



CP RAIL

2020 Integrated Vegetation Management Plan

Pest Management Plan Reference Number – CP01122019



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Schedule 1



1.0 Introduction

This document is an **Integrated Vegetation Management Plan (IVMP)** for the management of vegetation within property owned and controlled by Canadian Pacific Railway (CP), including track ballast, rights-of-way, station grounds and railway yards including shops and buildings. It has been prepared in accordance with Section 58 of the *BC Integrated Pest Management Regulation* (IPMR).

1.1 Canadian Pacific Railway

The Canadian Pacific Railway (CPR) operates on approximately 1,500 km of track throughout southern British Columbia. The mainline follows the Trans-Canada Highway from the Alberta-British Columbia border at Field through to Vancouver. Branch lines travel through the BC southern-eastern interior, including through the Crowsnest Pass and alongside the Columbia River Valley. Operationally, CP has 15 subdivisions and 3 major spur lines within BC (the “Territory”).

1.2 Purpose and Objectives of an Integrated Vegetation Management Plan (IVMP)

This IVMP describes CP’s planning processes and the principles of integrated pest management (IPM), and how, together, these approaches ensure effective vegetation management while considering and incorporating environmental and human health values. CP is committed to ensuring worker and public safety, and environmental protection considerations in balance with the safe and efficient operation of its railway.

When carrying out vegetation management activities, CP, its contractors and agents, will use this plan.

1.3 Identifying Information

1.3.1 Person Responsible for Managing Pests (Vegetation)

Within CP, the person responsible for managing vegetation and who will be the principal contact for information relating to this integrated vegetation management plan is **Geoff Gordon, Vegetation Specialist, Environmental Programs and Regulatory**. Mr. Gordon can be contacted at (587)227-1024 or geoff_gordon@cpr.ca

1.3.2 Geographic Boundaries of the Area to Which This Plan Applies

This plan applies to vegetation management, including Noxious Weed and Invasive Plant management, on all track ballast, rights-of-way, station grounds and railway yards including



around shops and buildings located on CP property as described in Section 1.1. Attached hereto and marked as Schedule 1 are copies of a map depicting the geographic boundaries of the area to which this plan applies.

1.4 **Term of This Plan**

This plan permits CP to utilize herbicides, using IPM principles, within the geographic boundaries of the areas depicted in Schedule 1. The plan shall be in force for a five-year period from the date a Confirmation of a Pesticide Use Notice has been obtained from the BC Ministry of Environment (MoE).



2.0 Integrated Vegetation Management (IVM)

For the purpose of this IVM Plan (IVMP), the term integrated vegetation management (IVM) will be used to describe a program that involves vegetation management using the principles of Integrated Pest Management.

2.1 IVM Program Purpose and Objectives

Safety, regulatory and other operational requirements obligate CP to manage vegetation within its property. The objectives of the CP IVM Program are to prevent or manage unwanted vegetation that can compromise railway safety, reliability, efficiency and the environment. For the purpose of this IVMP, unwanted vegetation primarily includes any vegetation that must be controlled as per the Transport Canada *Railway Safety Act*, so that it does not:

- become a fire hazard to track-carrying structures;
- obstruct visibility of railway signs and signals;
- interfere with railway employees performing normal trackside duties;
- prevent proper functioning of signal and communication lines;
- or prevent railway employees from visually inspecting moving equipment from their normal duty stations.

This IVMP also includes the control of Noxious Weeds and Invasive Plants mandated under the BC *Weed Control Act* and other applicable provincial legislation.

2.1.1 IVM Program Purpose

The main purpose for controlling unwanted vegetation is to maintain the safe functioning of train operations and to protect the public, employees and the environment from potential hazards that are associated with railway operations. This IVMP has been developed to provide a single document that describes the CP planning processes, using the principles of IVM that will both ensure effective vegetation management while protecting environmental and human health values.

2.1.2 IVM Program Objectives

The objectives of IVM are to ensure effective vegetation management while considering and incorporating environmental and human health values. CP is committed to ensuring worker, public safety and environmental protection considerations are in balance with the safe and efficient operation of a railway.

If not managed properly, unwanted vegetation can damage the integrity of the roadbed (i.e. ballast), inhibit the operation of signals and switches, hinder the inspection of the track structure



and trains, cause trackside fires, compromise employee safety when train crews are entraining and detraining, and reduce visibility at public road crossings, which increases the potential risk of train / vehicle collisions.

The objectives of the CP IVM program are to:

- Maintain a vegetation-free track ballast section;
- Manage vegetation in railway yards and station grounds including around buildings and signal infrastructure
- Maintain a stable, self-sustaining, plant community that is compatible with federal railway safety requirements within the remainder of the right-of-way
- Manage Noxious Weeds and Invasive Plants in accordance with provincial government objectives.

In meeting these IVM objectives, CP will ensure the protection of the public, employees and the environment from the potential hazards associated with operating a railway by maintaining the safe and efficient functioning of train operations.

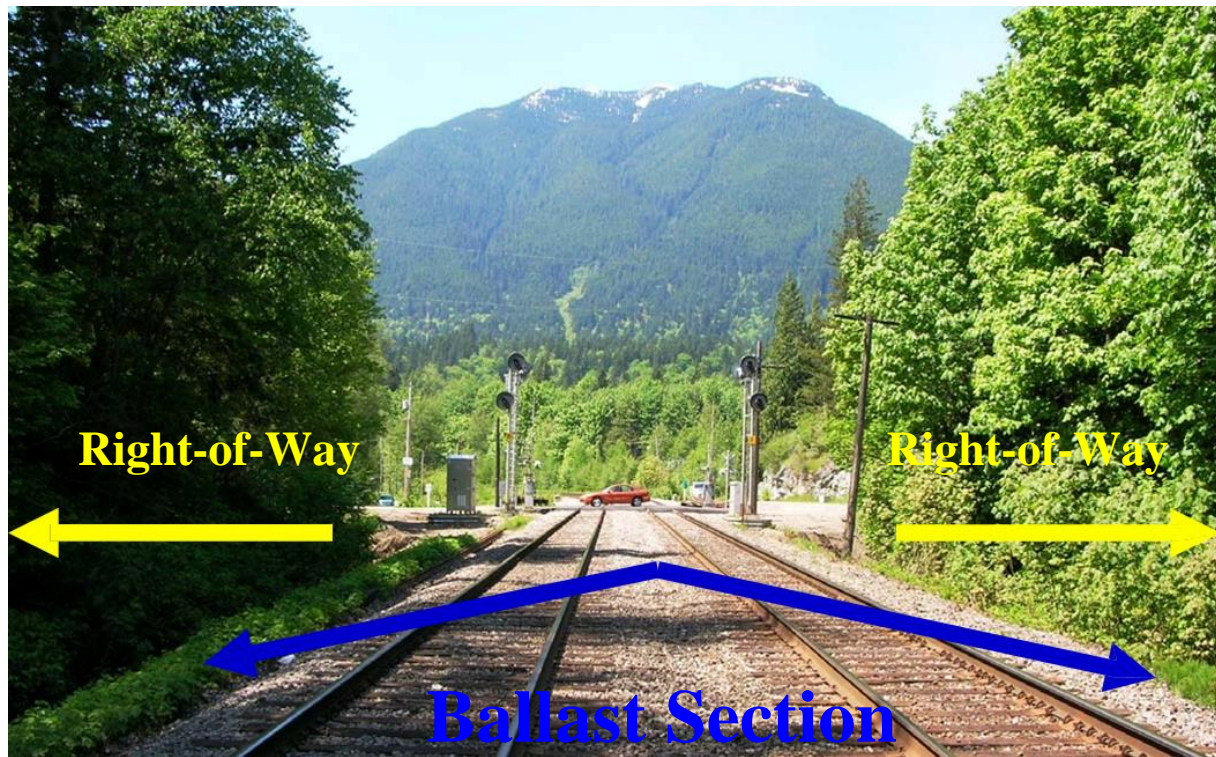
2.2 IVM Program Rationale

Vegetation management may be required on track ballast, right-of-way areas and within station grounds and railway yards including shops, buildings and material storage areas.

2.2.1 Vegetation Management Zones

As is shown in **Figure 1**, the CP has 2 primary vegetation management zones: the “ballast section” and “right-of-way”.



Figure 1: CPR Vegetation Management Zones

2.2.2 Vegetation Management in the Ballast Section Zone including Station Grounds, Railway Yards and Facilities

Structural Integrity of the Roadbed (Ballast)

Ballast material is selected to provide free drainage of water, provide structural support for vertical loads, and keep the ties and rails from moving during rail operations and temperature changes.

Total vegetation control in the ballast section is one of the most critical aspects of the CP IVM program. Unwanted vegetation negatively affects the structural integrity of the railway roadbed. Vegetative growth within the track ballast reduces drainage. Proper drainage of the ballast section is critical for a stable track structure. Vegetation retains fine particles such as silt or clays and increases organic matter within the ballast, which in turn, reduces drainage of water and leads to additional growth of vegetation and decreased ballast integrity. When the ballast's ability to support the weight of trains is reduced the result is problems with track support, alignment and profile that are potential causes of train derailments.

Vegetation growing in ditches at the ballast shoulder can impede proper drainage and contribute to flooding or washout of the track structure and surrounding areas. Excessive moisture will also

contribute to the premature deterioration of rail ties and track hardware, the failure of which may also result in a train derailment.

Safety and Inspection

The condition of the track structure and train cars is monitored at regular intervals by sophisticated electronic and / or laser-guided inspection equipment which requires a clear line-of-sight and weed free condition to locate potential defects. In addition to automated inspection equipment, railway employees are obligated to visually inspect both stopped and moving trains for potential defects in car equipment such as wheels, bearings and couplings. As well, it is imperative that track maintenance personnel are able to effectively inspect the track roadbed and track structure such as switches, ties, rail and fasteners. The presence of vegetation can significantly impair proper inspection of trains and the track roadbed structure.

Hazards to the Public

There are many possible sources of ignition in railway operations including sparks from brakes, diesel engines, wheels, overheated bearings and operation of rail-grinding equipment. Sources of ignition, combined with dry brush and weeds in hot dry conditions, are a fire hazard, with potential to harm the public or damage buildings, property, or the environment.

Hazards to CP Employees

The presence of vegetation can be hazardous to employees conducting their daily trackside duties. Train crews must be able to safely walk beside the track and climb on and off trains. Maintenance personnel must work around the track structure and throughout the right-of-way. Vegetative growth can impede movement, cause slippery conditions and create tripping hazards for employees. Excessive vegetation may also obscure tripping hazards such as equipment, uneven ground or holes.

Damage to Railway Equipment

The presence of vegetation exceeding the height of the rail may cause wet, slippery conditions, which can affect traction and braking of locomotives and equipment. This can result in damage to track and locomotive components. Slippery conditions require increased use of traction sand by the locomotive, which further contaminates the ballast.

Track Maintenance Impacts

Excessive vegetation not only interferes with CP employee's ability to carry out maintenance duties such as rail and tie changes and access to material storage areas, but also results in the loss of tools, track hardware and other equipment which can become potential tripping hazards to employees.



2.2.3 Vegetation Management in the Right-of-Way Zone

Selective control of vegetation within the right-of-way zone is routinely required to remove brush and trees. Brush and trees in the right-of-way zone must be managed in order to:

- Maintain visibility (i.e. sight lines) at road and pedestrian crossings
- Maintain sight line visibility at curves
- Provide clear visibility of railway signs and signals
- Maintain the integrity of railway communication and electrical distribution lines
- Reduce physical hazards to train crews and track maintenance personnel who must work in these areas; and
- Reduce the fire hazard potential.

Other circumstances that may require selective vegetation management within the right-of-way may include:

- Woody vegetation and brush that is interfering with the normal functioning of equipment used to detect rock falls and slides
- Vegetation that is affecting railway site security by providing easier access to the right-of-way over security fencing.

Sight Line Requirements

Maintaining visibility at road and pedestrian crossings is necessary to reduce the potential for accidents with vehicles and pedestrians. Under the federal *Railway Safety Act* (Transport Canada), there are mandatory sight line regulatory requirements for road and pedestrian crossings. One requirement under this act is the degree of visibility for both vehicles crossing the tracks and for rail-based vehicles. The greater the posted road speed limit and the greater the train speed at these crossings, the greater the sight line requirement. Additional safety factors are also applied in consideration of the road surface (e.g., gravel vs. pavement), types of vehicles using the crossings (e.g., longer vehicles like school buses) and curvature and grade of the crossing approach.

The sight line distance is to allow both vehicles (road and rail) sufficient time to see and to stop for the approaching vehicle. CP must manage vegetation on the right-of-way accordingly in order to maintain these sightline requirements.

Noxious Weeds and Invasive Plants

CP has a statutory responsibility under the BC *Weed Control Act* to control the spread of weeds designated as Noxious. As part of its IVM program, CP uses a variety of tools and strategies in order to fulfill its legal obligations.



3.0 CP IVM Program Elements

The elements of the CP IVM program are:

- **Planning (prevention)** and managing ecosystems to prevent organisms from becoming pests;
- **Identifying** vegetation problems and potential vegetation problems;
- **Monitoring** populations of vegetation, the damage caused by vegetation, and environmental conditions;
- **Using injury (treatment) thresholds** in making treatment decisions;
- **Suppressing vegetation populations (treatment options and method selection criteria)** to acceptable levels using strategies based on consideration of biological, mechanical, and chemical controls in appropriate combinations (i.e., treatment options), in conjunction with environmental and human health protection; and
- **Evaluating** the effectiveness of vegetation management strategies.

3.1 Prevention

CP undertakes proactive measures aimed at preventing the initial growth and spread of unwanted vegetation. Where and when feasible, practical and cost effective, these measures will be implemented as part of the CP's IVMP. Examples of preventative measures include:

- Selective tree removal from rights-of-way and crossings
- Eliminating seed sources
- Ballast reconstruction, cleaning and surfacing; and
- Seeding of disturbed areas (re-vegetation and increasing competition).

3.1.1 Selective Tree Removal

Selective tree removal within the right-of-way is carried out on a priority basis in order to prevent the obstruction of crossing and signal sightlines, reduce the potential for rock slides and in areas where trees pose a danger of falling onto the track or neighboring properties. Trees on the right-of way also need to be managed proactively as they serve as sources of seeds and leaf litter which can foul the ballast necessitating future control measures.



Figure 2: Selective Tree Removal

Selective removal of dead Ponderosa Pine “danger trees” at Lytton, BC, where the trees pose both a safety hazard to the railway and to campers at an adjacent RV Park.

3.1.2 Eliminating Seed Sources

Leakage of grain comes from improperly closed hopper gates on rail cars and car end- platforms. This seed source contributes to the growth of vegetation on the ballast section. CP maintains an on-going program to identify and repair problem hopper gates and to work with companies responsible for loading and unloading grain products at terminal ports to reduce the spillage of grain. As well, CP utilizes vacuum trucks to remove spilled grain and other agricultural commodities that can foul the ballast and lead to future weed growth.



Figure 3: Seed Source Elimination Measure



Vacuum Trucks are used in yards and mainline areas to collect spilled grain.

Seeds from adjacent private property also contribute to unwanted vegetative growth on CP's property. CP continues to work cooperatively with adjacent property owners to reduce the spread of seeds onto ballast and rights-of-way, and through participation in regional weed management committees to stop the spread of Noxious Weeds and invasive plants.

3.1.3 Ballast Reconstruction, Surfacing and Cleaning

New ballast is free of organic matter and fine particles and does not require vegetation management for several years. Fine particles are deposited in the ballast over time as a result of the continual fracturing and powdering of the ballast rock by moving trains. This, coupled with organic matter being deposited by the wind (dust), from seed sources both within the right-of-way and from adjacent properties, from decomposing plant material that has died on the ballast, and by migration from underlying soils (mud pumping), makes the ballast a suitable area for vegetation to become established over time.



Ballast resurfacing is a technique that, as a side benefit, temporarily disrupts the growth of unwanted vegetation in the ballast areas. Alone, ballast surfacing is not an effective technique for controlling vegetation. Surfacing involves tamping the ballast area to increase the density of the ballast material and is used to restore the geometry of the track vertically and horizontally.

Ballast cleaning is undertaken to improve drainage and to increase ballast strength. Depending on how the ballast cleaning is done, it may remove some of the vegetation and organic material in which the vegetation is growing. Ballast cleaning can be done in two ways. The first involves adding new ballast and then raising and tamping the area. Although this provides a small layer of clean ballast on the surface, it does not remove the organic materials below. As a result, the organic material is still present to retain water and provide a medium for further weed growth.

Complete ballast cleaning will return the ballast to the same condition as with ballast reconstruction. Due to the relatively high cost of this technique, it is not suitable as a primary management technique, but merely provides a secondary benefit from planned resurfacing programs instituted for operational reasons.

3.1.4 Seeding of Disturbed Areas on Rights-of-Way

Seeding disturbed areas with native grasses or low-growing vegetation can be an effective method of preventing the establishment of Noxious Weeds, invasive plants and woody vegetation. Re-vegetation strategies that are compatible with railway safety requirements as well as ecological values are considered as part of the environmental assessment process for all new construction projects on CP.



Figure 4: Seeding of Disturbed Areas

Hydroseeding of CP right-of-way with native grasses near Kamloops, BC following construction of new grade for a double tracking project.

3.2 Identification of Pests Targeted by the IVMP

The accurate identification of unwanted vegetation growing on CP property is important for several reasons:

- The method of control for unwanted vegetation is dependent on the recognition of the density and types of plant species;
- Depending on their growth rates, characteristics, and their location, control may not be necessary or desirable;
- Control methods may differ depending on the plant species. Some types of vegetation may be controlled by non-chemical methods, but others may only be managed through the use of certain types of pesticides (herbicides); and
- Certain plants may be Noxious Weeds or invasive plants and must be controlled by law.

There are three categories into which the pests that are targeted by this IVMP can be classified:

- Herbaceous Broadleaves and Grasses;
- Woody Vegetation (i.e. trees and shrubs); and
- Noxious Weeds and invasive plants.



3.2.1 Herbaceous Broadleaves and Grasses

Herbaceous broadleaf and grass species are the most frequent types of weeds growing on track ballast, within station grounds, railway yards, and around shops and buildings. Noxious weeds and invasive plants can also be found in these locations. CP has a statutory obligation to control Noxious Weeds under the *BC Weed Control Act*.

3.2.2 Woody Vegetation

Woody tree and shrub species are most problematic when they encroach onto ballast or ballast shoulders, or are found on the right-of way where their presence limits visibility or access to switches and other equipment. They may present a safety hazard if they blow down into the tracks or disrupt the functioning of slide detectors. They can also present a fire hazard if their branches are overhanging too close to power lines located on the right- of-way, can compromise site security by providing easier access over security fencing, and can deposit organic debris onto the ballast which increases growth of unwanted vegetation.

A mix of evergreen and deciduous trees are commonly found on CP right-of way. Mechanized / mechanical cutting are common non-chemical methods for the management of trees. However, many trees and shrubs, particularly many deciduous species, can re-sprout extensively from the areas where cuts have been made, thereby greatly increasing future management efforts. Re-sprout can usually only be effectively controlled by combining cutting work with the application of a selective herbicide to the cut surfaces after cutting or through the complementary use of foliar herbicide applications.

3.2.3 Noxious Weeds and Invasive Plants

Noxious Weeds and invasive plants can negatively impact agriculture, where they can displace or reduce the quality and quantity of crop and forage species. They can also out- compete native plant species, impacting biodiversity and wildlife forage. Proper identification of Noxious Weeds and invasive plant species is critical so that appropriate control methods can be implemented.

3.3 Monitoring Pest Populations

Rights-of-way, main tracks, sidings, yards and station tracks are visually inspected twice per week as part of regular inspections by CP's Track Maintenance Supervisors. During these inspections vegetation management issues are noted through either formal or informal processes and are communicated to the Manager, Vegetation Program. Specific areas of focus that are monitored on an on-going basis include:

- an assessment of track conditions and extent of vegetation growth;
- sightlines at road and pedestrian crossings
- location of “danger trees” and other vegetation that is posing an imminent safety risk



The aforementioned inspections, by CP Track Maintenance Supervisors, are supplemented on a regular basis by the Manager, Vegetation Program or delegate and include all of the above as well as more detailed assessment work such as:

- the documentation of average percent cover of ballast vegetation
- the locations of Noxious Weed and invasive plant species / populations
- Efficacy of all previous control methods

During the monitoring program, CP's IVMP considers both the regional and local characteristics of each site. Factors such as the location of environmentally sensitive zones and other features requiring protection, vegetation types and abundance, and general site conditions are documented, as these parameters are important for selecting the best methods or combination of methods of vegetation control. In this respect, the information obtained from monitoring (i.e. baseline information) drives the development of annual IVM work plans.

In addition to the above inspections and assessments, vegetation problems that can or are potential safety hazards for workers (e.g. slipping or tripping hazards) are identified in monthly occupational health and safety meetings for further action. Confirmed safety issues will result in control measures being initiated based on the treatment options contained in this IVMP.

3.4 Injury / Treatment Thresholds and Treatment Decisions

The injury / treatment threshold is the point at which the abundance of pests (i.e. unwanted vegetation) and the damage they are causing, or likely to cause, indicate that control is necessary or desirable. A treatment decision regarding unwanted vegetation is required when these thresholds are exceeded.

In this IVMP, the injury / treatment threshold is generally the level of vegetative surface cover (typically expressed as the percentage of the total area) or vegetation height, that can be tolerated and still maintain the integrity of, or safety at, the site.

Any percentage of unwanted vegetation cover above the established treatment threshold requires a vegetation management decision. Treatment thresholds will vary, since vegetation control is more critical for certain areas than for others. They can be specific and include all unwanted vegetation species (e.g., on track ballast, where there is a very low tolerance for vegetative growth), or they can be specific to one species (e.g., where a single, tall growing tree or shrub species compromises sight lines, site security or worker safety). Consequently, the density of unwanted vegetation establishment or the presence of a specific weed species will often dictate the level of control required.

Treatment thresholds are part of the management decision-making process for IVM. These thresholds ensure that management is contemplated only when unwanted vegetation exceeds a



pre-set treatment threshold. Above this treatment threshold, unacceptable functional, economic and environmental damage may occur, as well as an increased risk to health and safety.

Density of Unwanted Vegetation Establishment

In areas where the tolerance for unwanted vegetation is low, such as on track ballast, crossing and signal sightlines and in certain areas of yards, the treatment threshold is determined by the density of all species present on the site.

Specific Problem Species

There are situations where the density of unwanted vegetation establishment cannot be used as a criterion in deciding when to initiate IVM. The following situations, based on specific problem species, may trigger a vegetation management action:

- Noxious Weeds or invasive weeds are present on a particular site;
- The height of the brush within right-of-way areas;
- The presence of danger trees;
- Vegetation that interferes with the minimum sight line requirements;
- Trees or brush that compromise site security, create safety issues for employees (tripping, slipping or health hazards), or have branches in close proximity to power poles or poles used for communication purposes; and
- Vegetation that interfere with access to railway equipment such as switches.

Table 1 on the following page summarizes the Injury / Treatment Thresholds used in this IVMP that may trigger a treatment decision:



Table 1: Injury / Treatment Thresholds That May Trigger a Treatment Decision and Control Options

Zone	Location	Treatment Threshold	Control Action(s)
Ballast	main track	3% weed cover	chemical
	siding	3% weed cover	chemical
	back track, storage track	3% weed cover	chemical
	disused track	30% weed cover	mechanical & chemical
Right-of-Way	general	20% brush cover by area OR height over 1.2 m OR sight line formula*	mechanical & chemical
	signalized highway crossing	sight line formula *	mechanical & chemical
	non-signalized highway crossings / bridges	sight line formula *	mechanical & chemical
	access crossing	sight line formula *	mechanical & chemical
	pedestrian crossing	7 seconds clear sight at train speed*	mechanical & chemical
	curve	line of sight 100 m minimum	mechanical & chemical
	communication and electrical distribution lines	height over 1.5m	mechanical & chemical
	“danger” tree	tree height > 80% of distance to track	mechanical & chemical
Yard / Station Grounds	classification track	3% weed cover	chemical
	shop track	3% weed cover	chemical
	shop, building and work area	3% weed cover	mechanical & chemical
Communication and Signal Installations	buildings, bungalows, slide detection fences other wayside infrastructure	3% weed cover	mechanical & chemical
All	Noxious Weeds and invasive plants **	As per BC Weed Control Act	mechanical & chemical

** Sightline formula - Transport Canada Grade Crossing Standards

**CP actively works with Provincial, Regional District Inspectors and First Nation representatives to develop area wide Noxious Weed and invasive plant management strategies, treatment thresholds and management priorities.

3.4.2 Decision Making Process

The decision to undertake vegetation management and the treatment method used will depend primarily on whether or not the injury / treatment threshold (see **Table 2**) has been exceeded for that particular area. The degree, to which the threshold has been exceeded, however, will also influence the decision for treatment. Thresholds that are exceeded intermittently over small,



localized areas may be deferred until control activities can be completed over a larger area. If specific safety hazards are identified, however, control activity may be accelerated or initiated.

3.5 Treatment Options and Selection Criteria

Once a decision has been made that treatment is required for an area, the selection of method(s) used will depend on the following criteria:

- Characteristics of the site, including the proximity of water bodies, water sources and environmentally sensitive features;
- Timing of the treatment;
- Percentage, species and composition of weeds / vegetation;
- The possibility of adverse impacts to wildlife, fish, surrounding land, workers and bystanders;
- Existing soil types, weed species present, reasons for control, and how they relate to the suitability of the particular method(s) being considered;
- Potential impact of the weeds / vegetation on safety and site security; and
- The consequences of not treating.

Prior to vegetation management being implemented, general site conditions and environmental sensitivities will be assessed and documented by qualified persons familiar with the treatment areas. These site assessments also document the location of environmentally sensitive features such as proximity to water bodies and water sources, as well as the weed species present, and their distribution by percentage weed cover.

Under this IVMP, the IPM techniques proposed for use may **include manual and mechanical control methods, biological controls, chemical controls (herbicides) including advanced application technologies.**

3.5.1 Mechanical and Manual Control Methods

Mechanical and manual methods may include hand pulling and cutting, weed trimming, mowing and brush cutters, and chain saws. A description of these methods, the rationale for each control option, including the benefits and limitations of each control option, are described in more detail in **Table 2**.



Table 2: Description and Rationale, Benefits and Limitations of Manual and Mechanical Control Methods

Description & Rationale	Benefits and Limitations
<p>Hand Pulling and Cutting are viable manual control methods for spot control of certain established weeds that can be easily uprooted, such as young tree seedlings, clumps of grass, and small patches of noxious weeds and invasive plants where the roots can be fully removed. Hand removal and cutting may be used around signs, switches, shops and buildings, or where chemical controls (herbicides) cannot be</p>	<p>These methods produce immediate results and can be conducted throughout the growing season. They are effective if the number of weeds to be pulled or cut is small and the site is a manageable size. These methods are costly, however, because they are slow and labour intensive. In addition, vegetative debris must be removed from the site and the re-growth of undesirable vegetation within the disturbed areas often occurs.</p>
<p>Weed Trimming can be used in areas such as along fence lines, around switches, signs and equipment, and in areas around buildings, shops, and material storage piles.</p>	<p>Weed trimming allows the problem vegetation to be cut to the ground level. When done early in the season, it helps remove seed heads. For small areas in close proximity to environmentally sensitive areas where herbicides cannot be used, it may be an effective non-chemical alternative. Weed trimming does not remove roots, however, and is only of limited effectiveness against weed species that reproduce from stem pieces.</p>
<p>Mowing and Brush Cutters are effective for the removal of brush and small trees from the right-of-way for the maintenance of sight line and other requirements. Mowers and brush cutters can work off track or can be modified to travel on railway tracks. They effectively cut most vegetation to a height of 10 to 20 cm, and extend from the shoulder of the ballast out into the inner portion of the right-of-way for 4 to 6 m.</p>	<p>Mowing and brush cutting quickly removes vegetation, may reduce seed sources for ballast infestation, and leave treatment areas aesthetically pleasing. These methods, however, are slow, they remove all vegetation (including desirable plant species), and they encourage plant re-growth or suckering of species such as willow, alder, maple, cottonwood and Himalayan blackberry. In isolation these techniques also increase maintenance requirements over the longer term, can create a safety hazard for both workers and animals by leaving sharp, exposed cut stems, and can increase the fire hazard if the plant debris are not or cannot be removed. Mowing and cutting may sometimes be followed by the selective application of herbicides (e.g., products containing the herbicide active ingredients to cut areas including stems, emerging foliage and stumps to reduce the re-growth of</p>
<p>Chain Saws are generally used in the outer portion of the right-of-way to remove or prune trees and tall shrubs that cannot be reached by mowers or brush cutters, for the removal of “danger trees” that pose a hazard of falling onto the track or neighbouring properties and for general tree removal to maintain sight lines on rights-of-way at curves and at road and pedestrian crossings.</p>	<p>The use of chain saws provides immediate results and provides selective control of vegetation. They can also be used in areas where most herbicides cannot be used such as immediately adjacent to watercourses. The use of chain saws, however, is physically demanding, and there is a risk of injury to the operator from wood debris and broken chains.</p>

Figure 5: Mowing and Brush Cutters

Off Track Mowers can quickly clear vegetation obstructing visibility at road / rail crossings. However, mechanized mowers and cutters are non-selective tools and as a result the ability to discriminate between desirable and undesirable species is limited.

3.5.2 Biological Control Methods

Biological control is a self-sustaining approach that is used in select areas to control some Noxious Weed and invasive plant species. Bio-control methods involve the introduction / release of pests or parasites (predominantly insects) for the long term control of specific Noxious Weed or invasive plant species. The agents are screened to ensure they will attack and weaken only the targeted plants.

CP continues to work cooperatively with provincial invasive plant councils, regional weed control committees as well as federal agencies to support bio-control research and releases on CP rights-of-way. Biological controls, if feasible and cost effective, will continue to be utilized where available.



Figure 6: Bio-control

European Stem-boring Weevil (*Mecinus janthinus*) released for control of Dalmatian Toadflax on CP rights-of-way in southeast BC.

3.5.3 Chemical Control (Herbicides)

3.5.3.1 The Need for Herbicide Use

Herbicides are an important tool in railway vegetation management. This is especially true in areas where non-chemical methods cannot be employed or are not effective, or in areas such as track ballast where there are no effective non- chemical control alternatives available.

3.5.3.2 Herbicide Identification

The herbicides active ingredients proposed for targeting problem vegetation within this PMP are listed in **Table 3**:

Table 3: Herbicide Active Ingredients Proposed for Possible Use *

aminopyralid	flumioxazin
2,4-D	glyphosate
bromacil	imazapyr
chlorsulfuron	metsulfuron-methyl
clopyralid	picloram
dicamba	diuron
indaziflam	triclopyr
aminocyclopyrachlor	siloxylated polyether (spray adjuvant)
diflufenzopyr	fluroxypyr

* Due to the proposed 5 year duration of the IVMP, it is not possible to precisely forecast with certainty which herbicide active ingredients will or will not be used. The above list includes all possible active ingredients that may be used within the term of the IVMP. Many of the above-listed active ingredients are sold by several chemical manufacturers under a variety of Trade Names. It is not practical to list all of the potential Trade Names for the active ingredients that may be used under this IVMP in this document. CP reserves the right to utilize any and all of the available products (i.e., Trade Names) for the above listed active ingredients provided that they are registered for the intended purpose under the Federal *Pest Control Products Act*.

3.5.3.3 Criteria for Herbicide Treatments on Specific Areas or for Specific Purposes

Table 4 on the following page summarizes the reasons for possible use of herbicides for unwanted vegetation management within specific use areas or for specific purposes under this IVMP.

Table 4: Vegetation Management on Specific Areas or for Specific Purposes

Area Purpose of	Criteria for Using Herbicides for Vegetation Management
Ballast	<p>Ballast section treatment includes all tracks within the IVMP area. As noted earlier, there are no effective non-chemical controls for ballast vegetation management. Historically, all major yards have been treated with herbicides annually, due to the treatment thresholds having been exceeded. Treatment of main tracks, sidings, and station tracks are carried out as and where required if the applicable treatment threshold has been exceeded.</p> <p>Factors such as track type, site details (e.g., the type of vegetation present and the presence of environmentally sensitive areas adjacent to proposed treatment sites), and past management results determine the priority, frequency, and type of vegetation management treatment selected. The track type is a major factor in determining the prioritization of ballast vegetation management each year. For example, primary yards and mainline tracks have the highest priority for vegetation management due to their high levels of traffic and associated safety concerns. Treatment with appropriate herbicide active ingredient(s) listed in Table 5 may be required for ballast vegetation management.</p>
Rights-of-Way (General)	<p>Areas within rights-of-way that are vegetated with a suitable and stable cover of low growing plant species that do not pose a fire or safety risk to the public, CP or its personnel, receive only limited management. However, in instances where Noxious Weeds, invasive plants are present or where tall growing vegetation is impeding sight line requirements or compromising access to buildings, signals, communication and electrical infrastructure and appropriate herbicide active ingredient(s) listed in Table 5 may be used.</p>



Area Purpose of	Criteria for Using Herbicides for Vegetation Management
Maintain Sight Line Requirements	The maintenance of sight lines is most critical at vehicle and pedestrian crossings or at approaches to bridges. Deciduous vegetation has the capacity to re-sprout following mechanical control methods. Treatment with appropriate herbicide active ingredient(s) listed in Table 5 may be done by foliar application, application to cut stumps, to the basal bark areas of individual trees following mechanical cutting or mowing to stop re-sprouting, or applied in areas where mechanical methods are not feasible or practical
Danger Trees	Treatment with appropriate herbicide active ingredient(s) listed in Table 5 may be done by application to cut stumps of individual danger trees following mechanical cutting to stop re-sprouting.
Noxious Weeds and Invasive Plants	The treatment of Noxious Weeds and invasive plants will be based on the advice of regional weed control committees and the legislative requirements specified in the <i>BC Weed Control Act</i> . Treatment with appropriate herbicide active ingredient(s) listed in Table 5 may be undertaken.

3.5.3.4 Herbicide Application Equipment

The application equipment proposed for use in applying herbicides include:

Backpack

A backpack is a portable, manually operated, pressurized container with a positive shut-off system and a nozzle for applying herbicides. It operates under low pressure, thus minimizing the possibility of drift. Directed spray from a backpack unit will selectively apply a herbicide solution. It is particularly useful for spraying small areas or individual trees, shrubs or plants. Within this IVMP, backpack sprayers may be used for foliar or soil application, for the application of active ingredients to cut surfaces (i.e., stumps) following manual or mechanical controls, and for the spot control of Noxious Weeds and invasive plants.



Figure 7: Backpack Application***Wick / Wipe On Applicator***

Wick / wipe on application may be used to selectively apply herbicides by wiping them directly onto plants. Only small amounts of herbicide are applied, so the need for pumps, control devices and spray tanks is eliminated. Wick / wipe on applications are ideal for vegetation management in areas where no spray drift can be tolerated. Wick / wipe on applications may be used for the application to cut surfaces (i.e., stumps) following manual or mechanical controls, and for the spot control of Noxious Weeds and invasive plants

Handgun (Power Hose and Nozzle)

A handgun (power hose and nozzle) is a hand-held spray gun and hose attached to a portable tank filled with herbicide solution, usually with a power driven pump to provide pressure to the herbicide solution in the hose. Handguns are generally used where large areas of vegetation have to be controlled, but may also be used for the spot control of Noxious Weeds and Invasive Plants. Applications can be made from a hi-rail vehicle or from an all-terrain vehicle traveling adjacent to the tracks.

Shrouded Boom Sprayer (Mounted on a Hi Rail vehicle)

These sprayers are designed to distribute herbicide solutions evenly over large areas. Applications can usually be adjusted and controlled by on-board computer systems to



accommodate variations in treatment condition. The shrouded boom allows for the application of herbicide over a set width (e.g., the width of the ballast plus the shoulder). Shrouded booms are mounted on a Hi Rail vehicle with a power-driven pump to apply herbicide.

Figure 8: Shrouded Boom Sprayer



Radiarc Sprayer

Is a precision, boomless application device used for the application of herbicides and plant growth regulators in a uniform pattern with a low volume application. The sprayer can be mounted on the side of a Hi Rail spray vehicle for application of weed and brush control herbicides to right-of-ways

Table 5: Description and Rationale, Benefits and Limitations of Herbicide Application Methods / Techniques

Description & Rationale	Benefits / Limitations
Foliar applications involve use of a manually operated pressurized backpack sprayer or a handgun, and can be used to apply all of the active ingredients. This method / technique is most effective when the target vegetation is actively growing.	Foliar applications can be carried out at any time of the year, provided the target plants are actively growing. As foliar applications are potentially susceptible to drift, caution must be exercised around desirable plants and in environmentally sensitive areas.
Wick / Wipe-on applications involve the use of a wick soaked with a herbicide solution that is wiped or dragged over the foliage of the target vegetation. The wick applicators are available in various materials and in many sizes. This technique will generally be used where cut stumps have re-sprouted, or for treating small patches of vegetation, invasive plants or Noxious Weeds in areas where no drift can be	This application technique virtually eliminates drift, and is useful for the safe and effective treatment of individual plants or stems located amongst desirable vegetation. However, this technique is very labour intensive and is only practical for use in small treatment areas or where target stem density is very low.
Cut Surface applications may be used in conjunction with manual cutting treatments for controlling woody vegetation. With this method / technique, the problem vegetation is cut as low to the ground as possible and herbicide is applied to the cut surface of the stump to limit the potential for re-sprouting.	This method / technique is a great alternative to foliar applications in / near environmentally sensitive areas or in high traffic crossing areas where aesthetics concerns need to be considered. Because herbicide applications are restricted to the cut surface of freshly cut stumps, there is generally no herbicide drift, resulting in minimal potential impact to fish, wildlife, and bodies of water, water sources, and food intended for human consumption. Cut surface applications pose little risk of herbicide exposure to workers or the general public. However, if treatment is not undertaken immediately following manual control, this
Soil applications may be used for the application of non-selective herbicides to ballast and other areas where bareground control is required. These applications usually involve the use of shrouded boom sprayers, but can also be conducted using ATV mounted sprayers or handgun.	Soil applied herbicides usually give season long (residual) control of all vegetation on ballast and track areas. As a result, particular care must be taken when working in close proximity to environmentally sensitive areas.
Radiarc sprayers mounted on the side of a hi-rail spray vehicle may be used for the foliar application of selective weed and brush control herbicides to rights-of-way.	The use of this boomless application device results in a uniform herbicide spray pattern while providing good drift control using a low volume application.

3.6 Post Treatment Evaluations

Post treatment monitoring is conducted to determine if the goals of the IVMP have been met and to record the effectiveness of the treatment, including adverse effects. Visual inspections are completed after the effects of treatments treatment are well established. In the case of spring



treatment, post-treatment monitoring are usually conducted in late summer. In the case of late summer or autumn treatments, post-treatment evaluations are usually carried out the following spring. Post-treatment evaluations are used to update baseline information for use in the following treatment season.

Post-treatment evaluations will document and record:

- Compliance with the commitments made in the IVMP, and the requirements of the IPMR including maintenance of pesticide free and no treatment zones;
- The method(s) of vegetation control;
- Dates and locations of treatment;
- Whether applied rates of herbicides used were adequate (or need to be increased or can be reduced);
- Evidence of off target herbicide movement;
- Amount and rate of re-growth in the unwanted vegetation; and
- General effectiveness of the treatment.

Post-treatment evaluation results determine what adjustments, if any, are needed in subsequent control programs in order to meet compliance and control objectives. In the case of ballast programs where no alternative to herbicide applications exist, changes in herbicide active ingredients may be needed periodically to ensure treatment efficacy and reduce the potential for herbicide resistance.



4.0 Operational Information

The operational information included in this section includes:

- Herbicide handling requirements;
- Qualifications and responsibilities of persons applying herbicides;
- Procedures for safely transporting herbicides;
- Procedures for safely storing herbicides;
- Procedures for safely mixing, loading and applying herbicides;
- Procedures for the safe disposal of empty herbicide containers and unused herbicides; and
- Procedures for responding to herbicide spills.

4.1 Herbicide Handling Requirements

Only qualified personnel will carry out herbicide use applications under this IVMP. The transportation, storage, handling, application and disposal of pesticides are governed by Federal and Provincial legislation. All personnel working with herbicides will follow safe handling practices including workplace requirements for Workplace Hazardous Materials Information System (WHMIS) labeling and worker education, and in compliance with Division 7 of the BC Integrated Pest Management Regulations (IPMR). The required practices for contractors and their workers are detailed in:

- Worker's Compensation Board of British Columbia (1998) *Occupational Health and Safety Regulation – BC Regulation 296/97 as amended by BC Regulation 185/99 – Sections 6.70 to 6.109*;
- B.C Ministry of Environment, Lands and Parks (2005) *Handbook for Pesticide Applicators and Dispensers*; and
- Worker's Compensation Board of British Columbia (2009) *Standard Practices for Pesticide Applicators*.

4.2 Qualifications and Responsibilities of Persons Applying Herbicides

All herbicide applications will be conducted or supervised by a person who holds a valid Pesticide Applicator Certificate endorsed for the class of pesticide and the pesticide use required to apply herbicides under this IVMP.

The responsibilities of the Certified Pesticide Applicator are to:

- Be in continuous attendance at the site;
- Have available proof of certification;
- Supervise no more than four uncertified assistants at one time;
- Maintain continuous contact, auditory and / or visual, with the uncertified assistants;
- Be within 500 m of persons being supervised; and



- Comply with the standards contained in Division 7 of the IPMR.

4.3 Procedures for Safely Transporting Herbicides

The transportation of herbicides will comply with all Federal and Provincial laws governing their transport. In addition, personnel shall follow these procedures for safely transporting herbicides:

- Limit the amount of herbicides that will be carried in any one vehicle. The quantity shall be no more than what is necessary for each project, except where transportation occurs between storage facilities.
- Ensure that herbicides are carried in a compartment(s) that is secured against spillage and unauthorized removal. The compartment(s) shall be separate from food and drinking water, safety gear, spill containment equipment and people.
- Inspect all herbicide containers for defects prior to transporting. Keep herbicides in their original containers and with original labels. If original labels are not available, the herbicides shall be placed in appropriate containers that have the trade name, active ingredient concentration and pesticide registration number affixed to the outside of the container.
- Ensure that the vehicle is equipped with a first aid kit, fire extinguisher, spill contingency plan and kit, and that the vehicle operator has been trained on how to handle spills.
- Ensure that all documents and placards are carried in, or placed on, transport vehicles if required under the *Transportation of Dangerous Goods Act*, the *IPMA* or the *IPMR*.
- Read and understand the herbicide labels and the product Material Safety Data Sheet (MSDS) for all herbicides being transported.

4.4 Procedures for Safely Storing Herbicides

Other than temporary storage on a contractor's mobile equipment, the overnight storage of pesticides is not permitted on CP property. All herbicide materials required for CP work are acquired as needed from regional distributors who are appropriately licensed.

4.5 Procedures for Safely Mixing, Loading and Applying Herbicides

Personnel shall follow these procedures for safely mixing, loading and applying pesticides:

- Ensure that all mixing, loading and application of herbicides is carried out by Certified Pesticide Applicators, and that all manufacturer's recommendations, as specified on the herbicide labels, are adhered to.
- All mixing, loading and application of herbicides shall be undertaken in a safe manner.
- All mixing and loading shall be undertaken only in areas at least 15 m from and selected to prevent, any spilled herbicides from entering pesticide-free zones, no treatment zones, bodies of water, fish or wildlife habitat, water sources, or other environmentally sensitive areas.



- Ensure that containers used to mix, prepare or apply herbicides are not washed or submerged in any body of water.
- Ensure that eyewash station(s), protective clothing, safety spill kits, spill response plans, each herbicide product's MSDS, emergency telephone numbers and first aid supplies are present and available at or near the treatment site.
- To follow all directions and restrictions on herbicide product labels, including adhering to the recommended re-entry times to treated areas unless personal protective equipment is worn.

4.6 Procedures for the Safe Disposal of Empty Herbicide

Containers and Unused Herbicides

Personnel shall follow these procedures for safely disposing of empty herbicide containers and unused herbicides:

- Ensure that all herbicide waste is disposed of in a manner consistent with the requirements of the BC *Environmental Management Act* as appropriate.
- Ensure that empty herbicide containers are returned to the herbicide distributor as part of their recycling program; or triple rinsed or pressure rinsed, altered so that they cannot be reused, and disposed of in a permitted landfill or other approved disposal site.

Through careful planning and estimation, every attempt is made to manage herbicide mixes in a manner that will not result in the generation of surplus / unused herbicides. In the event that unused herbicide cannot be re-deployed in a timely manner for other projects, any surplus will be returned to the herbicide distributor. To further reduce the potential generation of surplus / unused herbicides CP promotes the use of application systems that use injection rather than in tank mixing.

4.7 Procedures for Responding to Herbicide Spills

All personnel shall follow these procedures for responding to herbicide spills. If contractors that work under this IVMP have their own spill response plan, they must meet or exceed the following plan:

- Spill treatment equipment shall be present at or near mobile storage, mixing and loading sites and shall include: personal protective equipment, absorbent material, neutralizing material, a long handled broom, shovel, and a waste-receiving container with lid;
- A copy of an approved spill response plan shall be at or near each work site, and all personnel working on the project shall be familiar with its contents;
- All personnel shall be protected from herbicide contamination by wearing appropriate protective clothing and safety gear;
- Any person exposed to herbicide shall be moved away from the place of the spill;
- First aid shall be administered, if required;



- The source of the spill shall be stopped;
- The spilled material shall be stopped from spreading by creating a dam or ridge;
- The project supervisor shall ensure that 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 contents clearly marked;
- Contaminated soil or other material shall be removed from the spill site and placed in clearly marked garbage bags or containers;
- When more than 5 L or 5 kg of herbicide are spilled, the person responsible for the project shall immediately report to the CP Network Management Centre who in turn will notify all appropriate authorities including the BC Provincial Emergency Program by telephoning 1-800-663-3456; and
- An approved representative of IVMP holder shall be notified of the details related to the spill as soon as practical by the Contractor project supervisor.



5.0 Environmental Protection Strategies and Procedures

All vegetation management activities, both chemical and non-chemical proposed for use under this IVMP will incorporate:

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

5.1 Strategies to Protect Community Watersheds

Current information indicates that no community watersheds are located within 1 km of the geographic boundaries of the IVMP area. Consequently, no strategies are required to protect these community watersheds during vegetation management activities.

5.2 Strategies to Protect Domestic and Agricultural Water Sources

Table 6 shows the Pesticide Free Zones (PFZ) and No Treatment Zone (NTZ) buffers that CP will maintain within the areas covered under this IVMP:



Table 6: Water Protection PFZs and NTZs for Vegetation Management *

Herbicide Applications	Ballast, Signal, Switch or Yard	Right-of-Way
Domestic and agricultural wells and water intakes, including all methods and herbicides	30m NTZ**	30 m NTZ**
Around or along a body of water or dry stream and classified wetland using any pesticide except glyphosate, subject to label restrictions and including all application methods	10m PFZ	10m PFZ
Selective applications to trees at crossings where a temporary body of water or dry stream is not fish bearing, and does not drain directly to fish bearing waters	N/A	1m NTZ
Glyphosate Applications		
Along or around a body of water and classified wetland if the body of water: <ul style="list-style-type: none"> • is not fish-bearing at any time of the year • does not drain directly into a fish-bearing body of water 	2m NTZ	2m NTZ
Along or around a body of water or a classified wetland that is: <ul style="list-style-type: none"> • fish-bearing, or • that drains directly into a fish-bearing body of water, or • along or around a dry stream that when wet is fish-bearing or drains directly into a fish-bearing body of water 	2m PFZ	5m PFZ
Up to the high water mark of a temporary free-standing body of water and over dry streams, that are: <ul style="list-style-type: none"> • not fish-bearing at any time of the year • do not drain directly into a fish-bearing body of water 	0m NTZ	0m NTZ
Noxious Weeds / Invasive Plants		
Selective application of glyphosate to Noxious Weeds and invasive plants adjacent	1m PFZ	1m PFZ

* The terms in the above table will have the same meaning as defined in the IPMA and IPMR

** The 30 m NTZ may be reduced if the confirmation holder for this IVMP is reasonably satisfied that the smaller zone will ensure that herbicide from the use will not enter the water supply, intake or well.

5.3 Strategies for Protecting Fish and Wildlife, Riparian Areas and Wildlife Habitat

In addition to clearly established environmental management practices for all maintenance work near watercourses (CP Standard Practice Circular No. 4 – Working Near Water), the



establishment of PFZs and NTZs, as identified in **Table 6**, will also help protect riparian areas and other key habitats from any potential impacts specifically associated with herbicide applications.

Over the past 15 years, CP has surveyed and mapped fish habitat areas adjacent to its right-of-way. The mapping identifies known fish bearing streams and spawning areas. This mapping is consulted in advance of most maintenance activities, including those that involve vegetation management. This mapping is updated periodically.

CP will conduct all vegetation management activities in a sustainable and responsible manner to minimize any potential negative impacts within environmentally sensitive areas including obtaining the following information and / or implementing the following protective strategies:

- Locate all bodies of water;
- If applicable, identify all bodies of water as fish bearing or non-fish-bearing;
- Select the most appropriate method(s) of vegetation management that should be employed;
- For herbicide applications maintain appropriate PFZ and NTZ buffers; and
- Ensure that there shall be no refueling of machinery, herbicide mixing or cleanup or disposal of herbicide materials within 30 m of riparian zones.

The Federal *Species at Risk Act* (SARA) protects endangered plant and wildlife species and aims to prevent their extinction and secure the necessary actions for their recovery. Applicable provisions of SARA and the BC *Wildlife Act* shall be adhered to. CP will attempt to avoid or reduce the impact to all listed species at risk and will work cooperatively with regulatory agencies and stakeholders in any recovery planning. Where avoidance of impacts is not possible, CP commits to working with regulatory agencies and other stakeholders on recovery planning processes. The level of participation will be determined by the degree of known impact the CP activities have on species including:

- The listing status of the species and other associated species;
- The likelihood and extent of impacts incurred by other stakeholders;
- Consideration given to species of concern on existing CP property, federal and / or provincial processes;
- Public interest; and
- Identification of specific-species at risk as significant aspects in our environmental management program.

CP supports science-based decision-making and an ecologically based approach to avoidance and recovery planning, and, further, recognizes that action taken to prevent the need to list a species of concern is a preferred means of ensuring preservation of the species.



5.4 Strategies to Prevent Herbicide Contamination of Food Intended for Human Consumption

Vegetation control measures and herbicide products are carefully selected and appropriately managed to minimize the potential for impacts to non-target areas adjacent to CP rights-of-way including neighboring farms or gardens as well as known sites in undeveloped areas used by First Nations and others for harvesting plants intended for human consumption.

With respect to potential food sources within CP rights-of-way, unauthorized access is strictly forbidden under federal law and is enforced by CP Police. Nevertheless, supplementary precautions are taken to ensure that herbicide applications are conducted in a manner that will reduce the potential for herbicide contamination of food, such as berries. Precautions may vary based on site specific circumstances, but generally will include providing additional buffer zones around known plant harvesting areas during herbicide applications or adjusting the timing of herbicide applications. For example, in the case of *Rubus* species (e.g., Himalayan blackberry) no herbicide applications are conducted from the time flowers open (late spring) until berries have predominantly dropped from the vine (late summer) for areas more than 3 m away from the rail, signal or switch stands.

5.5 Pre-Treatment Inspection Procedures for Identifying Treatment Area Boundaries

Prior to commencing with actual herbicide applications, there are a number of activities that take place to ensure applications will be conducted safely and effectively. These include a review of available mapping sources, PFZs and NTZs requirements, setting up Treatment Notices (i.e., posting signs at authorized public access points in railway yards) and verifying the treatment methodology. Some PFZs and NTZs boundaries can also be affected by short term or seasonal conditions and as a result supplementary pre-treatment inspections with local officials may be needed.

On the actual days that herbicide applications are planned, daily job briefings are conducted prior to the initiation of any work with relevant CP employees, the contractor and their employees, and other parties if applicable (e.g., Regional District weed inspectors). These meetings address all safety and environmental aspects of the work, including strategies for adherence with PFZ and NTZ requirements and identification of any other areas or mileage(s) that merit special concern or precautions.



5.6 Procedures for Maintaining and Calibrating Herbicide Application Equipment

All herbicide application equipment used on CP property shall be safe, clean, in good repair, compatible and appropriate for the herbicide being used. The Ministry of Environment's "Handbook for Pesticide Applicators and Dispensers" will be used for guidance with respect to calibration intervals and procedures for specific types of application equipment. In practice, most sprayers shall be re-calibrated when changing herbicide products or when nozzle output begins to vary. The frequency of calibrations shall be dictated by factors such as herbicide formulation. For example, abrasive formulations such as dispersible granule normally result in greater nozzle wear and will require more frequent calibrations.

5.7 Procedures for Monitoring Weather Conditions and Strategies for Modifying Herbicide Application Methods for Different Weather Conditions

5.7.1 Weather Monitoring

Measurements shall be made to record weather conditions prior to and periodically during herbicide applications. Wind speed and direction, precipitation, temperature and sky conditions (clear, overcast, cloudy, partly cloudy) shall be recorded for foliar applications and boom sprayer applications. Temperature, precipitation, frost and dew conditions shall be recorded for stump or basal bark applications. Persons applying herbicides are responsible for checking each product label for guidelines for applying herbicides under various weather conditions.

5.7.2 Stop Treatment Conditions

Herbicide applications shall be stopped if:

- The maximum / minimum temperature stated on the herbicide label is exceeded;
- The wind speed and / or direction cause the foliar backpack application of herbicide to drift and / or miss the target vegetation;
- Ground wind velocity is over 8 km / hour for foliar applications and over 16 km / hour for applications using a shrouded boom;
- It begins to rain steadily, increasing the chances of excessive runoff and leaching; and
- There is ice or frost on the foliage.



6.0 Reporting, Notification and Consultation

6.1 Reporting

Accurate record keeping allow both CP and the Administrator, *Integrated Pest Management Act*, to monitor the quantity of pesticides used, and to ensure compliance with the *Integrated Pest Management Act and Regulation*, the commitments made in this PMP, and the contents of the Pesticide Use Notice. CP will ensure that each of the required records described below are maintained.

6.1.1 Pesticide Use Records

Each contracting firm that applies pesticides for CP must maintain daily records of pesticide use. Section 37(1) of the *Integrated Pest Management Regulation (IPMR)* describes the requirements for these records. The following records must be kept for each treatment location and day of use:

- The date and time of the pesticide use;
- The name of the pest targeted by the use or the purpose of the pesticide use;
- The trade name of each pesticide used and its registration number under the federal Act;
- For each pesticide used, the method and rate of application and the total quantity used;
- The prevailing meteorological conditions including temperature, precipitation and velocity and direction of the wind, these conditions should be measured at the beginning of each day before starting treatment, re-measured if obvious changes in environmental conditions occur throughout the day, and re-measured at the end of any treatment day; and
- A record for each piece of the holder's pesticide application equipment that requires calibration showing when the equipment was calibrated and the data upon which its calibration was based.

6.1.2 Pesticide Annual Report

In accordance with Section 39, CP will provide to the Regional Administrator, *Integrated Pest Management Act*, the following information for a calendar year by January 31 in the next calendar year for operations conducted under this PMP during the calendar year:

- The name and address of the confirmation holder, and their confirmation number;
- Trade name and active ingredient of the pesticide(s) applied, including their PCP numbers;
- Total area treated; and
- Quantity of each active ingredient applied (kg).



6.2 Notifications

CP commits to providing the following notifications with respect to this PMP:

6.2.1 Notification of PMP Confirmation

As per section 7(6) of the IPMA, CP will, within 7 days of the plan confirmation date, make available, for the term of the confirmation, a copy of the confirmation and the PMP with relevant maps at the following location to allow inspection by the public:

CP Ogden Headquarters
7550 Ogden Dale Road S.E.
Calgary AB T2C 4X9

6.2.2 Annual Notice of Intent to Treat

As per section 42 of the IPMR, for the purpose of an annual Notice of Intent to treat, CP will prepare and retain a detailed map showing the treatment locations for the applicable calendar year, which indicate the following for each treatment location:

- The proposed treatment areas; and
- The geographic features that require a pesticide-free zone or a no-treatment zone.

CP will forward, in writing, to the B.C. Ministry of Environment, at least 21 days prior to treatment in each year during which the PMP is in effect, an Annual Notice of Intent to Treat (NIT) for the following year. This NIT will identify:

- Name and business location
- Proposed treatment areas;
- Proposed treatments;
- Pesticides proposed for use and their method of application; and
- The total area proposed for treatment.

6.2.3 Requests to Amend the PMP

CP will forward, in writing, to the Ministry of Environment, amendments requested for the PMP. Amendment requests to add new application techniques or similar changes will not require further public advertising or First Nations consultation, provided that the amendment request is within land owned or controlled by CP. Amendments to add new active ingredients will require further public advertising and/or First Nations consultation.

6.2.4 Notification of Contraventions

Section 72(1)(d) of the IPMR requires that a confirmation holder give written notice to the administrator on a contravention of the IPMA or IPMR that involves the release of a pesticide



into the environment. CP commits to abiding by this requirement. In addition, CP has implemented contractor guidelines to ensure compliance. Failure of the contractor to observe the following requirements will be cause for contractor dismissal:

- Violation of the requirements of the IPMA or the IPMR;
- Mixing of pesticides in inappropriate locations such as near environmentally sensitive zones;
- Failure to use adequate personal protective equipment when required by the product label;
- Application of pesticides within prohibited zones;
- Improper cleanup or reporting of spills;
- Application of pesticides by uncertified personnel without appropriate supervision;
- Improper disposal of unused chemicals or containers;
- Improper equipment calibration;
- Application of pesticides under inappropriate or unsafe conditions;
- Failure to properly complete and submit daily operating logs or records; and
- Handling, storing, mixing, transporting, or applying pesticides in a manner which violates product labels.

6.2.5 Public Notification Prior to Treatment

Notification of individuals, communities and organizations in the time and manner as agreed during the public consultation process, will be completed prior to treatments. CP will maintain a record of all public notifications for each treatment area.

6.2.6 Employee Notification Prior to Treatment

CP will provide internal notification to all potentially affected employees in advance of all pesticide treatments via electronic mail, bulletins and written postings. Employee notification is not normally conducted in advance of mechanical methods of vegetation control such as mechanical cutting or manual removal. The method of employee notification will be via CP's internal email system and posting on employee notification boards.

6.2.7 Posting of Treatment Notices

Prior to treatment, treatment notices will be posted at potentially high traffic public areas. The posted signs will contain the following information:

- The trade name of the pesticide that has been applied and the Pest Control Act (PCP) registration number;
- The date of pesticide use;
- The confirmation number of the PMP; and
- A contact telephone number for the BC Pesticide User Licensee contracted by CP to apply the pesticide.



For each treatment location, the applicator will maintain a record of where notices were posted.

6.3 Consultations

6.3.1 Public Consultation Plan

Prior to submitting a Pesticide Use Notice to the Ministry of Environment for PMP confirmation, CP will carry out a public consultation process.

The objectives of conducting public consultations when this PMP is at the draft stage are:

- To increase public awareness of the PMP process and of the principles of Integrated Pest Management which are embodied in the PMP
- To ensure that the public has an opportunity to identify concerns, and for CP to address those concerns, before the PMP is finalized and submitted and a Pesticide Use Notice submitted for confirmation
- To ensure a transparent and accountable review process for the PMP
- To educate the public on the need to manage problem vegetation, noxious weeds and invasive plants
- To explain how the planning process that is described in the PMP recognizes the need to protect human health and the environment.

The public will be consulted of the PMP development via notices in local community newspapers throughout British Columbia. As per Section 61(1) of the IPMR, at least 45 days before submitting a Pesticide Use Notice, the first of 2 notices, at least 40 cm² in size, will be published within a 2 week period in newspapers circulated in the various communities (or nearest communities).

During the public consultation process, a copy of the PMP will be available for viewing at CP's Corporate Headquarters - 7550 Ogden Dale Road S.E. Calgary, AB T2C 4X9 or on the CP website at www.cpr.ca/vmp In addition, copies of the PMP may be requested through the Vegetation Manager:

Geoff Gordon

Phone: (587) 227-1024

Email – geoff_gordon@cpr.ca



6.3.2 Public Consultation Report

CP will prepare a Public Consultation Report that contains:

- A summary of public consultations, including the names and addresses of those who provided input, the nature of their concerns and/or recommendations, and the CP response to the input from the public; and
- A list of newspapers in which notification of the pending PMP submission appeared, along with the publication dates and a photocopy or tear sheet of a representative advertisement.

The Public Consultation Report will be provided to the Administrator, *Integrated Pest Management Act*, upon request.

6.3.3 First Nations Consultations

In addition to the objectives for public consultation outlined in Section 6.3.1, CP will consult with First Nations to avoid infringement on aboriginal rights, treaty rights, or cultural values during their IVM program. CP not only has an obligation to consult with First Nations, it must also attempt to address their concerns and accommodate their cultural interests. Consultation processes must take into account the BC Treaty negotiation process, and current litigation actions by First Nations respecting aboriginal land use or sovereignty. Both of these major issues can have an impact on the CP IVM program. In light of the above sensitivities and special concerns, CP is committed to establishing and maintaining positive relationships with First Nations through meaningful and respectful consultation.

First Nations consultations will be conducted in compliance with Section 61(2) of the BC Integrated Pest Management Regulations (IPMR). This legislation requires that:

“If a proposed pesticide use under a pest management plan has the potential to significantly impact an individual or a member of an organization or community, the confirmation holder must make reasonable efforts, starting at least 45 days before submitting a pesticide use notice to the administrator, to contact and consult these individuals”.



Apart from meeting this legislative requirement, the objectives of conducting First Nations consultations are:

- To increase First Nations awareness of the IVMP process and of the principles of IVM which are embodied in the IVMP;
- To ensure that First Nations have an opportunity to identify concerns, and for CP to address those concerns before the IVMP is finalized and a Pesticide Use Notice submitted for confirmation;
- To ensure a transparent and accountable review process for the IVMP;
- To educate First Nations on the need to manage problem vegetation and noxious weeds on the CP rail system; and
- To explain how the planning process that is described in the IVMP recognizes the need to protect human health and the environment.

The First Nations to be consulted with were determined by:

- Following procedures outlined in the Ministry of Environment document “*Draft Guidelines for IPM Proponents Conducting Consultations with First Nations*” (August, 2011);
- Following procedures outlined in the document “*Province of British Columbia Interim Updated Procedures for Meeting Legal Obligations When Consulting First Nations*” (May 7, 2010); and
- Consulting the First Nations Consultative Areas Database (CAD) to secure preliminary contact information for First Nations who may have Aboriginal Interests identified within the PMP area.

A list of the First Nations that will be consulted with is shown in **Table 7**.



Table 7: The First Nations within the Geographic Area Covered by the IVMP

Adams Lake	Boothroyd Band
Boston Bar First Nation	Chawathil First Nation
Cook's Ferry Indian Band	Kanaka Bar Indian Band
Ktunaxa Nation	Kwantlen First Nation
Laq'a: mel First Nation	Little Shuswap Lake Indian Band
Lytton First Nation	Nicomen Indian Band
Seabird Indian Band	Shawahlook First Nation
Shuswap Indian Band	Shxw'ow'hamel Indian Band
Siska Indian Band	Spuzzum Indian Band
Union Bar First Nation	Yale First Nation

This IVMP is for a large area and does not specify the exact sites of proposed treatment, because not all treatment sites will be known at the PMP development stage. Some First Nations may want to continue consultation after the location(s) of specific treatment sites have been identified and/or receive notification when the treatment sites are identified at a specified time before herbicide applications. Section 28(2) of the IPMR allows a proponent to make an agreement during initial consultation to directly notify a First Nation, in an agreed time and manner, before herbicide use. If requested by a First Nation, CP Rail commits to continue consultation after the location(s) of specific treatment sites have been identified and/or receive notification when the treatment sites are identified at a specified time before herbicide applications. This will be documented in the First Nations Consultation Report.

6.3.4 First Nations Consultation Report

In order to facilitate Ministry consideration of the adequacy of First Nations consultations and of the CP response to any issues raised, CP will prepare a report that describes the consultation process and outcomes. This report will be submitted to the Administrator, *Integrated Pest Management Act*, in conjunction with the submission of the Pesticide Use Notice application.



Schedule 1

CPR Subdivisions in BC

SUBDIVISION	FROM	TO (Miles)
Boundary	Nelson	Castelgar (25.6)
Byron Creek	Fabro	End (11.6)
Cascade	North Bend	Vancouver (129.1)
Cranbrook	Crowsnest	Cranbrook (107.7)
Fording River	Sparwood	End (33.8)
Laggan	Lake O'Hara	Field (14.4)
Mission	Mission Jct.	Huntington (10.1)
Mountain	Field	Revelstoke (125.7)
Moyie	Cranbrook	Int'l Border (51.1)
Nelson	Curzon	Nelson (95.2)
Page	Livingston	Pratt (7.6)
Rossland	Castlegar	Trail (22.0)
Shuswap	Revelstoke	Kamloops (128.5)
Thompson	Kamloops	North Bend (121.5)
Westminster	MacAulay	New Westminster (9.2)
Windermere	Fort Steele	KC Junction (144.8)
SPURS		
Ioco	Port Moody	End (3.2)
Marpole	End of Track	New Westminster (16.0)
Robson	Castlegar	End (5.1)
Van Horne	Richmond	End of Track (2.4)