

Appendix1. Stocking Standards Q And A

Why Implement Fire Management Stocking Standards?

Fire management based stocking standards are a key tool in helping define stand composition and structure to reduce fire type (e.g. Crown versus ground), fire intensity (i.e. heat as a product of combustion) and rate of spread of wildfires. This provides increased opportunity for fire suppression, increased likelihood of desirable fire effects and protection from fire for values susceptible to fire on the landbase.

The Relationship Between Fire Management Stocking Standards and Fire Management Planning

Fire management planning is intended to achieve two purposes: 1) to identify information (values information, priorities, suppression tactic concerns, etc.) directly relevant to fire suppression activities; and 2) provide an analysis of fire hazard and risk within a geographical area (e.g. the District) to assist with mitigating fire risk to values on the landbase through fuels management, establishment of fuel/ fire breaks, enhanced suppression effectiveness and provide for beneficial fire for those fire dependent ecosystems. Within British Columbia, stocking standards represent the legal standard for reforestation following harvesting and provide the linkage between stand level and forest level management activities. The intent of the fire management stocking standard is to promote the establishment of stands with suitable structural conditions that are fire resistant or resilient and that enhances suppression effectiveness at both the stand and forest level.

Fire management plans identify areas of value (e.g. property, infrastructure, critical habitat, etc.) where use of a fire management stocking standard may be appropriate to help mitigate fire risk and protect these values. Examples include within and adjacent to interface areas and near or adjacent to areas with known high resource value (e.g. critical habitat for species at risk). Targeted harvesting and pre-commercial thinning operations to capture timber value, while putting in place fire management stocking standards to protect these values, can occur today.

Landscape Scale Fire Management versus Fire Management Stocking Standards

Stocking standards are site specific (note: *landscape level standards under FPPR s. 45 are possible*) while fire management planning occurs at a much broader scale. Stocking standards are just one tool along with prescribed fire, managed wildfire, planned development, harvesting patterns and fuelbreak design for implementing landscape scale fire management. That said, Fire Management Stocking Standards are a critically important tool as a well-designed and implemented standard can both protect values and reduce fire behaviour to enhance suppression success. Fire management plans are the mechanism for

planning and implementing landscape scale fire management using “tools” like fire management stocking standards.

Impact Upon Timber Supply

Long term impacts to timber supply are expected to be minimal. Wildfire Management Branch has identified approximately 50,000 hectares (ha) of the Timber Harvesting Land Base (THLB) within the Wildland Urban Interface (WUI) with Extreme and High threat ratings. These areas are priorities for treatments over the next 10 years. In comparison, approximately 118,824 ha of THLB were impacted by wildfire in 2014, and 498,000 ha of THLB has been impacted by wildfire since 2003. The use of fire management stocking standards are not intended as silvicultural regimes over broad areas but are intended for small targeted areas for specific value protection or as a means of implementing landscape fuelbreaks. Existing fuel treatment programs will provide the mechanism for maintaining stands in a state that meets their intended fire management objectives once the stands revert to the Crown at free growing. By addressing wildfire management objectives in the WUI, it is expected that improved cost effectiveness of suppression will free up resources to protect timber resources elsewhere in the THLB.

Only a portion of the WUI is expected to require fire management stocking standards and continued development of landscape scale fire management plans will further identify the area(s) involved.

Fire Management Stocking Standard Associated Costs

Increased costs are a potential concern with implementing fire management stocking standards. It will take time to evaluate how much of a factor this turns out to be. There are possibilities for both increased and decreased costs. Planting costs may be reduced while spacing costs increase. Brushing costs may be reduced if broadleaf deciduous species are included in the standard through broadleaf or mixed wood management. Hazard abatement costs may or may not increase.

Fuel Management Retreatment

Retreatment of restored fire dependent ecosystem areas or target high priority fuel modification areas through maintenance activities such as prescribed fire burning may be necessary to maintain the function of those areas. Other fuel management or fuel break areas may or may not require a lot of maintenance depending upon their design. For example, shaded fuel breaks that do not result in extensive ingrowth may not require significant retreatment. Depending upon fuel break implementation strategy, no retreatment may be needed. If for example a fuel break is established through a fire management stocking standard the fuel break may simply be moved sideways through establishing the standard on new ground and never retreating the original fuel break. Fuel breaks do not necessarily need to be static features on the landscape.

To date, WMB has treated approximately 5,000 ha around communities using fire crews and a fuels management treatment funding stream has been developed for the Strategic Wildfire Prevention Initiative (SWPI), enabling communities to apply for and receive funds for prescribed maintenance around WUI areas.

Use of Broadleaf Species

Provincial guidance on the incorporation of mixed wood and broadleaves into FSP stocking standards is that these types of standards and the use of broadleaf species are suitable for situations such as: when they are included in volume estimation for timber supply; where they are currently included as part of land use objectives for an area or their use is consistent with management objectives in a TSA silviculture strategies or TFL management plan; short rotation broadleaf crops for root diseases management; or reducing fire risk in wildland urban interfaces. This memo and guidance document provides more detailed information on the use of broadleaves to reduce fire risks. Due to generally higher moisture contents and reduced flammability broadleaf species generally have demonstrated ability to reduce fire intensity and rate of spread making them generally highly desirable either singly or as a component of a mixed species fire management stocking standard. In situations where they are ecologically appropriate for the site, they provide fire management benefit for periods of time and can be managed on a short rotation basis if desired.

Density Management

The minimum free growing height for a stocking standard is intended to ensure that a tree is adapted to the site, and is growing well and can reasonably be expected to continue to do so. The intent is to ensure that stand not only meets the desired stand structural conditions, such as species composition, but is expected to maintain them into the future. Practitioners may prescribe increased minimum height requirements to help ensure that the stands are more structurally stable at free growing thus making achievement of fire management objectives more likely. As experience is gained with fire management stocking standards and the resulting follow up treatment further guidance on minimum heights may be developed, at this time there is no expectation that free growing heights will be modified for fire management.

Managing maximum density is important because increased density commonly results in both increased fuel loading and ladder-fuels that increase-likelihood of Crown fire. For those fire management stocking standards that require lower tree densities to be effective, control of maximum density is key to the success of the standard.

FRPA and the Wildfire Act and Fire Management Stocking Standards

Stocking standards arise as a required element within Forest Stewardship Plans under the *Forest and Range Practices Act (FRPA)*. Further requirements, tests and variances are described within the *Forest Planning and Practices Regulation (FPPR)*. Neither FRPA nor the FPPR describe requirements with respect to hazard abatement following industrial activities (e.g., logging). Those requirements are described within the *Wildfire Act and Regulation*. Successful development and application of fire management stocking standards involves meeting the requirements specified under both FRPA and the *Wildfire Act*.

Where and When to Apply Fire Management Stocking Standards

The fundamental purpose of these standards is to mitigate damages to values at risk from wildfire. Those values requiring mitigation are to be identified within fire management plans as well as from other planning or legal documents. For example, fire management plans identify a buffer area around wildland urban interface areas within which fire management stocking standards can be applied. This buffer area is commonly two kilometres (km) due to the potential for interface or structure spot fires developing from wildfires spotting embers into the interface. However, this phenomenon is dependent upon fuel type as some fuel types spot more than others. Hence there is no need nor is it practical to apply fire management stocking standards to entire two km buffer areas. Mitigation activities around other values on the landbase may result in smaller treatment areas through the use of strategically located fire management stocking standards and/or some type of fuel management treatment. Fuel breaks located so as to disrupt large areas of contiguous fuels are the other primary application of fire management stocking standards and are typically at the forest or landscape level. Fuel breaks may be somewhat mobile through time as they can be moved about to achieve fire management objectives. Strategically located fuelbreaks, established through fire management stocking standards, will help to break up large continuous tracts of dense timber thus reducing uncontrolled spread of wildfire. Fire management stocking standards can be applied after primary harvest or alternatively as a thinning or intermediate cut harvest.

Ecological Suitability

Ecological suitability (i.e., ability to survive and grow into a tree) of species is a key requirement for all stocking standards including those with a fire management objective. Species should be ecologically suited to the site but also suited to meet fire management objectives (e.g., fire resistant). This may well entail the use of species which do not maximize timber production as the primary species singly or in combination with more productive species as part of the standard. For example, broadleaf species are generally highly desirable from a fire management perspective but are often short lived and may or may not meet specified timber objectives. However, broadleaf species commonly provide a market alternative as well as benefits with respect to both fire management and diversity. They may also require more intensive management on shorter rotations. Evaluation of trade-offs between timber production, fire management objectives, diversity and other management objectives is a key part of development of fire management stocking standards.

Climate Change Impacts

Given expected increases in fire frequency, intensity and area burned resulting from climate change, the use of fire management stocking standards as a tool in fire hazard mitigation may provide both opportunities for increased suppression effectiveness and protection to values on the landbase. We recognize that mitigative actions as the use of fire management stocking standards may be the primary source of protection that values on the landbase receive when threatened by wildfire during particularly challenging fire seasons when suppression resources are limiting or engaged in higher priority fire suppression activities. Given that species most adapted to fire are often associated with ecosystems

that have evolved with the presence of fire and that those ecosystems are often warmer and drier than ecosystems currently are, it may improve the performance of fire management stocking standards to include more fire adapted species from these ecosystems. Within the province this may occur as a result of climate based seed transfer and/or facilitated migration of fire adapted species as Douglas-fir or ponderosa pine.