



**CANADIAN FOREST PRODUCTS LTD.**

**Forest Management Group,  
Vavenby Woodlands Operating Areas**

**Forest Vegetation  
Pest Management Plan**

**2016 – 2021**

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**Prepared by**

**Canadian Forest Products Ltd.**

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## **SECTION 1: INTRODUCTION**

### **1.1 CANFOR'S PEST MANAGEMENT PLAN FOR SILVICULTURE OBLIGATIONS**

This Pest Management Plan (PMP) describes the integrated vegetation management process used by Canadian Forest Products Ltd. (Canfor) in relation to its silviculture obligations. The PMP is consistent with Canfor's Environmental Policy and Environmental Management System. Our Environmental commitments may be viewed online by accessing the following URL: [http://www.canfor.com/docs/news-2010/canfor-environment-policy\\_2011.pdf?sfvrsn=0](http://www.canfor.com/docs/news-2010/canfor-environment-policy_2011.pdf?sfvrsn=0) . The PMP is to be used by Canfor staff and contractors when assessing and conducting vegetation management treatments, while considering the obligations of the Forest Stewardship Plan and other applicable forest management plan commitments.

A silviculture regimen that involves the potential use of herbicides considers economic, environmental, and social concerns. Canfor's silviculture goal is to establish healthy, well-stocked stands of ecologically suited commercial tree species that recognize the sites' growth potential. Vegetation management is an integral part of meeting Canfor's legal requirements to produce free growing stands on its silviculture obligations, and Canfor's vegetation management strategy includes using herbicides where appropriate and as permitted by this PMP.

### **1.2 GEOGRAPHIC BOUNDARIES OF THIS PEST MANAGEMENT PLAN**

This PMP applies to the various licences that Canfor Vavenby Division has or manages within the Kamloops Timber Supply Area's of the Kamloops Forest Region and within the Thompson Rivers Natural Resource District. This area includes any of Canfor's managed openings that are contained within the areas identified on the Vavenby Division Pest Management Plan Area Map (Appendix 1).

### **1.3 RESPONSIBILITY FOR VEGETATION MANAGEMENT**

Within Canadian Forest Products Ltd., Vavenby Division, the principal contact for information relating to this Pest Management Plan (PMP) is Leanne Chow FIT, Field Supervisor - Silviculture @ (250) 676-1125 and/or Kori Vernier RPF, Silviculture Coordinator @ (250) 529-7211 x247 .

### **1.4 PEST MANAGEMENT PLAN LEGISLATION**

A PMP is a plan that describes:

- A program for managing vegetation or reducing damage caused by vegetation, based on integrated vegetation management; and,
- The methods of handling, preparing, mixing, applying and otherwise using herbicides within the program.

The *Integrated Pest Management Act* (IPMA) and the Integrated Pest Management Regulation (IPMR) require pesticides to be used pursuant to the principles of Integrated Pest Management (IPM), which requires the development of a PMP and the use of pesticides in accordance with the terms and conditions of the PMP. Links to the



*Integrated Pest Management Act* and *Integrated Pest Management Regulation* are provided below.

[Integrated Pest Management Act](#)

[Integrated Pest Management Regulation](#)

### **1.5 ROLE AND TERM OF THIS PMP**

This PMP shall be in force for a five-year period from the date that the Pesticide Use Notice has been confirmed by the BC Ministry of Environment (MoE).

The PMP ensures the following:

- Legal accountability with the provisions of the IPMA, as well as all applicable federal, provincial and regional legislation;
- The incorporation and use of the principles of IPM; and,
- Public awareness of Canadian Forest Products Ltd., Vavenby Woodlands Division vegetation management program.



## **SECTION 2: INTEGRATED VEGETATION MANAGEMENT**

### **2.1 INTRODUCTION**

In the context of this document the term Integrated Vegetation Management (IVM) will be used to describe vegetation management using the principles of Integrated Pest Management. Vegetation refers to all plant life including, without limitation, grasses, sedges, forbs, vines, ferns, brush, deciduous trees, and coniferous trees.

### **2.2 OBJECTIVES OF CANFOR'S INTEGRATED VEGETATION MANAGEMENT PROGRAM**

Canfor's integrated vegetation management objective is to prevent competing pest vegetation from causing injury or death, or having an unacceptable negative impact on:

- sites scheduled for planting or fill planting,
- newly planted seedlings, and/or
- juvenile, commercially valuable coniferous trees.

While meeting the objectives of sustainable forest management by ensuring healthy and vigorous plantations, Canfor will use herbicides:

- appropriately as a vegetation management tool and seek a balance between social, economic, and environmental values; and,
- in a biologically and ecologically appropriate manner, with treatment strategies based on sound science.

### **2.3 INTEGRATED VEGETATION MANAGEMENT (IVM) PROCESS**

The elements of Canfor's IPM program are:

1. Prevention
2. Pest Identification
3. Seedling and Vegetation Monitoring
4. Injury Thresholds and Treatment Decisions
5. Treatment Options and Selection Criteria
6. Post-Treatment Effectiveness Evaluation

Each of the above IPM elements form an integral part of Canfor's vegetation management program and are discussed in detail below.

#### **2.3.1 Prevention**

Canfor employs the following preventative measures to avoid competitive vegetation problems. The post-harvest assessment survey is conducted within one season of harvest. This survey is used to confirm the ecology classification of the block, and to identify areas where vegetation is expected to become a concern. Results of the walkthrough will guide planting timing, species and stock type selection, need for site preparation, and scheduling of future treatments and assessments.

- *Early Identification of Brush Prone Sites* – biogeoclimatic ecosystem classification (BEC) zones and site series known to have high brush hazards are identified in the pre- and post-harvest inspections, and appropriate treatment regimes are scheduled.
- *Selection of Appropriate Species* – The selection of species to be grown on a site must be ecologically suited to the site. Pre-harvest and post-harvest biogeoclimatic ecosystem classification will provide guidelines for species selection to maximize seedling performance and minimize the need for brushing treatments.
- *Selection of Appropriate Stock Type* – The physiological characteristics that seedlings possess have a significant impact on seedling establishment and capacity to compete against encroaching vegetation. Small stock types may be appropriate for use on sites with a low competition hazard or other limiting factors, while larger stock types may be appropriate on sites with high competition hazard.
- *Site Preparation* – Site preparation will be conducted, where appropriate, to improve microsites for newly established seedlings by reducing or rearranging slash, ameliorating adverse forest floor, soil, above and below ground vegetation structure, or other site biotic factors.

Other strategies that are used as a preventative measures include:

- *Use of Improved Seed* – Seed of the highest genetic worth available for the area is used to grow seedlings for planting and fill-planting activities. Seedlings grown from improved seed show faster growth than those grown from wild seed, providing these seedlings with an improved ability to compete with encroaching vegetation.
- *Minimizing Regeneration Delay* – Seedlings that are quickly established are more likely to compete successfully with problematic vegetation. Especially on brush-prone sites, seedlings should be planted as soon as possible following harvesting.
- *Maximizing Seedling Performance* – Seedlings that are planted in the best microsite possible and that remain undamaged during the planting process are more likely to compete successfully with problematic vegetation. Guidelines on stock handling to avoid seedling damage and optimizing the quality of planting microsites should be followed during planting activities.

### 2.3.2 Pest Identification

A pest, in the context of this PMP, is an organism that limits or eliminates the ability of a seedling crop tree from establishing and/or reaching free growing status. While this could include many kinds of organisms, the focus of this PMP is on plant species. Target species are outlined in the various scenarios described in the “Injury Thresholds” Section 2.3.4.

A fundamental activity in managing competing vegetation is the timely identification of vegetation that has the potential for negatively impacting crop trees. The first step is

sound biogeoclimatic ecosystem classification from which vegetation species can be predicted. This prediction helps plan the most appropriate reforestation strategies that may help to control competing vegetation.

The next step in prompt pest identification is a post-harvest site assessment, which is carried out in order to prescribe silviculture treatments. The site is assessed for site limiting factors including frost, drought, aeration, saturation, heavy vegetation competition, soil temperature, and stability. Pest identification will also occur in the monitoring program which is described in Section 2.3.3.

The chief references for the identification of vegetation pests commonly found within the PMP area include:

- *Plants of Northern British Columbia* (Mackinnon, Pojar, and Coupe)
- *Plants of Southern Interior British Columbia* (Parish, Coupe, and Lloyd)
- *Trees, Shrubs, Flowers* (Lyons)
- *Autecology of Common Plants in British Columbia: A Literature Review* (Haeussler, Coates, and Mather)

### 2.3.3 Seedling and Vegetation Monitoring

Canfor monitors and assesses seedling and vegetation performance using a combination of the following methods described in the table below. Treatment decisions will be based on current surveys (completed <18 months from treatment date). In each of the survey types referenced in Table 1, information that is collected includes crop tree species, height, density, age and for competing vegetation species, height and distribution. This data is recorded and stored in our Corporate Database (Resources).

**Table 1: Methods for monitoring seedling performance and vegetation**

Seedling and Vegetation Monitoring Methods	Frequency
<i>Survey - Regeneration Performance</i> – This more intensive type of survey is used on the more heterogeneous sites where it may be difficult to evaluate the performance of planted and natural stock and recommend brushing treatments. This survey is used to determine stocking levels and performance of planted and natural stock, and to prescribe brushing treatments or fill plants if necessary.	Once - 2 or 3 growing seasons after planting
<i>Walkthrough - Regeneration Performance</i> – Informal walkthroughs on more homogenous sites where seedling performance and competition hazard are easier to evaluate. This survey is used to determine stocking levels and performance of planted and natural stock, and to prescribe brushing treatments or fill plants if necessary.	May be scheduled when more information is required for a treatment decision.
<i>Walkthrough - Free Growing Recce</i> - Walkthrough survey used to confirm that block, or specific strata, will meet standards for free growing before a free growing survey is undertaken.	Once – 5-10 growing seasons after planting. Scheduled as needed as survey regime progresses.
<i>Site Visit</i> - A site visit used to assess crop tree height, density and distribution, as well as brush competition and distribution. Also used in a Predictive Herbaceous Scenario (see Section 2.3.4) to confirm treatment.	May be scheduled when more information is required for a treatment decision.
<i>Survey - Free Growing</i> - The purpose of the free growing survey is to gather data required to provide confidence and reliance that a free growing stand has been established. Data will be collected to produce a Free Growing report.	Once - 5 to 15 growing seasons after planting.

### 2.3.4 Treatment Thresholds and Decisions

#### Decision Thresholds and Action Levels

With respect to a development and implementation of a decision protocol for determining whether or not treatment is required, there are three scenarios to address. These scenarios can be applied to portions of or entire openings where treatment is recommended based on the results of injury thresholds:

**Senario 1: Obvious Herbaceous/Shrub** – In this scenario, herbaceous vegetation levels are well developed, and crop trees have been established long enough (1-2 growing seasons) that response can be assessed with respect to seedling attributes.

**Target Species** - Vegetative species in this scenario include, but are not limited to, red elderberry, *Rubus* species (e.g. thimbleberry), *Ribes* species, black twinberry, *Sorbus* species, white-flowered rododendron, high-bush cranberry, fireweed and grasses.

**Treatment objectives** are to control competing vegetation long enough that crop trees are able to recover from injury, and that crop trees can generate adequate growth to keep ahead of recovering brush levels. Table 2 below describes the measure of vegetation competition and seedling impact justifying treatment.

**Table 2: Treatment threshold for vegetation management under Scenario 1**

Indicator	Threshold Chosen	Measure	Treatment Threshold
Comeau's Index <sup>1</sup>	Comeau's Index, a commonly used vegetation index which is a measure of total density of vegetation multiplied by vegetation height divided by crop tree height.	sum (% cover of brush species x height) <i>divided by</i> (tree height)	> 80 (recommend treatment)

<sup>1</sup> Comeau's Index (CI) is a simple index that measures the competition for sunlight with regards to crop trees. CI is calculated as the sum of the products of cover and height for all non-crop species within a 1.26 meter radius around a crop tree, divided by crop-seedling height. CI shows that growth declines with increases in competition index. There is a very rapid decline in growth as CI increases from 0 to 100. At CI=100, growth is approximately 60% of that of a seedling growing free from competition. At a CI=150, seedlings receive 30% of the full sunlight in midsummer and would achieve approximately 45% of potential growth rates (Comeau, 1993).

**Scenario 2: Predictive Herbaceous** – In this scenario, at the time of assessment, the vegetation levels may or may not be fully expressed. Additionally, crop trees may not be established or have not been established long enough that response can be assessed with respect to seedling attributes. Predictive herbaceous is ecology driven and the target vegetation includes the species that are described in Scenario 1.

**Treatment objectives** focus on maintaining current seedling vigor prior to injury; specifically on sites where, if left untreated, we forecast that vegetation competition will cause injury to crop trees. This is a predictive scenario, whereby treatment decisions are based on brush hazard ratings that are assigned by site ecology. Site classification is based on biogeoclimatic ecosystem classification system and is completed during the development of the Silviculture Prescription/Site Plan. The following provide links to the Land Management Handbooks pertaining to the area covered by this PMP:

<https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh20-1.pdf>

<https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh20-2.pdf>

<https://www.for.gov.bc.ca/hfd/pubs/docs/Lmh/Lmh23.pdf>

[https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh39\\_Part1.pdf](https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh39_Part1.pdf)

[https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh39\\_Part2.pdf](https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh39_Part2.pdf)

Brush hazard ratings associated with BEC zones down to the site series applicable to this PMP are outlined in Table 3.

**Table 3: Brush hazard rating for select biogeoclimatic ecosystem zones, sub-zones, variants, and site series in the Thompson Okanagan Natural Resources District**

Biogeoclimatic Zone, Subzone and Variant	Site Series									
	01	02	03	04	05	06	07	08	09	10
ESSF wc2	mod	low	low-mod	mod	mod	high	very high	high		
ESSF vc	high	low	mod	high	high	mod				
ESSFdc2	mod	low	low	low-mod	mod	mod	mod	mod	low	
ICHmw3	mod	low	mod	low	mod	high	high	high	mod	
ICHwk1	mod	low	low	low	high	very high	high	high		
ICHmk2	mod	low	low	mod	high	mod				
ICHmk3	mod	low	mod	mod	high	very high	very high			
ICHvk1	high	nil	mod	mod	very high	very high				
SBS mm	med	low	low	mod	mod-high	high	high	mod	mod	
SBS dw1	mod	low	low	low	mod	mod	mod	mod	mod	
IDFmw2	low	low	low	mod	low					
IDFvh2	low	nil	low	low	low	mod	mod	low		

BEC classes rated as moderate, high, very high, or extreme may need treatment based on the predictive herbaceous scenario. Where treatments are prescribed, a follow up site visit will be conducted to confirm treatment (conducted the same season, prior to treatment). These proactive treatments may minimize the potential for repeated treatments. The thresholds are described in Table 4.

**Table 4: Treatment thresholds for vegetation management under Scenario 2**

Indicators	Cause	Measure	Threshold
Brush Hazard by BEC	Based on local knowledge of treatment responses, observed data from surveys, and BEC, predictions are made as to the likelihood of requiring treatment. This is combined with Comeau’s Index to prescribe treatment.	See Table 3	Moderate, High, Very High, Extreme brush hazard rating
Comeau's Index	See Comeau’s Index description under Scenario 1. For a site preparation decision where no tree data exists, use 20 cm (target height for Sx 412 2+0).	sum (% cover of brush x height) / (tree height)	> 80 (recommend treatment)

**Scenario 3: Obvious Deciduous Vegetation Competition** – Expressed deciduous competition results in imminent or measurable negative crop tree impact.

**Target Species** - For the purpose of this scenario, “deciduous vegetation” refers to trembling aspen, black cottonwood, alder species, willow species, maple and birch.

**Treatment objectives** for this scenario is to release crop trees from competition of deciduous species. Treatment thresholds are based on densities and distributions of deciduous trees that reduce stocking and impacts the ability to meet legal obligations as specified in the approved Forest Stewardship Plan (see Appendix 2 – Canfor Vavenby FSP Stocking Standards) or Silviculture Prescription. The following threshold provides guidance:

Without treatment, Free Growing obligations (i.e. minimum number of free growing stems per hectare) will not be met because the distribution of deciduous species results in a stand > 1.0 contiguous hectare where deciduous species are encroaching on the effective growing space of the crop tree.

Without treatment, Free Growing obligations will not be met. See Forest and Range Practise Regulations Section 46.11 (link below).

[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/12\\_14\\_2004#section46.11](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/12_14_2004#section46.11)

This PMP uses current practices as per the obligations and definitions pertaining to a “Free Growing Tree” as described in the FS 660, Section 18.a (link below).

<http://www.for.gov.bc.ca/hfp/silviculture/Surveys/FS660final2011.pdf>

### 2.3.5 Treatment Options and Selection Criteria

When undertaking vegetation management there are a range of commonly used treatment options available. Tables 5-10 describe the various treatments considered under this PMP, their relative benefits and limitations, and a rationale for selecting the treatment under this PMP.

**Table 5: Aerial (helicopter) application methods for herbicides**

<b>Herbicide - Helicopter Methods</b>	
<b>Helicopter Discretionary</b> - Non-continuous, discretionary application of herbicide across portions of areas within a cutblock. Equipment includes a helicopter with low-pressure boom with conventional or high volume nozzles. Varying glyphosate application rates possible.	
<b>Helicopter Broadcast</b> - Continuous application of herbicide across all or a portion of areas within a cut block. Equipment includes a helicopter with low-pressure boom with conventional or high volume nozzles. Varying glyphosate application rates possible.	
<b>Benefits</b>	<b>Limitations</b>
<ul style="list-style-type: none"> <li>➤ Highly effective control over a number of years</li> <li>➤ Little to no contact of herbicide to workers</li> <li>➤ Lowest cost brushing method</li> <li>➤ Able to treat slashy, steep ground more safely than a ground treatment.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Less selective than other methods.</li> <li>➤ Stringent application constraints</li> <li>➤ High public profile</li> <li>➤ Intensive preparation and follow up</li> <li>➤ Mature leave trees limit use of this method.</li> <li>➤ Visual quality affected for a number of years</li> <li>➤ Technically demanding</li> </ul>
<i>Rationale for Selecting Treatment Method in PMP</i> –We have not found a more effective, cost efficient method for vegetation control, and we have found this method to be the safest in regards to workers on the ground.	

**Table 6: Ground-based herbicide application methods**

<b>Herbicide - Backpack Methods</b>	
<b>Backpack Discretionary</b> - Non-continuous, discretionary application of herbicide across portions of areas within a cutblock. Equipment includes low-pressure backpack sprayer with adjustable nozzles. Varying glyphosate application rates possible.	
<b>Backpack Broadcast</b> - Continuous application of herbicide across all or a portion of areas within a cut block. Equipment includes low-pressure backpack sprayer with adjustable nozzles. Varying glyphosate application rates possible.	
<b>Benefits</b>	<b>Limitations</b>
<ul style="list-style-type: none"> <li>➤ Effective control over a number of years.</li> <li>➤ Can treat on blocks with lots of mature standing leave trees.</li> <li>➤ Can be applied with more precision, and applicator can be more “selective” than a helicopter.</li> <li>➤ Little or no buffer zone required protecting PFZ.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Stringent application constraints</li> <li>➤ Intensive preparation and follow up</li> <li>➤ Effectiveness diminishes as height of brush increases.</li> <li>➤ Needs a very high level of supervision and layout.</li> <li>➤ Higher potential of worker exposure to herbicide.</li> <li>➤ Safety concerns with wearing heavy equipment on rough terrain.</li> </ul>
<i>Rationale for Selecting Treatment Method in PMP</i> –This method is a key tool, and is especially useful in areas that have lots of leave trees and herbaceous vegetation.	
<b>Herbicide - Brushsaw Methods</b>	
<b>Cut Stump</b> - Non-continuous, discretionary application of herbicide onto cut surfaces of target vegetation only. Equipment generally includes a brushsaw with a user-controlled herbicide attachment that applies herbicide beneath the surface of the cutting blade. Varying glyphosate application rates possible but are much lower rates than Aerial and Backpack methods.	
<b>Benefits</b>	<b>Limitations</b>
<ul style="list-style-type: none"> <li>➤ Effective control over a number of years preventing re-sprouting of target vegetation.</li> <li>➤ Much bigger treatment window versus other herbicide treatment methods.</li> <li>➤ Little or no buffer zone required protecting PFZ.</li> <li>➤ Very little herbicide exposure to workers.</li> <li>➤ Can be applied with more precision, and applicator can</li> </ul>	<ul style="list-style-type: none"> <li>➤ Stringent application constraints</li> <li>➤ Intensive preparation and follow up</li> <li>➤ Needs a very high level of supervision and layout.</li> <li>➤ Safety concerns with wearing heavy equipment on rough terrain.</li> <li>➤ Expensive equipment required.</li> </ul>



<p>be more “selective” than other methods.          ➤ Uses less herbicide on a given area (reduced application rate)</p>	
<p><i>Rationale for Selecting Treatment Method in PMP</i> –This method is a good tool for blocks that have high numbers of leave trees or numerous water bodies with primarily broadleaf competition, and shows good effectiveness in preventing re-sprouting of aspen.</p>	
<p><b>Herbicide – Basal Bark</b></p>	
<p><b>Basal Bark</b> – Non-continuous, discretionary application of herbicide onto surfaces of target vegetation only.</p>	
<p><b>Benefits</b></p>	<p><b>Limitations</b></p>
<ul style="list-style-type: none"> <li>➤ Effective control over a number of years.</li> <li>➤ Can treat on blocks with lots of mature standing leave trees.</li> <li>➤ Can be applied with more precision, and applicator can be more “selective” than a helicopter.</li> <li>➤ Little or no buffer zone required protecting PFZ.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Stringent application constraints</li> <li>➤ Intensive preparation and follow up</li> <li>➤ Needs a very high level of supervision and layout.</li> <li>➤ Higher potential of worker exposure to herbicide.</li> <li>➤ Safety concerns with wearing heavy equipment on rough terrain.</li> </ul>
<p><i>Rationale for Selecting Treatment Method in PMP</i> –This method is a good tool for blocks that have high numbers of leave trees or numerous water bodies with primarily broadleaf competition, and shows good effectiveness in preventing re-sprouting of aspen. Treatment does not immediately increase slash level in treatment area.</p>	

**Table 7: Ground-based non-herbicide methods - small engine**

<p><b>Non-Herbicide – Brushsaw Method</b></p>	
<p><b>Manual Brushing</b> – Worker cuts target vegetation with a brushsaw or chainsaw.</p>	
<p><b>Benefits</b></p>	<p><b>Limitations</b></p>
<ul style="list-style-type: none"> <li>➤ No herbicide use.</li> <li>➤ Public acceptance</li> <li>➤ Can be applied selectively</li> <li>➤ Can be used in riparian areas or pesticide free zones</li> </ul>	<ul style="list-style-type: none"> <li>➤ Re-sprouting of target species, may require re-treatment</li> <li>➤ Safety hazards associated with saws, exhaust fumes, and repetitive motion injuries.</li> <li>➤ High treatment cost. Expensive equipment required.</li> <li>➤ Relative short window for treatment (after leaf out to end of July).</li> <li>➤ Not effective on herbaceous brush.</li> </ul>
<p><i>Rationale for Selecting Treatment Method in PMP</i> - Can be effective if crop trees are taller and not suppressed (but will not make “Free Growing”)</p>	

**Table 8: Ground-based non-herbicide methods - hand tools**

<p><b>Non-Herbicide – Girdle</b></p>	
<p><b>Manual Girdling</b> – Worker uses hand-girdling tool and removes a continuous strip of bark around individual stems, eventually (2-3 years) killing the trees.</p>	
<p><b>Benefits</b></p>	<p><b>Limitations</b></p>
<ul style="list-style-type: none"> <li>➤ No herbicide use.</li> <li>➤ Public acceptance.</li> <li>➤ Can be applied selectively.</li> <li>➤ Low cost hand tools so workforce can gear up easily.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Re-sprouting, may require multiple treatments.</li> <li>➤ High treatment cost due to low productivity.</li> <li>➤ Cannot use for herbaceous.</li> <li>➤ Repetitive strain injuries common.</li> </ul>
<p><i>Rationale for Selecting Treatment Method in PMP</i> - Can be effective if crop trees are taller and not suppressed (but will not make “Free Growing”)</p>	

**Table 9: Ground-based non-herbicide methods – livestock**

<p><b>Non-Herbicide – Sheep</b></p>	
<p><b>Sheep Grazing</b> – 1-3 shepherds guide a herd of sheep (1,000 – 1,500 head) through areas where they eat target vegetation.</p>	
<p><b>Benefits</b></p>	<p><b>Limitations</b></p>
<ul style="list-style-type: none"> <li>➤ No herbicide use.</li> <li>➤ Not constrained by weather conditions.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Moderate to high amounts of damage to crop trees (especially Pli and Fdi and any species in June)</li> <li>➤ High treatment cost.</li> <li>➤ Can only use for certain herbaceous species and only provides a couple months of control.</li> <li>➤ Can only use on good access, flat blocks with low to</li> </ul>

	<p>no slash.</p> <ul style="list-style-type: none"> <li>➤ Need a group of blocks in close proximity to make a “program”.</li> <li>➤ Risk of disease spread to wild ungulate populations.</li> <li>➤ Potential damage to pesticide free zones and riparian areas from herd.</li> <li>➤ Risk of predation.</li> </ul>
<p><i>Rationale for Selecting Treatment Method in PMP - Only other realistic option to herbaceous treatment if herbicide cannot be used.</i></p>	

**Table 10: Ground-based non-herbicide methods - site preparation**

<p align="center"><b>Non-Herbicide – Mechanical Site Preparation</b></p>	
<p><b>Mechanical Site Prep</b> – Creating improved microsites for reforestation where site limiting factors might inhibit seedling performance, for example soil temperature, soil moisture, competing vegetation, or physical barrier (slash loading)</p>	
<p align="center"><b>Benefits</b></p>	<p align="center"><b>Limitations</b></p>
<ul style="list-style-type: none"> <li>➤ No herbicide use.</li> <li>➤ Public acceptance.</li> <li>➤ Increased soil temperature</li> </ul>	<ul style="list-style-type: none"> <li>➤ Temporary brush control</li> <li>➤ Expensive</li> <li>➤ Access limitations</li> <li>➤ Possible soil compaction and rutting</li> <li>➤ Potential for surface erosion</li> <li>➤ High visual impact</li> <li>➤ Site constraints – slope, slash, duff layer depth</li> </ul>
<p><i>Rationale for Selecting Treatment Method in PMP – Creates favourable microsites and achieves temporary brush control</i></p>	

### 2.3.6 Selection of Treatment Method

Treatment method selection takes into consideration a number of factors including physical (see Benefits and Limitations in Treatment Methods tables), legal and political constraints as well as stakeholder concerns. Treatment efficacy and treatment cost are also considerations in selecting an appropriate method of treatment.

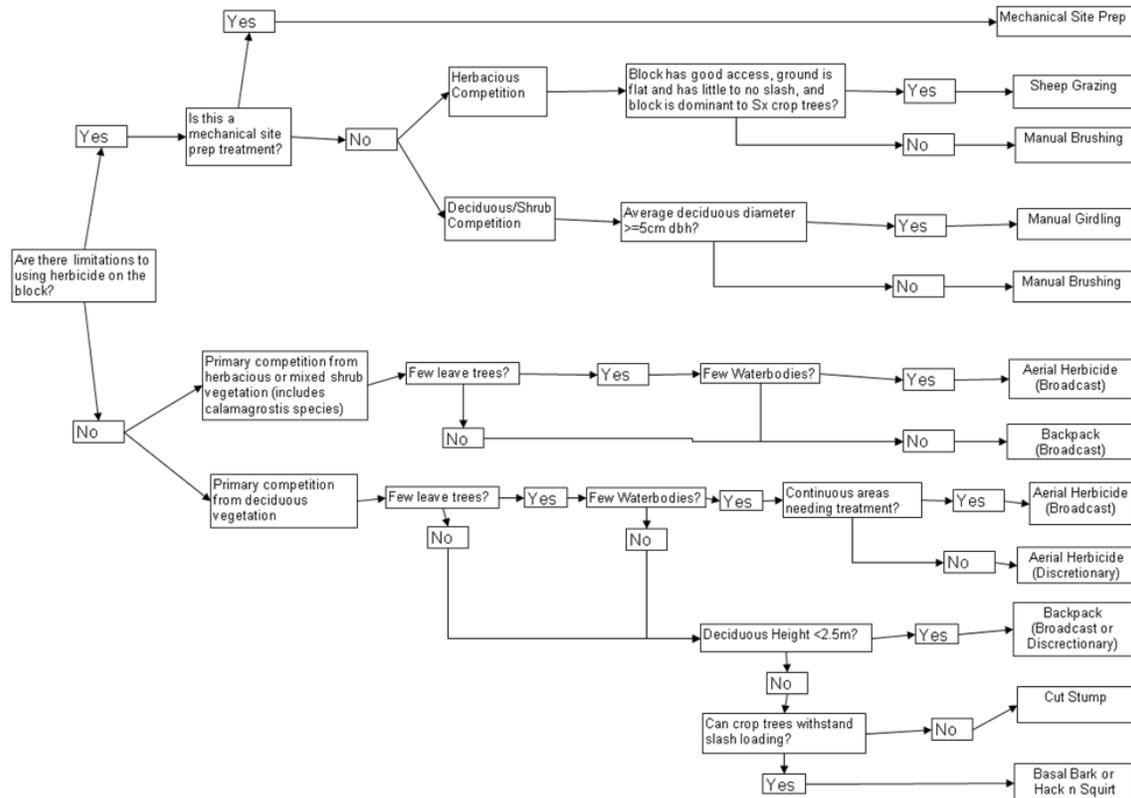
Legal and political constraints will influence treatment selection. Legal constraints must be addressed and accommodated within all strategies. Political constraints may come from a number of sources. These constraints may be identified through a number of avenues, for example public consultation, regulatory agencies, Forest Stewardship Plan processes, and Land and Resource Management Plan processes.

Due to the complexity of issues that may influence a treatment decision, this PMP does not attempt to create a treatment decision matrix that may exclude or that may apply extraneous constraints upon a treatment decision.

Figure 1 below illustrates the process and describes guidelines for selecting an appropriate brushing method in Canfor Vavenby. This process is greatly simplified and the actual treatment choice may be different than below with a stated rationale.

**Figure 1: Brushing Method Selection Model**

Use this model to select the most suitable brushing method. Circle the final choice. Add any comments to rationalize treatment choice.



Limitations to using herbicide on the block may include: specific SP requirements, wildlife habitats (i.e. nests, dens identified on block), ungulate winter ranges, stakeholder limitations, pesticide free zones, old growth management areas, and other limitations specified in higher level plans.

NOTE: This model is a guide to help determine brushing treatments; factors such as block location, size of treatment area, terrain issues (i.e. slope, slash levels), and cost should also be considered when reaching a final brushing treatment decision.

### 2.3.7 Post-Treatment Evaluation

All blocks where treatment has been conducted will be visually assessed within 12 months of treatment. Table 11 details aspects of the treatments to be evaluated.

**Table 11: Post-treatment evaluation considerations**

<b>Efficacy</b>
Coverage of intended treatment area
<ul style="list-style-type: none"> <li>absence of striping (herbicide applications only)</li> <li>absence of missed areas</li> </ul>
Treatment Efficacy
<ul style="list-style-type: none"> <li>level of removal of target vegetation</li> <li>current level of competition</li> </ul>
Seedling Damage



<ul style="list-style-type: none"><li>• level of seedling damage</li></ul>
<ul style="list-style-type: none"><li>• location of damage, if any (terminal bud, needles, stem, etc.)</li></ul>
Prescription Evaluation
<ul style="list-style-type: none"><li>• treatment meets needs of plantation</li></ul>
<b>Compliance</b>
Pesticide Free Zones (herbicide applications only)
<ul style="list-style-type: none"><li>• no evidence of herbicide compromise into Pesticide Free Zones</li></ul>
Boundaries
<ul style="list-style-type: none"><li>• as mapped on final treatment boundary maps</li></ul>
<ul style="list-style-type: none"><li>• consistent with treatment plan</li></ul>
<ul style="list-style-type: none"><li>• no evidence of herbicide outside of marked boundaries (herbicide applications only)</li></ul>

Non-compliance of herbicide applications identified during the post-treatment evaluation will be reported to the Ministry of Environment.

Subsequent surveys as described in Section 2.3.3 may be conducted to further evaluate seedling performance and vegetative response to treatment.

## **SECTION 3: OPERATIONAL INFORMATION FOR HERBICIDE USE**

### **3.1 PROCEDURES FOR SAFELY TRANSPORTING HERBICIDES**

The federal *Transportation of Dangerous Goods Act* (TDGA) and the *Integrated Pest Management Act* regulate the transportation and handling of poisonous substances, which may include some herbicides.

The following procedures will be followed while transporting herbicides for application under this PMP:

- Limited amounts of herbicide concentrate will be carried in any one vehicle. The quantity will be no more than what is necessary for each project.
- Herbicide concentrate will only be carried in a secure lockable, signed compartment.
- Herbicide concentrate will only be transported in original labeled containers.
- Herbicide concentrate will always be carried separately from food and drinking water, safety gear, and people.
- Spill containment and clean up equipment will be carried separately from herbicides but in close proximity to the herbicide on each vehicle during herbicide transport and use.
- Appropriate documents such as operations records and material safety data sheets (MSDS) will be carried in each vehicle during herbicide transport and use.

### **3.2 PROCEDURES FOR SAFELY STORING HERBICIDES**

Herbicides will be stored in accordance with the *Integrated Pest Management Act* and Regulations and the WorksafeBC document “Standard Practices for Pesticide Applicators”. In summary, the storage area must:

- be ventilated to the outside atmosphere;
- be locked when left unattended;
- restrict access to authorized persons;
- be placarded on the outside of each door leading into the facility in which the herbicides are stored bearing, in block letters that are clearly visible, the words “WARNING – CHEMICAL STORAGE – AUTHORIZED PERSONS ONLY”.

In addition, the person responsible for the storage area shall notify the appropriate fire department of the presence of herbicides on the premises.

Some contractors may store herbicides for extended periods of time in vehicles when performing herbicide treatments for Canfor. The vehicle is considered a mobile storage unit. Persons responsible for the herbicide storage shall ensure that all herbicides are stored in a locked canopy, or similar arrangement, separate from the driver and personal protective equipment.

### **3.3 PROCEDURES FOR SAFELY MIXING, LOADING, AND APPLYING HERBICIDES**

All mixing, loading and application of herbicides shall be carried out by certified pesticide applicators in the appropriate category of certification. General procedures and precautions include:

- Mixing of herbicides must always be conducted in a safe manner.
- Safety spill kits, spill response plans and first aid supplies shall be present on or near the treatment site.
- Eye wash station(s) and protective clothing as recommended on the respective product labels shall be available on or near the treatment site.
- Product labels and Material Safety Data Sheets will be available on or near the treatment site to ensure that quantities of herbicides being mixed and used are consistent with label rates.
- There shall be no mixing or loading of herbicides within 15 metres of sensitive environmental features (i.e. riparian management areas as described in the *Forest and Range Practices Act* and non classified waterbodies).
- Ensure that the application equipment is in good working order and, if required, is calibrated to conform to the application rates on the pesticide label.
- Implement precautions to prevent unprotected human exposure to pesticides.
- Implement precautions to ensure that domestic water sources, agricultural water sources and soil used for agricultural crop production are protected for their intended use.
- Ensure that, to prevent treatment of watercourses, the suction hoses used for herbicide(s) will not be used to pick up water from natural sources such as streams or ponds. The intake of water for mixing will be protected from backflow into the natural source by an “air gap” or “reservoir” between the source and the mixing tank.

### **3.4 PROCEDURES FOR THE SAFE DISPOSAL OF EMPTY HERBICIDE CONTAINERS AND UNUSED HERBICIDES**

Empty containers shall be disposed of in accordance with the manufacturer's instructions as noted on the product label or provincial instructions and recommendations that are detailed in the BC Ministry of Environment document Handbook for Pesticide Applicators and Dispensers (1995). As a minimum, empty herbicide containers shall be:

- returned to the herbicide distributor as part of their recycling program; or,
- triple rinsed or pressure rinsed, then altered so they cannot be reused; and,
- disposed of in a permitted sanitary landfill or other approval disposal site.

Unused herbicides will be stored at the herbicide distributor's warehouse or another approved facility.

### **3.5 PROCEDURES FOR RESPONDING TO HERBICIDE SPILLS**

Spill treatment equipment shall be at or near storage (including mobile storage) mixing and loading sites, and it shall include the at least following:

- Personal protective equipment
- Absorbent material such as sawdust, sand, activated charcoal, vermiculite, dry coarse clay, kitty litter or commercial absorbent
- Neutralizing material such as lime, chlorine bleach or washing soda
- Long handled broom, shovel, and waste-receiving container with lid

A copy of an approved spill response plan shall be at or near each work site. All personnel working on a project involving herbicides should be familiar with its contents. If contractors that work under this PMP have their own spill response plan, it must meet or exceed the requirements as described in Canfor's Emergency Preparedness and Response Plan, generally described below:

- All personnel shall be protected from herbicide exposure by wearing appropriate protective clothing and safety gear;
- Any person exposed to a herbicide shall be moved away from the place of the spill;
- First aid should be administered, if required;
- The source of the spill should be stopped;
- The spilled material should be stopped from spreading by creating a dam or ridge;
- The project supervisor shall ensure operations cease until the spill is contained and the source is repaired;
- Absorbent material shall be spread over the spill, if applicable, to absorb any liquid;
- The absorbent material shall be collected in garbage bags or containers with the contents clearly marked;
- Contaminated soil or other material will be removed from the spill site and placed in garbage bags or containers;
- The person responsible for the project shall contact an approved representative of Canfor for shipping instructions and disposal requirements;
- When more than five kilograms of product of herbicide is spilled on land, or any amount into a waterbody, the person responsible for the project will immediately report it to the Provincial Emergency Program by telephoning 1-800-663-3456 or, where that is impractical, to the local police or nearest detachment of the RCMP and an approved representative of Canfor will be notified of the details related to the spill as soon as is practical by the Contractor project supervisor

## **SECTION 4 ENVIRONMENTAL PROTECTION STRATEGIES AND PROCEDURES**

Vegetation management activities involving the use of herbicides under this PMP will incorporate the following:

- Strategies to protect community watersheds, and other domestic water sources
- Strategies to protect fish and wildlife, riparian areas, and wildlife habitat
- Strategies to prevent herbicide treatment of food intended for human consumption
- Pre-treatment inspection procedures for identifying treatment area boundaries
- Procedures for maintaining and calibrating herbicide application equipment
- Procedures for monitoring weather conditions and strategies for modifying herbicide application methods for different weather conditions

Strategies for protecting community watersheds, domestic water sources, fish, wildlife, riparian areas, and wildlife habitat features for vegetation management activities that do not involve the use of herbicides will be in accordance with any or all of:

- Forest Planning and Practices Regulation
- Forest Stewardship Plan
- Sustainable Forest Management Plan
- The site plan/silviculture prescription for the site
- Any other pertinent higher-level plan

In this PMP, Canfor based the size of its pesticide-free zones (PFZ) and no treatment zones (NTZ) on the standards currently contained in the *Integrated Pest Management Act* and Regulations.

### **4.1 STRATEGIES TO PROTECT COMMUNITY WATERSHEDS AND OTHER DOMESTIC WATER SOURCES**

The Hascheak, Russell, and McDougall Community Watersheds fall within the Canfor Vavenby operating area. No herbicide will be used within these community watersheds.

A Pesticide Free Zone (PFZ) will be established around any other established community watersheds that may be developed during the term of this PMP to ensure that the integrity of the watershed is maintained. The area of the PFZ will comply with the standards set at that time.

Due to the location of Canfor's tenure (Crown land located away from private land), there are no known water supply intakes or wells used for domestic or agricultural purposes on Canfor's tenure where there are agreed upon measures that are in excess of requirements outlined in Regulation.

Pursuant to section 71 of the Integrated Pest Management Regulation, a 30 m no-treatment zone will be implemented around any water supply intake or wells used for domestic or agricultural purposes, including water for livestock or for irrigation of crops.

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## **4.2 STRATEGIES TO PROTECT FISH AND WILDLIFE, RIPARIAN AREAS, AND WILDLIFE HABITAT**

### **4.2.1 Pesticide Free Zones (PFZ)**

“Pesticide Free Zone” means an area of land that must not be treated with pesticide and must be protected from pesticide moving into it.

Water bodies are identified, pre-harvest, in conjunction with the development of Silviculture Prescriptions, Site/Exemption Plans, or Site Level Plans. Herbicide layout contractors conduct a reconnaissance of the treatment area to identify water bodies post-harvest.

“Pesticide Free Zones” will be established consistent with the Integrated Pest Management Regulation. See IPMR Section 74 and 75.

[http://www.bclaws.ca/EPLibraries/bclaws\\_new/document/ID/freeside/10\\_604\\_2004#section74](http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_604_2004#section74)

In order to maintain “Pesticide Free Zones” a 10 meter buffer will be established for backpack herbicide application methods.

### **4.2.2 Wildlife Habitat Features and Riparian Area**

Wildlife Habitat features, Wildlife Habitat Areas and Riparian areas are defined in Regulation and identified pre-harvest and managed through approved Silviculture Prescriptions, Site Plans and Forest Stewardship Plans. The application of herbicides will be consistent with the protection measures stated in those operational plans and/or Regulation. Observation of wildlife habitat features post-harvest will be reported to Canfor representatives, and where necessary, site-specific protection measures will be implemented through the establishment of Pesticide Free Zones.

Wildlife Habitat Features found in the Canfor Vavenby Woodlands operating area include:

- Wildlife Habitat Areas (WHA) - 4 areas designated for the purpose of Bull Trout Habitat. These are identified in the Government Action Regulation (GAR) Order as WHA Areas #6-283,6-284, 6-285 and 6-286. Use the following link to access information on their locations. [http://www.env.gov.bc.ca/cgi-bin/apps/faw/wharesult.cgi?search=wlap\\_region&wlap=Skeena](http://www.env.gov.bc.ca/cgi-bin/apps/faw/wharesult.cgi?search=wlap_region&wlap=Skeena)

The protection measures related to the WHA Order Schedule 1 - General Wildlife Protection Measures specifies:

Implement primary forest activities to maintain stream channel integrity, large woody debris inputs, water quality, groundwater flow, substrate composition; and prevent cumulative hydrologic effects.

### **4.2.3 Species at Risk**

Canfor is certified under several forestry certification brands, and the application of herbicides under this PMP will be consistent with the protection measures strategies stated

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in our Sustainable Forest Management Plan, specifically outlined in Canfor Vavenby Division - “Fine Filter Species Operational Control”. See Appendix 3

Canfor has developed annual training for staff and contractors for assistance in proper identification of at risk species and plant communities found within Canfor’s operating areas. Observation of species at risk post-harvest will be reported to Canfor representatives, and where necessary, the observations will be reported to the Ministry of Environment and site-specific protection measures may be implemented. See Appendix 4 – Species At Risk and Sites of Biological Significance Training.

Where species at risk are encountered they will be excluded from treatment area or they will be protected by a “Pesticide Free Zone”.

#### **4.3 STRATEGIES TO PREVENT HERBICIDE TREATMENT OF FOOD INTENDED FOR HUMAN CONSUMPTION**

Canfor shall attempt to locate areas where there is food grown for human consumption and take the appropriate precautions during vegetation management operations to avoid treatment of these areas. Such precautions may include providing increased buffer zones around these areas during herbicide applications, timing applications, or using non-chemical methods of vegetation management. Signs will be posted at all entrances to the treatment site to meet regulatory requirements (as per Sec 64(1) of the Integrated Pest Management Regulations).

Herbicide will not be stored or transported in the same compartments as human food.

#### **4.4 PRE-TREATMENT INSPECTION PROCEDURES FOR IDENTIFYING TREATMENT AREA BOUNDARIES**

A pre-treatment inspection will be completed on all treatment sites by the contractor and/or Canfor supervisor to identify treatment area boundaries and the presence of the general public, grazing wildlife and livestock. During this inspection, sensitive areas such as bodies of water and no treatment zones are noted on maps. The contractor is instructed to follow the bagging/flagging requirements as depicted on the treatment layout map.

During the pre-work discussion, contractor representatives shall be instructed in the bagging/flagging requirements and precautions, and review the methodology and procedures for applications and handling of the herbicide.

No treatment is to proceed until it is confirmed there is no presence of the general public and there is no visible grazing wildlife or livestock in the treatment area.

## 4.5 WEATHER MONITORING AND STRATEGIES

Measurements will be made to record weather conditions prior to treatment, at the end of treatment and in between treatment if there has been a change in site or weather conditions. The following items will be recorded for foliar treatment methods:

- Wind speed and direction
- Relative Humidity (RH)
- Presence of frost or dew
- Precipitation
- Temperature
- Sky conditions (clear, overcast, cloudy, partly cloudy)

The following table describes strategies for modifying application according to changing weather conditions:

	Temp.	Thick Dew or Frost on Leaves	Wind Speed (km/hour)	Relative Humidity (%)	Rain, Inversion, Fog	Freezing Conditions
Aerial Foliar (conventional)	>26.5 C No Spray	No Spray	>8 No Spray	<40 No Spray	No Spray	No Spray
Aerial Foliar (low drift)	>30 C No Spray	No Spray	>8 No Spray	<35 No Spray	No Spray	No Spray
Backpack, Foliar	>26.5 C No Spray	No Spray	>10 No Spray	<40 No Spray	No Spray	No Spray
Cutstump, Hack and Squirt					No application if raining	No Application
Basal Bark					No application if stem is wet	As long as snow is below treatment height

## 4.6 PROCEDURES FOR MAINTAINING AND CALIBRATING HERBICIDE APPLICATION EQUIPMENT

The application contractor shall ensure that the application equipment is in good working order and, if required, is calibrated to conform to the application rates on the pesticide label. Proper calibration is very important to ensure herbicide is not under or over applied.

### 4.6.1 Aerial Herbicide Equipment

All equipment shall be calibrated prior to commencing operations for that season. Proof of this calibration for aerial applications and the swath kit analysis shall be kept by the treatment contractor for at least 2 years.



Maintenance of the spray equipment is the responsibility of the application contractor. The contractor shall have qualified personnel on each spray site who will ensure the equipment conforms, at all times, to the manufacturer's standards.

#### **4.6.2 Ground Herbicide Equipment**

The application contractor shall calibrate equipment used for backpack applications. Equipment should be calibrated:

- for each individual applicator using hand-held or backpack equipment,
- at the beginning of each season
- at the start of each treatment job
- any time the application equipment is changed
- for each change in size or type of nozzle
- any time the herbicide or formulation of a herbicide is changed

A maintenance person, designated by the application contractor, must conduct maintenance and repairs. The maintenance person must be knowledgeable in the operation and repair of the equipment. The equipment operation must conform to the manufacturer's specifications.

Records will be kept by contractors for each piece of calibrated equipment for a minimum of 2 years.



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## **SECTION 5: FORESTRY HERBICIDES PROPOSED FOR USE UNDER THIS PMP**

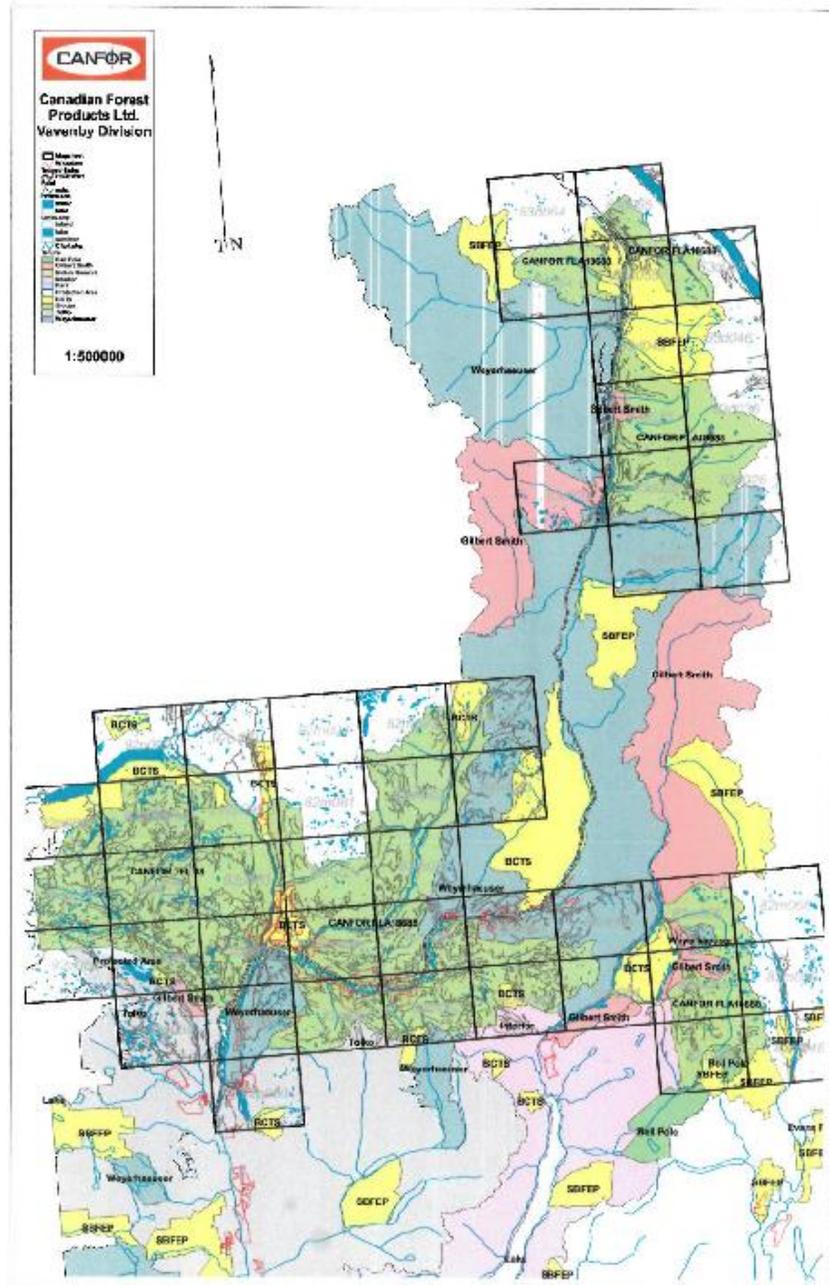
Herbicides proposed for use within the scope of this PMP are registered for forestry use under the Pesticide Control Products Act. They have been deemed safe when applied according to the instructions outlined on their labels.

The herbicides listed below are proposed for use within the context of this PMP for vegetation control.

Herbicide Trade Name	Active Ingredient	Application			Pesticide Control Products Act #
		Usage	Aerial	Ground	
Vision, Vision Max Vantage Forestry, Weed-Master	glyphosate	common	yes	yes	19899, 27736, 26884, 29009

The most common herbicide used in forestry is glyphosate. It is selected for its low toxicity and high efficacy in treating competing forest vegetation. When applied at relatively low rates, it effectively manages competing forest vegetation species without significant damage to coniferous trees.

# Appendix 1: Vavenby Division Pest Management Plan Area Map



## Appendix 2: Canfor Vavenby Forest Stewardship Plan Stocking Standards

### 7.1 General Standards

Where a holder of this FSP is required under the Act and regulations to establish a free growing stand in respect of timber harvesting governed by this FSP, the holder will on all cutblocks, subject to Paragraph 7.2 do so in accordance with the regeneration and free growing stocking standards in Appendix A.

For the purposes of the Free Growing stocking standards, all coniferous species listed as primary, secondary, or tertiary in the Reference Guide to FDP Stocking Standards – Kamloops Forest Region, Caribou Forest Region, and Prince George Forest Region as applicable, dated December 11, 2002 will be considered preferred species.

For the purposes of the Regeneration Delay and Free Growing stocking standards Lw will contribute a maximum of 30% toward target stocking density.

### 7.2 Variations from General Standards

Despite Paragraph 7.1, a holder of this FSP may apply the following stocking standards in the following circumstances:

- 7.2.1 Regeneration delay will be 7 years where natural regeneration is the primary reforestation method.
- 7.2.2 Non rust resistant white pine or naturally regenerated white pine will be pruned to a height of 1.3 metres to reduce risk of white pine blister rust. This will occur when white pine accounts for more than 5% of the required stems per hectare to meet free growing; if less than 5% is required, pruning will not occur and the white pine will be deemed acceptable. Only rust resistant white pine will be planted.
- 7.2.3 In FDU's FLK, FLS, and TFL 18, in the SBS, ESSF, and ICH zones between 1000 and 1500 meters elevation where White Pine Weevil (*Pissodes strobi*) having attack levels > 10%<sup>4</sup> is identified in a plantation containing > 30% spruce, aspen and birch will not be considered detrimental competition to spruce crop trees as long as the HDR of the spruce crop trees are less than 60 when conducting a free growing survey.
- 7.2.4 Aspen, cottonwood, birch, willow and alder within the 5 meter machine free zone of a temperature sensitive stream, or a S4, S5, or S6 stream, are not considered deleterious brush competition when conducting a free growing survey.
- 7.2.5 With respect to Mule Deer,
  - a. Western larch planted in Critical Mule Deer Winter Range defined in Figure 4 of the KLRMP as it was on the date of the Order may only make up a maximum of 50% of the total target stocking on those standard units planted.
- 7.2.6 The maximum density for Lodgepole Pine leading stands is 25,000 countable stems per hectare.
- 7.2.7 For all other species and for stands with ≤ 80% Lodgepole Pine the maximum density is 10,000 countable stems per hectare.

<sup>4</sup> >10% is defined as % of spruce attacked /total spruce.



- 7.2.8 Where the MITD is 2.0 metres the MITD may be reduced to 1.6 metres for areas;
- i. Where stumping or mounding site preparation treatments are conducted, or
  - ii. Where surface or sub-surface rock limits plantable spot selection of the site, or
  - iii. Where there is high congregation and use by cattle, or
  - iv. Where heavy slash loading exists, or
  - v. Cable terrain where stumping cannot be conducted to manage root rot, or
  - vi. Sites where stump avoidance during planting is a root rot management strategy, or
  - vii. To facilitate obstacle planting in areas within the Mule Deer UWR units as identified in Appendix B, or
  - viii. Riparian areas with a high component of residual stems.
- 7.2.9 To remain consistent with the result/strategy as set out in Section 5.1.9 of this FSP, within KLRMP Critical Moose Winter Range in figure 4 of the Kamloops LRMP as it was on the Date of Submission of this FSP;
- a. Aspen, willow, cottonwood, birch and red osier dogwood will not be considered detrimental competition to crop trees at free growing if they are no more than 10 meters from the edge of a permanent road prism, or a W1, W2, or W5 wetland identified as visible from a permanent road.





Canfor - Vavenby Stocking Standards Amendment 2 071119.xls

BEC Zone	Subzone & Variant	Site Series	FSP Stocking Standard ID	MITD (m)	Regeneration Delay Standards		Primary	Secondary	Tertiary	Preferred spp												Acceptable spp												Free Growing Standards				
					Max Regen Company ID	Max Regen Delay (yrs)				Min WS P&A	Min WS P	Fd	Pl	Sx	Cw	Bl	Pw	Hw	Lw	Py	Fd	Pl	Sx	Cw	Bl	Pw	Hw	Lw	Py	FG ID	Target WS (sph)	Min WS (sph)	Pl / Pw Ht (m)	Other Spp Ht (m)	Lw Ht (m)	Fd Ht (m)	Sx Ht (m)	
SBS	dw1	08		2.0		4	700	600	Fd, Pl, Sx	Bl	-	Fd	Pl	Sx																			1200	700	2.0	1.0	1.4	
ICH	wk1	02	1013049	1.6		4	500	400	Fd, Pl	-	Bl, Cw, Hw, Pw, Sx	Fd	Pl	Cw																		1000	500	1.4	0.8	1.0		
ICH	mk2	02	1011005	1.0		4	400	400	Fd, Pl	-	Bl, Sx	Fd	Pl																			600	400	1.4	0.8	1.0		
IDF	dk1	03	1013050	1.0		4	400	400	Fd, Pl	Py	-	Fd	Pl																			600	400	1.0	0.8	0.8		
IDF	mw2	02		1.0		4	400	400	Fd, Pl	Py	-	Fd	Pl																			600	400	1.0	0.8	0.8		
ICH	mw3	03	1011006	1.6		4	500	400	Fd, Pl	-	Bl, Cw, Hw, Lw, Pw, Sx	Fd	Pl																			1000	500	1.4	0.8	1.4	1.0	
ICH	mm	02	1013051	1.6		4	500	400	Fd, Pl	Hw	Bl, Cw, Sx	Fd	Pl																			1000	500	1.4	0.8	1.4		
ICH	mw3	02	1011007	1.6		4	500	400	Fd, Pl	Py	Cw, Pw	Fd	Pl																			1000	500	1.4	0.8	1.0		
MS	xk	02	1013052	1.6		4	500	400	Pl	Fd	-	Fd	Pl																			1000	500	1.0	0.6			
SBPS	mk	02	1013053	1.6		4	500	400	Fd, Pl	-	Sx	Fd	Pl																			1000	500	1.2	0.6	0.8	0.6	
IDF	dk1	01	1013054	2.0		4	500	400	Fd, Pl	Py	Lw, Sx	Fd	Pl																			1000	500	1.0	0.6	1.0	0.8	0.6
IDF	dk2	01		2.0		4	500	400	Fd, Pl	Py	Lw, Sx	Fd	Pl																			1000	500	1.0	0.6	1.0	0.8	0.6
IDF	dk2	03		2.0		4	500	400	Fd, Pl	Py	Lw, Sx	Fd	Pl																			1000	500	1.0	0.6	1.0	0.8	0.6
IDF	mw2	03	1013055	2.0		4	500	400	Fd, Pl	Py	Cw, Lw, Sx	Fd	Pl																			1000	500	1.6	0.8	1.6	1.0	
IDF	dk1	04	1013056	2.0		4	500	400	Fd, Pl	Py, Lw	Sx	Fd	Pl																			1000	500	1.0	0.6	0.8		
MS	dm2	03	1013057	2.0		4	500	400	Fd, Pl	-	Bl, Sx	Fd	Pl																			1000	500	1.0	0.6			
MS	xk	05		2.0		4	500	400	Pl	Fd	Bl, Sx	Fd	Pl																			1000	500	1.0	0.6			
SBS	dw1	02	1011008	2.0		4	500	400	Fd, Pl	-	-	Fd	Pl																			1000	500	1.4	0.8	1.0		
SBS	mm	02	1011009	2.0		4	500	400	Pl	Fd	Bl, Sx	Fd	Pl																			1000	500	1.4	0.8	1.0		
SBS	mm	03		2.0		4	500	400	Fd, Pl	-	Bl, Sx	Fd	Pl																			1000	500	1.4	0.8	1.0		
SBS	mm	04		2.0		4	500	400	Pl	Fd	Bl, Sx	Fd	Pl																			1000	500	1.4	0.8	1.0		
SBS	mm	04	new number 1	2.0		4	500	400	Pl	Fd	Bl, Sx	Fd	Pl	Sx																		1000	500	1.4	0.8	1.0		
ICH	mw3	04	1011010	2.0		4	700	600	Fd, Pl	-	Bl, Cw, Hw, Lw, Pw, Sx	Fd	Pl																			1200	700	2.0	1.0	2.0	1.4	
IDF	mw2	01	1013058	2.0		4	700	600	Fd, Pl	-	Cw, Lw, Sx, Bl	Fd	Pl																			1200	700	1.6	0.8	1.6	1.0	
IDF	mw2	01	YC	2.0		4	700	600	Fd, Pl	-	Bl, Cw, Lw, Sx	Fd	Pl																			1200	700	1.6	0.8	1.6	1.0	
IDF	mw2	01	YS	2.0		4	700	600	Fd	Pl	Lw, Sx, Bl, Cw	Fd	Pl																			1200	700	1.6	0.8	1.6	1.0	
SBPS	mk	03	1013059	2.0		4	700	600	Fd, Pl	-	-	Fd	Pl																			1200	700	1.6	0.6	1.0		
SBS	dw1	03	1011012	2.0		4	700	600	Fd, Pl	Bl	-	Fd	Pl																			1200	700	2.0	0.8	1.0		
SBS	mc1	03		2.0		4	700	600	Fd, Pl	Bl	-	Fd	Pl																			1200	700	2.0	0.8	1.0		
ICH	mm	04	1013060	2.0		4	700	600	Cw, Hw, Sx	Bl, Fd, Pl	-	Fd	Pl	Sx	Cw	Hw																1200	700	2.0	1.0	1.4		
ICH	mm	05		2.0		4	700	600	Cw, Hw, Sx	Bl, Fd, Pl	-	Fd	Pl	Sx	Cw	Hw																1200	700	2.0	1.0	1.4		
ICH	mw2	01	1011013	2.0		4	700	600	Fd	Pl, Sx	Bl, Cw, Hw, Pw, Lw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	01	YC	2.0		4	700	600	Fd	Cw, Hw, Pl, Sx	Bl, Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	05		2.0		4	700	600	Fd	Cw, Pl, Sx	Hw, Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	06		2.0		4	700	600	Cw, Fd, Hw, Sx	Bl, Pl	Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	01	new number 2	2.0		4	700	600	Fd	Pl, Sx	Bl, Cw, Hw, Pw, Lw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	01	YC	2.0		4	700	600	Fd	Cw, Hw, Pl, Sx	Bl, Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	05		2.0		4	700	600	Fd	Bl, Cw, Pl, Sx	Hw, Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	mw3	06		2.0		4	700	600	Cw, Fd, Hw, Sx	Bl, Pl	Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	wk1	03	1011014	2.0		4	700	600	Cw, Fd, Hw, Sx	Bl	Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	wk1	04		2.0		4	700	600	Cw, Fd, Hw, Sx	Bl	Lw, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	wk1	02	1011015	2.0		4	700	600	Fd	Bl, Cw, Hw, Sx	Lw, Pl, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	
ICH	wk1	01		2.0		4	700	600	Cw, Fd, Hw, Sx	Bl	Lw, Pl, Pw	Fd	Pl	Sx	Cw	Lw																1200	700	2.0	1.0	2.0	1.4	





### Appendix 3: Vavenby Division - Fine Filter Species and Site of Biological Significance Operational Control

English Name	BC List	Identified Wildlife	SARA
American Badger	Red	Y (May 2004)	Y
Band-tailed Pigeon	Blue		Y
Bighorn Sheep	Blue	Y (Jun 2006)	
Brewer's Sparrow, <i>breweri</i> subspecies	Red	Y (Jun 2006)	
Bull Trout	Blue	Y (Jun 2006)	
Burrowing Owl	Red	Y (May 2004)	Y
Caribou (southern mountain population)	Red	Y (May 2004)	Y
Coastal Tailed Frog	Blue	Y (May 2004)	Y
Columbia Sculpin	Blue		Y
Dun Skipper	Red		Y
Fisher	Blue	Y (Jun 2006)	
Flammulated Owl	Blue	Y (May 2004)	Y
Fringed Myotis	Blue	Y (May 2004)	Y
Gopher Snake, <i>deserticola</i> subspecies	Blue	Y (May 2004)	
Great Basin Spadefoot	Blue	Y (May 2004)	Y
Great Blue Heron, <i>herodias</i> subspecies	Blue	Y (Jun 2006)	
Grizzly Bear	Blue	Y (May 2004)	
Half-moon Hairstreak	Red	Y (Jun 2006)	Y
Lewis's Woodpecker	Red	Y (May 2004)	Y
Long-billed Curlew	Blue	Y (May 2004)	Y
Monarch	Blue		Y
Olive-sided Flycatcher	Blue		Y
Peregrine Falcon, <i>anatum</i> subspecies	Red		Y
Prairie Falcon	Red	Y (Jun 2006)	
Racer	Blue	Y (Jun 2006)	Y
Rusty Blackbird	Blue		Y
Sage Thrasher	Red	Y (May 2004)	Y
Sharp-tailed Grouse, <i>columbianus</i> subspecies	Blue	Y (Jun 2006)	
Short-eared Owl	Blue	Y (May 2004)	Y
Sonora Skipper	Red	Y (Jun 2006)	Y
Speckled Dace	Red		Y
Spotted Bat	Blue	Y (May 2004)	Y
Spotted Owl	Red	Y (May 2004)	Y
Western Painted Turtle - Intermountain - Rocky Mountain Population	Blue		Y
Western Rattlesnake	Blue	Y (Jun 2006)	Y
Western Screech-Owl, <i>kennicottii</i> subspecies	Blue		Y
Western Screech-Owl, <i>macfarlanei</i> subspecies	Red	Y (May 2004)	Y
Western Skink	Blue		Y
Western Toad	Blue		
White-headed Woodpecker	Red	Y (May 2004)	Y
Williamson's Sapsucker, <i>thyroideus</i> subspecies	Red	Y (Jun 2006)	Y
Wolverine, <i>luscus</i> subspecies	Blue	Y (May 2004)	
Yellow-breasted Chat	Red	Y (May 2004)	Y

BEC variants that have been prioritized<sup>15</sup> for rare ecosystem assessment are:

Kamloops TSA

<b>Common Name</b>	<b>Biogeoclimatic classification</b>
Douglas-fir / western snowberry / bluebunch wheatgrass	IDFxw/03
Douglas-fir - ponderosa pine / bluebunch wheatgrass	IDFxw/04
hybrid white spruce - water birch / northern gooseberry	IDFxw/06
hybrid white spruce / prickly rose / palmate coltsfoot	IDFxw/07
western hemlock / velvet-leaved blueberry - falsebox	ICHwk1/03
western red cedar - hybrid white spruce / black twinberry / soft-leaved sedge	IDFdK2/07
Douglas-fir - ponderosa pine / bluebunch wheatgrass	IDFxh2/02 & IDFxh2/03
lodgepole pine / falsebox / pinegrass	SBSmm/03 & SBSmm/04
Douglas-fir - Rocky Mountain juniper / kinnikinnick	IDFdK3/02
Douglas-fir / common snowberry - saskatoon	PPxh2/06
black cottonwood - water birch	PPxh2/07



## **Appendix 4: Fine Filter Species and Sites of Biological Significance Training**

[\\Corpfs02\Woods\FMG\WORKING\Certification\FMS\species\\_at\\_risk\Training\\_SAR\\_SOMC\fmg\\_somc\\_training\\_2014\\_a.pptx](\\Corpfs02\Woods\FMG\WORKING\Certification\FMS\species_at_risk\Training_SAR_SOMC\fmg_somc_training_2014_a.pptx)