



CANADIAN FOREST PRODUCTS LTD.

**Forest Management Group,
Prince George and Vanderhoof Operating Areas**

Integrated 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 maybe viewed online by accessing the following URL: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 regime 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 harvested 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 Canadian Forest Products Ltd., Prince George and Vanderhoof Divisions have or manage within the Prince George and Vanderhoof Timber Supply Areas of the Prince George Forest Region and within the Fraser Fort George and Bulkley Nechako Regional Districts. This area includes any of Canfor's managed openings that are contained within the areas identified on the Prince George and Vanderhoof Division Integrated Vegetation Management Plan Area Map (Appendix 1).

1.3 RESPONSIBILITY FOR VEGETATION MANAGEMENT

Within Canadian Forest Products Ltd., Prince George and Vanderhoof Divisions, the principal contact for information relating to this Pest Management Plan (PMP) is Cheryl Johnston-Schuetz, Forestry Supervisor - Silviculture @ (250) 962-3496.

1.4 PEST MANAGEMENT PLAN LEGISLATION

A PMP is a plan that describes:

- A program for managing vegetation populations 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.

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., Prince George and Vanderhoof Divisions 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 fillplanting,
- newly planted seedlings,
- juvenile, commercially valuable coniferous trees, and/or

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 stocktype selection, need for site preparation, and scheduling of future treatments and assessments.

- *Early Identification of Brush Prone Sites* – Biogeoclimatic Ecosystem Classification zones and site series known to have high brush hazards are

- identified in the pre-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 ecological 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 fillplanting 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 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 the following table, 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 (Cengea).

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 on Predictive Herbaceous Scenario 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 Injury Thresholds and Treatment Methods 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 is one scenario to address. This scenario can be applied to portions of or entire openings where treatment is recommended based on the results of injury thresholds:

Scenario 1: 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, Cottonwood, Alder species.

Treatment objectives for this scenario is to release crop trees from competition of deciduous species. Decision thresholds are based on densities and distributions of deciduous trees that reduce stocking and impacts the ability to meet *legal silviculture obligations* as specified in the approved Forest Stewardship Plan (see Appendix 2 – Canfor Prince George and Vanderhoof 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.

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.

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

2.3.4.1 Treatment Options and Selection Criteria

2.3.4.1.1 Aerial-Based Herbicide Methods

Herbicide - Helicopter Methods	
Helicopter Discretionary - 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.	
Helicopter Broadcast - 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.	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ Highly effective control over a number of years ➤ Little to no contact of herbicide to workers ➤ Lowest cost brushing method ➤ Able to treat slashy, steep ground more safely than a ground treatment. 	<ul style="list-style-type: none"> ➤ Less selective than other methods. ➤ Stringent application constraints ➤ High public profile ➤ Intensive preparation and follow up ➤ Mature leave trees limit use of this method. ➤ Visual quality affected for a number of years ➤ Technically demanding
<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.	

2.3.4.1.2 Ground-Based Herbicide Methods

Herbicide - Backpack Methods	
Backpack Discretionary - 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.	
Backpack Broadcast - 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.	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ Effective control over a number of years. ➤ Can treat on blocks with lots of mature standing leave trees. ➤ Can be applied with more precision, and applicator can be more “selective” than a helicopter. ➤ Little or no buffer zone required protecting PFZ. 	<ul style="list-style-type: none"> ➤ Stringent application constraints ➤ Intensive preparation and follow up ➤ Effectiveness diminishes as height of brush increases. ➤ Needs a very high level of supervision and layout. ➤ Higher potential of worker exposure to herbicide. ➤ Safety concerns with wearing heavy equipment on rough terrain.
<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 brush.	
Herbicide - Brushsaw Methods	
Cut Stump - 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.	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ Effective control over a number of years preventing re-sprouting of target vegetation. ➤ Much bigger treatment window versus other herbicide treatment methods. ➤ Little or no buffer zone required protecting PFZ. ➤ Very little herbicide exposure to workers. ➤ Uses less herbicide on a given area (reduced 	<ul style="list-style-type: none"> ➤ Stringent application constraints ➤ Intensive preparation and follow up ➤ Needs a very high level of supervision and layout. ➤ Safety concerns with wearing heavy equipment on rough terrain. ➤ Expensive equipment required.



application rate)	
<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.	

2.3.4.1.3 Ground-Based Non-Herbicide Methods – Small Engine

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

2.3.4.1.4 Ground-Based Non-Herbicide Methods – Hand Tools

Non-Herbicide – Girdle	
Manual Girdling – Worker uses hand-girdling tool and removes a continuous strip of bark around individual stems, eventually (2-3 years) killing the trees.	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ No herbicide use. ➤ Public acceptance. ➤ Can be applied selectively. ➤ Low cost hand tools so workforce can gear up easily. 	<ul style="list-style-type: none"> ➤ Re-sprouting, may require multiple treatments. ➤ High treatment cost due to low productivity. ➤ Cannot use for herbaceous. ➤ Repetitive strain injuries common.
<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”)	

2.3.4.1.5 Ground-Based Non-Herbicide Methods – Livestock

Non-Herbicide – Sheep	
Sheep Grazing – 1-3 shepherds guide a herd of sheep (1,000 – 1,500 head) through areas where they eat target vegetation.	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ No herbicide use. ➤ Not constrained by weather conditions. 	<ul style="list-style-type: none"> ➤ Moderate to high amounts of damage to crop trees (especially Pli and Fdi and any species in June) ➤ High treatment cost. ➤ Can only use for certain herbaceous species and only provides a couple months of control. ➤ Can only use on good access, flat blocks with low to no slash. ➤ Need a group of blocks in close proximity to make a “program”. ➤ Risk of disease spread to wild ungulate populations. ➤ Potential damage to pesticide free zones and riparian areas from herd. ➤ Risk of predation.
<i>Rationale for Selecting Treatment Method in PMP</i> - Only other realistic option to herbaceous treatment if herbicide cannot be used.	

2.3.4.1.6 Mechanical Site Preparation

Non-Herbicide – Mechanical Site Preparation	
Mechanical Site Prep – 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)	
Benefits	Limitations
<ul style="list-style-type: none"> ➤ No herbicide use. ➤ Public acceptance. 	<ul style="list-style-type: none"> ➤ Temporary brush control ➤ Expensive



<ul style="list-style-type: none"> ➤ Increased soil temperature 	<ul style="list-style-type: none"> ➤ Access limitations ➤ Possible soil compaction and rutting ➤ Potential for surface erosion ➤ High visual impact ➤ Site constraints – slope, slash, duff layer depth
<p><i>Rationale for Selecting Treatment Method in PMP – Creates favourable microsites and achieves temporary brush control</i></p>	

2.3.5 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.

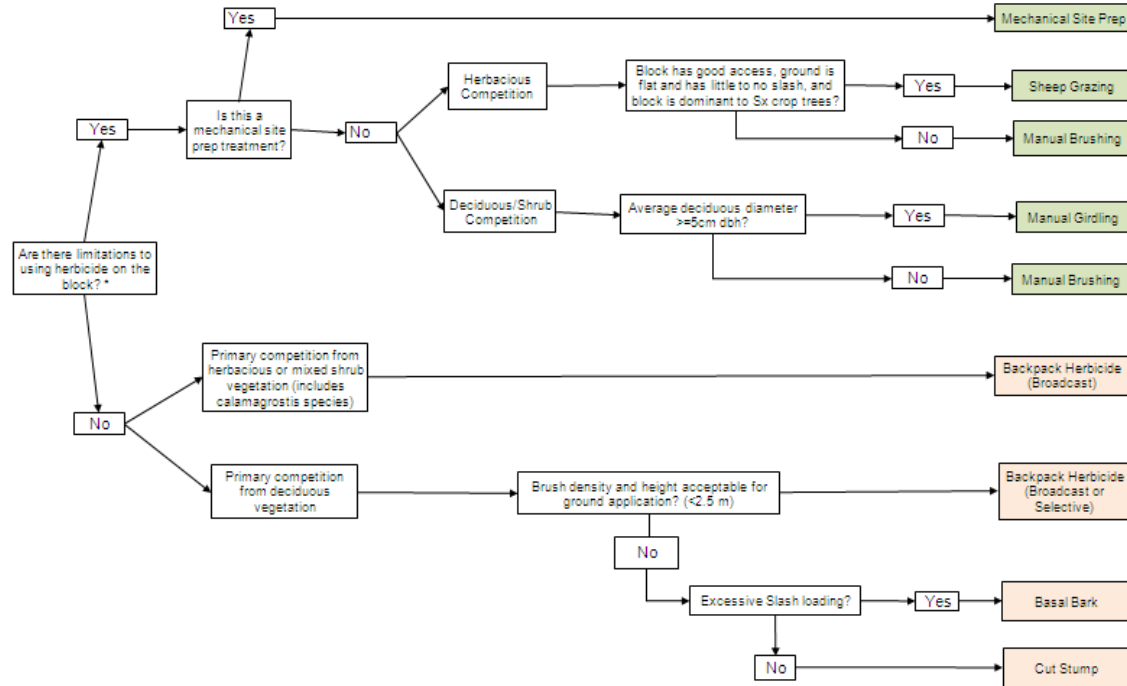
Legal and political constraints will influence treatment selection. Legal constraints must be addressed and accommodated within all strategies. Political constraints may come from a number of sources. These constraints may be identified through a number of avenues, for example public consultation, regulatory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

The flowchart below describes the process guideline for selecting a brushing method in Canadian Forest Products Ltd., Prince George and Vanderhoof operating areas. This process is greatly simplified and the actual treatment choice may be different than below with a stated rationale.

Brushing Method Selection Guide

NOTE: This decision flowchart 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 will be considered when reaching a final brushing treatment decision.



* 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.

2.3.6 Post-Treatment Evaluation

For all treatment areas a “Post Treatment Audit” will be conducted within 12 months of treatment. All blocks where treatment has been conducted will be visually assessed for the following :

Efficacy
Coverage of intended treatment area
<ul style="list-style-type: none"> • absence of striping • absence of missed areas
Chemical Efficacy
<ul style="list-style-type: none"> • level of removal of target vegetation • current level of competition
Seedling Damage
<ul style="list-style-type: none"> • level of seedling damage due to chemical • location of damage, if any (terminal bud, needles)
Prescription Evaluation
<ul style="list-style-type: none"> • treatment meets needs of plantation and schedule follow up monitoring survey. (See Section 2.3.3)
Compliance
Pesticide Free Zones
<ul style="list-style-type: none"> • no evidence of herbicide compromise into Pesticide Free Zones
Boundaries
<ul style="list-style-type: none"> • as mapped on final bag maps • consistent with treatment plan • no evidence of herbicide outside of marked boundaries

*Non-compliance identified during the Post Treatment Audit 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

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

All vegetation management activities intended for use within this PMP will incorporate measures designed to protect 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 and

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

One community watershed falls within the Canfor, Prince George operating area.

No herbicide will be used within the Pritchard Creek Community Watershed.

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.

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

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 Canadian Forest Products Ltd., Prince George and Vanderhoof Divisions include:

Wildlife Habitat Areas (WHA) - 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=Omineca

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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 in our Sustainable Forest Management Plan, specifically outlined in Canfor Prince George and Vanderhoof 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	>26.5 C No Spray	No Spray	>8 No Spray	<40 No Spray	No Spray	No Spray
Backpack	>26.5 C No Spray	No Spray	>8 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 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.



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	Ground	
Vision, Vision Max Vantage Forestry, Weed-Master	glyphosate	common	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: Prince George and Vanderhoof Divisions Pest Management Plan Area Map



**Appendix 2: Canadian Forest Products Ltd., Prince George
and Vanderhoof Divisions Forest Stewardship
Plan Stocking Standards**

<http://www.canfor.com/environmental/plans>



**Appendix 3: Prince George and Vanderhoof Divisions - Fine
Filter Species and Site of Biological Significance
Operational Control**



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

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Appendix 5: Wildlife: Moose Management

Moose are widely distributed throughout B.C. and fulfill an integral role ecologically in the maintenance of predator/prey systems. Moose are culturally important to First Nations for social, food and ceremonial purposes, are an important hunted species for residents, and provide economic benefits to the guiding industry. Results from recent surveys (2011/12 to 2013/14) indicate moose numbers have also declined substantially in parts of the Central Interior of the province which has raised significant concern by wildlife managers, First Nations and stakeholders. The Ministry has committed to developing a provincial framework for moose management as a step towards understanding the factors that may have led to these declines and to develop recommendations for actions that will meet management objectives, as well as maintaining current harvest levels in the rest of the province. Regional staff will use this framework to maintain provincial consistency in management approaches where appropriate, and as guidance when consulting with stakeholders.

The provincial goal for moose management is to ensure moose are maintained as integral components of natural ecosystems throughout their range, and maintain sustainable moose populations that meet the needs of First Nations, licensed hunters and the guiding industry in B.C.

The Ministry of Forests, Lands and Natural Resource Operations, Fish and Wildlife Branch, Victoria, B.C. (February 2015) developed a “Provincial Framework for Moose Management in British Columbia. The purpose of the framework is to provide guidance on provincial direction for moose management, outline an approach for preparing regional moose plans, and establish the scientific basis for making moose harvest management decisions (http://www.env.gov.bc.ca/fw/wildlife/management-issues/docs/provincial_framework_for_moose_management_bc.pdf)

Canfor: FMG is committed to follow regulation set by the Government and contained within : FOREST PLANNING AND PRACTICES REGULATION

- Division 3- Riparian Areas:
[Stream riparian classes](#)

47 (1) In this section, "**active flood plain**" means the level area with alluvial soils, adjacent to streams, that is flooded by stream water on a periodic basis and is at the same elevation as areas showing evidence of

- (a) flood channels free of terrestrial vegetation,
- (b) rafted debris or fluvial sediments, recently deposited on the surface of the forest floor or suspended on trees or vegetation, or

(c) recent scarring of trees by material moved by flood waters.

(2) A stream that is a fish stream or is located in a community watershed has the following riparian class:

(a) S1A, if the stream averages, over a one km length, either a stream width or an active flood plain width of 100 m or greater;

(b) S1B, if the stream width is greater than 20 m but the stream does not have a riparian class of S1A;

(c) S2, if the stream width is not less than 5 m but not more than 20 m;

(d) S3, if the stream width is not less than 1.5 m but is less than 5 m;

(e) S4, if the stream width is less than 1.5 m.

(3) A stream that is not a fish stream and is located outside of a community watershed has the following riparian class:

(a) S5, if the stream width is greater than 3 m;

(b) S6, if the stream width is 3 m or less.

(4) Subject to subsections (5) and (6), for each riparian class of stream, the minimum riparian management area width, riparian reserve zone width and riparian management zone width, on each side of the stream, are as follows:

Riparian Class	Riparian Management Area (metres)	Riparian Reserve Zone (metres)	Riparian Management Zone (metres)
S1-A	100	0	100
S1-B	70	50	20
S2	50	30	20
S3	40	20	20
S4	30	0	30

S5	30	0	30
S6	20	0	20

- (5) If the width of the active flood plain of a stream exceeds the specified width for the riparian management zone, the width of the riparian management zone extends to the outer edge of the active flood plain.
- (6) The minister may specify a riparian reserve zone for a stream with a riparian class of S1-A if the minister considers that a riparian reserve zone is required.
- (7) The riparian reserve zone for a stream begins at the edge of the stream channel bank and extends to the width described in subsection (4) or (6).
- (8) The riparian management zone for a stream begins at
- (a) the outer edge of the riparian reserve zone, or
 - (b) if there is no riparian reserve zone, the edge of the stream channel bank,
- and extends to the width described in subsection (4) or (5).

[am. B.C. Reg. 580/2004, s. 36.]

Wetland riparian classes

48 (1) Wetlands have the following riparian classes:

- (a) W1, if the wetland is greater than 5 ha in size;
- (b) W2, if the wetland is not less than 1 ha and not more than 5 ha in size and is in one of the following biogeoclimatic zones or subzones:
 - (i) Ponderosa Pine;
 - (ii) Bunch Grass;
 - (iii) Interior Douglas-fir, very dry hot, very dry warm or very dry mild;
 - (iv) Coastal Douglas-fir;

- (v) Coastal Western Hemlock, very dry maritime, dry maritime or dry subaritime;
 - (c) W3, if the wetland is not less than 1 ha and not more than 5 ha in size and is in a biogeoclimatic zone or subzone other than one referred to in paragraph (b);
 - (d) W4, if the wetland is
 - (i) not less than 0.25 ha and less than 1 ha in size and is in a biogeoclimatic zone or subzone referred to in paragraph (b) (i), (ii) or (iii), or
 - (ii) not less than 0.5 ha and less than 1 ha in size and is in a biogeoclimatic zone or subzone referred to in paragraph (b) (iv) or (v).
- (2) Despite subsection (1), an area is to be treated as a single wetland with a riparian class of W5 if
- (a) the area contains
 - (i) two or more W1 wetlands located within 100 m of each other,
 - (ii) a W1 wetland and one or more non-W1 wetlands, all of which are within 80 m of each other, or
 - (iii) two or more non-W1 wetlands located within 60 m of each other, and
 - (b) the combined size of the wetlands, excluding the upland areas, is 5 ha or larger.
- (3) Subject to subsections (4) and (5), for each riparian class of wetland, the minimum riparian management area width, riparian reserve zone width and riparian management zone width for the wetland are as follows:
-

Riparian Class	Riparian Management Area (metres)	Riparian Reserve Zone (metres)	Riparian Management Zone (metres)
W1	50	10	40
W2	30	10	20
W3	30	0	30
W4	30	0	30
W5	50	10	40

(4) No riparian reserve zone or riparian management zone extends onto any enclosed upland areas in a W1 wetland if the wetland is

(a) located in a boreal, subboreal or hyper-maritime climate, and

(b) greater than 1 000 ha in size.

(5) If the minister considers it necessary for a riparian reserve zone or riparian management zone to extend onto an enclosed upland area, the minister may require either or both of the following:

(a) a riparian reserve zone of a width of 10 m or less;

(b) a riparian management zone of a width of 40 m or less.

(6) The riparian reserve zone for a wetland begins at the edge of the wetland and extends to the width described in subsection (3) or (5).

(7) The riparian management zone for a wetland begins at

(a) the outer edge of the riparian reserve zone, or

(b) if there is no riparian reserve zone, the edge of the wetland,

and extends to the width described in subsection (3) or (5).

[am. B.C. Regs. 580/2004, s. 37; 62/2005, s. 7.]

Lake riparian classes

49 (1) Lakes have the following riparian classes:

- (a) L1-A, if the lake is 1 000 ha or greater in size;
- (b) L1-B, if
 - (i) the lake is greater than 5 ha but less than 1 000 ha in size, or
 - (ii) the minister designates the lake as L1-B;
- (c) L2, if the lake is not less than 1 ha and not more than 5 ha in size and is located in a biogeoclimatic zones or subzone that is
 - (i) Ponderosa Pine,
 - (ii) Bunch Grass,
 - (iii) Interior Douglas-fir, very dry hot, very dry warm or very dry mild,
 - (iv) Coastal Douglas-fir, or
 - (v) Coastal Western Hemlock, very dry maritime, dry maritime or dry subaritime;
- (d) L3, if the lake is not less than 1 ha and not more than 5 ha in size and is in a biogeoclimatic zone or subzone other than one referred to in paragraph (c);
- (e) L4, if the lake is
 - (i) not less than 0.25 ha and not more than 1 ha in size and is in a biogeoclimatic zone or subzone referred to in paragraph (c) (i), (ii) or (iii), or
 - (ii) not less than 0.5 ha and not more than 1 ha in size and is in a biogeoclimatic zone or subzone referred to in paragraph (c) (iv) or (v).

(2) Subject to subsection (3), for each riparian class of lake, the minimum riparian management area width, riparian reserve zone width and riparian management zone width are as follows:

Riparian Class	Riparian Management Area (metres)	Riparian Reserve Zone (metres)	Riparian Management Zone (metres)
L1-A	0	0	0
L1-B	10	10	0
L2	30	10	20
L3	30	0	30
L4	30	0	30

(3) If the minister considers it necessary, the minister may specify a riparian management area and a riparian reserve zone for a lake with a riparian class of L1-A.

(4) The riparian reserve zone for a lake begins at the edge of the lake and extends to the width described in subsection (2) or (3).

(5) The riparian management zone for a lake begins at

- (a) the outer edge of the riparian reserve zone, or
- (b) if there is no riparian reserve zone, the edge of the lake,

and extends to the width described in subsection (2) or (3).

[am. B.C. Regs. 580/2004, s. 38; 62/2005, s. 8.]



ACCESS MANAGEMENT

Canfor, FMG has made commitments to local Guides / Outfitters and First Nations to limit access within guiding / traditional areas to assist with achievement of moose management objectives as per the “Provincial Framework for Moose Management in British Columbia”.

INJURY THRESHOLDS AND TREATMENT METHODS AND DECISIONS

Target Species - For the purpose of this scenario, “deciduous vegetation” refers to Trembling aspen, Cottonwood and Alder species, none of which are known high browse species for moose.