified holders may be adjusted based on a schedule specified by a registered professional forester (RPF) or a registered forest technologist (RFT).[11]

WHAT IS THE 'LEGAL INTERFACE'?

The legal interface is defined by the *Wildfire Act* and *Wildfire Regulation* as an area inside—or within two kilometres of—improvement districts, water improvement districts or fire protection districts within regional districts. Fire hazards must be assessed and abated sooner if they are in the legal interface. However, the definition notably excludes municipalities, which most land managers would consider the wildland-urban interface. In addition, maps to represent the legal interface are not publicly available.

British Columbia has 189 improvement districts. These are local public bodies governed by elected trustees that provide specific services like water and fire protection. Originally established in the 1920s to manage irrigation in the Okanagan Valley, these districts evolved to include fire protection and other utilities, particularly in rural areas. Although they have the authority to tax, charge for services and manage land, their focus remains on the specific needs of their communities. For instance, 140 improvement districts offer water works services and 44 provide fire protection. No new improvement districts have been created since 1995, and many have since converted to municipalities or transferred their responsibilities to regional districts.

While the Province lists improvement districts online, public maps delineating them are unavailable.

Fire protection districts are, for the most part, outside of municipal boundaries. The Fire Commissioner's office no longer publishes the boundaries of fire protection districts. Access to fire protection district boundaries is available through BC's 27 regional districts, but this depends on whether they have, maintain or make these maps publicly available. In this investigation, the Squamish-Lillooet Regional District—one of three regional districts sampled by the Board—reported that fire protection district maps are not publicly accessible.

The Province released the Fuel Hazard Assessment and Abatement Fire Risk Map to help comply with the *Wildfire Regulation*'s 'interface' requirements and align with their 2012 Fire Hazard and Assessment Guidelines. While these maps reasonably represent the wildland-urban interface, the Board notes that they include municipalities, which *does not accurately* reflect the definition of 'legal interface' per the *Wildfire Regulation*.

[8] Section 7(1) of the *Wildfire Act, section* 11(1)(b)(i) of the *Wildfire Regulation*.
[9] Section 1(3) of the *Wildfire Regulation* defines "industrial activities" for the purposes of the term 'industrial activity' in section 1 of the *Wildfire Act*, which includes land clearing.
[10] Section 11(4) of the *Wildfire Regulation*.
[11] Section 11(3.1)(b) of the *Wildfire Regulation*.

Table 1. Who, When, and Where Fire Hazard Assessments Must Be Conducted for Industrial Activities

	WITHIN 2 KM OF THE LEGAL INTERFACE	FARTHER THAN 2 KM FROM THE LEGAL INTERFACE
Qualified Holder	Every 3 months, and the shorter interval between the last assessment and when the activity is expected to end for 3 months or more; OR as specified by RPF/RFT.	Every 6 months, and the shorter interval between the last assessment and when the activity is expected to end for 6 months or more; OR as specified by RPF/RFT.
Non-qualified Holder	Every 3 months, and the shorter interval between the last assessment and when the activity is expected to end for 3 months or more.	Every 6 months, and the shorter interval between the last assessment and when the activity is expected to end for 6 months or more.

Fire hazard assessments help reduce wildfire risks by identifying the need and extent of abatement. A person omitting required content from an assessment may violate section 11(4) of the *Wildfire Regulation* and could face an administrative penalty of up to $10,000.[12]

For fire hazard abatement, a person carrying out an industrial activity must abate a fire hazard they know of or should reasonably be expected to know of.[13] In addition to ensuring the activity does not increase the risk of a fire starting at the site, a qualified holder has two options to reduce the fuel hazard on the site. They can either:

1) Reduce the hazard on the site of the activity, as necessary, to ensure the activity does not increase the fire behaviour or fire suppression associated with a fire. In this case, 'increasing the fire behaviour' refers to: if a fire were to start, increasing the volatility of the fire; this means the rate of spread when considering fuel type, amount and arrangement of fuel with topography and weather. 'Increasing fire suppression' refers to: if a fire were to start, increasing the difficulty of controlling the fire;[ix] or
2) Reduce the fuel hazard on the site as specified by an RPF or RFT.

The timing requirements for abating fire hazards depend on whether the person is a qualified holder and the proximity of the activity to the legal interface (see Table 2). While uncommon, a government official can grant an exemption for conducting either hazard assessments or meeting abatement requirements.[14]

[12] Section 33(1)(b) of the *Wildfire Regulation*.
[13] Section 7(2) of the *Wildfire Act*.
[14] Section 26(1) of the *Wildfire Regulation*.

Table 2. Who, When, and Where Fire Hazard Abatement Must Be Completed

	WITHIN 2 KM OF THE LEGAL INTERFACE	FARTHER THAN 2 KM FROM THE LEGAL INTERFACE
Qualified Holder	Abate 24 months since the beginning of activity OR as specified by an RPF/RFT.	Abate 30 months since the beginning of activity OR as specified by an RPF/RFT.
Non-qualified Holder	Abate every 6 months after the date of the first fire hazard assessment.	Abate every 12 months after the date of the first fire hazard assessment.

A person contravening section 7(2) of the *Wildfire Act* for not abating a fire hazard on time, or to the required extent, may be prosecuted and imprisoned for up to one year for an offence, plus face an administrative penalty of up to $100,000.[15]

Abatement through burning is a common way to abate fuel hazards. All persons, including qualified holders, must comply with the *Open Burning Smoke Control Regulation* (OBSCR) enacted under the *Environmental Management Act*. The OBSCR aims to limit the public's exposure to smoke emissions by establishing conditions for open burning. The OBSCR can significantly restrict where and when a person may burn.

Photo 1. *Fire hazard abatement example: burning piles is a common strategy after logging and before tree planting.*

– PHOTO CREDIT: BC WILDFIRE SERVICE

The province is divided into venting index zones, each specifying criteria for when burning is allowed. Environment and Climate Change Canada issues ventilation forecasts daily and helps estimate the rate of smoke ventilation by factoring in local weather conditions like mixing heights and transport winds.

There are two ways for a forest licensee to obtain ventilation forecasts. The first is accessing ventilation indices published by Environment and Climate Change Canada.[16] The second is through custom ventilation forecasts.

The OBSCR allows for custom ventilation forecasts[17] which can substantially increase the opportunities for 'burn windows'. Custom ventilation forecasts must be completed by an approved forecaster, of which there are only four in BC at the time of writing. Custom ventilation forecasts incorporate factors, such as elevation and atmospheric conditions, that

[15] Section 33(2)(a) of the *Wildfire Regulation*.
[16] BC Ministry of Environment and Parks provides daily updates to these forecasts.
[17] Section 13 of the Open Burning Smoke Control Regulation.

allow smoke to disperse horizontally and vertically in the atmosphere.

High smoke sensitivity zones like population centres have the most burning constraints. These zones are depicted on a map under the OBSCR. For example, in a high smoke sensitivity zone, the OBSCR specifies that for open burning that lasts more than one day but less than two days, a ventilation forecast must be 'good' on the first day and either 'good' or 'fair' on the second day.[18]

The *Findings* section of this report evaluates compliance with these fire hazard assessment and abatement policies, and their effectiveness in reducing wildfire risk in the interface.

Considering Fire Management in Regenerating Stands

The *Forest Planning and Practices Regulation* (FPPR) and the *Woodlot Licence Planning and Practices Regulation* require licensees to regenerate stands to a minimum density[19] with ecologically suitable species and reach a minimum 'free growing' height within a specified period from the commencement of harvest.[20] Meeting these targets and timeframes is legally defined through 'stocking standards' for licensees within approved plans such as a Forest Stewardship Plan (FSP), Woodlot Licence Plan (WLP) or Forest Operations Plan (FOP) when they come into effect.

Stocking standards can help offset future wildfire risks. Silviculture practices, such as fire management stocking standards, offer options to regenerate fire-tolerant species. These options include:

- planting deciduous trees;
- site preparation using cultural or prescribed burning;
- managing understory vegetation to reduce flammable growth and promoting fire-resistant shrub or herbaceous cover; and
- prescribing alternative tree densities and spacing, where necessary.

These practices, as well as site-factors, affect forest succession, including tree branching, self-pruning rates, the canopy's base height and crown size. Together, these practices influence surface, ladder and canopy fuels, microclimatic conditions like humidity, and ultimately, fire behaviour.

[18] Section 20 of the Open Burning Smoke Control Regulation.
[19] As approved in a Forest Stewardship Plan, Woodlot Licence Plan or Forest Operations Plan.
[20] See section 44(1)(b) of the *Forest Planning and Practices Regulation* and section 35(2) of the *Woodlot Licence Planning and Practices Regulation*.

In 2016, the BC chief forester published the *Fire Management Stocking Standards Guidance Document*.[21] While the chief forester 'strongly recommends' a cooperative approach to fire management stocking standard development[22] to help achieve fire management objectives at the stand and landscape levels, following fire management stocking standards within the interface is not a legal requirement unless licensees specify their use in an approved FSP or WLP.

Amendments to the FPPR in March 2024 authorize the chief forester to require FSP holders to follow new stocking standards that reduce wildfire risk if current standards lead to an unacceptable risk.[23] To issue such an order under section 31.1 of FRPA, the chief forester must have new information about forest health, natural hazards, or ecological conditions in the area that wasn't available when the plan was approved.

Community Wildfire Risk Reduction

Collaborative planning to mitigate wildfire risk near communities became more common after the 2003 firestorms in the BC interior. These include Wildland Urban Interface Wildfire Risk Reduction Plans (WUI WRR plans) and Community Wildfire Resiliency plans[24] (referenced collectively as WRR plans) and span First Nations, municipal, provincial and federal jurisdictions. These plans strategically design treatments by assessing wildfire likelihood and potential impacts. These WRR plans tend to focus on forests older than 30 years, including converting fuels into less flammable types and using fuel breaks to reduce or isolate fuel sources. Treatments target fine surface fuels in the understory, ladder fuels through pruning, and crown fuels by selective cutting or spacing to promote fire-resilient stands.

These voluntary WRR plans, such as Community Wildfire Resiliency plans, are developed by various levels of government. Much of the funding comes through the provincial Community Resiliency Investment (CRI) program. The CRI program has two main streams: the FireSmart Community Funding and Supports stream, and the Crown Land Wildfire Risk Reduction stream.

The FireSmart Community Funding and Supports program is administered by the Union of BC Municipalities (UBCM), which funds local governments and First Nations to reduce wildfire risk through education, planning, and vegetation management. The Crown Land Wildfire Risk Reduction program is led by the Ministry of Forests. This stream supports wildfire mitigation on provincial Crown land. A third, pilot stream administered by UBCM helps regional districts build cooperative wildfire response organizations in areas without formal fire services. Funding for WRR work is also supported through the Forest Enhancement Society of BC and the First Nations' Emergency Services Society.

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[21] https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/land-based-investment/forests-for-tomorrow/fire_management_stocking_standards_guidance_document_march_2016.pdf

[22] Under section 26(5) of the FPPR, the minister may approve stocking standards if "the minister is satisfied that the regeneration date and stocking standards are reasonable, having regard to the future timber supply for the area." Similarly, section 16 of the FPPR permits an FSP to outline different stocking standards for various conditions.

[23] Section 16.1(1) of the FPPR.

[24] Community Wildfire Resiliency plans are community-led plans and focus on areas within and surrounding communities, including private lands, public land, and reserve lands within or adjacent to municipal or reserve boundaries. Wildland Urban Interface Wildfire Risk Reduction Plans are government-led and aim to mitigate risk in areas not covered by Community Wildfire Resiliency plans, focusing on public land in the WUI, outside of urban municipalities and reserves.

Photo 2. This WRR treatment example showcases a shaded fuel break in line with the tactical-level Williams Lake and Area Community Wildfire Protection Plan (2019). This treatment was planned by the Cariboo-Chilcotin District's Crown land WRR program and executed under forestry licence to cut.

The BC Wildfire Service (BCWS) has recently set a new standard for developing WUI WRR plans[x] to ensure consistent fuel management within the interface. Land managers, including forest licensees seeking funding for risk reduction activities like pre-commercial thinning or pruning for shaded fuel breaks, must typically have treatments aligned with these tactical-scale WUI WRR plans as part of the funding criteria.

WRR plans are not legally required for licensees operating within the interface. As described below, licensees might reference WRR plans within their FSPs. They typically do this to support the rationale for strategies like alternate stocking standards (for example, fire management stocking or intermediate cut stocking).

Carrying out WRR plans at the stand level begins with a Fuel Management Prescription (FMP). The FMP describes where, when, how and why a WRR treatment is done. These stand-level prescriptions often underpin authorizations under the *Forest Act*, with activities like cutting, pruning, clearing, or burning subject to legal requirements under the FRPA and the *Wildfire Act*. These activities must also be reported in the provincial Reporting Silviculture Updates and Land Status Tracking System (RESULTS).[25] Other requirements vary depending on the proponent's licence agreement with the Province and are evaluated by the Board for compliance and effectiveness in the *Findings* section below.

[25] See RESULTS Information Submission Specifications, Form and Manner of Reporting, Forests for Tomorrow and government funded programs.

APPROACH FOR EVALUATING FORESTRY ACTIVITIES AND WILDFIRE RISK IN THE INTERFACE

Investigation samples included forestry activities within the interface between June 2019 and June 2022, where the interface areas were classified as high or extreme wildfire threat by the BCWS Wildland Urban Interface Risk Class or Provincial Strategic Threat Analysis.

Investigators evaluated activities in the Sea to Sky, Cariboo-Chilcotin and Peace natural resource districts. Samples were included from interface areas that were:

- in the BCWS Wildland Urban Interface Risk Class; or
- within the legal interface; or
- within two kilometres of Federal Indian Reserves with a 2021 population greater than zero.[26]

Samples were chosen within these interface areas using a simple random sampling with a replacement approach.[27] The sample units were forestry-related activities defined by RESULTS opening reports and fuel treatments catalogued by the BCWS.[28]

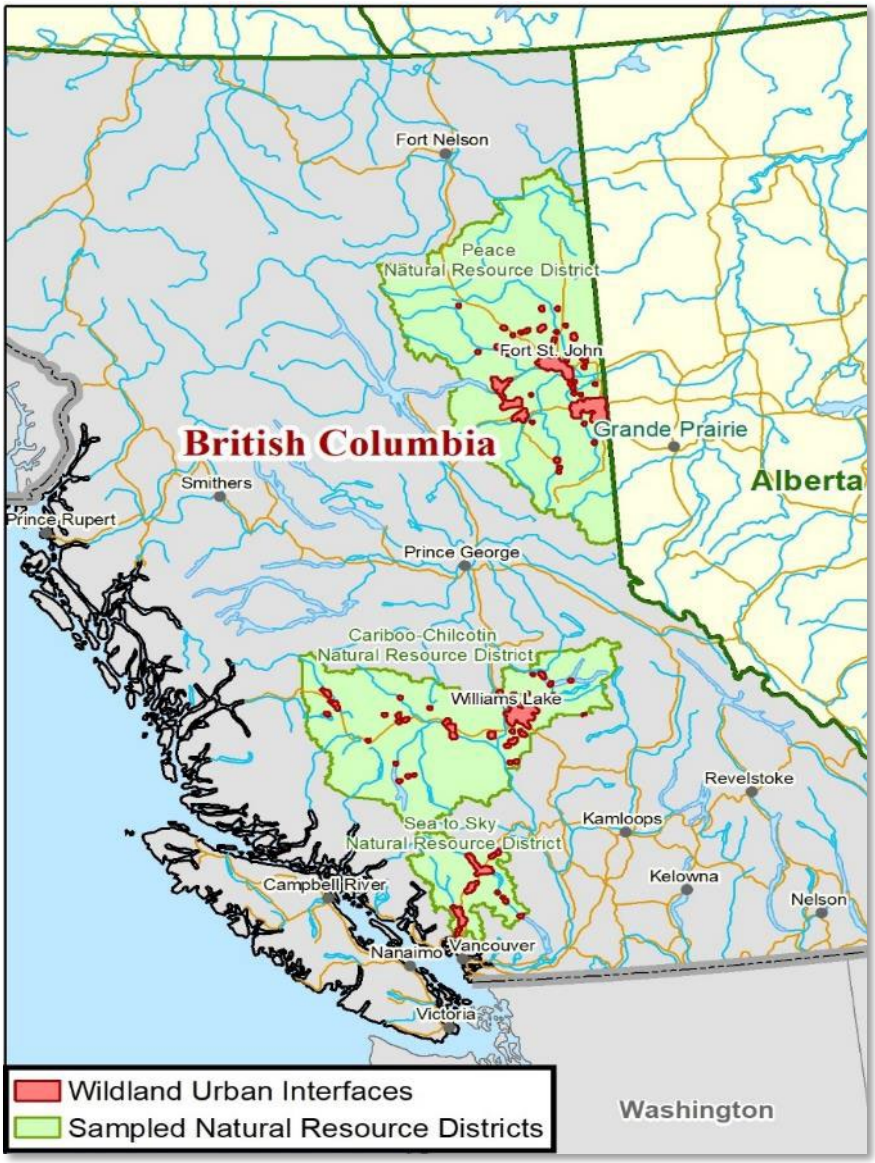

Figure 1. Sampling frame within WUIs of three natural resource districts.

[26] Note that the 2021 BCWS Wildland Urban Interface Risk Class mapping does not include all populated Federal Indian Reserves.
[27] Our sample size calculation used a margin of error no more than ± 5 percent at the 90 percent confidence interval.
[28] RESULTS openings are administrative boundaries for areas harvested with silviculture obligations or natural disturbances with intended forest management activities on public lands. BCWS fuel treatment data is from the publicly available BC Wildfire CRI Fuel Treatment dataset.

This investigation aimed to answer the following four questions:

1. Are licensees meeting legal requirements for hazard assessment and abatement in the interface?
2. Are WRR fuel treatments compliant with legal requirements?
3. Are licensees considering fire management stocking standards in the interface?
4. Are forestry activities consistent with tactical WRR Plans near communities?

Evaluations included reviewing FSPs, WLPs, FMPs, site plans, pre-work materials, RESULTS opening reports, and assessing fire hazard assessments for completeness, required content and timing. The Board investigators are RPFs, including wildland fire risk reduction experts, who oversaw the Board's hazard abatement evaluations. In harvested cutblocks, Board investigators conducted independent, post-harvest hazard assessments to evaluate the remaining wildfire risk on-site. In WRR treatments, Board investigators completed post-treatment stand condition assessments to evaluate compliance with prescriptions.

Board investigators also interviewed First Nations, licensees, prescribing professionals, government decision-makers and staff, and experts within the BCWS.

FINDINGS

Are Licensees Meeting Legal Requirements for Hazard Assessment and Abatement in the Interface?

Board investigators sampled 43 cutblocks from 18 licensees across three natural resource districts. All licensees were qualified holders on cutblocks with completed harvesting. The report first describes its findings related to hazard assessment, followed by findings on abatement.

Fire Hazard Assessments

The Board made several findings regarding fire hazard assessments (Figure 2). These include:

- Hazard Assessments Lack Content and Lag in Timing: Only 70 percent of hazard assessments met legal content requirements, and only 23 percent were completed on time.
- Standards for Assessments Need Updating: The 2012 BCWS guide has limitations, and few licensees adhere to it.

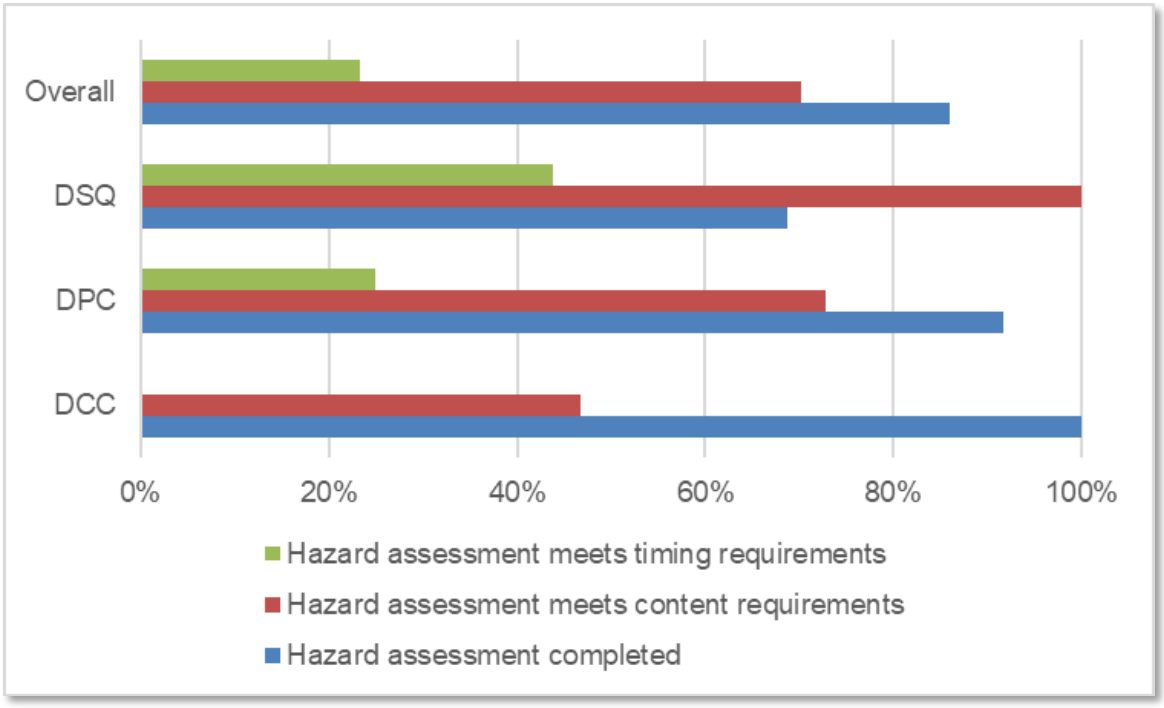

Figure 2. Results of hazard assessment compliance with the Wildfire Regulation across three natural resource districts (Sea to Sky – DSQ, Peace – DPC, and Cariboo-Chilcotin – DCC). Note, none of the assessments met timing requirements in DCC.

Fire Hazard Assessments Lack Content and Lag in Timing

The Board evaluated three tests of compliance for hazard assessments:

1. Whether the licensee completed fire hazard assessments.[29]
2. Whether the assessment included the required content for assessing fuel hazards and the associated fire risks and whether that content was accurate.[30]
3. Whether the licensee met the timing requirements.[31]

OVERALL, **86%** OF CUTBLOCKS HAD HAZARD ASSESSMENTS COMPLETED

- **100%** IN CARIBOO-CHILCOTIN
- **92%** IN PEACE
- **69%** IN SEA TO SKY

Although the Board assessed these elements individually, licensees must have met all requirements to achieve compliance with the regulation.

Licensees did reasonably well in achieving the first test of compliance. Overall, 86 percent of cutblocks had hazard assessments completed, with 100 percent of assessments completed in the Cariboo-Chilcotin, 92 percent in the Peace and 69 percent in the Sea to Sky districts.

[29] As per section 7(1) of the *Wildfire Act*.
[30] As per section 11(4)(a) of the *Wildfire Regulation*.
[31] As per section 11(2) and (3) of the *Wildfire Regulation*.

Photo 3. *Board investigators measuring surface fuels in the Pemberton Valley.*

Regarding content requirements, all completed fire hazard assessments included estimates of fuel loading from the industrial activity and its impact on potential wildfire behaviour and suppression ability.

Of the completed fire hazard assessments, 70 percent met the legal content requirements. However, the other 30 percent did not evaluate the risk of fire ignition, such as human or lightning ignition risk, or spread due to the activity. Consequently, only 47 percent in the Cariboo-Chilcotin, 73 percent in the Peace and 100 percent in the Sea to Sky districts met the content requirements.

Regarding timing requirements, of the completed hazard assessments, only 23 percent of fire hazard assessments were completed on time, with 0 percent in the Cariboo-Chilcotin, 27 percent in the Peace and 64 percent in the Sea to Sky. No licensee elected to adjust the timing of their hazard assessment based on a schedule specified by an RPF or RFT. In addition, few licensees could demonstrate that they completed periodic hazard assessments during active operations, as required. Most assessments were completed after operations had ceased. The *Wildfire Regulation* requires that, if industrial activity is expected to cease longer than the prescribed interval, an assessment must be completed by the date operations stop. For those conducting assessments outside this legal timing window, assessments were completed an average of five months after operations ended. Despite these shortcomings, Board investigators agreed with licensee fire hazard conclusions in 81 percent of the completed fire hazard assessments.

Standards for Assessments Need Updating

Licensees used a range of different protocols for fire hazard assessments. Most licensees still relied on or modified the criteria from Schedule 7 of the 1995 *Forest Fire Prevention and Suppression Regulation*.[32] Although repealed in 2004, Schedule 7 remains relevant to fire hazard assessments, but does not address the risk of fire ignition. The Board was interested in why only 22 percent of assessments followed the BCWS guide.

The following list presents the Board's evaluation of the BCWS guide, incorporating feedback from licensees and the Board's review. The list highlights deficiencies, which, if addressed, could greatly enhance the consistency and quality of fire hazard assessments conducted by licensees. The BCWS guide:

a. Relies on the assessor to estimate fuel loading—in tonnes per hectare (T/ha)—and recommends using planar intersect sampling protocols.[33] However, the planar

[32] https://www.bclaws.gov.bc.ca/civix/document/id/loo62/loo62/169_95#schedules
[33] https://www.for.gov.bc.ca/hfd/pubs/Docs/frh/frh001.pdf

intersect method is ineffective in areas with deep slash, and licensees told the Board they do not use these protocols because they are slow, expensive and don't easily represent diverse fuel strata.

b. Does not explicitly provide an approach to determine risk due to the distribution of surface fuels, density and spatial arrangement, or spotting potential of piles and windrows and their effect on fire suppression.

c. Lacks clarity on the size class of fuel loading used in its dispersed fuel thresholds. Relying on gross fuel loading metrics (fine and coarse fuels) can be ineffective for assessing fire hazards.

d. Highlights several instances where fuel hazards cannot be mitigated into compliance, even when adhering to its recommendations. For example, a site in the severe category needs to meet a fuel hazard threshold of 25 or less. In an S-1 fuel type,[34] fuel loads of 1–5 T/ha on a south-facing slope score 30 points. With fuel loads already at 1 T/ha, lowering the score to the required threshold is impossible. In other words, any slash load on a slope over 30 percent will exceed the 25-point threshold and can't be reduced to meet the threshold in Chart 1 of the BCWS guide.

e. Has a Defined Hazard Assessment and Abatement Strategy, which sets some unrealistic expectations for fuel loading. For example, targets as low as 1–5 T/ha when using heavy machinery can be difficult to achieve.[xi]

f. Lacks a clear process for connecting post-harvest fire hazard assessments to pre-harvest conditions, making it challenging to establish meaningful benchmarks for hazard reduction.

In 2024, BCWS released the *Fire Hazard Assessment & Abatement Roadmap*,[35] outlining a strategic plan to improve wildfire resilience through better hazard assessment and abatement practices. The roadmap included early scoping for updates; however, progress was waiting on legislative amendments to FRPA (via Bill 23 – 2021) to incorporate wildfire objectives—amendments that have not been enacted at the time of writing.

Fire Hazard Abatement

The Board evaluated whether fire hazard abatement efforts met the required timelines within and outside the 'legal interface' and whether abatement reduced fuel hazards to the extent set out in the *Wildfire Regulation*.[36] The Board made several findings:

[34] FRDA Handbook 12, is the Field Guide to the Canadian Forest Fire Behaviour Prediction (FBP) System. Also known as 'the Red Book', it describes the S-1 fuel type as Jack or lodgepole pine slash.

[35] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/hazard-assessment-abatement/fhaa_roadmap_final_2024.pdf

[36] Section 12.1(2) and (3) of the *Wildfire Regulation*. Despite all investigation samples being within what the Board has classified as the wildland urban interface, only 33 percent of the samples met the description of being within the 'legal interface', and all of those were within the Sea to Sky Natural Resource District.

- Legal Requirements for Hazard Abatement Too Often Unmet:
    - At the time of assessment, 16 percent of cutblocks did not meet the abatement requirements of the *Wildfire Regulation*, with an additional 21 percent needing abatement within the remaining abatement period to comply.
    - A primary cause of inadequate abatement was the failure to follow instructions specified by an RPF or RFT.
- Regulations and Economics Can Hinder Abatement:
    - The *Wildfire Regulation* has abatement timelines of up to 30 months. These timelines heighten risks in interface areas, especially for municipalities, which are excluded from the 'legal interface' definition and left outside of the stricter requirements to mitigate hazards sooner.
    - The absence of fire-management objectives in the interface allows for regulatory compliance without effectively reducing wildfire hazards as long as industrial activities do not worsen fire behaviour or suppression challenges.
    - The lack of economic incentives, such as stumpage allowances, hinders efforts to raise the standards of abatement practices.
    - The OBSCR poses an obstacle to timely hazard reduction.

Legal Requirements for Hazard Abatement Too Often Unmet

The *Wildfire Regulation* gives licensees two options when reducing the fuel hazard. They must either:

a. ensure carrying out the activity does not increase the risk of a fire starting on the site and, if a fire were to start, would not increase the fire behaviour or fire suppression associated with the fire; or

b. follow the specifications of an RPF or RFT.[37] For this report, we refer to these specifications as a prescribed measure.

[37] Section 12.1(3) of the *Wildfire Regulation*

Prescribed measures were present for about 49 percent of the cutblocks sampled—40 percent in the Cariboo-Chilcotin, 50 percent in the Peace and 56 percent in the Sea to Sky. However, at the time of evaluation, licensees only followed these prescriptions in 43 percent of cases—33 percent in the Cariboo-Chilcotin, 50 percent in the Peace and 44 percent in the Sea to Sky. Licensees must only comply with option (a) or (b) described above to meet the *Wildfire Act* fire hazard abatement requirements. This means that even if a licensee did not follow prescribed measures, the licensee could still demonstrate compliance if the industrial activity doesn't increase the risk of a fire starting or intensify fire behaviour and suppression challenges.

Overall, licensees did not meet the abatement requirements to reduce fuel hazards in 16 cutblocks—or 37 percent of cutblocks sampled. Board investigators reported that fire hazards would have been adequately reduced for all of these cutblocks had the licensee followed the prescribed measures. Of these 16 cutblocks, 9 had 30-month abatement periods that had not yet expired. This means licensees still had time to address the fire hazards after receiving the Board's evaluation. However, the Board's assessments of these 9 cutblocks were conducted 18 to 24 months after harvesting had started,[38] providing ample time for abatement to have already been completed. Abating a hazard promptly, or as soon as practicable, is a sound practice.

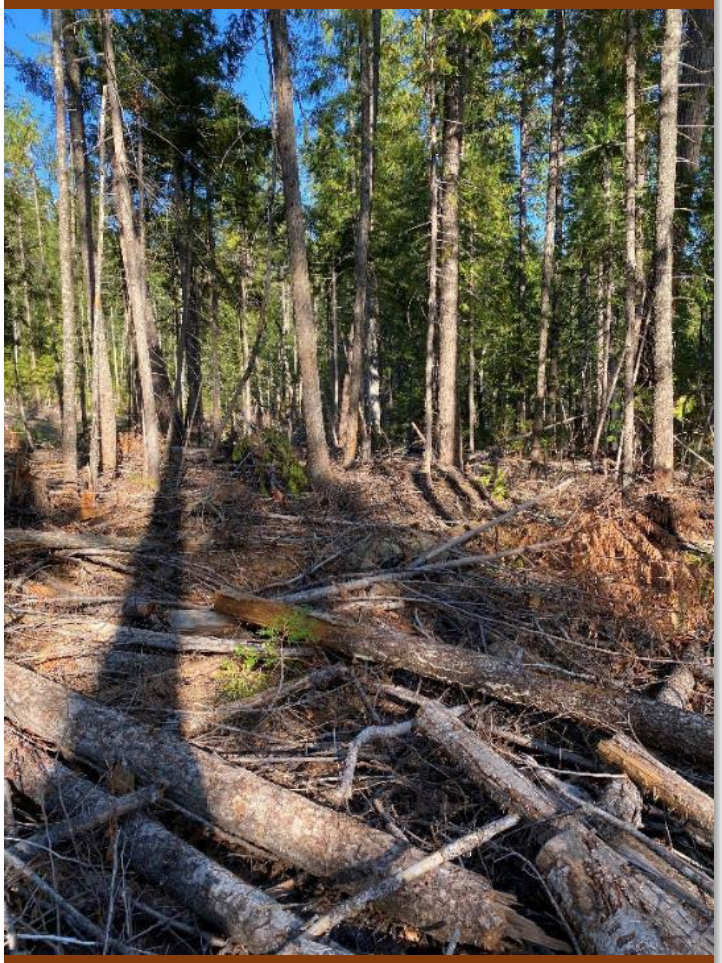

Photo 4. *Unsound practice: There were high surface fuel loads in a cutblock within an ungulate winter range near Likely. Although immediately adjacent to the community, this cutblock fell outside the 'legal interface' zone and had 30 months for hazards to be abated—making it legally compliant, even though this photo was taken 19 months after operations had been completed.*

Therefore, at the time of assessment, 16 percent of cutblocks had failed to meet the hazard abatement requirements of the *Wildfire Regulation*, and an additional 21 percent of cutblocks needed further abatement work during the remaining abatement period to comply.

Licensees who reduced fuel hazards to the extent required in the *Wildfire Regulation* also abated hazards on time. Practices that effectively reduced the fuel hazard included increased utilization, mechanical site preparation and access management (see textbox below).

[38] Board assessments were conducted 17 to 22 months after harvesting ended.

SOUND PRACTICES OBSERVED THAT IMPROVED HAZARD ABATEMENT

- Mulching or chipping and removing or widely disbursing materials.
- Full tree yarding to roadsides where processing at roadsides led to debris removal, burning, or well-spaced piles far from tree lines.
- Fuel-free zones along roads through pile bucketing and raking or scarifying.
- In-block dispersed fuels reduced by lop and scatter or machine trampling.
- In-block dispersed fuels reduced by bunching (piling) that follow the Chief Forester's *Options for Reducing Slash* BMP.[xii]
- Bunching and burning using BCWS *Pile Construction and Burning Guidance*[xiii]
- Use of custom ventilation forecasts to increase burn windows.
- Use of air curtain incinerators to enable burning in areas with smoke constraints
- Access restrictions for in-block roads in high wildfire risk areas, including full or partial road decommissioning or closure.
- Abatement options identified at the planning stage of block development.
- Abating fuel hazards as soon as practicable.

Where licensees did not reduce fuel hazards to an acceptable level, Board investigators observed the following trends:

- Abatement activities were completed, but large piles remained near the timber's edge, had no access constraints and signs of recreational campfires were immediately adjacent.
- Not following prescribed measures, such as those for grinding piles, maintaining a low fuel zone along the roadside, or burning piles prescribed for burning.
- Leaving unacceptable amounts of dispersed surface fuels, combined with adjacent fuel types (for example, timber edge) increased the risk of spread.
- Significant piles/windrows remained on-site, creating significant spotting risks.
- Inadequate implementation of abatement prescriptions, such as burning piles on steep slopes where the area burned travelled downslope into continuous fuels.
- Operational barriers, such as terrain constraints, machinery limitations, or log processing methods—processing at the stump—increased fuel loading. This was prevalent in helicopter access blocks.

Photo 5. *Successful fire abatement was achieved through well-dispersed in-block fuels, bunching, and debris chipping/removal in this Soda Creek First Nations cut block managed by Tolko Industries in the Cariboo-Chilcotin district.*

Seventy-five percent of cutblocks (12 out of 16) where fuel hazards were not reduced enough to satisfy the requirements of the *Wildfire Regulation* shared a common issue of not following the prescribed measures from the RPF or RFT.

Photo 6. *This roadside pile outside of Squamish is made up of cured fuels, including fines and bark that is predominantly western red cedar. Approximately 50 cubic metres in volume, immediately adjacent to a C-5 fuel type timber edge, with evidence of a recreational campfire directly beside it. This is an unsound practice.*

The Board observed several reasons why licensees did not follow fuel hazard reduction specifications:

- Prescribed measures for abatement were often included in the fuel hazard assessment and, therefore, not integrated into the planning phase of development (that is, not part of any harvest plans).
- Professionals provided prescriptions to abate fire hazards but sometimes without any reference to their professional designation (for example, no reference to RPF or RFT). This was coupled with some licensees not being aware that the prescribed measures, often written with the hazard assessment, were legal prescriptions.
- Some abatement prescriptions lacked clear, measurable instructions, leaving no concrete indicators to assess successful implementation.

Regulations and Economics can Hinder Abatement

Various legal, policy and economic barriers hinder effective abatement within the interface. These barriers include the lengthy 30-month abatement period, a requirement to avoid increasing fuel hazard rather than actively reducing it, higher operating costs without corresponding appraisal allowances, and constraints imposed by open burning regulations.

While the *Wildfire Regulation* mandates that fire hazards within or near the legal interface be mitigated sooner than beyond the legal interface, it applies only to areas inside or within two kilometres of improvement district boundaries, water improvement districts, or fire protection districts—explicitly excluding municipalities. This sharply contrasts with what land managers define as the wildland-urban interface.

As outlined above, investigators sampled nine cutblocks that were directly adjacent to communities. However, these cutblocks fell outside the legal interface and therefore were subject to an extended 30-month abatement period, despite failing to reduce fuel hazards adequately (see Photo 4). A 30-month hazard abatement deadline creates wildfire risk and may extend across 3 fire seasons, during which fuel is often most available and cured before decomposition reduces the hazard.

This issue has long been on the Board's radar. In its 2019 *Fire Hazard Abatement and the Shovel Lake Wildfire* complaint investigation,[39] the Board examined concerns that logging debris may have contributed to the Shovel Lake fire near Fraser Lake. Following the investigation, the Board recommended shortening the timeframe between logging and the completion of hazard abatement to enhance wildfire suppression efforts. It also suggested that government review both the deadlines for hazard abatement and the allowable amount of fuel left on cutblocks without abatement requirements. While the government committed to conducting this review, no changes have been made to the regulations or policies.

The *Wildfire Regulation* permits high-risk conditions to persist by requiring industrial activities to reduce risk only to pre-activity levels. This means it is possible to comply with the regulations without effectively reducing wildfire hazards, as the regulation only requires that fire behaviour or suppression challenges are not worsened.

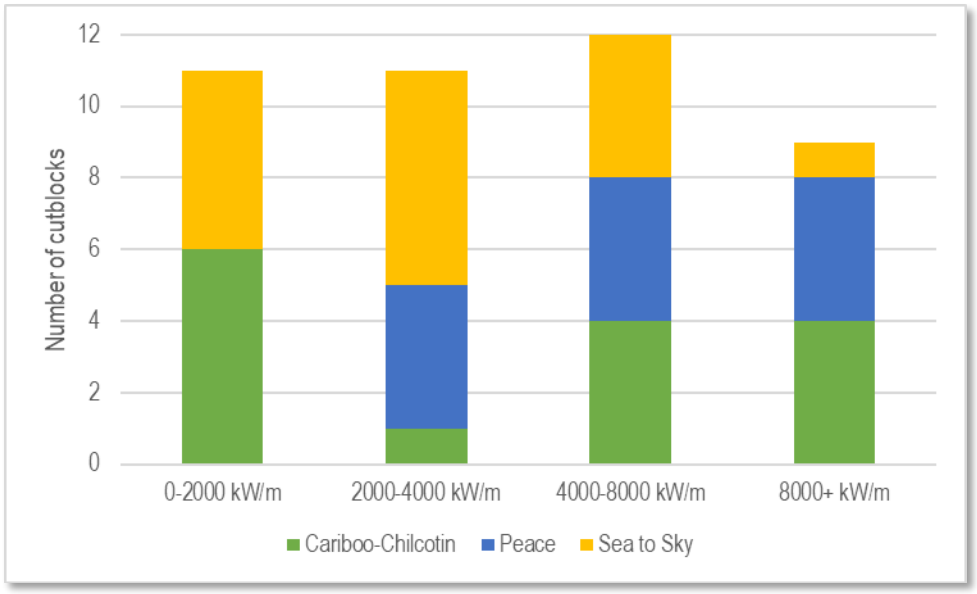

Figure 3. Distribution of Board field-assessed potential fire behaviour in cutblocks.

Figure 3 shows the estimated fire behaviour on cutblocks assessed by the Board. Nearly half of the cutblocks evaluated would have a fire behaviour potential of over 4000 kW/m, which is considered too high for successful direct suppression attacks despite hazard abatement efforts. The Board's assessments show that this regulatory gap enables compliance without effectively reducing wildfire risk.

Operating within areas subject to orders made under the *Government Actions Regulation* enacted under FRPA, such as mule deer winter ranges, can prove challenging for abating fire hazards. Partial harvesting means fewer trees are removed at higher costs, so the log value may pay its way for logging but not for abating to a higher standard. Licensees expressed concern that, despite the increased costs associated with partial harvesting, the fire risk and the proximity

[39] Forest Practices Board IRC 221

of some industrial activities to communities, there aren't any allowances in the stumpage appraisal system to help offset costs under these special conditions.[40]

Licensees informed the Board that the biggest barrier to fire hazard abatement is the OBSCR and its restrictions on burning. The Board examined the available burn windows in sampled cutblocks near communities and within high-sensitivity venting zones to assess this. This evaluation included reviewing ventilation indices and fire danger ratings outside the fire season post-harvest, recognizing that burns typically occur outside fire season and that licensees often require multiple two-day burn windows to complete their burn programs.

From 2020 – 2023, few burn windows offered at least two consecutive days needed for burning. In the Peace, there were16 opportunities for a 2-day burn on average, with a low in 2023 of only 8 opportunities. In the Cariboo-Chilcotin, there were 6 opportunities for a 2-day burn on average, with a low in 2022 of only 2 opportunities. In the Sea to Sky, there was1 opportunity for a 2-day burn window on average, and no opportunities in 2022 or 2023.

Photo 7. *Pile burning in cutblock for abatement. Conditions often make good venting difficult—a common challenge when managing smoke impacts.*

– PHOTO CREDIT: BC WILDFIRE SERVICE

To address these challenges in burn windows, some licensees are adopting alternative strategies. Custom venting forecasts, used by licensees like Cheakamus Community Forest, can identify more burn opportunities. The Líl̓wat Nation has purchased air curtain incinerators as part of their managed forest tenures. Using air curtain incinerators allows a licensee to get an exemption for burning in high smoke sensitivity zones.[41]

Limited burn windows can, therefore, make it challenging for licensees to reduce fuel hazards near communities, increasing wildfire risk, especially in high-sensitivity venting zones. Ironically, while the OBSCR limits the opportunities for licensees to abate post-logging fire hazards through burning, the regulation exempts open burning under a plan for community wildfire risk reduction. [42]

[40] Note that the *2024 Interior Appraisal Manual* sets lower stumpage rates for commercial thinning, but only where stand age is 45 years and younger.
[41] Section 28(2) of the *Open Burning Smoke Control Regulation*.
[42] Section 4(2) of the *Open Burning Smoke Control Regulation*.

Are Wildfire Risk Reduction Fuel Treatments Compliant with Legal Requirements?

Our evaluation of WRR activities included 22 treatments across the Cariboo-Chilcotin and Sea to Sky natural resource districts. Between June 2019 and June 2022, no WRR treatment activities were reported in the Peace.

Land managers develop FMPs to guide operational WRR work. The Board identified several findings:

- Plan Content is Comprehensive: FMPs have well-prepared content, with some improvements noted below being adopted as standards by the BCWS. However, treatment approvals can take up to a year, even for government-sponsored WUI WRR plans.
- Weak Accountability: FMPs are rarely legally enforceable, resulting in minimal consequences for non-compliance.
- High Conformance Rates: Over 90 percent of treatments met targets for surface fuel reductions, ladder and canopy fuel reductions and debris disposal.

The following sections will review the content of FMPs, accountability for implementing these plans, and results from the field.

Content of Fuel Management Prescriptions: A Strong Start For WRR

Provincial funding programs like the Crown Land Wildfire Risk Reduction require FMPs. However, FMPs are not a legal requirement under FRPA, so not every WRR treatment has one. The Board reviewed 22 WRR treatment samples and found 21 had an FMP, each providing specific objectives, measurable targets, maps, and instructions for implementation, including harvesting, pruning, retention objectives and debris disposal.

The Board found that FMPs consistently included the relevant objectives, strategies, rationale, and instructions for WRR activities. They effectively linked treatment objectives to WRR plans, such as a Community Wildfire Resiliency Plan. They outlined strategies for meeting legal requirements, prescriptions for surface, ladder, and canopy fuels, and debris disposal.

Fuel Management Prescriptions can contain complicated prescriptions, especially with many overlapping objectives for forests adjacent to communities. For this investigation, 86 percent of treatments overlapped with legal orders such as ungulate winter range, old growth management areas, wildlife habitat areas (WHAs) or areas with recreation features. The prescriptions comprehensively considered these legal requirements and provided thoughtful strategies.

The Board found that FMPs described important fire behaviour outcomes, including targets for head fire intensity (frontal fire) and critical surface fire intensity levels. The BCWS guidance[43] and accepted practice for prescribed treatments is to reduce surface fuel levels to achieve a fire intensity of 2000 kW/m or less.[44] Keeping the surface fire intensity below this level means that ground suppression (including heavy equipment) can generally be successful at controlling a fire.[xiv] Fine woody debris (<7 centimetres in diameter) primarily contributes to fire intensity during the active flaming phase. In contrast, coarse woody debris (CWD) and deep organic layers are more commonly linked to the smouldering phase of fire behaviour.[xv] Most FMPs clearly describe these fire-intensity and fuel size targets.

However, the Board noted opportunities for improving FMPs to help ensure they are implemented as intended, including:

- In some cases, like in the Sea to Sky district, obtaining WRR approvals and related authorizations took up to a year. This delay stemmed from the complex review process across multiple government agencies due to primary objectives for WHAs, such as spotted owl habitats, even when a government-endorsed WUI WRR plan was in place.
- Some FMPs don't specify fuel sizes in their targets for surface fuel removals. Specifying targets for fine (<7 centimetres in diameter), large (7 to 20 centimetres in diameter), and CWD (>20 centimetres in diameter) is key to helping estimate fire behaviour outcomes.
- Coarse woody debris targets in FMPs can be complicated and poorly written. CWD is often measured in diameter classes, lengths, and decay classes, with targets set at the number of pieces per hectare. Some targets included metrics to estimate fire behaviour, such as T/ha or kg/m^2, but didn't translate easily to those implementing the prescription on the ground (for example, size, length and density). This makes it hard to have clear operational instructions and to know or measure whether a strategy has been achieved.
- Harvesting, including WRR treatments, carried out under permit by licensees with FSPs must be consistent with FSPs. FSPs sometimes use CWD targets regulated by section 68 of the FPPR, which has much lower targets for CWD, including fewer, shorter and smaller diameter pieces[45] than recommended by the chief forester for WRR treatments. The chief forester has provided clear guidance[xvi] as a best practice for CWD targets for WRR treatments, defining large CWD as greater than 20 centimetres in diameter and greater than 10 metres in length, with guidance on the maximum target for large CWD by Biogeoclimatic zone.

[43] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/23_fuel_management_prescription_guidance_v2.pdf
[44] The guidance also permits fire intensity up to 4,000 kW/m in certain circumstances, using a zoned approach that accounts for terrain and other factors.
[45] Section 68(1)(b) of the FPPR sets the Interior CWD target as: a minimum of 4 logs per hectare, each being a minimum of 2 metres in length and 7.5 centimetres in diameter at one end.

- While stand and stock tables are consistently in FMPs, the Board found similar prescriptions for stand densities despite vastly different age classes or site types. Canopy bulk density (CBD) is generally not included in prescriptions but is used to predict crown fire behaviour. CBD can significantly vary between stand ages and affect fire behaviour outcomes.

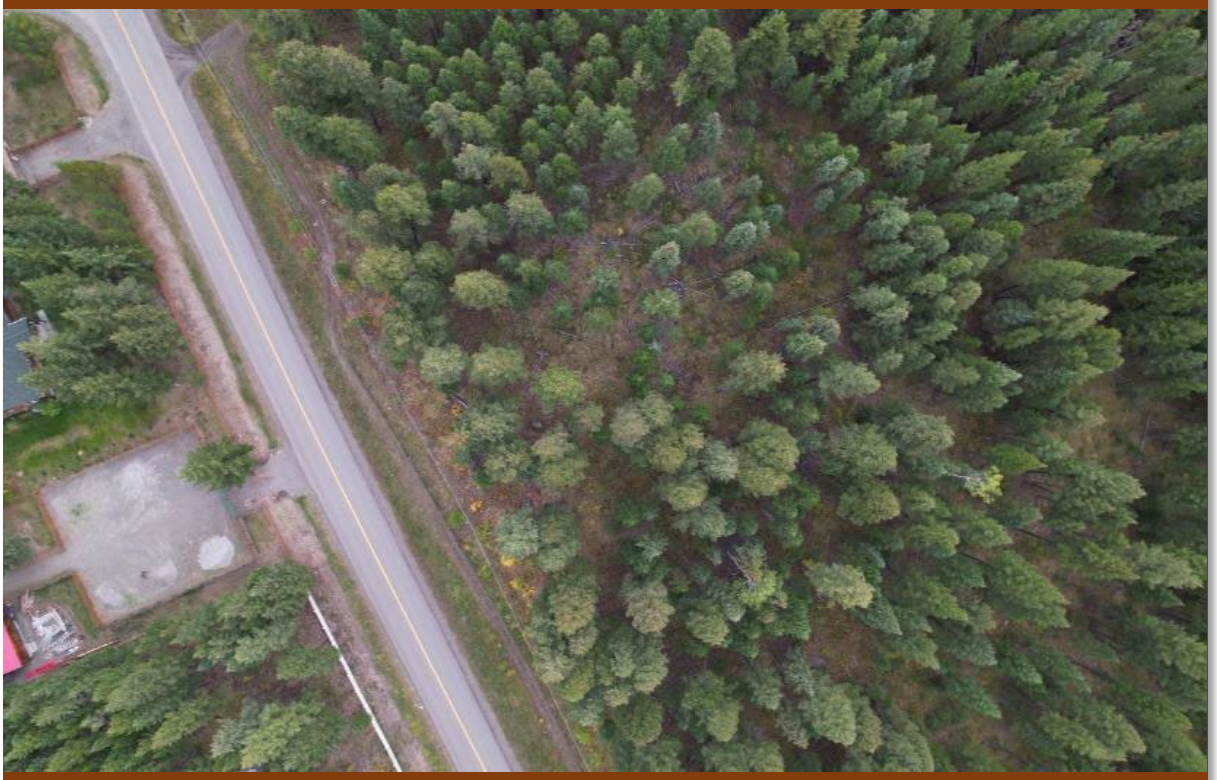

Photo 8. *One of the first WRR treatments next to homes on Borland Rd. This treatment, part of the 2019 Williams Lake Community Wildfire Protection Plan, aims to reduce canopy bulk density to lower crown fires to the surface or prevent ground fires from reaching the crown for easier wildfire suppression (photo taken July 2023).*

While overall, FMPs are well prepared, the Board is encouraged to see new BCWS guidance[46] on FMPs[xvii] that are intended to increase consistency while guiding continual improvement.

[46] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/fire-fuel-management/fuel-management

SOUND PRACTICES TO IMPROVE FMPS

- In areas where WRR treatments overlap with wildlife measures, such as Wildlife Habitat Areas, develop replicable prescriptions like pre-vetted intermediate-cut stocking standards that address multiple overlapping objectives. This approach will help streamline the review process.
- Clearly define and simplify CWD targets in FMPs to ensure they are practical and measurable and include operational instructions to help with implementation.
- Inform FSPs using best practices, such as the Chief Forester's CWD guidance for WRR treatments or equivalent standards.

Accountability to Implement Fuel Management Prescriptions are Weak

The need to comply with FMPs varies depending on the licence type. The Board evaluated treatments across various license types[47] but found that accountability for following plans remains weak under all of them.

Most authorizations for work carried out under the Ministry of Forests' Crown Land Wildfire Risk Reduction Program are forestry licences to cut or authorizations issued under section 52 of FRPA.[48] The Board observed inconsistencies in the licensing documents authorizing the work. While some elements of prescriptions are enforced through contracts, some of the authorizations did not refer to an FMP, while others included only limited terms and conditions, such as identifying specific timber for harvest, without addressing the broader prescriptions outlined in the FMP.

When a person operates outside of an FSP and under a section 52 authorization, the absence of conditions tied to the FMP can result in certain conservation measures under FRPA being not legally enforceable. This gap leaves critical landscape-level reserves, such as Old Growth Management Areas, and practice requirements like soil disturbance limits or managing natural surface drainage, lacking legal enforceability for these forestry activities.

Occasionally, an FSP or woodlot licence holder undertakes WRR work without external funding, such as a partial harvest under a cutting permit. However, the Board found that cutting permits often narrowly reference FMPs. In these cases, site plans may not be required,[49] or if the FMP's provisions are not established as a result or strategy within the FSP, there are no legal consequences for failing to follow the prescription.[50]

[47] Fifty-nine percent of treatments were authorized under cut permit, 18 percent under forestry licence to cuts, 14 percent under section 52s, and another 9 percent a mix of forestry licence to cut/s.5's.
[48] Section 52 of FRPA - The minister can authorize cutting, damaging and destroying Crown timber for a purpose such as wildfire risk reduction.
[49] FPPR section 33(1)(b) provides an exemption for preparing site plans for commercial thinning, removal of individual trees, or a similar type of intermediate cutting;
[50] Section 10(1) of FRPA requires FSP holders to prepare a site plan that must be consistent with the FSP (Section 10(2)(b)), and they must ensure the FSP results are achieved and strategies are carried out (Section 20.22(1)).

Board investigators also identified inconsistencies in how government monitored the completion of the work. Few authorization documents required proponents to submit a post-harvest report or a statement confirming compliance with the licence terms and applicable forestry legislation.

SOUND PRACTICES FOR ENHANCING FMP ACCOUNTABILITY

Include terms and conditions in authorizations that promote achieving the results of an FMP,[1] extending beyond just the harvesting process to include targets for surface fuel, ladder and canopy fuel reductions, and debris disposal, as well as provisions for managing FRPA values.

Additionally, in cases where licence holders did submit declarations of completion, there was limited oversight to verify that the work had been completed as required. Although the BCWS is in its third year of auditing WRR treatment efficacy and FMP conformance, these broad performance audits should complement, not replace, contractual oversight.

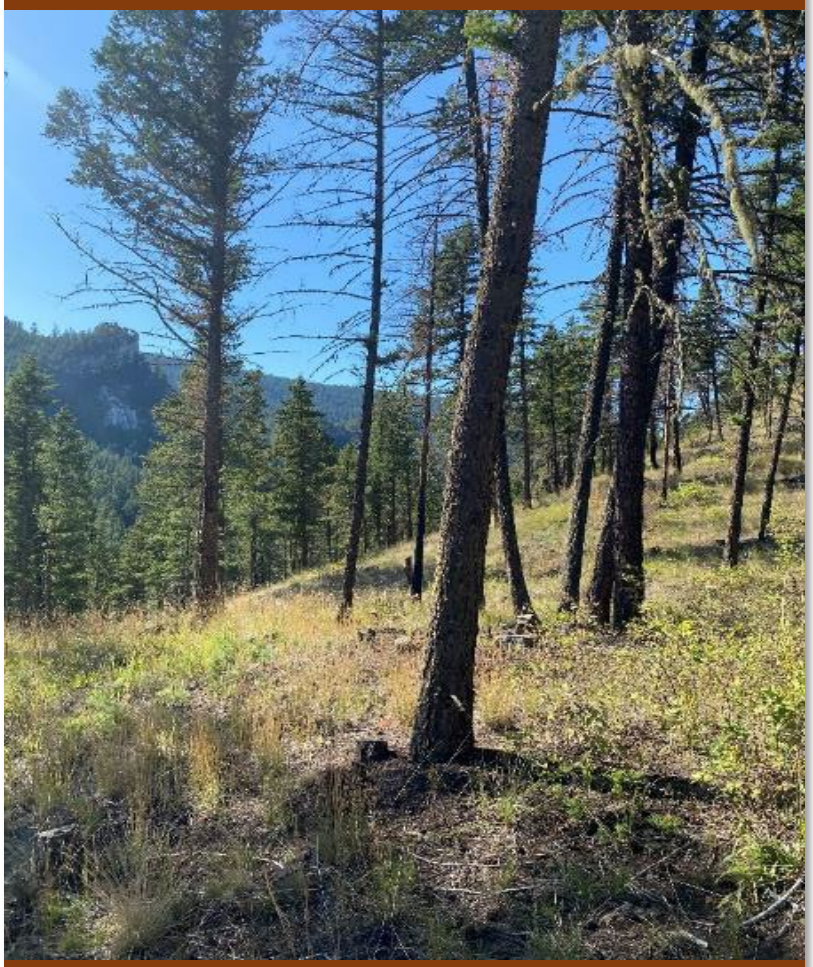

Photo 8. *WRR treatment in the Esk'etemc Community Forest, managed by Alkali Resource Management, immediately adjacent to the community of Alkali Lake. The Board found that all of the 4 treatments evaluated under this licensee were consistent with the tactical WRR plan (Esk'etemc Wildfire Risk Management Plan (2019)) and fully or substantially followed each treatments Fuel Management Prescriptions.*

High Conformance: Fuel Management Prescriptions are Being Properly Implemented

The Board's site evaluations of the 22 WRR samples showed treatments generally adhere to most FMPs. However, as previously mentioned, these prescriptions are seldom legally enforceable. Consequently, the Board focused more on evaluating whether the treatments conformed to the prescriptions rather than strictly complying with legal requirements.

Board investigators conducted field evaluations to examine whether the treatments followed FMPs for managing surface, ladder and canopy fuels and debris disposal while also considering other FMP objectives and strategies, such as CWD targets, boundaries and retention practices.

For treatment prescriptions, the Board found:

- Treatments effectively reduced fine surface fuels.
- 96 percent of the treatments had fine fuels that would maintain an estimated surface fire intensity of under 2000 kW/m.

- 77 percent of activities fully or substantially adhered to the surface fuel loading prescriptions of the FMPs, with 71 percent of the treatments in the Cariboo-Chilcotin and 100 percent of treatments in Sea to Sky substantially[51] meeting surface fuel loading prescriptions.
- All treatments across both natural resource districts substantially or fully followed crown base height prescriptions, meaning pruning was carried out as intended. Pruning lower branches, for example, 3 metres above the forest floor, aims to break the fuel continuity between the ground and the canopy.
- 91 percent of treatments were consistent with the prescribed stand/stock tables. This means that the trees cut and those remaining substantially or fully met the specifications in the plan, such as species selection, density and health/form or vigour.
- 95 percent of treatments substantially or fully met debris disposal objectives. In certain cases, pile burning led to escapes that damaged residual trees (see Photo 9)
- Approximately 82 percent of treatments met the prescriptions for CWD.
- All treatments fully respected site boundaries and substantially followed other retention objectives, such as maintaining buffers next to recreation trails, cultural heritage resources, wildlife dens or riparian areas.
- 91 percent of treatments met the legal requirements for reporting silviculture treatments under section 86 of the FPPR.

Photo 9. *Residual trees were scorched in some areas due to piles placed over decayed CWD, leading to unintended burns. Most sites used pile burning for debris disposal, as BCWS did not support chipping and dispersal during the review period. Small escapes from pile burns might not harm fire-resistant mature Douglas fir, but escapes can pose significant safety risks without proper planning and oversight. In 2024 BCWS changed its policy, publishing the mastication guidance, allowing treatments to use chipping while considering the risks and benefits.*

- 95 percent of the treatments scored low in wildfire threat assessments. This indicates that fire behaviour within these areas is likely slow-moving, with minimal involvement of deeper or larger fuel layers.[xviii]

[51] Board investigators evaluated conformance with FMPs using the following categories:
Fully: The prescriptions of the FMP are met or exceeded objectives in all significant respects.
Substantially: Most elements of the prescription are met, and any underperformance does not significantly impact the objectives of the WRR
Partially: Some elements of the prescription are not met, which may hinder the achievement of WRR objectives.
Not consistent: None of the associated elements of the prescription are met.

Are Licensees Considering Fire Management when Regenerating Stands in the Wildland-Urban Interface?

The Board's review examined activities within the interface approved between 2019 – 2022, covering 18 licensees operating under 10 FSPs and 4 WLPs.

The Board's findings highlight several issues:

- 83 percent of the licensees evaluated in high wildfire-risk interface areas are not using fire management stocking standards. Only three Sea to Sky district tenure holders operated under an FSP referencing fire management stocking standards. No tenure holders in the Cariboo-Chilcotin or Peace natural resource districts operated under an FSP that included fire management stocking standards.
- A few notable licensees considered wildfire risks for their managed stands by outlining the desired future condition at free-growing and beyond, incorporating post-spacing densities and intermediate-cut stocking standards to achieve specific fire behaviour outcomes.

Photo 10. *Harvested in 2005, this BCTS block in the interface near D'Arcy had a prescribed burn and was replanted with Ponderosa pine and Douglas fir. It reached its free-growing milestone in 2019 with 571 stems per hectare.*

Few Licensees Use Fire Management Stocking Standards

Overall, few licensees use fire management stocking standards (FMSS). Only 3 licensees use FMSS, or 17 percent of those across the 3 districts evaluated. Cheakamus Community Forest LP, Líl̓wat Forestry Ventures, and Spel̓kúmtn Community Forest LP, all within the Sea to Sky natural resource district, reference FMSS in their FSPs. These 3 represent only 30 percent of that district's licensees reviewed by the Board.

The Ministry of Forests has provided non-legal guidance for stocking standards for decades. Stocking standards set targets and timelines for regenerating forest stands, specifying the minimum densities for preferred and acceptable tree species based on ecological site classifications. The provincial reference guides[52] are either adopted by licensees or they develop alternate stocking standards with district specialists or independently. Government then approves those standards within an FSP and, in the future, FOP. District managers sometimes set

[52] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/stocking-standards

expectations for licensees in formal letters with non-legal guidance on best practices.

In 2016, the Sea to Sky natural resource district manager published an expectations letter to licensees. Following the guidance of the Office of the Chief Forester on Fire Management Stocking Standards,[xix] the letter directed licensees to consider fire management to revise or develop new stocking standards. Despite this expectation, few licensees have developed or adopted fire management stocking within the Sea to Sky district.

The Sea to Sky district has a history of being a leader in developing fire management stocking. BC Timber Sales (BCTS) participated in 17 cutblocks between 1990 – 2006 in an exemplary Birkenhead landscape fire management pilot project (see Photo 10). This included broadcast burning for site preparation, planting more fire-resistant trees, accepting deciduous natural regeneration and alternative stocking densities.

Some policies are changing to enable fire management in silviculture; for example, cultural burning after completing primary harvesting activities and waste assessment are now included as stumpage allowance in BC's appraisal system. Despite past progress, chief forester guidance and appraisal changes supporting fire management in silviculture, BCTS in the Chinook Business Area no longer include FMSS in their FSP nor do they prescribe broadcast burns.

Neither the Cariboo-Chilcotin nor the Peace natural resource districts have developed, endorsed or set expectations for developing FMSS. The Cariboo-Chilcotin natural resource district indicated they had considered developing FMSS but believe the current regional stocking standards are sufficient to ensure regeneration in the interface and identified fuel breaks. As a result, none of the FSPs sampled by the Board in the Cariboo-Chilcotin or Peace natural resource districts contain FMSS.

Licensees told the Board that regenerating forests in the interface is paradoxical; while planting at higher densities may eventually increase wildfire risk, it may also minimize their silviculture liabilities. Some tenure holders expressed concern that FMSS might reduce timber supply and delay free-growing declarations.

> The Líl̓wat Nation has a notable fire management stocking strategy, including spacing and intermediate cut stocking standards. In recognizing that in some biogeoclimatic variants, low establishment stocking densities can lead to high in-growth when the stand reaches free growing. To account for this, Líl̓wat Nation has built-in post-spacing minimum and maximum stems per hectare targets. For example, in the Interior Douglas Fir warm wet zone, while the preferred and acceptable target is 400 stems per hectare, Líl̓wat Nation specifies a post-spacing maximum of 600 stems per hectare, with site plans detailing the timing for prescribed stand tending treatments.

Some licensees have adopted strategies to address the conflict between timber and wildfire objectives. The Cheakamus Community Forest LP, Líl̓wat Forestry Ventures, and Spel̓kúmtn Community Forest LP have included spacing specifications in their stocking standards to meet free-growing density targets. Similarly, these licensees and others, like Tolko in the Cariboo-Chilcotin, have incorporated intermediate-cut standards, such as those outlined in the *Interim Guidance for Commercial Thinning,*[xx] into their FSPs. Intermediate cuts, including commercial thinning or single-stem harvesting, enable the removal of merchantable trees before a second harvest, creating stand structures that can reduce the risk of wildfire ignition, spread and severity.

SOUND PRACTICES FOR REGENERATING STANDS IN HIGH WILDFIRE RISK AREAS

FSPs, WLPs and FOPs should incorporate silviculture options to reduce wildfire risk in the interface. Fire management stocking standards enable the regeneration of fire-resistant species, prescribed or cultural burns for site preparation, flammable understory control and alternate tree densities to achieve desired fire behaviour outcomes. These standards address young and immature stands, guiding stocking levels and intermediate cuts to support wildfire risk reduction.

Are Forestry Activities Consistent with Wildland-Urban Interface Wildfire Risk Reduction Plans Near Communities?

Wildland-urban interface WRR plans are designed to identify high-risk areas in the interface and prioritize actions to prevent catastrophic wildfires. As mentioned, commercial logging occurs 11 times more frequently in the interface than WRR treatments. While tactical plans are typically used to guide WRR efforts, the Board wanted to know whether licensees consider these plans during forest harvesting and whether their activities align with WRR priorities.

Findings from the Board's assessment include:

- Few provisions for wildfire management in licensee plans: Of the 10 FSPs and 4 WLPs reviewed across the 3 districts, only 2 mentioned a tactical WRR plan, such as a Community Wildfire Resiliency Plan, and only 4 included wildfire management provisions. Despite their importance, WRR plans are not easily accessible or available for licensees or the public.
- Forestry activities don’t align enough with priority risk reduction areas: Although 91 percent of WRR treatments overlapped with priority areas identified in tactical WRR plans, none of the cutblocks overlapped with areas specifically designated for priority risk reduction. This may reflect the complexity of operating in areas closest to communities, where a high overlap of ecological, cultural, and recreational values can make it difficult to implement treatments despite their risk-reduction potential.

Licensees Have Few Planned Provisions for Wildfire Management

The Board's review found 12 of the 14 communities sampled across the three natural resource districts were included in a WRR plan.[53] These plans feature maps outlining the total area

[53] Parts of the Cariboo Regional District area F, which includes the communities of Horsefly (pop.173) and Likely (pop. 300-350) do not have a tactical wildfire risk reduction plan.

covered and regional boundaries assessed for risk and treatment priority areas, including operational-scale sites like fire guards scheduled for treatment.

Cheakamus Community Forest Limited Partnership is the only FSP in the Sea to Sky district that references a WRR plan. The Cheakamus Community Forest FSP (2022) allows certain exemptions to carry out wildfire salvage or enable risk reduction treatments, and sets clear standards for retained trees during wildfire risk reduction treatments. While not referencing a WRR plan, the Líl̓wat Forestry Ventures' and Spel̓kúmtn Community Forest Limited Partnership's FSPs have direct provisions for wildfire management via FMSS and intermediate cut stocking standards.

Among the Board's samples, the only other FSP to include such a reference to WRR plans is FSP 780, led by Tolko Industries Ltd. This multi-party FSP covers the forest licence for Soda Creek First Nations and the separate community forest agreements for Likely Xatśūll Community Forest Ltd and Esk'etemc.

Tolko's FSP 780 provides excellent references to regional wildfire management plans. The FSP includes several strategies related to wildfire management. It permits harvesting within primary and interface fuel breaks in the approved community or regional wildfire plans, which involves reducing fine surface debris, ladder fuels and small-diameter trees. These strategies apply to old growth management areas, lakeshore management zones and critical habitats for fish, and they help ensure fire mitigation practices are followed to minimize impacts on primary old seral forest characteristics, critical riparian attributes and hydrologic recovery. The plan also includes exemptions for primary fuel breaks in riparian reserve zones and riparian management areas, allowing necessary activities to maintain fuel breaks while adhering to wildfire management plans.

The Board found that WRR plans, such as Community Wildfire Resiliency plans, are not easily accessible. Their varying vintages and ownership by different jurisdictions create challenges for the public and licensees to access. The absence of a centralized access system prevents WRR plans from being integrated into forestry planning around the WUI.

Despite these notable references, only 4 out of 14 FSPs—just 28 percent of those reviewed—demonstrate any consideration of wildfire management. This highlights a concerning gap in preparedness, particularly in areas with the highest wildfire hazards and the most severe consequences in the WUI.

Forestry Activities Don't Align Enough with Priority Risk Reduction Areas

Of the 65 samples of activities authorized under FRPA that the Board evaluated, 45 of them were within an area covered by one of these tactical WRR plans. Of those 45, 23 were logged cutblocks and 22 were WRR treatments.

As might be expected, because tactical WRR plans guide operations for WRR treatments, nearly all (91 percent) of the WRR treatments overlapped with treatment priority areas. Despite more logged areas than areas treated for WRR, none of the logged cutblocks in our samples overlapped with areas prioritized for wildfire risk reduction.

CONCLUSION

This investigation reveals progress and persistent challenges in how regulated forestry activities address wildfire risk reduction within the interface.

Fire hazard assessments remain foundational, but their effectiveness is hindered by outdated standards, poor implementation, and regulatory gaps. Only 70 percent meet legal content standards, and fewer than a quarter are completed on time. Although fire hazards in the interface must be assessed and addressed more quickly, the legal definition excludes municipalities—the province's most populated areas—and these legal interface maps are not publicly available, hindering transparency and risk identification. While the 2012 BC Wildfire Service's *Guide to Fuel Hazard Assessment and Abatement* provides a framework, its limitations reduce adherence and effectiveness. Updating this guide to improve clarity and usability could significantly enhance compliance and consistency, helping make fire hazard assessments a stronger wildfire mitigation tool.

Fire hazard abatement efforts show both promising and problematic trends. Many licensees help reduce risk through effective piling and burning, debris chipping, and managing access in high-risk areas. However, regulatory and operational barriers continue to hinder progress; 16 percent of cutblocks did not meet legal abatement requirements, and another 21 percent required additional work before the applicable deadline. Prolonged abatement periods and failure to follow prescribed measures leave many areas vulnerable, and regulatory loopholes allow compliance without meaningfully reducing wildfire hazards. Creating fire management objectives in the interface, addressing barriers like the *Open Burning Smoke Control Regulation* and creating economic incentives for abatement would help accelerate risk reduction.

Wildfire risk reduction treatments are largely effective, helping reduce wildfire hazards in priority areas. These treatments align well with fuel management prescriptions, achieving over 90 percent conformance with surface fuel, ladder fuel, and debris reduction targets. This reflects strong planning and operational implementation. However, delays in approval processes and weak accountability measures hinder the full potential of wildfire risk reduction efforts.

The use of fire management stocking standards in regenerating stands remains rare, hindering an important opportunity to reduce fire risk over the long term. Only 17 percent of licensees have adopted them. Despite this, a few notable examples demonstrate how tailored stocking standards can effectively reduce fire behaviour risks. The Board encourages greater adoption of these practices, and integration into Forest Stewardship Plans would help enhance resilience in regenerating stands.

Finally, while Wildland-Urban Interface Wildfire Risk Reduction plans help identify high-risk areas and prioritize treatments near communities, their integration with forestry activities is inconsistent. While over 90 percent of wildfire risk reduction treatments overlap with priority areas for risk reduction, conventional harvesting almost never does, hindering opportunities for forestry to play a larger role in wildfire mitigation. Improved coordination between licensees and

wildfire risk reduction planning initiatives could enhance outcomes for communities at high wildfire risk.

While progress is evident in the quality of wildfire risk reduction treatments and some innovative approaches to reduce risks near communities, significant barriers continue to hinder wildfire mitigation efforts. Strengthening hazard assessments, streamlining abatement, and fully integrating wildfire risk reduction into forestry planning and operations would help ensure forestry activities contribute more effectively to wildfire resilience in the wildland-urban interface . By addressing these gaps and building on existing successes, regulated forestry activities can help—not hinder—wildfire risk reduction in the interface.

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