



**2020 – 2025**

**Integrated Vegetation Management Plan  
Confirmation Number: 767-0011-20/25**

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**Cover photo:** A typical crossover assembly yard, with pipeline right of way visible in background.

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## Executive Summary

Enbridge is North America's largest energy infrastructure company. Enbridge is committed to responsible operation and maintenance of its pipelines and facilities to ensure they are safe and reliable. Vegetation management is an essential component in ensuring safe, reliable, and environmentally responsible operations.

Enbridge operates many of its facilities under the jurisdiction of the Canada Energy Regulator (CER), a departmental corporation and agent of the Crown established under the *Canadian Energy Regulator Act*. The CER requires its regulated companies to comply with the current provisions of the Canadian Standards Association CSA Z662-19, *Oil and Gas Pipeline Systems*. Vegetation management is referred to in section 10.5.2, which states:

Where the terms of the easement permit, vegetation on rights-of-way shall be controlled to maintain clear visibility of the pipeline from the air and provide ready access for maintenance crews.

This Integrated Vegetation Management Plan (IVMP) is an integral component of Enbridge's long-term commitment to a successful Integrated Vegetation Management (IVM) Program. Enbridge's IVMP has been in operation for several years and this document is part of a continuation of current vegetation best management practices.

Vegetation management objectives are achieved using IVM principles. This means selecting treatments that most effectively target problem vegetation while minimizing impacts to the surrounding environment. IVM techniques used within the Enbridge-shared corridors of the BC pipeline include prevention, physical controls, mechanical controls, and herbicide treatments. These are organized into site-specific programs to ensure effective, economical, and environmentally safe treatments.

Vegetation within or adjacent to facilities may restrict system operations and reliability. As a responsible pipeline operator, Enbridge maintains or controls vegetation within its facilities and on its pipeline rights-of-way (RoWs) for operational, regulatory, and safety reasons. Managing vegetation allows Enbridge to:

- Conduct monthly aerial inspections of RoWs to inspect for operational concerns or third-party impacts to and from the pipelines
- Allow access for pipeline operations and maintenance activities
- Help ensure the safety of personnel and the public
- Reduce the risk of fire hazards
- Manage invasive weeds
- Maintain relationships with landowners, tenure holders, Indigenous communities, and public stakeholders

Both federal and provincial legislation contain sections pertinent to Enbridge vegetation management operations. Enbridge's IVMP may also be reviewed by several higher-level planning authorities, including local Land Use Plan managers, Invasive Plant Management groups, and the Pest Management Regulatory Agency.

To be effective, the Enbridge invasive weed program must operate in cooperation with many other individuals, agencies, and land managers, since weed infestations occur across many different land uses. Weed management is most effective when the multi-jurisdictional coordination includes all potentially affected or adjacent landowners, Indigenous communities, and tenure holders to prevent the spread of weeds and achieve overall control.



**Figure 1 – Enbridge BC Valve Site**

Both federal and provincial legislation contain information required and pertinent to this Enbridge IVMP. Many individuals, organizations, companies, communities and vegetation experts collaborated to provide information for this IVMP. It is essentially a set of best practices and guidelines compiled from knowledgeable and experienced industry and government consultants. It is intended to provide Enbridge personnel and contractors (and stakeholders) with advice regarding the specific topic.

The recommendations set out in this IVMP allow flexibility but must be used in conjunction with competent IVM practices and judgment. Operators and contractors are responsible for judging any given treatment's suitability in a particular situation. In case of inconsistency or conflict between any of the recommended practices in this IVMP document and the applicable legislation, as amended from time to time, the legislative requirements shall prevail.

Every effort has been made to ensure the accuracy and reliability of the information, processes, and procedures contained in this IVMP.



## Glossaries

### Acronyms

<b>a.i.</b>	Active ingredient
<b>CER</b>	Canada Energy Regulator
<b>CERA</b>	<i>Canadian Energy Regulator Act</i>
<b>CCCIPC</b>	Cariboo Chilcotin Coast Invasive Plant Committee
<b>DOR</b>	Daily Operations Record
<b>ESA</b>	Environmentally sensitive areas
<b>FLNRO</b>	(Ministry of) Forests, Lands, Natural Resource Operations and Rural Development
<b>FVISS</b>	Fraser Valley Invasive Species Society
<b>IPCPRRD</b>	Invasive Plant Committee of the Peace River Regional District
<b>IPM</b>	Integrated pest management
<b>IPMA</b>	<i>Integrated Pest Management Act</i>
<b>IPMR</b>	<i>Integrated Pest Management Regulation</i>
<b>IVM</b>	Integrated vegetation management
<b>IVMP</b>	Integrated Vegetation Management Plan
<b>LRMP</b>	Land and Resource Management Plan
<b>MoE</b>	Ministry of Environment and Climate Change Strategy
<b>MSDS</b>	Material safety data sheet
<b>NIT</b>	Notice of Intent to Treat
<b>NRIPC</b>	Northern Rockies Invasive Plant Committee
<b>NTZ</b>	No-treatment zone
<b>NWIPC</b>	Northwest Invasive Plant Committee
<b>OGC</b>	Oil and Gas Commission
<b>OHSR</b>	<i>Occupational Health and Safety Regulation (WorkSafe BC)</i>

<b>PCPA</b>	<i>Pest Control Products Act</i>
<b>PCP</b>	Pest Control Product (number)
<b>PFZ</b>	Pesticide-free zone
<b>PMP</b>	Pest Management Plan
<b>PMRA</b>	Pest Management Regulatory Agency
<b>PPE</b>	Personal protective equipment
<b>PUN</b>	Pesticide Use Notice
<b>RMA</b>	Riparian management area
<b>RMZ</b>	Riparian management zone
<b>RoW</b>	Right-of-way
<b>RPRC</b>	Regional Pesticide Review Committee
<b>RRZ</b>	Riparian reserve zone
<b>SAC</b>	Spills Action Centre
<b>SARA</b>	<i>Species at Risk Act</i>
<b>SDS</b>	Safety data sheet
<b>SRW</b>	Statutory right-of-way
<b>TNIPMC</b>	Thompson Nicola Invasive Plant Management Committee
<b>WHMIS</b>	Workplace Hazardous Materials Information System

## Definitions

Also see Section 6.1.1 – for *Water Body Descriptions and Definitions*.

<b>Annual</b>	A plant with a single year life cycle. It germinates, produces seed, and dies.
<b>Biennial</b>	A plant with a life cycle of two years. It germinates the first year and produces seed and dies in the second year.

<b>Drift</b>	The effect of wind on herbicide particles in the air. The force and direction of the wind will determine the direction and distance of herbicide drift.
<b>Herbicide</b>	A chemical pesticide that kills problem vegetation and weeds. It can be in a liquid or solid form.
<b>Integrated Vegetation Management</b>	A process that ensures effective vegetation management while considering and incorporating environmental and human health value. IVM involves the use of different techniques to control vegetation and invasive weeds.
<b>Integrated Vegetation Management Plan</b>	A program for managing pest populations or reducing damage caused by pests based on integrated pest management; and the methods of handling, preparing, mixing, applying and otherwise using pesticides within an integrated vegetation management program.
<b>Leaching</b>	When a liquid seeps through soil into water sources.
<b>Manager</b>	For private land, the owner or person with the exclusive right to the land. For Crown land, the government agency responsible for the land. Managers of the land are generally limited to tenants, livestock grazers, crop farmers, and forest and other tenure holders who have the authority to restrict access to the site. However, a manager can also be any user with a registered interest in the land (such as a woodlot licensee or Christmas tree farm operator who has the authority to restrict access to the land).
<b>Mode of action</b>	A herbicide’s mode of action refers to the way in which it affects a plant. Uptake of herbicides is by root, foliage, or stems. Herbicides used within this IVMP are carried along with other nutrients throughout the plant where they disrupt plant growth processes.
<b>Monitoring</b>	The collection, analysis, and interpretation of information to evaluate the progress of vegetation management strategies.
<b>Perennial</b>	A plant that lives for multiple years producing seeds multiple times.
<b>Pest</b>	A plant growing where it is not wanted or a plant that interferes with vegetation management objectives.
<b>Problem vegetation</b>	Undesirable vegetation (herbaceous, trees, shrubs/brush), and noxious weeds as defined in the BC <i>Weed Act</i> or identified as a priority “invasive plant” in local weed committee management plans and referred to in this IVMP as invasive weeds.

<b>Residual</b>	The ability of a herbicide to stay in the environment. A low, moderate, or high residual herbicide is categorized by how fast the herbicide is broken down in the soil or digested in an organism.
<b>Rhizomes</b>	An underground, horizontal stem that contains buds, nodes, and leaves that look like scales.
<b>Selectivity</b>	The degree to which a herbicide kills a range of vegetation or only specific species. Herbicides that control all vegetation are non-selective, while those that control certain types of vegetation are selective. Examples: Triclopyr and picloram selectively control broadleaved vegetation, while glyphosate is non-selective.
<b>Soil residual activity</b>	The herbicide's continuing effects for a period of time after application. Active ingredients in herbicides are classified as having low soil residual activity, moderate soil residual activity, or long soil residual activity. Examples: Glyphosate and triclopyr have low soil residual activity, lasting less than 50 days in the soil, while picloram has long soil residual activity, lasting 3-5 years in the soil.
<b>Toxicity</b>	The degree to which a substance is poisonous.

## Section 1 – Introduction

Within Enbridge, IVM is a long-standing, science-based, decision-making process based on prevention, monitoring, and control. IVM identifies risks from vegetation pests and informs decisions and strategies for their management. The process coordinates the knowledge of problem vegetation biology, the most current best management practices, environmental impact information, traditional ecological knowledge, and newly innovative and available technology to prevent unacceptable levels of problem vegetation damage.

The overall objective is to achieve an acceptable control level using the most appropriate tools, while having the least possible impact and risk to people, property, resources, and the environment.

### 1.1 – System Overview

Enbridge operates a pipeline system that transports natural gas to markets in British Columbia (BC) and the Pacific Northwest. The system is comprised of active and decommissioned pipelines as well as facilities including compressor stations, meter stations, and valve sites that combine to monitor and control gas flow. The gas is transported between the facilities along approximately 2,858 kilometers of transmission pipelines that are buried within RoWs, which cross both Crown and private lands.

This IVMP covers vegetation management activities that relate to its BC Pipeline operations from Huntington (south) to Fort Nelson (north) and the Alberta border near Dawson Creek (east). This area encompasses all past Westcoast/Duke/Spectra-defined regions that include T-South, T-Central and T-North. See Appendix 1 – Map of Areas of Operation.

Besides pipelines, this plan includes vegetation control for the following facilities and infrastructure:

- Rights-of-way
- Valve and meter stations
- Sales tap and crossover stations
- River revetments and dykes
- Access roads, paths, and radio tower sites

### 1.2 – Vegetation Management Requirements

As a responsible operator, Enbridge must maintain or control vegetation within its facilities as well as on its pipeline RoWs for operational, regulatory, and safety reasons.

#### 1.2.1 – Facilities

- Vegetation within or adjacent to Enbridge facilities may restrict system operations and reliability, increase the potential for fire hazards, compromise public and employee safety, and alter the aesthetics of landscaping in more urban areas.

### 1.2.2 – Rights-of-Way

- **Vegetation restricts aerial inspection:** Enbridge relies heavily on helicopters to patrol the vast areas of pipeline RoWs along its system to inspect for operational concerns or third-party impacts to and from the pipelines.
- **To allow access for pipeline maintenance:** Large vegetation impedes access for emergency or routine repairs vital to safe pipeline operations.
- **To help ensure personnel safety:** In remote locations, RoWs are often the only safe landing areas for helicopters in emergencies. Maintained RoWs also facilitate safe travel to remote locations for staff, first responders, and fire crews.
- **To help ensure public safety:** By clearing brush and trees on RoWs, the pipeline route is made visible to the public. This reduces the potential for encroachment and possible damage by third parties.
- **To reduce fire hazards:** Clearing large vegetation off a pipeline RoW reduces heat generated on top of the pipeline in the event of a large fire. A well-maintained pipeline RoW with a low-growing shrub/herbaceous vegetation complex may also act as a fire break to reduce the risk of a forest fire spreading.
- **To manage invasive weeds:** Vegetation targeted by Enbridge includes invasive weeds growing along its RoWs. These are either legislated as noxious under the provincial *Weed Control Act*, or are non-legislated but highly invasive and significantly impact Enbridge operations and the environment.

This IVMP uses Integrated Pest Management principles that involve the selection of treatments that most effectively target specific plant species while minimizing impacts to the environment.

### 1.3 – Term of the Integrated Vegetation Management Plan

The *Integrated Pest Management Act* and *Regulation* include provisions to allow pesticide use to be authorized under a single, comprehensive IVMP. This newly revised 5-year IVMP will replace Enbridge's previous IVMP (April 2015 to March 2020) covering IVM techniques for BC pipeline operations.

The proposed term of this revised IVMP is April 2020 to March 2025. This IVMP was first developed and published in 2005 and has been routinely updated and revised since then.

The Enbridge IVMP is required to ensure:

- Compliance with the *Integrated Pest Management Act and Regulation*
- Public awareness of, and input into, Enbridge's vegetation management program
- Responsible use of herbicides

- Effective implementation of integrated vegetation management programs, using a combination of manual, mechanical, and herbicide techniques; and taking into account land uses, environmentally sensitive areas, and minimizing the use of herbicides

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## Section 2 – Problem Vegetation

Effectively managing undesirable or problem vegetation (including hyper abundant plants) contributes to worker and public safety. It also benefits agriculture, industry, private land, local and Indigenous communities, and the economy.

Non-native species such as invasive weeds impact biodiversity, threaten traditional resources and are costly to provinces, the federal government, private landowners and users, rights holders, communities, and industry. Responsible IVM is critical in establishing safe work areas, complying with regulations, maintaining infrastructure, and preserving agricultural land and natural resources in BC and Canada.

**Problem vegetation** in the context of this IVMP is:

- Undesirable vegetation (herbaceous, trees, shrubs/brush) as identified below and referred to in this IVMP as **undesirable vegetation**.

For the purpose of this plan, “undesirable”, is a reference that applies only in an industrial sense and is applicable only on Enbridge facilities and infrastructure. Enbridge recognizes that many of the species listed below have traditional use value. It is anticipated that the habitats adjacent to any facilities or infrastructure undergoing integrated vegetation management would offer similar, undisturbed populations of species with traditional use value.

- A “noxious weed” as defined in the BC *Weed Control Act* or identified as a priority “invasive plant” in local weed committee management plans and referred to in this IVMP as **invasive weeds**.

### 2.1 – Undesirable Vegetation – Herbaceous

Herbaceous grass and broadleaf species most frequently establish in areas with thin gravel cover or exposed subsoil. The dry, gravel surfaces typical of Enbridge stations provide disturbed conditions where weeds frequently establish. Control of herbaceous vegetation is also required along access roads, through cracked asphalt, and at edges of buildings or along sidewalks in concrete seams.

### 2.2 – Undesirable Vegetation – Trees

Tall-growing tree species growing on Enbridge pipeline RoWs must be maintained or controlled for operational and safety reasons. Tree species of concern may include;

#### 2.2.1 – Deciduous Trees

- Balsam poplar (*Populus balsamifera* ssp. *balsamifera*)
- Black cottonwood (*Populus balsamifera* ssp. *trichocarpa*)
- Choke cherry (*Prunus virginiana*)
- Douglas maple (*Acer glabrum*)





- High-bush cranberry (*Viburnum edule*)
- Prickly rose (*Rosa acicularis*)
- Red raspberry (*Rubus idaeus*)
- Saskatoon (*Amelanchier alnifolia*)
- Soopolallie (*Shepherdia canadensis*)
- Thimbleberry (*Rubus parviflorus*)

Control of shrub species may be selectively prescribed depending on their growth location in the RoW relative to the pipelines. Established shrub species may provide effective low-growing competition against the establishment of tree species on the edges of Enbridge RoWs. However, shrub species and brush must be controlled where it is over and alongside a pipeline.

## 2.4 – Invasive Weeds

Invasive weeds have significant environmental impacts within BC. Preventing their spread is critical since infestations costs millions of dollars each year, and losses are experienced by ranchers, farmers, conservations groups, utility companies, foresters, transportation, governments, and the general public. After habitat destruction, invasive weeds are the second greatest threat to the diversity of natural resources within BC.

Most invasive weeds are introduced plant species from other countries, which have the capacity to establish quickly and easily on new sites. Also, a plant species native to certain regions of BC may occasionally spread to other regions of the province outside of its typical range, exhibiting invasive characteristics in its new environment.

Invasive plants are often very aggressive plants that have no natural predators or pathogens in their new environment to reduce their vigour and spread. Specific impacts of invasive alien plants include the following.

### 2.4.1 – Economic Impacts

- Reduced the yield and quality of agricultural crops, and value of marketable livestock
- Decreased land values
- Increased maintenance costs to public land and utilities, and private property
- Negative impacts to recreational opportunities due to landscape aesthetics

### 2.4.2 – Environmental Impacts

- Increased soil erosion and stream sedimentation
- Displacement of natural grasses and wildflowers, including rare and endangered species
- Destruction of natural habitat for wildlife, birds, fish, and other aquatic organisms
- Increased wildfire hazards

### 2.4.3 – Social Impacts

- Degraded water quality, potentially impacting public health and safety

- Toxicity to humans, pets, livestock, and wildlife
- Introduction of disease and harmful insects
- Reduced visibility on transportation corridors

## 2.5 – Noxious and Invasive Weeds

Certain invasive weed species are legislated within BC as “noxious” within the provincial *Weed Control Act*. The Act defines a noxious weed as “a weed designated by regulation to be a noxious weed, and includes the seeds of the noxious weed.”

The Act states: “Every occupier shall control, in accordance with the regulations, noxious weeds growing or located on land and premises, and on any other property located on land and premises, occupied by him.”

This means that landowners or managers, private companies, utility companies, regional districts and municipalities, and provincial government agencies or anyone else in physical possession of land all have a responsibility to manage invasive weeds in the province.

### 2.5.1 – Designated Noxious Weeds

The *Weed Control Act* currently designates 21 plant species as noxious weeds throughout BC. In addition, many other species are classified as noxious within the boundaries of specified regional districts (as listed in [Parts 1 and 2 of Schedule A](#) of the *Weed Control Regulation*). More than half of these “regional weeds” are designated noxious within regional districts located where pipeline RoWs are managed.

Fact sheets, guidebooks, and web information to aid in the identification and management of noxious weeds are available through the [BC Ministry of Agriculture and Lands](#).

In addition, the [Invasive Species Council of BC](#) (ISC) has an up-to-date field guide of invasive plants.

### 2.5.2 – Non-Legislated Invasive Weeds

Other invasive weed species not designated as noxious under the *Weed Control Act* have spread to areas of the province outside of their native range, causing negative impacts. Control of these nuisance weeds can be controversial since they may provide a benefit or not cause an impact to some land users, while negatively impacting others. Enbridge may manage certain weed species if they prove to be highly invasive and significantly impact Enbridge pipeline operations.

The provincial Ministry of Agriculture and Lands may classify certain highly invasive weeds not currently on the Provincial or Regional District Noxious Weed lists as “Weed Alert” species.

## Section 3 – Prevention

Vegetation management planning and implementation for Enbridge often depends on system design, location, building requirements, and preventive measures that are aimed directly at stopping the initial growth of undesirable vegetation and invasive weeds. These measures are considered and included during the design and construction stages.

Prevention measures are viewed as the first step in reducing the need for herbicides or other vegetation management control methods. Preventive measures are an integral part of Enbridge's control measures. These are typically implemented during site construction and vegetation maintenance to ensure site conditions discourage vegetation and weed growth.

### 3.1 – General Prevention Strategies

Examples of strategies used to prevent the spread of problem vegetation may include:

- **Only using clean equipment:** Ensuring equipment brought into a construction site is clean and free of organic material. Where possible, equipment will be inspected and verified as clean.
- **Seeding of forbs and grasses:** Planting of native grass mixes or plants in specific areas (such as erosion-prone areas) during and post-construction to return the land to equivalent land capability.
- **Removal of topsoil and/or installing aggregate or geo-textile materials:** Done during construction and after site disturbances in site-specific areas (usually facilities) where this treatment is deemed to be beneficial and suppression of all vegetation is required.
- **Exclusion of certain seed mixes:** Within the Fort Nelson First Nation traditional territory, Enbridge will not purchase smooth brome, white and yellow sweet clover, crested wheatgrass, or green foxtail for reclamation seed mixes, and will not purchase reclamation seed mixes if these species are identified in the Seed Certificate of Analysis.

### 3.2 – Prevention of Invasive Weeds

Enbridge is committed to helping prevent the spread of noxious and invasive weeds. Personnel will be provided information to identify the plants. Any observed infestations will be reported to the vegetation manager at Enbridge (Environmental Specialist).

Prior to leaving weed-infested areas or driving off-road into RoW areas for inspection or maintenance work, vehicle drivers will inspect the undercarriage for weeds. This is important for taller-growing species such as perennial sow thistle, scentless chamomile, and Canada thistle.

Surfaces disturbed during construction or weed removal will be seeded to a perennial vegetation cover. Only certified clean seed, free of noxious weeds will be used.

Weed plant material removed from infested sites during vegetation management activities; construction activities, or vehicle inspections will be properly disposed of. Cut plants with mature seed heads will be bagged and sealed prior to disposal in local landfills.

Examples of how to minimize the spread of invasive and noxious weeds include:

- Minimizing construction area disturbance
- Rapid site reclamation
- Preventing use of weed-contaminated construction and reclamation material
- Cutting, bagging, and disposing of seed heads in appropriate landfills (during weed control activities)
- Checking and cleaning undercarriages of vehicles when leaving or travelling through weed infested sites

For further information on local invasive weeds and prevention plans in the operating areas covered in this plan, please visit these websites:

- Cariboo Regional District Web Site, [Invasive Weeds](#)
- [Fraser Valley Invasive Species Society](#)
- Peace River Regional District, [Invasive Plant Program Strategic Plan and Profile](#), 2018
- [Northwest Invasive Plant Council](#)
- [Thompson Nicola Invasive Plant Management Committee](#)

### 3.3 – Prevention of Weeds (Herbaceous Plants)

Preventive measures aimed at stopping the initial growth and spread of undesirable herbaceous plants (weeds) is an important component of the IVM program at facilities. These measures are incorporated into station and building designs prior to construction and are implemented during regular operational and maintenance activities. They include the following.

#### 3.3.1 – Surfacing Materials

Proper selection and installation of surfacing materials at Enbridge facilities is essential for minimizing growth of weeds. Suitable surface materials are installed to the correct thickness and are clean of soil fines that provide growth medium for new weed establishment. Gravel (crushed rock) over geo-textile or mulch are the predominant surfacing materials used within Enbridge stations.

Several measures taken when installing and maintaining surface materials will reduce long-term vegetation management requirements:

- Install clean gravel of suitable thickness when upgrading stations, as thick gravel reduces a weed's ability to penetrate down to the underlying subsoil.
- Control vegetation prior to upgrading gravel.
- Upgrade areas of low gravel created by vehicle traffic, construction, or maintenance activities.

- Restrict snow clearing to vehicle driveways and around piping; replace and re-grade all snow-clearing damage.
- Repair cracks in asphalt and concrete, which are susceptible to weed growth.
- Use landscape fabric and mulches in landscaping around facilities to reduce the growth of weeds.

### 3.3.2 – Reducing Surface Organic Matter

Leaves, needles, cones, branches, and other organic debris deposited or blown onto station gravel from adjacent trees and shrubs will be cleaned up and disposed of. As this material decomposes, it provides growth medium for new weed establishment. A regular fall cleanup on station gravel will help reduce weed growth.

### 3.3.3 – Reducing Selected Organic Matter at Fence Lines

Where possible and with approval from local stakeholders, vegetation will be maintained immediately outside of fences and along access roads, because:

- Large trees and shrubs deposit organic debris into stations, impact station security (by facilitating access over fence), create safety and fire hazards if overhanging too close to equipment, and will overgrow access roads inhibiting site access.
- Low vegetation grows through and entwines in chain link fencing, and provides a seed source for new weed growth on station gravel.
- Heavy vegetation growth can provide cover for other pests, and overgrown vegetation will impact site aesthetics.

### 3.4 – Prevention of Undesirable Trees and Brush

As a first step in the IVM process, Enbridge uses measures aimed at preventing the growth and spread of undesirable trees and brush. These mitigation measures are incorporated during construction and are contained within the site specific Environmental Protection Plans that are developed for all major construction activities. Some of these prevention measures may include:

- Minimizing disturbance at the construction phase.
- Rapid site reclamation.
- Implementing preventive measures during facility construction or operations and maintenance to ensure that site conditions discourage the introduction and growth of trees and brush.
- Reseeding with approved native grasses and forbs.

## Section 4 – IVM Planning

### 4.1 – Vegetation Management Objectives

Enbridge’s obligation to control vegetation on its facilities, pipeline RoWs, and other infrastructure is dictated by federal and provincial legislation, public concerns, operations, safety, and aesthetic values or crop values to adjacent landowners. Enbridge vegetation management objectives are to prevent the growth of problem vegetation that may:

- Impede site access
- Cause unnecessary risks while doing routine RoW maintenance and safety checks
- Impact the facilities or restrict system operations and reliability
- Increase the potential for fire hazards
- Compromise public and employee safety
- Alter the aesthetics of the landscaping around the Enbridge facilities

While achieving the above objectives, Enbridge will:

- Commit to building mutually beneficial long-term relationships with Indigenous communities, landowners, and stakeholders who reside near or conduct activities in close proximity to the company’s system.
- Follow the principles of IVM by designing and implementing a program that integrates manual, mechanical, biological, cultural, grass reseeding, and herbicide treatment with the overall objective of converting plant communities on Enbridge’s RoWs to a composition and structure that is more compatible with RoW safety and operations.
- Pursue consultation that is premised on due diligence, increased understanding, and awareness.
- Be dedicated to the health and safety of all people and animals that have contact with our systems, and to the maintenance of a clean and healthy environment.
- Keep all communications open with the public, with the objective of enhancing the public’s understanding of the link between safety, reliability, and vegetation management.
- Identify and understand stakeholder interests in order to design and implement a program that respects sensitive areas and existing uses.
- Maintain a safe pipeline corridor that will allow for routine and effective aerial pipeline monitoring, the implementation of an effective emergency response plan, and the control of the spread of invasive and noxious weeds.

### 4.2 – Vegetation Management – Planning Overview

Enbridge will manage vegetation in and around its facilities, access road, infrastructure, and RoWs in a professional manner, using but not limited to the following strategies and practices:

- Vegetation management decision-making will be based on site information, including, but not limited to, vegetation inventories, species growth rates, vegetation response to

different treatments, fish and wildlife resources, land ownership, and present and potential uses of the land.

- Employees and contractors will be properly trained in and knowledgeable of vegetation management processes and be able to identify and contribute to opportunities for continuous improvement.
- A complete spectrum of vegetation management techniques will be considered, with the best method applied to each situation.
- A consistent approach to contracting will be established to ensure that the ongoing availability of competent, efficient, and competitive contractors is maintained.
- Vegetation management plans will foster the use of leading-edge techniques and the optimization of resources. Programs will be implemented in a consistent manner, with consideration of individual site variables.
- All programs will be monitored and evaluated to identify opportunities, and as a basis for continuous improvements from year to year.
- All vegetation control projects will have monitoring programs to ensure compliance.
- The IVM program will aim to minimize long-term impacts on the environment, while accommodating other resource users.
- Vegetation management efforts will reduce the chances of plant or tree roots damaging pipeline coating, and reduce fire hazards.

### **4.3 – Stewardship**

Enbridge is committed to providing good stewardship on behalf of its employees, contractors, and neighbors. Good stewardship includes but is not limited to the following,

- Being transparent with the general public, Indigenous peoples, communities, and Enbridge’s employees by explaining the objectives of the work to be done, and providing information about the safest products and optional methods to be used during treatments
- Educating industry and the public about the importance and need for vegetation management
- Helping identify, record, and report invasive plants
- Minimizing disturbance and retaining native plant communities when possible
- Ensuring all equipment is clean when leaving a construction site to avoid spreading invasive weeds



- Collaborating with Invasive Plant Committees and Regional Districts and being a part of a coordinated effort
- Encouraging Reduce, Recycle, and Reuse programs

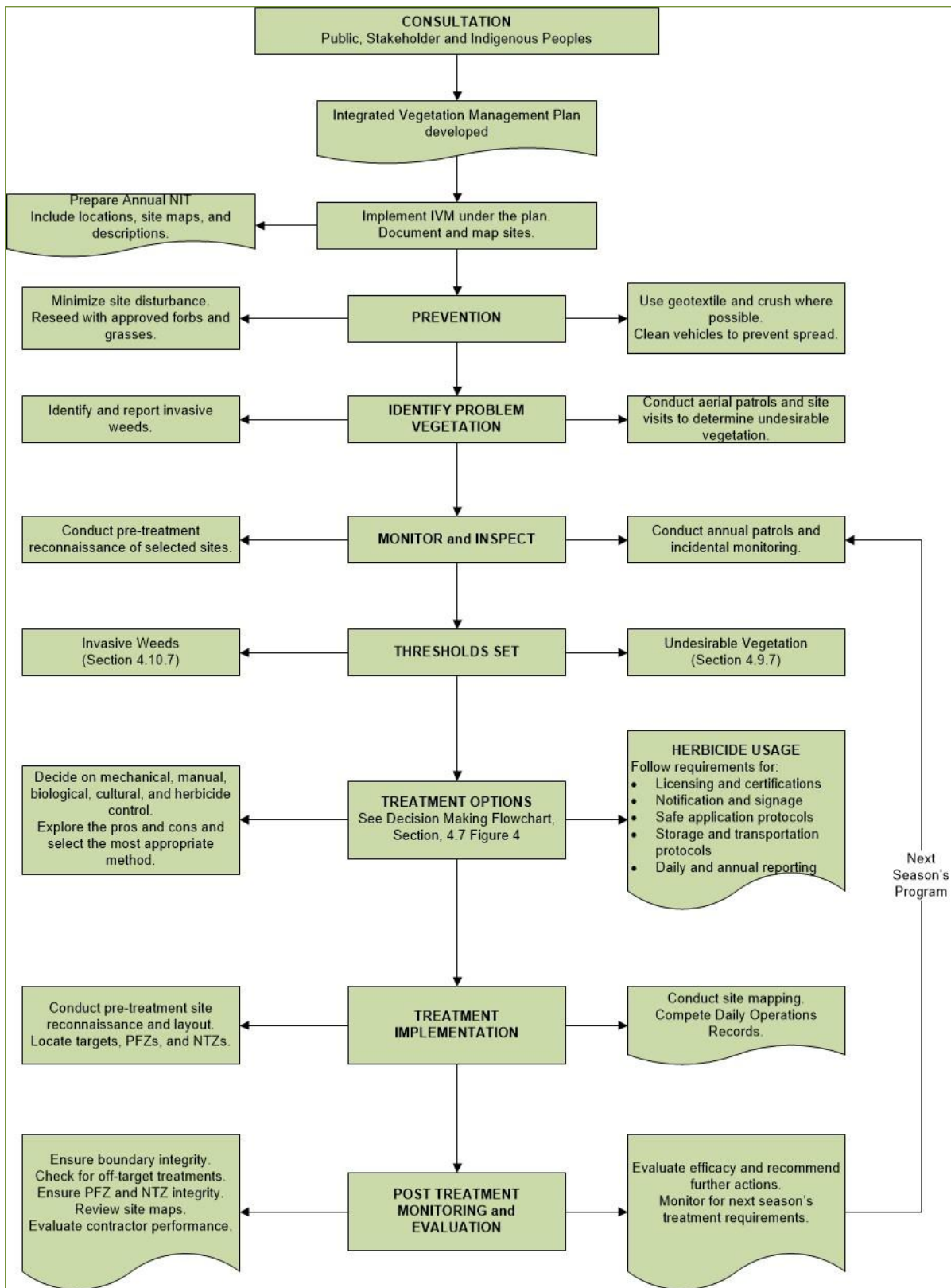
Enbridge recognizes that there is a potential for interaction between the IVM program's activities and sites of cultural importance on the landscape. These sites could take the form of documented archeological locations or locally known sites of cultural importance and traditional land use or ecological value. Enbridge is committed to working with communities and regional land managers to improve awareness of locations of this nature, and to ensure that any proposed activities do not endanger the nature or traditional values of the site. Steps that would be considered may include the following:

- Completing additional assessments of an area in question
- Avoiding mechanized disturbance within mapped archeological sites and receiving appropriate approvals where required from the BC archaeological branch
- Tailoring treatment methods to meet operational requirements without compromising traditional values present at specific locations
- Avoiding herbicide application to known high value harvesting areas that are used for traditional purposes whenever possible

#### 4.4 – Compliance with Regulation

The flowchart in Figure 3 – describes Enbridge's integrated pest management program for the control of problem vegetation as described in Section 5 – of this IVMP. The flowchart also follows section 58 of the *Integrated Pest Management Regulation (IPMR)*, which describes required information and procedures for the IVMP as follows:

- Prevention – section 58 (2)(a)
- Identification – section 58 (2)(b)
- Monitoring – section 58 (2)(c)
- Treatment thresholds – section 58 (2)(d)
- Treatment options – section 58 (2)(e)
- Evaluation – section 58 (2)(f)



**Figure 3 – Implementing the Enbridge Integrated Pest Management Plan**

## 4.5 – Integrated Vegetation Management

Integrated vegetation management (IVM) involves the use of several techniques to control vegetation on Enbridge RoWs and facilities. The selection of management techniques depends on the species to be targeted, treatment timing, land use, and environmental sensitivity. Since a wide variety of vegetation species and invasive weeds may grow in one area, a single technique is not always suitable to treat all species. An IVM approach combining different techniques is generally most effective when tailored to the vegetation concerns and conditions at each site.

For example, a repetitive cycle of only manual or mechanical cutting and the resulting re-sprouting often results in an increasing density of tall-growing species, therefore requiring many visits to a specific location. These increased visits also increase the footprint on the environment. However, with the site-specific use of herbicides in combination with physical control methods, it is possible to effectively establish a stable, low-growing plant community that will not restrict RoW access or obscure the identification and location of pipeline and infrastructure markers and warning signs.

## 4.6 – Treatment Thresholds

A treatment threshold is a level of unwanted vegetation, (expressed as a percentage of the total area) that requires vegetation management action. If problem vegetation is left above selected thresholds, it could pose a threat to safety and cause increased environmental damage

Treatment thresholds will vary, since vegetation control is more critical for certain areas than others. In some instances, the level of vegetation coverage visible on the surface cannot be used to determine if the treatment threshold has been reached. The potential impacts of the roots of a tall tree or other brush species compromising the integrity of the pipelines must be considered when determining if/when the threshold has been reached. As a result, the level of control required is determined by a combination of concerns or a single concern as listed below:

- Vegetation density
- Species of vegetation (invasive weeds, trees, brush)
- Regulatory requirements
- Landowner interests
- Public or employee safety
- Associated environmental features

### 4.6.1 – Facility Treatment Thresholds

**Table 1 – Facility Treatment Thresholds**

Area of Interest in Facilities	Threshold (% problem vegetation)
Adjacent to any equipment and buildings	0% problem vegetation cover
Vehicle parking areas	5% problem vegetation cover

Area of Interest in Facilities	Threshold (% problem vegetation)
Vacant areas within facilities not occupied with equipment	5% problem vegetation cover
Outside facility fences, and on access roads and corridor	10% problem vegetation cover

**4.6.2 – Right-of-Way Treatment Thresholds**

In the case of Enbridge RoWs and their associated or adjoining infrastructure, there is no tolerance for any type of vegetation that has the potential of degrading the pipelines or any of the infrastructure. The traditional percentage-based threshold model may not be applicable. The decision to initiate treatments is based on the presence of target vegetation that has the ability to compromise the integrity of any pipeline or associated equipment, injure adjacent croplands, or have other negative environmental impacts.

Treatment decisions must also take into account conditions off and adjacent to RoWs and infrastructure, and the probability of treatment success given the presence and status of targeted vegetation off Enbridge-managed properties. Treatment decisions may also consider public safety, species growth rates, and social, economic, regulatory, and environmental considerations.

The *National Energy Board Onshore Pipeline Regulations* and the *BC Wildfire Regulation* are examples of legislation that have a mandate for vegetation management in certain areas or for specific reasons. However, neither of these legislative requirements specifies thresholds based on the amount of vegetation present. To keep compliant with this legislation, Enbridge must ensure it has appropriate treatment thresholds based on field assessments of facilities and RoWs. These requirements will inform site-specific treatment decisions.

**4.7 – Treatment Decision-making**

IVM programs must be proactive and based on measurable data. Well-integrated programs use several approaches to reach a final desired outcome. Many options can be used, such as cutting, mowing, biological, and cultural controls. Herbicide application can also be used in conjunction with one of these options or on its own. These options all contribute toward managing invasive weeds and other undesirable vegetation on areas such as utility RoWs, roadsides, forestry land, and pipelines. Each individual site requires a unique vegetation management plan and a solution.

The flowchart in Figure 4 – describes the process by which an Enbridge representative will make vegetation management decisions. This is an important step to ensure that the protection of the environment and safety of workers are carefully considered.

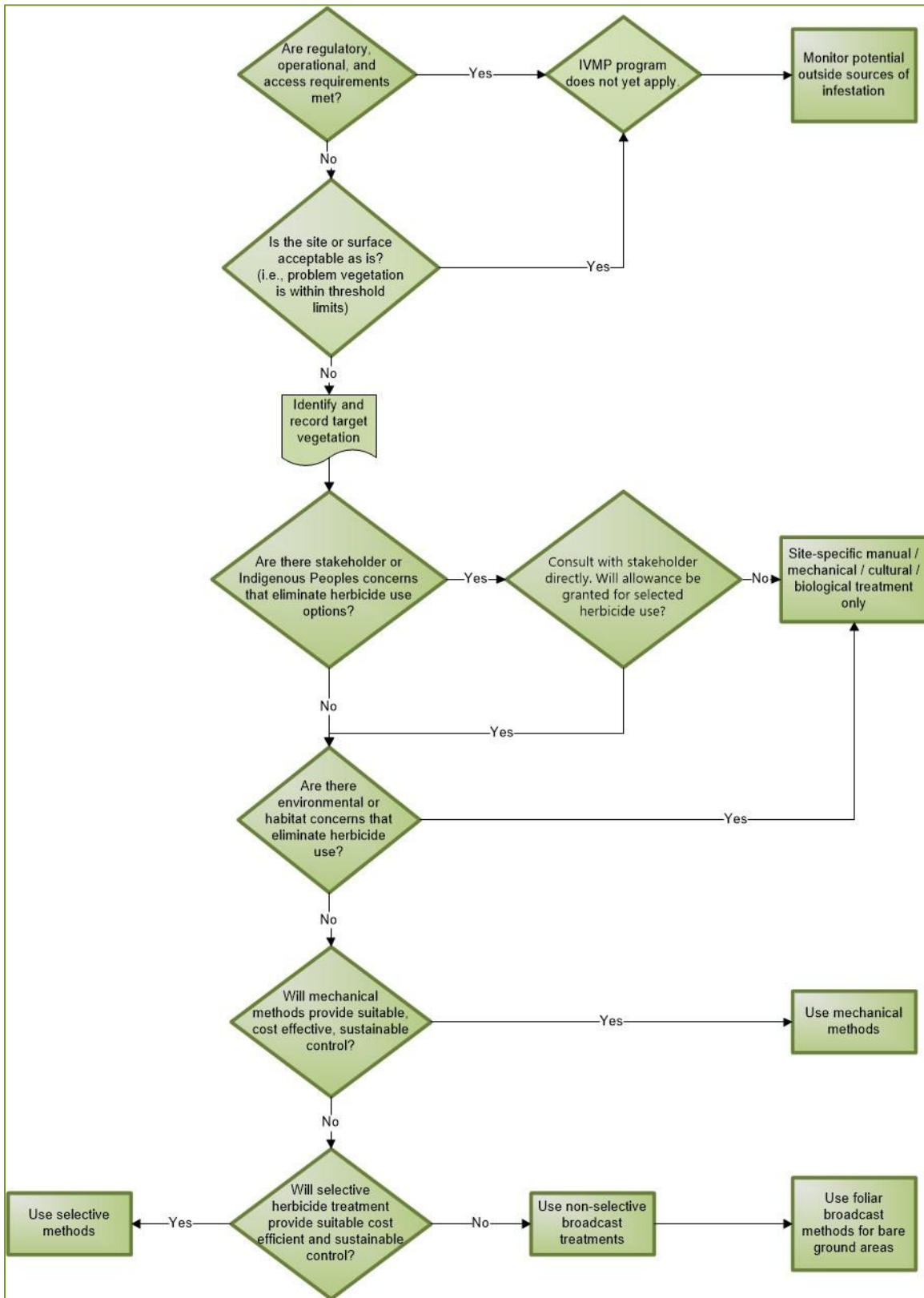


Figure 4 – Treatment Decision-making Flowchart

## Section 5 – IVM Treatment Methods

### 5.1 – Undesirable Vegetation: Herbaceous Plants

Vegetation management techniques used at Enbridge facilities for **herbaceous vegetation** are classified as physical, natural, and herbicidal.

#### 5.1.1 – Physical Treatments

##### Powered Mechanical Trimming

This common treatment is used to remove herbaceous vegetation growing on gravel areas, in cracks in asphalt or concrete, on landscaped areas, and along access roads.

A two-step procedure within gravel areas that combines cutting with herbicide application effectively manages the growth of problem vegetation while removing organic matter. Herbaceous vegetation is cut down, raked (along with dead organic matter), bagged, and removed off site for disposal. The cut portions of the vegetation at the gravel surface may then be treated with herbicide.

##### Hand Pulling

This technique manages sporadic infestations of weeds growing on gravel and landscaped areas. Hand pulling is effective on certain species of herbaceous vegetation only if the infestations are of a manageable size and maturity.

Some species are difficult to hand pull, especially if the plants are young (e.g., juvenile grass species). Any soils exposed after hand pulling are immediately covered with existing gravel.

##### Selective Slashing

Manual or mechanical treatment has been successful at managing herbaceous species using tools such as brush saws and weed trimmers. Herbaceous vegetation is most commonly found encroaching outside of fence lines. Selective slashing of certain herbaceous species is combined with herbicide treatments to reduce re-sprouting.

#### 5.1.2 – Natural Treatments

Natural treatments may include the introduction of biological agents (insects, mammals) that consume the target species.

#### 5.1.3 – Herbicide Treatments

Several herbicides are recommended for control of herbaceous broadleaf weed and grass species. (See Section 5.4 – and Table 4 – )

## 5.2 – Undesirable Vegetation: Trees and Brush

Vegetation management techniques used at Enbridge facilities for **undesirable trees and brush** are classified as mechanical, natural, and herbicidal. Biological controls are available but not widely used.

The control of tree and brush species is essential along the majority of Enbridge transmission RoWs. Control strategies used to manage woody species will vary depending on the species, size, and vicinity to the pipeline.

### 5.2.1 – Manual and Mechanical Controls

#### Selective Slashing

Slashing is a manual vegetation management technique involving the removal of vegetation using hand tools including brush saws, chain saws, weed trimmers, axes, and machetes. This technique can be used selectively to remove problem vegetation without disturbing adjacent and valuable competitive vegetation.

#### Mowing / Blading

Mowing and blading are the traditional tools for managing pipeline RoW vegetation. Within remote areas, undesirable woody vegetation is cut with wheel or track-mounted heavy-duty cutters (rotary or flail) attached to skidders. In frozen conditions, a bulldozer blade can be used to shear shrub and small trees from the surface (blading). Past mechanical treatments on Enbridge RoW have involved using combinations of hydro-axe, hand slashing, and blading/mowing.

#### Pruning

Pruning involves the removal of selected species encroaching alongside facilities using proper arboriculture practices. Removal of larger trees and brush may be required adjacent to facilities to improve site safety, security, and aesthetics.

### 5.2.2 – Natural Treatments – Plant Competition

The use of plant competition is one of the cheapest and most useful weed control practices. A well established, low-growing mat of grass and forbs species will commonly prevent growth of woody vegetation. Shade-intolerant deciduous species such as balsam poplar, aspen poplar, alder, and birch, which re-sprout heavily following slashing, require open, sunny conditions for optimal growth, and grow poorly, if at all, in shady conditions. These open conditions are typical of utility RoWs.

By selectively treating the woody vegetation without disturbing the low-growing grasses and forbs, long-term reductions in growth or the eventual control of woody vegetation can be achieved.

Plant competition can also be effectively used by leaving shrub species on the RoW edges, away from the pipelines. The perimeter shrub layer will effectively out-compete large canopy tree suckers growing along the edges of the RoW, permitting better aerial visibility for inspections.

### 5.2.3 – Herbicide Treatments

Herbicide treatment involves the use of various herbicides techniques to inhibit growth and prevent re-sprouting of trees and brush within or adjacent to Enbridge facilities and RoW. (See Section 5.4 – and Table 4 – .)

### 5.2.4 – Biological Controls

Biological control techniques often use control agents such as fungi or insects that specifically target certain problem undesirable species. The only biological control agent currently available in Canada for the control of alder species is Chontrol Peat Paste (the fungus *Chondrostereum purpureum*). This product inhibits re-growth from cut stumps of Red and Sitka alder. by colonizing and decaying the stump of the tree or brush. The bio-control agent is usually applied during the active growing season when conditions are beneficial for fungal growth.

### 5.2.5 – Monitoring of Undesirable Trees and Brush

Monitoring of vegetation conditions on all RoWs will be assessed by Enbridge staff during regular aerial and ground operational patrols and safety inspections. These are completed at least once annually.

- Post-treatment inspections of existing problem vegetation will highlight areas for future investigation and potential treatment.
- Treatment areas on each pipeline RoW will be prioritized according to the size (stem height) and amount (stem density) of problem woody vegetation.
- Long-term treatment schedules and budgets will be projected according to the priority treatment areas to ensure that only efficient, cost-effective treatments are implemented, while respecting environmental impacts and Enbridge's overall environmental footprint.
- Appropriate treatments will be used to control problem vegetation on steep slopes and in environmentally sensitive areas (ESAs).
- Problem woody vegetation on all other sections of Enbridge RoWs will be treated using a combination of mechanical mowing and herbicide applications.
- Suitable buffer zones will be maintained around PFZs and ESAs. Vegetation within these areas will be treated using appropriate techniques. Buffers while using herbicides will be as per Table 5 – and Section 6.2 – of this IVMP.



### 5.2.6 – Treatment Thresholds and Priorities for Undesirable Trees and Brush

Treatments for undesirable trees and brush will be prescribed and priorities set based on the following table of thresholds and priorities.

Density of vegetation numbers represent averages. Actual treatment type decisions and implementation will focus on annual vegetation condition changes and growth on the RoW, with a focus to reducing environmental risk and treatment cost.

**Table 2 – Treatment Thresholds and Priorities for Undesirable Trees and Brush**

Average Stem Height (m)	Stem Density (stems per hectare)		
	0 – 1500 (lower priority)	1500 – 4000 (medium priority)	4000+ (high priority)
< 2.0	Selective	Selective or basal	Broadcast
2.0 – 3	Selective	Broadcast	Broadcast
3 > 6	Selective or basal	Mow	Mow
> 6	Manual / mechanical	Manual/ mechanical	Manual/ mechanical

The IVM program for undesirable trees and brush will be implemented as follows:

- Priority treatment areas will be mowed or sprayed.
- Mowing will be performed generally during the winter months when the RoWs are accessible to heavy-duty mowers.
- Disturbance to the low growing vegetation will be minimized.
- Two to three seasons after mowing, re-growth may be treated within a planned herbicide use program to reduce re-sprouting.
- Basal bark treatments may be made during optimal times.

Combining herbicide applications with mowing/mechanical trimming and cutting will greatly reduce the number of vegetation treatments required over the long term. In comparison, if mowing alone is used to control woody vegetation, approximately five mechanical treatments will be required over a 25-year period. Overall levels of woody vegetation on the RoWs will increase despite repeated treatments, as will the overall environmental footprint from Enbridge’s activities.

Herbicide application will reduce levels of deciduous re-sprouting, allowing the competitive herbaceous and grass layer to provide long-term competition against the woody vegetation.

## 5.3 – Invasive Weeds

The most effective way to control invasive weed species and noxious weeds is an IVM program that uses preventive measures (cleaning equipment, re-vegetating exposed soil, purchasing clean seed; see Section 3 – ) and physical measures (weed trimming, mowing), in conjunction with herbicides. This is recommended by organizations that Enbridge works in conjunction with.

Enbridge takes responsibility for noxious weed control where its pipelines cross Crown land. In areas where invasive weed infestations have been identified on RoWs, Enbridge will:

- Ensure all environmental concerns are addressed prior to any treatment.
- Review all appropriate disposal methods for invasive weeds.

The Ministry of Agriculture and regional weed committees have specific recommendations for controlling each provincially or regionally designated noxious weed species.

In B.C., noxious and invasive weed control has been designated for enforcement either provincially or within the boundaries of specific regional districts. This includes a number of weeds designated as noxious within the boundaries of the Peace River Regional District. Most noxious weeds within this region are problematic to farmers, are extremely competitive with crops, and are difficult and costly to control.

### 5.3.1 – Physical Treatments

Physical treatments recommended for controlling invasive weeds include a combination of hand pulling, weed trimming, mowing, and herbicides. The selection of techniques depends on the size of the weed infestation and the weed species of concern.

Enbridge regularly uses mowing to maintain vegetation along their transmission RoWs. Mechanical control is usually coordinated on a local level and at times may be in conjunction with herbicide treatments or biological releases to improve invasive weed control. Smaller invasive weed infestations may be controlled using manual hand removal or cutting.

#### Hand Removal and Manual Cutting

Enbridge uses hand pulling and hand cutting of selective invasive weed plants, or mechanical cutting of small weed infestations, specifically for:

- New sites with only a few weed plants where it is advantageous to stop seed spread
- Sites close to water, wells, and other riparian areas
- Sites with concerns regarding damaging adjacent plants
- Sites where biological control is not an option
- Sites, where feasible, that may have significant local Indigenous rights, may be culturally significant, or where landowners are opposed to the use of herbicides

- Site conditions that preclude the use of herbicide treatment, or where the window of opportunity to use herbicides is not present at treatment time (e.g., conditions such as weather or plant growth that are not within herbicide control parameters)

## Mowing

Mowing is the predominant technique used for managing RoW vegetation on the Enbridge BC pipeline. However, mowing is not always effective in managing invasive weeds growing amongst other vegetation, and in some cases, can enhance infestations. Although mowing usually reduces seed production, invasive weeds are often at least somewhat resistant to mowing because of their propagation characteristics and ability to produce secondary flowering below the original cutting height. Mowing with or without partial plant pickup may also aggravate some weeds to propagate, given the redistribution and continual soil disturbance.

To improve and enhance existing mowing practices, Enbridge has worked with mowing contractors to update existing mowing standards and practices to reflect the objective of reducing the spread of invasive weeds to meet invasive weed control strategies.

### 5.3.2 – Natural Controls

#### Establishing Competitive Vegetation

Invasive weeds will invade areas that can provide suitable habitat for their short or long-term survival. The most susceptible areas for weed invasion are soils disturbed following construction or vegetation management activities.

Post disturbance, these soils will be seeded to a perennial vegetation cover using grasses and legumes to provide a competitive cover to protect against invasive weed establishment. Low-growing desirable plant species will be encouraged where feasible.

Herbicide treatments may be required in combination with the seeding or planting to effectively inhibit growth of aggressive weed species and allow the desirable competitive vegetation to establish.

#### Seeding Disturbed Areas

Invasive weeds commonly invade dry, disturbed soils without a healthy, perennial vegetation cover. This includes soils disturbed through road or recreational development, land clearing for urban development including housing and utility RoW construction, grading, agriculture, or timber harvesting.

Soils disturbed during construction or weed removal should be seeded as soon as practical after disturbance to discourage the establishment and spread of invasive weeds, while reducing erosion.

## Grazing

Grazing is a technique for managing RoW vegetation on the Enbridge BC pipeline, but used in very localized circumstances. While this technique might not be the most effective for managing invasive

weeds growing amongst other vegetation on the RoW, it may be more acceptable to local rights holders or stakeholders. In some cases, it may be very effective overall once environmental, social, and economic impacts are considered.

### 5.3.3 – Herbicide Treatments

Enbridge's general policy is to use spot and selective treatment with herbicides, as opposed to treating the entire RoW to effectively target problem invasive weed species, while minimizing impacts to other desirable vegetation. Contractors are encouraged to use herbicides that are site or species-specific and are used in a rotation with other active ingredients to prevent herbicide resistance.

For all sites where herbicides will be applied, containment and treatment areas are determined for each plant species. Where it is safe to apply herbicides, targeted plants are treated with the intent of eliminating all plants of that species. Herbicides will not be applied more than 1.5m from a targeted plant or weed species (IPMR s. 77(1)). Highly residual herbicides are not selected for sites where there is a potential for soil movement, shallow aquifers, or a high concentration of coarse textured soil. (See Section 5.4 – Herbicide Treatments)

On sensitive sites where it is not practical to use herbicides, other treatments to eliminate or reduce further seed production and spread will be used.

### 5.3.4 – Biological Controls

The release of biological control agents for management of noxious weeds has been extensively used within B.C. since the early 1950s. The agents, predominately insects, are captured (normally from a noxious weed's native environment) and screened to ensure they will attack and weaken only the targeted species. They reduce the vigour of the weed and suppress the plants' competitive ability against desirable plant species.

Biological control insect releases are normally only used for weed management at large sites with a high density of noxious weeds, such as fields and areas that include adjacent property where there is a cooperative effort to control weeds. The size of the weed infestation must be large enough to support the insect population, and the site itself must be suitable habitat for the insect species. This method is expensive and labour intensive and is not usually effective in eliminating weed populations. However, it is effective in reducing growth and spread of weeds when used in combination with other IVM techniques (prevention, physical controls, seeding, and herbicide applications).

At this time, several biological control agents are available in Canada for the control of invasive weed species. These agents are distributed under government programs and on private and provincial land. Enbridge will contribute to research and use of these biological insects in the years to come. A complete list of currently approved biological control agents within B.C. can be viewed at this [government website](#).

### 5.3.5 – Treatment Priorities for Invasive Weeds

Enbridge places a high priority on controlling invasive weeds in its facilities and on transmission RoWs. These are the major RoWs transecting from the south to the north of the province, and if not properly maintained, they could be vectors for weeds spreading to other areas within BC.

Enbridge works closely with inter-agency weed committees to set priorities in a co-operative manner. The priority with which invasive weeds along Enbridge’s RoW and facilities will be controlled under this IVMP will depend upon the invasive weed species of concern and the level of infestation within an area. Both factors must be taken into account to prioritize whether weed control treatments are required. Control of a specific weed species in an area already heavily infested may be of low priority. However, control of the same weed species in a newly infested area will be critical to prevent further spread.

Table 3 – sets out the priority under this IVMP to control specific weed species (1) in areas where infestation of a weed species is high, and (2) in newly invaded areas. High infestation areas are sites where a given weed species has established over several growing seasons and is present on properties other than the RoW or facilities. Enbridge vegetation management budgets and control measures are generally directed toward invasive weed infestations of high priority according to *Weed Act* requirements and local invasive weed group coordinated efforts.

**Table 3 – Priority Invasive Weed Control**

Priority	Purpose or Intent	Objective
<b>1</b> <b>Extremely High Risk</b>	To stop the spread of newly invasive weeds threatening currently uninfested, highly susceptible areas.  This priority also includes sites that are threatening a large neighboring economic base – for example, seed and other high value crops – as well as regions with a large area of habitat that is deemed to be ecologically at risk.	Eradication of all targeted invasive plants
<b>2</b> <b>High Risk</b>	To stop the spread of listed invasive weeds threatening currently uninfested, highly susceptible areas.  This priority also includes sites that are threatening a large neighboring economic base – for example, seed and other high value crops – as well as regions with a large area of habitat that is deemed to be ecologically at risk.	Containment of all targeted invasive plants  Eradication where feasible (Goals will vary depending on location, such as Northeast Region of BC)

Priority	Purpose or Intent	Objective
<b>3</b> <b>Moderate Risk</b>	To stop invasive plants that pose a moderate risk from invading and spreading into undisturbed sites. These plants pose a threat to areas deemed ecologically at risk within the region.  To stop enlargement of infested sites in highly susceptible areas (must have a reasonably good expectation of control)	Containment, but not managed by Enbridge (level of treatment depends on level of control on adjacent lands)
<b>4</b> <b>Low Risk</b>	To stop invasive plants that pose a moderate risk from invading and spreading into undisturbed sites.	Some level of containment, if required and if adjacent landowners / managers trying to stop further spread

## 5.4 – Herbicide Treatments

Herbicide treatment involves the use of herbicides and techniques to inhibit growth of problem vegetation, such as trees and brush within or adjacent to Enbridge facilities and RoW. The selection of a particular herbicide is generally determined by the following:

- Environmental characteristics
- Soil residual activity
- Health and safety
- Mode of action
- Selectivity

Herbicides approved for Enbridge are of low toxicity and are categorized by the selectivity of the product, application method required, duration in which the herbicide is retained within the soil, and environmental safety.

Many selected herbicide products may have the identical active ingredient but have a distinctive PCP number; these herbicides are considered equivalent and may also be used under this IVMP. See Table 4 – below.

Recommended label rates will be used to selectively target each invasive weed, herbaceous, or deciduous species. Additional information about these active ingredients or products, including their labels and material safety data sheets (MSDS) can be accessed at these websites:

- [www.belchimcanada.com](http://www.belchimcanada.com)
- [www.corteva.ca](http://www.corteva.ca)
- [www.univarsolutions.com](http://www.univarsolutions.com)

- [www.cropscience.bayer.ca/](http://www.cropscience.bayer.ca/)
- [www.agro.basf.ca](http://www.agro.basf.ca)

**Table 4 – Approved Herbicides Properties and Use**

Active Ingredient	Where Applied	Soil Residual Activity*	Selectivity (toxicity to non-target species)
2,4-D	Plant foliage	Low	Selective
Aminocyclopyrachlor	Plant foliage	Low	Selective
Aminopyralid	Plant foliage	Low	Selective
Chlorsulfuron	Plant foliage	Moderate	Selective
Chondrostereum purpureum	Cut stump (biological)	Low	Selective
Clopyralid	Plant foliage	Low	Selective
Dicamba	Plant foliage	Low	Selective
Dichloroprop-P (2,4-DP)	Plant foliage	Low	Selective
Diflufenzopyr	Plant foliage	Low	Non-selective
Diuron	Soil	Moderate	Non-selective
Flumioxazin	Plant foliage and soil	High	Non-selective
Fluroxypyr	Plant foliage	Low	Selective
Glyphosate	Plant foliage	Low	Non-selective
Imazapyr	Plant foliage and soil	Moderate	Non-selective
Indaziflam	Pre-emergence	Moderate	Selective
MCPA	Plant foliage	Low	Selective
Mecoprop	Plant foliage	Low	Non-selective
Metsulfuron-methyl	Plant foliage and soil	High	Selective
Methyl and Ethyl Oleate	Plant foliage	Low	Adjuvant/Surfactant
Mineral Oil	Plant foliage and stem or stump	Low	Adjuvant/Carrier

Active Ingredient	Where Applied	Soil Residual Activity*	Selectivity (toxicity to non-target species)
Picloram	Plant foliage and soil	High	Selective
Pyroxasulphone	Pre-emergence	High	Non-selective
Saflufenacil	Plant foliage and soil	High	Selective
Siloxylated Polyether	Plant foliage	Low	Adjuvant/Surfactant
Triclopyr	Plant foliage and stem or stump	Low	Selective

\* **Low** generally refers to soil activity less than 40 days; **moderate** generally refers up to one year; and **high** generally refers to greater than one year.

#### 5.4.1 – 2,4-D

This herbicide group covers a great number of materials that consist of phenoxyacetic (hormone) compounds. They are selective depending upon rate and species, and are formulated to rapidly penetrate the waxy covering of plants. As a group, they are of low toxicity to humans and animals and are found in many herbicide products including **Tordon 101**.

2, 4-D persists in soils for an average of 1-4 weeks. The addition of 2, 4-D in combined products extends the control spectrum to cover a greater number of woody vegetation species.

#### 5.4.2 – Aminocyclopyrachlor

The active ingredient aminocyclopyrachlor is found in the herbicide products **Truvis** and **Navius VM**. Products with this a.i. are most widely used for the treatment of noxious and invasive weeds, as well as many other broadleaf weeds. Navius VM is also used for the control of brush and woody plants on RoWs, roadsides, industrial sites, and other non-crop areas.

#### 5.4.3 – Aminopyralid

Aminopyralid controls a number of noxious and invasive weeds, such as Canada thistle, knapweed, and many others. It is generally applied to the plant foliage. Aminopyralid is found in the herbicide products **Sightline**, **ClearView**, and **Milestone**.

#### 5.4.4 – Chlorsulfuron

The active ingredient chlorsulfuron is a non-selective herbicide for post-emergent control of annual weeds by both foliar and root uptake, on RoWs and non-crop industrial sites such as compressor stations. This active ingredient is found in the herbicide products **Telar** and **Truvis**. It is a wettable granule that is mixed in water and applied by ground application for control of broadleaf weeds, including many terrestrial and riparian invasive and noxious weeds.



#### 5.4.5 – *Chondrostereum purpureum*

This biological control agent is a fungus that inhibits re-growth from cut stumps of Red and Sitka alder by colonizing and decaying the stump of the tree or brush. It is usually applied during the active growing season when conditions are beneficial for fungal growth. **Chontrol Peat Paste** is the only biological control agent currently available in Canada for the control of alder species.

#### 5.4.6 – Clopyralid

The active ingredient clopyralid is a selective herbicide that which controls difficult noxious weeds such as knapweed, Canada thistle, perennial sow thistle, and scentless chamomile. Clopyralid is found in the herbicide products **Transline** and **Lontrel 360**, which selectively control broadleaf weeds without damaging surrounding grasses. Clopyralid breaks down within soils over several months.

#### 5.4.7 – Dicamba

The active ingredient dicamba is a selective, post-emergent herbicide generally used to control herbaceous broadleaf invasive plants. However, it is also used for some brush species. It has low to moderate soil residual activity and provides a wide spectrum of broadleaf control on RoWs and rangelands, as it does not affect established grasses. Dicamba is found in several herbicide products such as **Vanquish**, **Overdrive**, and **Banvel**.

#### 5.4.8 – Dichloroprop-P (2,4-DP)

Dichloroprop is a chlorophenoxy herbicide similar in structure to 2,4-D that is used to kill annual and perennial broadleaf weeds. As with 2,4D it is selective depending upon rate and species. It is formulated alone in products such as Estaprop XT and is also a component of many common weed killers. It is used in many non-crop applications such as landscaping, roadsides, utility and railway rights of way and it is also used for brush control.

#### 5.4.9 – Diflufenzopyr

The active ingredient diflufenzopyr is a selective herbicide for post-emergent control of annual and perennial weeds, invasive plants, and shrubs by foliar application. It is used on RoWs and non-crop industrial sites such as compressor stations, tank farms, pumping stations, etc. It is found in the herbicide product **Overdrive**.

#### 5.4.10 – Diuron

At higher rates, this active ingredient is used as a soil sterilant; at lower rates, it is used as a selective pre-emergent herbicide for seedling weeds and grasses in alfalfa; dandelions are resistant. Diuron works by upsetting photosynthesis within the plant. It requires moisture to move the chemical into the root zone. It is non-corrosive and non-flammable. The diuron product **Karmex** can only be used on facility sites and not on RoWs due to its residual nature.

#### 5.4.11 – Flumioxazin

Flumioxazin is used in the non-selective control of vegetation as a pre-emergent application. This residual chemical stays active in the soil for approximately one growing season and can help prevent new growth, as well as stopping any current growth on the application area when mixed with glyphosate products. Product names include Valtera, Payload. These products are useful when herbicide resistance is a concern.

#### 5.4.12 – Fluroxypyr

Fluroxypyr selective herbicide is for the control of annual and perennial broadleaf weeds and woody brush on-farm non-cropland and other non-cropland areas including industrial sites, non irrigation ditch banks, rights of way, pine plantations and conservation reserve program (CRP) locations. Fluroxypyr is a member of the pyridine class of herbicides and induces an auxin-type response in susceptible annual and perennial broadleaf weeds (auxin being a type of plant growth hormone).

#### 5.4.13 – Glyphosate

The active ingredient glyphosate is effective for controlling re-sprouts of certain deciduous tree species. The herbicide is applied to the cut stump immediately after slashing. “Hack and squirt” in the cut frill of a tree in a liquid formulation is also used.

Glyphosate is also used for herbaceous and invasive weed species. Glyphosate is non-selective and has no or very little residual activity in the soil. It binds tightly to all types of soils independent of the levels of organic matter, silt, clay, and soil pH. It is found in many different product formulations from various manufacturers such as Bayer, Corteva Agri-Science and TeraGro (examples; VP480, Roundup, Weed-Master etc).

#### 5.4.14 – Imazapyr

The active ingredient imazapyr is used to control most broadleaf weeds and annual and perennial grasses. It is applied post-emergence once the plants have had time to sprout. Imazapyr is translocated throughout the plant and plant growth stops almost immediately after application. It is moderately residual and can last in the soil for season long control for certain perennial plants. Imazapyr is found in the herbicide product **Arsenal**.

#### 5.4.15 – Indaziflam

The active ingredient indaziflam is used for pre-emergent control of annual grasses and broadleaf weeds in non-crop areas such as utilities, RoWs, industrial sites, and roadsides. It is most effective when applied to sites prior to weed germination and needs to be applied only once per season. Mixing it with glyphosate can enhance its performance and provide a wide spectrum of weed control. Indaziflam is found in the herbicide product **Esplanade SC**.

#### 5.4.16 – MCPA

The active ingredient MCPA is most often used in agricultural applications. It is also used in the treatment and control of noxious and invasive weeds in and around oil and gas lease sites that are often adjacent to cropland and farmer terrestrial food and feed crops. MCPA controls many broadleaf weed species and has low residual activity in the soil. It is found in the herbicide product **MCPA Ester 600**.

#### 5.4.17 – Mecoprop

Mecoprop – Mecoprop (also known as methylchlorophenoxypropionic acid and MCPP) is a common general use herbicide found in many household weed killers and "weed-and-feed" type lawn fertilizers. It is primarily used to control broadleaf weeds. It is often used in combination with other chemically related herbicides such as 2,4-D, dicamba, and MCPA. Commonly used in turf and landscape application, it has also been included in some cereal grain formulations. This herbicide is used in conjunction/rotation with other group 4 herbicides to reduce herbicide resistance. It is included as an Active Ingredient in products such as Trillion and Par 3.

#### 5.4.18 – Metsulfuron-methyl

The active ingredient metsulfuron-methyl is used as a selective herbicide for post-emergent control of annual and perennial weeds, invasive plants and shrubs by foliar application, and on RoWs and non-crop industrial sites such as compressor stations, tank farms, pumping stations, etc. It is found in several herbicide products, including **ClearView**, **Sightline**, **Navius VM**, and **Escort**. The latter is a dry-flowable granule to be mixed with water.

#### 5.4.19 – Methyl and Ethyl Oleate

Methyl and Ethyl Oleate (esterified vegetable oil) is the primary ingredient found in Hasten NT. The product is used as an adjuvant for chemicals that do not have surfactants/adjuvants in their formulations. These adjuvants are included to help enhance the effectiveness of the herbicide mixture upon contact with targeted species. Adjuvants generally help the chemicals stay on the selected vegetation and help the chemicals enter the vegetation by helping them "stick" longer on the plant surface.

#### 5.4.20 – Mineral Oil

Mineral oil (or Basal Oil) is used as a carrier and mixed with Triclopyr for some kinds of selective stem applications to woody brush. The oil base carrier helps the Triclopyr penetrate the bark and enter into the cambial layers of the stems

#### 5.4.21 – Picloram

The active ingredient picloram is a selective herbicide commonly used to treat broadleaf tree and shrub species on utility RoWs. Its effectiveness is largely attributed to its selective nature. Grass species are generally tolerant to this active ingredient and broadleaf weeds can be selectively treated without damaging the surrounding grasses.

Picloram reduces the growth of broadleaf weeds to a stage at which the grass species can effectively provide competition. It attaches to organic matter in surface soil layers, which restricts its movement deeper into the soil. It can persist for a number of years in certain soils providing long-term control against noxious and invasive weeds. In comparison, 2, 4-D persists in soils for an average of only 1-4 weeks. The addition of 2, 4-D extends the control spectrum to cover a greater number of woody vegetation species.

Picloram is found in the herbicide products **Tordon 22k** and **Tordon 101**.

#### 5.4.22 – Pyroxasulphone

Pyroxasulfone is primarily an annual grass herbicide, but it has substantial activity on a number of broadleaf weeds, including lambsquarters, pigweed, waterhemp, and black nightshade, and somewhat less activity on common ragweed and velvetleaf. It is primarily used for control and suppression of certain weeds on fallow land and non-crop areas around farms and to maintain bare ground where it is required on non-crop areas. It is paired with another active ingredient Flumioxazin in the herbicide products Torpedo and Fierce.

#### 5.4.23 – Saflufenacil

Saflufenacil is a new herbicide of the pyrimidinedione chemical class for pre plant burn down and selective pre-emergence dicot weed control in multiple crops, including soybeans and corn. It is often mixed with other products such as glyphosate to control weeds in a wide range of food crops. It is the active ingredient in a new herbicide product from BASF – (Kixor™).

#### 5.4.24 – Siloxylated Polyether

Siloxylated Polyether is a silicone surfactant designed to enhance the efficacy of water soluble post-emergent herbicides. Spray solutions that are tank-mixed with this ingredient will completely wet the leaf surface and have been shown to increase the amount and speed of uptake of water-soluble herbicides. This results in more consistent weed control. Enhanced herbicidal efficacy has been most evident on broadleaf and woody brush weed species and has been shown to be less effective for enhancing performance on perennial grass weed species.

#### 5.4.25 – Triclopyr

The active ingredient triclopyr is considered selective and is effective for control of deciduous trees and brush. It provides an effective alternative to glyphosate for control of certain tree species such as aspen poplar (trembling aspen).

Triclopyr has very little soil residual activity and rapidly degrades in soil microorganisms and sunlight. It generally takes 10-46 days to break down in soil depending on soil type, moisture, and temperature. Although the herbicide does not bind to soil as tightly as glyphosate, once triclopyr moves into the soil, there is generally little movement. The herbicide tends to stay in the upper 30cm of the surface soil layers following rainfall, where it undergoes degradation. Triclopyr is found in the herbicide product **Garlon**.

## Section 6 – Environmental Protection

Sensitive wildlife habitat would include habitats that have been identified provincially, through environmental review process, or through feedback from land managers.

Enbridge recognizes the importance of implementing vegetation management work in an environmentally responsible manner. All vegetation management activities proposed in this IVMP will incorporate measures designed to protect the environment and sensitive areas described in this IVMP.

Extreme caution will be exercised when working around all waterbodies, streams, rivers, lakes, or wetlands and other environmentally sensitive areas such as agricultural lands, sensitive wildlife habitat, and areas with protected or sensitive plants and other species. Pesticide-free zones (PFZs) will be maintained adjacent to sensitive areas when applying herbicides. Suitable buffer zones will also be used to ensure protection of the riparian areas regardless of the treatment application.

Unless an adjacent property owner or land manager agrees otherwise, an applicator must ensure that a no-treatment zone (NTZ) between pesticide use and the adjacent property is sufficient to prevent the release of pesticide spray or runoff onto the adjacent property.

To determine whether a particular buffer is adequate, an applicator must consider the following:

- Active ingredient and volatility of the pesticide formula to be applied
- Application method
- Soil conditions
- Slope conditions of the site
- Rainfall
- Weather conditions
- The location, type, size, and use of water supply intakes or wells
- The location of the water supply intake or well in relation to the proposed treatment sites
- Any relevant geographic features

All vegetation management activities proposed for use under this IVMP will incorporate:

- Strategies to protect community watersheds and other domestic and agricultural water sources
- Strategies to protect fish, wildlife, their habitats, and riparian areas
- Strategies to prevent herbicide contamination of food intended for human consumption

### 6.1 – Water Bodies

A 10m PFZ will be maintained along all water bodies as defined in the IPMR including streams, and wetlands, except as stated in Section 6.1.4 – and in Table 5 of Section 6.2.

### 6.1.1 – Water Body Descriptions and Definitions

Under the IPMA and IMPR, the definition for “body of water” does not include a human-made, self-contained body of water or structure for water.

In general all observable water bodies and wildlife habitat features will have a PFZ or NTZ established at the time of pre-treatment reconnaissance as per Section 6.2 and [8.2](#) and regardless of classification.

The federal *Fisheries Act* does not provide a direct definition for types of water bodies. The Act instead specifies under section 35 (1) that “*No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat.*”

The Act under section 2 (1) defines fish habitat as “*water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas*”.

Under the *Fisheries Act*, regulated waterbodies will likely include all lands covered by water that may be standing or flowing, including:

- Water classified as a stream or river
- Water in a lake or wetland
- Marine or estuarine water
- Fish-bearing water
- Identified wildlife habitat feature
- Water flowing directly into the above types

#### High-water Mark

The area frequently wetted during a season of high water, i.e., usually where there is a break in terrestrial vegetation. Spraying can be carried out, but only from the top of the high-water mark and above. If the high-water mark cannot be reliably identified the location will be estimated at treatment time based on changes in vegetation type and scour patterns. (as in the case of some small wetlands or small seasonal pools). Spraying can take place at the high-water mark and up.

#### Free-standing Body of Water

A body of water that is not draining into or away from another water source by direct overland flow.

#### Temporary Body of Water

A wetted area that is only seasonally wet. For example, a dry stream is not considered a body of water and may be treated if not fish-bearing any time of the year.

To identify signs of water flow, look for water scouring signs and siltation areas. To help decide if a wet area is temporary, look for indicator plants that thrive in water. If a dry shallow depression contains plants that would not be present if the depression was wet for long periods of time, it should not be considered a body of water.

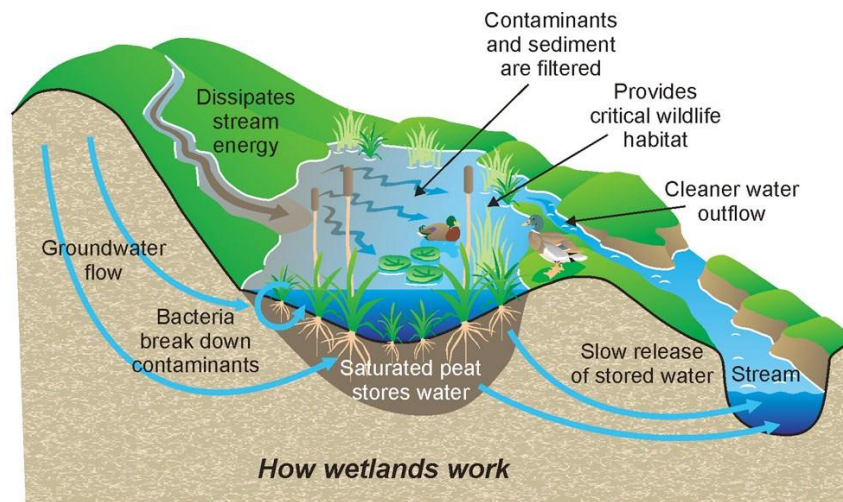
**Stream or River**

A watercourse (same meaning as under the *Forest and Range Practices Act*), including a watercourse that is obscured by overhanging or bridging vegetation or soil mats that contain water on a perennial or seasonal basis, is scoured by water or contains observable deposits of mineral alluvium, and that has a continuous channel bed that is 100m or more in length, or flows directly into:

- A fish stream, river or fish-bearing lake or wetland, or
- A licensed water works

**Wetland**

A swamp, marsh, bog, or other similar area (same meaning as under the *Forest and Range Practices Act*) that supports natural vegetation that is distinct from adjacent upland areas. Wetlands are areas where a water table is at, near, or above the surface or where soils are water-saturated for a significant length of time.



**Figure 5 – How Wetlands Work**

**Non-Classified Wetlands**

- Wetlands not between 0.5 ha and 1 ha in size, and not located in biogeoclimatic zones CDF or CWH (xm,dm,ds)
- Wetlands not between 0.25 ha and 1 ha in size, and not located in biogeoclimatic zones BG, PP, or IDF (xh,xw,xm)

The [Forest Planning and Practices Regulation](#) describes wetlands in BC in more detail.

### **Marine or Estuarine Water**

A waterbody in an inlet or arm of a sea or ocean.

### **Wildlife Habitat Feature**

May be identified by the minister responsible for the *Wildlife Act* by any or all of the following:

- A fisheries sensitive feature
- A marine sensitive feature
- A significant mineral lick or wallow
- A nest of:

A bald eagle

An osprey

A great blue heron

A category of species at risk that is limited to birds

- Any other localized feature that the minister responsible for the *Wildlife Act* considers to be a wildlife habitat feature

For further details, refer to section 9 of BC's [Government Actions Regulation](#).

### **6.1.2 – Riparian Areas, IPMR 58 (3)(b)(ii)**

A riparian zone is the area or strip of land immediately adjacent to streams, rivers, wetlands, and other water bodies. A thriving riparian plant community is an integral component of fish habitat – it regulates water temperature, controls erosion, and provides fish with cover and food. Riparian Vegetation Management Areas (RVMA) will be closely managed under this IVMP to ensure no unreasonable adverse impacts occur from any work performed within its boundaries.

**Riparian Vegetation Management Areas** provide distinct ecological benefits to fish and other wildlife:

- They support lush plant growth and stay green longer than other areas not alongside surface water.
- Root mats of grasses and shrubs within an RVMA shield soils from surface erosion, while roots of larger trees help to maintain the structural integrity of the banks.
- Roots and organic debris also filter surface runoff, effectively removing suspended solids before they enter the stream channel.
- Large woody debris gives fish places to hide from predators, contributes to stream bank stability, and increases the in-stream habitat diversity.



- Terrestrial insects drop from overhanging vegetation to provide fish with a direct source of food.
- They provide a diversity of plant species, which in turn support a broad variety of bird and wildlife species with differing needs for food supplies, nesting and denning sites, shelter from weather extremes, and places to hide from predators.
- They provide corridors for wildlife by providing a sheltered route that connects larger habitats together and gives protection from predators.

### 6.1.3 – Working in and Around an RVMA

Extreme caution must be taken when working in and around an RVMA with large machinery, hand-held mechanical devices (e.g., saws), or herbicide applications. Enbridge will take these critical measures:

- The RVMA boundary will be flagged in advance with flagging tape, particularly if mowing machinery is to be used in adjacent areas or if the water body is difficult to distinguish.
- Where herbicide applications will take place adjacent to the riparian area, all PFZs and NTZs will be well flagged (see Table 5 – and Section 6.2 – of this IVMP)
- Disturbance to low growing desirable vegetation will be minimized.
- Debris will not be left below the waterbody's high-water mark.
- Within the RVMA, chainsaws and machinery will not be refuelled, and chemicals will not be mixed. These activities will occur 100m away from surface water.

### 6.1.4 – Strategies to Protect Community Watersheds, IPMR 58 (3)(b)(i)

Enbridge will ensure that community watersheds are protected under this IVMP. Extreme care will be taken around all water intakes and wells during the use of any herbicides. Protection of community watersheds will be done by:

- Ensuring a 30m no-treatment zone is maintained around a water supply intake used for domestic use (*exception below*)
- Ensuring a 100m no-treatment zone is maintained upslope from a licensed community watershed intake
- Not storing pesticides near community watersheds for more than 24 hours
- Asking property owners where their wells and water intakes are located, to help protect domestic and agricultural use
- Using available maps that show water intakes, and recording the locations for future use
- Using more selective treatments on these treatment areas to help reduce possible drift, leeching, or runoff

Generally, a 30m no-treatment zone will be established around a water supply intake or well that is used for domestic or agricultural purposes, including water for livestock or for irrigation of crops. However, under the IPMR s. 71(4), other exceptions may apply as follows.

A confirmation holder may be “reasonably satisfied” that a smaller NTZ is appropriate around a water supply intake after a careful consideration of the following factors, if applicable:

- Chemical, physical, and toxicological characteristics of the pesticide
- Application method proposed to be used
- The location of the water supply intake or well in relation to the proposed treatment site (no applications will occur closer than 10m)
- The size and use of the water supply or intake
- Current weather conditions
- Soil conditions and type
- Relevant geographic features

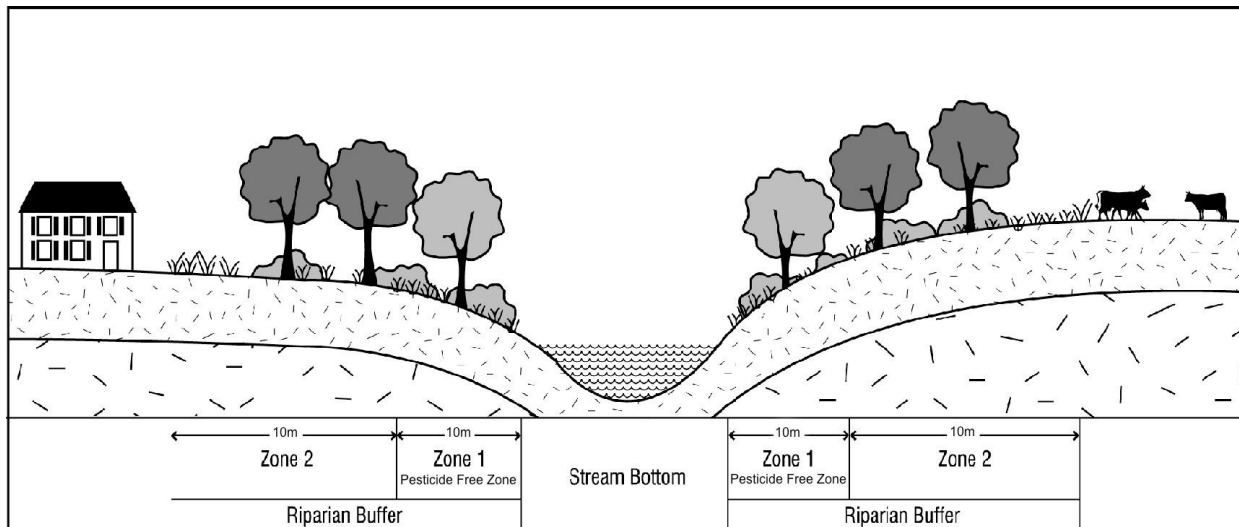
A written record will be made of the rationale for reducing a no-treatment zone.

### 6.2 – Pesticide-free Zones and No-treatment Zones, IPMR 75 (3)(4)(5)(6)(7)

A 10m PFZ will be maintained along all water bodies, dry streams, and classified wetlands, except as stated in Section 6.1.4 – above and the glyphosate use exceptions listed in Table 5 below.

- A **pesticide-free zone** is an area of land that must not be treated with pesticide and must be protected from pesticide moving into it.
- A **no-treatment zone** is “an area of land that must not be treated with pesticide.”

NTZs are generally adjacent to a PFZ and are used as a buffer zone to protect the PFZ from any pesticides moving into it. NTZs will be identified and marked/flagged prior to any herbicide application.



**Figure 6 – Buffer Zones Around a Stream**

Table 5 describes PFZ restrictions to be applied alongside all water bodies as per the listed sections of the IPMR. (See Section 6.1.1 – for definitions of water body and wetlands.)

**Table 5 – Water Protection Requirements for Specific Uses**

IPMR Section	Permitted Application	NTZ/PFZ	Exception
	<b>All Applications</b>		
71(3)	Domestic and agricultural wells and water intakes, including all methods and pesticides.	30m NTZ	NTZ may be reduced if reasonably satisfied that a smaller NTZ will ensure no pesticide enters well or intake (IPMR 71(4))
	<b>Non-glyphosate Applications</b>		
73(1)	Use of pesticides other than glyphosate along or around bodies of water, such as a classified wetland or dry stream. Subject to all label conditions and application methods.	10m PFZ	Glyphosate application
	Subsurface drainage intakes (facilities)	2m PFZ	No herbicides
71(3)	Non-potable wells and water intakes for facilities and rights-of-way	10m NTZ	
	<b>Glyphosate Applications Only</b>		
74(1)(c)	Along or around a body of water that is: <ul style="list-style-type: none"> <li>• Not fish-bearing at any time of the year</li> <li>• Does not drain directly into a fish-bearing body of water</li> </ul>	2m NTZ	
74(2)	Up to the high-water mark of a temporary free-standing body of water and dry stream that is: <ul style="list-style-type: none"> <li>• Not fish-bearing at any time of the year</li> <li>• Does not drain directly into a fish-bearing body of water</li> </ul>	0m NTZ	
74(1) (a)	Along or around a waterbody or a classified wetland that is: <ul style="list-style-type: none"> <li>• Fish-bearing or that drains directly into a fish-bearing waterbody, or</li> </ul>	2m PFZ	

IPMR Section	Permitted Application	NTZ/PFZ	Exception
	<ul style="list-style-type: none"> <li>Along or around a dry stream that when wet is fish-bearing or drains directly into a fish-bearing waterbody</li> </ul>		
	<b>Invasive Weed Management</b>		
77(2)	Selective application of glyphosate to noxious weeds and invasive plants if the application is used between 1m and 10m above the high-water mark.	1m PFZ	

### 6.3 – Plants, Wildlife and Habitat Protection IPMR 58 (3)

#### 6.3.1 – Preventing Pesticide Contamination of Food for Human Consumption

All herbicides approved under this IVMP will be applied as per label requirements with a focus on agricultural requirements in areas actively producing crops or crops that are grazed by livestock. Additional safety measures may include increased buffer zones around these areas during herbicide applications, timing of applications, methods of application, or other alternatives.

Enbridge’s access roads and lease sites are often located near environmentally sensitive areas containing agricultural crops or domestic animals. Food intended for human consumption is sometimes grown or found within these areas.

Enbridge contractors will investigate areas in proximity to crop food intended for human consumption and take appropriate precautions during vegetation management operations to avoid contamination of these areas.

#### 6.3.2 – Protecting Sensitive Wildlife Habitat

The herbicides used by Enbridge are unlikely to have any direct toxic effect to wildlife, and have been federally approved by the Pest Management Regulatory Agency (PMRA). Selection of the correct herbicide and control method is very carefully thought out.

Attention must be given to areas around water in order to maintain individual ecosystems for specific wildlife within that area. While completing treatments, the structures and patterns of a natural forest setting must be retained to conserve and help wildlife populations, especially species at risk.

Additional steps that could be considered or reviewed:

- Identifying ungulate winter ranges
- Identifying wildlife trees and other habitat features
- Identifying specific plant species that are highly used by wildlife
- Identifying particular wildlife that may require additional protection

### 6.3.3 – Protecting Sensitive Plant Species

High-value plants that are known to be or could potentially be consumed or collected by humans and other important native plant species will not be targeted for treatment. Rare or endangered native plants that have been recognized will be protected from herbicide applications where practical. Indigenous people or other members of the public may identify these sites during higher level planning, consultation, or referral.

### 6.3.4 – Species at Risk

Environment Canada has developed “Species at Risk” public awareness, research programs, and detailed lists of species at risk for all regions in Canada. It is important to consider and be aware of these at-risk species in local areas where vegetation control programs could potentially cause negative effects to specific species and their habitats.

The federal government has jurisdiction over:

- All listed species (from *Species at Risk Act*) on federally owned land such as national parks, department of national defence lands, and Indigenous reserve lands
- Migratory birds wherever they occur
- Aquatic species wherever they occur

The BC provincial government has jurisdiction over all other SARA species. It must protect listed species to at least SARA standards, or the federal government may extend its jurisdiction and apply SARA through its “Safety Net” provisions.

Visit the following government websites for more information:

- Federal: [Species at Risk Act](#) (SARA)
- BC: [Species & Ecosystems at Risk](#)
- BC: [Species at Risk – Federal and Provincial](#)

The Canadian Wildlife Service (CWS) conducts research on the impact of pesticides on wildlife and provides advice to the Pest Management Regulatory Agency on their registration and use. Habitat used by wildlife is also essential for agriculture, forestry, and other competing interests. To accommodate all concerns, CWS may work with other agencies and groups to minimize the impact on critical wildlife habitat.

Should a species at risk be expected in an area requiring vegetation management, a site-specific vegetation management plan will be required that addresses concerns specific to that species.

SARA requires cooperation and consultation with Indigenous communities affected by a recovery strategy, action plan, management plan, or critical habitat protection. This cooperation is extremely important to effective implementation on reserve lands and land claims settlement regions.

## Section 7 – Herbicide Application and Operational Practices

### 7.1 – Health Safety and Personnel Qualifications

Health and safety in the workplace is a shared responsibility. Every Enbridge employee, contractor, and subcontractor is responsible and accountable to ensure their own safety. All Enbridge safety policies and procedures, as well as any government safety regulations (such as WorkSafe BC) will be strictly followed on all Enbridge worksites. The transportation, storage, handling, application, and disposal of herbicides are governed by federal and provincial legislation.

The required practices and other relevant information are detailed in:

- WorkSafe BC's [Occupational Health & Safety Regulation](#), sections 6.70 to 6.109
- [Integrated Pest Management Act](#) and [Regulation](#) (IPMA and IPMR)
- [Canadian Pesticide Education Program Applicator Core Manual](#)
- B.C. Ministry of Forests (FRDA 006) [Herbicide Field Handbook](#)
- WorkSafe BC's [Standard Practices for Pesticide Applicators](#) (2010)
- Pesticide labels on containers and MSDS sheets

### 7.2 – Licensing and Certifications

All Enbridge contractors working with herbicides will follow safe handling practices, including workplace requirements for WHMIS labeling and worker education.

- Contractors applying herbicides under this IVMP must have a valid BC Pesticide Control Service License. In addition:
- Anyone supervising applicators or mixing herbicides under this IVMP must be certified with a valid British Columbia Industrial Vegetation Management Applicators certificate. The supervisors to applicators ratio will not exceed 4 to 1.
- Anyone applying herbicides under this IVMP must have obtained an Assistant Applicators designation through the applicator training program run by the Ministry of Environment and Climate Change Strategy (MoE).

### 7.3 – Transportation of Herbicides, IPMR 58 (3)(a)(i)

The transport of herbicides is regulated by the federal *Transportation of Dangerous Goods Act* (TDGA) and the British Columbia IPMA and IPMR.

The federal TDGA addresses the handling and transportation of regulated substances, which may include some herbicides. At this time, no herbicides covered under this IVMP fall within the federal Act. However, section 7 of the IPMR specifies certain transport procedures.

These procedures will be followed when transporting herbicides for application under this IVMP:

- Limited amounts of herbicide concentrate will be carried in any one vehicle.
- Herbicide concentrate will only be carried in a secure and lockable compartment with signage as per WHMIS and TDGA.
- Herbicide concentrate will only be transported in original, labelled containers.
- Herbicide concentrate will always be carried separately from food and drinking water, safety gear, and people.
- Safety gear and spill containment and clean-up equipment will be carried separately from herbicides but in close proximity to the herbicide on each vehicle.
- Appropriate documents such as Daily Operations Records and MSDS will be carried with each operation during herbicide transport and use.

#### **7.4 – Mixing and Loading of Herbicides, IPMR 58 (3)(a)(iii)**

Mixing of herbicides is usually done just prior to applications. This work is all completed by certified applicators in a manner that respects safety and environmental practices as per Section 6.1.3 – of this IVMP. As a reminder, no mixing or refuelling is to occur within 100m of surface water.

A container used to prepare, mix, or apply a pesticide **will not** be washed or submerged in a body of water. If equipment is used to draw water from a body of water or an irrigation system into a container used to contain, prepare, mix, or apply a pesticide, a gap will be maintained between the pesticide and the equipment so that pesticide is prevented from entering the body of water or irrigation system.

#### **7.5 – Herbicide Storage, IPMR 58 (3)(a)(ii)**

Herbicides will be stored in accordance with the IPMA and IPMR and the WorkSafe BC document [\*Standard Practices for Pesticide Applicators\*](#).

Storage areas must be ventilated, which means there must be, at minimum, an opening that allows air to circulate. This can be an open window, roof or wall vents, gable-type vents, or a mesh door or window.

As per IPMR s. 31, anyone planning to store herbicides must also notify the nearest fire department within 60 days after storage begins. The following information must be provided for each herbicide:

- Manufacturer
- Distributor
- Formulator
- Wholesaler
- Licensee

Presently, Enbridge requires that all pesticide application contractors:

- Purchase and store all herbicide.



- Have a proper storage facility that is a secured, lockable room vented to the outside and accessible only to those with authority to access
- Equip the storage room with a spill kit and first aid equipment in the event of spill, and precautionary signs on the entrance door.
- Ensure MSDS are available at the site.
- Store herbicides separately from food intended for human or animal consumption.
- Ensure that mobile units used for herbicide treatment and short-term storage:
  - Display a precautionary symbol
  - Are kept separate from the passenger area of vehicles in lockable compartments
  - Are kept locked at all times when unattended

## 7.6 – Containers and Residual Storage, IPMR 58 (3)(a)(iv)

The responsibility of herbicide container disposal associated with vegetation control activity presently lies with the contractor. The contractor must triple rinse and then puncture empty herbicide containers to prevent their reuse.

Destroyed containers must be disposed of at an appropriate landfill site. In most cases, herbicide distributors accept empty, clean containers for recycling. Options for returning containers are expected to increase as more distributors or manufacturers expand these types of programs. Enbridge encourages all contractors to use a recycling program if available in their area. Any unused chemical must be returned to the storage facility in the original container for future use.

## 7.7 – Herbicide Application Records, IPMR 58 (3)(c)

Herbicide application methods and equipment to be used under this IVMP include the following:

### 7.7.1 – Equipment

- Truck or heavy equipment-mounted spray tank with power hose/nozzle
- ATV-mounted spray tank with power hose/nozzle or boomless nozzle
- Backpack sprayers
- Cut stump applicators
- Wick applicators
- Hack and squirt applicators

### 7.7.2 – Methods

A brief description of the pros and cons of each treatment type is included in [Appendix 2](#).

- **Ground foliar application:** Using a backpack or handgun sprayer to foliar treat smaller areas for the control of herbaceous and deciduous species.
- **Boomless application:** Using boomless nozzles to treat larger areas as a foliar or ground treatment.

- **Cut stump application:** Cutting of smaller diameter deciduous species with a power saw or hand tool and applying herbicide to the cut stump surface.
- **Hack and squirt application:** Making an incision or frills with a hand tool around the circumference of the deciduous species and injecting herbicide in the incision or frill.
- **Basal bark application:** Treating the outer surface of deciduous species from ground level up to approximately 30cm in height with a mix of triclopyr and isopar mineral oil.

## 7.8 – Herbicide Equipment Calibration, IPMR 58 (3)(b)(v)

Equipment will be supplied by contractors and maintained in good working condition with no leaks. An inspection or calibration of equipment will occur prior to beginning vegetation control activities each year.

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 pesticide or formulation of a pesticide is changed

## 7.9 – Monitoring Weather and Conditions, IPMR 58 (3)(b)(vi)

Measurements will be made to record weather conditions prior to and periodically during herbicide applications. Wind speed and direction, precipitation, temperature, frost, dew and sky conditions (clear, overcast, cloudy, partly cloudy) will be recorded for all methods of treatment.

Herbicide application will be shut down if:

- The maximum allowable temperature is exceeded (per product instructions or following [Worksafe BC guidelines](#)).
- The wind speed exceeds the recommended speed (8 km/hr), or wind direction causes the treatment to miss the intended target.
- It begins to rain, increasing the chances of excessive runoff and leaching.
- Foliage is covered by ice or frost or water is flowing on the foliage.

## 7.10 – Treatment Area Identification

All areas scheduled for herbicide treatment will be inspected on the ground and specific site marking and layout will be completed in order to locate, identify, and mark all treatment and non-treatment areas, including:

- Pesticide-free zones (PFZs)

- No-treatment zones (NTZs)
- Wells, wetlands, and riparian areas, as well as significant geographic and wildlife features

All areas that have been marked for treatment will be clearly visible to the applicator and any site monitors for inspection. All layout will be completed prior to treatment.

Area layouts efforts may be conducted with the use of photos, diagrams, compasses, or GPS and will be transferred to or referenced with maps. These maps will be available to the MoE if requested, prior to any herbicide treatment. These maps or diagrams will be on site during treatment, and the supervisor and all applicators will have the opportunity to review the maps or diagrams prior to treatment.

### 7.11 – Daily Operations Records

Contractors and applicators applying herbicides for Enbridge must record and complete Daily Operations Records (DORs, see [Appendix 3](#)). The DORs will include:

- Treatment location
- Targeted species
- Herbicides applied
- Active ingredient
- PCP number
- Application rate
- Treatment area and size
- Application method
- Weather conditions
- Safe return time

DORs will be periodically sent to the Enbridge representative during the treatment season at mutually agreed upon times prior to the start of any treatments. Enbridge will retain all DORs and maps of the treatment sites for three years.

### 7.12 – Spill Response Plan, IPMR 58 (3)(a)(v)

Section 9 of Enbridge's *Quick Reference Guide for People Leaders* states in part:

- All spills or releases, including planned or unplanned releases of any solid, liquid, or gas (excluding natural gas), must be reported immediately – see Section 7.12.1 – .
- At a minimum, if the spill caused impacts to the environment, the Enbridge Emergency Number 1-800-663-9931 is to be called. Any additional reporting out will be completed by Enbridge at that point in time as required.
- An Incident Near Miss Form must be generated and submitted for every spill incident. All documentation will be kept on record for future reference.

A copy of the project specific spill response plan (or contact) and associated reporting information along with Enbridge's *Quick Reference Guide* for People Leaders will be available at each work site, as well as in the pesticide transport vehicle. All personnel working on any project will be familiar with the contents of the spill plan for the project or the Reference Guide. If contractors that work under this IVMP have their own spill response plan, it must meet or exceed the contents in this plan and also must be available on site.

As a minimum, these procedures must be followed if a spill occurs:

1. Protect all personnel from herbicide contamination by wearing appropriate safety gear.
2. Move any exposed persons away from the place of the spill and keep them warm. Provide first aid, if necessary.
3. Stop the source of the spill and contain it if possible.
4. Identify the type of product spilled.
5. Stop the spilled material from spreading by creating a dam or ridge.
6. Determine the source, volume, and area affected by the spill.
7. Inform the project supervisor immediately of the spill.
8. Project supervisor: Ensure all personnel working on the project are aware that a spill has occurred and that cleanup procedures have commenced.
9. Project supervisor: Ensure all operations cease until the spill is contained and the source is repaired.
10. Spread absorbent material over the spill, if applicable, to absorb any liquid.
11. Phone the Enbridge Supervisor to obtain instructions on reporting procedures and disposal of contaminated materials.
12. Collect the absorbent material into garbage bags or containers. Clearly mark the contents.
13. Remove any contaminated soil or material from the spill site and collect in garbage bags or containers.

### **7.12.1 – Spill Reporting Procedures**

As per Enbridge's *EH&S Quick Response Guide For People Leaders* and relevant contract documents, all spills or releases, including planned or unplanned releases of any solid, liquid, or gas (excluding natural gas), must be reported immediately to BC Field Services at 1-800-663-9931.

As per section 9 of Enbridge's *EH&S Quick Reference Guide for People Leaders*, the worker in charge where the spill occurs is responsible for reporting the spill to the appropriate people.

Emergency reporting procedures, responsibilities, and contacts are listed in [Appendix 4](#).

### 7.12.2 – Spill Kit and Equipment

An approved spill kit will be provided by the contractor / applicator and must be readily available at all mixing, loading and refuelling sites. Spill kits must also be included in any vehicles used to access treatment locations or conducting activities. The following protective gear and equipment should also be available:

- Eye protection / eye wash
- Coveralls
- Protective gloves/boots
- Plastic bags or container
- Shovels
- Roll of marking ribbon
- Spill absorbent or cat litter, absorbent pads, or similar material

### 7.12.3 – Personal Protective Equipment (PPE)

Long-sleeved shirts, long pants, gloves, and boots are minimum requirements and should **always** be worn when working with pesticides. (Coveralls are recommended.) See Table 6 – for further recommendations. Additional PPE may be required depending on individual facility procedures and requirements.

**Table 6 – Required Personal Protective Equipment**

Legend: √ recommended      O optional

Activity / Method	Water-resistant Boots	Water-resistant Gloves	Protective Coveralls	Hard Hats	Eye Protection
Pesticide mixing	√	√	√	O	√
Cut stump	√	√	√	√	√
Hack and squirt	O	√	√	√	√
Backpack	√	√	√	O	√
Power hose spray	√	√	√	O	√
Basal bark	√	√	√	O	√
Boomless nozzle	√	√	√	O	O

## Section 8 – Monitoring, Reporting, and Notifications

### 8.1 – Evaluation and Effectiveness, IPMR 58(2)(f)

The IPMR requires a description of the monitoring program that will be employed for evaluating the effectiveness and impacts of pesticide use on pest populations and the environment. This includes effects on organisms other than the targeted species. The information collected in this program must include a description of the following, along with other pertinent information regarding the monitoring program:

- Monitoring methods
- Frequency of monitoring
- Data that will be collected

### 8.2 – Pre-Treatment Monitoring, IPMR (3)(b)(iv)

Monitoring methods and the frequency of monitoring visits will be site-specific and will depend on the priority rating for that particular site. High-priority sites will be monitored more frequently than low-priority sites.

As a minimum, all sites with known problem vegetation will be patrolled by ground or by air at least once a year.

In addition, Enbridge's representative will meet with their contractors prior to beginning vegetation management treatments to discuss herbicide applications, manual and mechanical methods, soil types, plant species, densities, environmentally sensitive areas, and other contractual details. Observations will be recorded to collect information to determine management objectives, monitoring actions to be taken, and what management action(s) should be prescribed, if any action is needed.

Annual pre-treatment monitoring observations will record the following at problematic or high priority sites:

- Vegetation species and locations
- Size and abundance/density of vegetation
- Site disturbances that may cause vegetation species and densities to change or move over time
- Environmental conditions and features of the area
- Meeting the required thresholds
- Damage that has occurred or may be caused by the undesirable vegetation
- Potential for other third-party impacts

Vegetation density and abundance are measured to establish management objectives. Density can be determined in a series of plots along a transect line, by visual estimation, or by counting the plants. From this data, site-specific management actions can be implemented.

Prior to and during vegetation application or treatments, contractors are required to proceed on foot or by vehicle in front of vegetation treatment crews to conduct reconnaissance, mark maps and notify the crews of any riparian areas or other environmental features that require protection from treatments or the removal of vegetation. These additional assessments ensure an extra level of protection for the environment just prior to treatment.

### **8.3 – Post-Treatment Monitoring, IPMR (3)(b)(iv)**

Enbridge representatives will monitor contractor activities periodically throughout vegetation management program activities to ensure proper procedures are followed and regulatory compliance is assured.

Enbridge staff and/or their consultants conduct annual post-treatment monitoring and evaluation, which is integral to continually improving and refining the vegetation management process. It differs from the pre-treatment monitoring discussed above.

Post treatment evaluation will be conducted using visual assessments during routine patrols (aerial and ground). The patrols are completed typically within the treatment season, as a minimum. During these assessments, evaluators will record results. Some of the observations to be recorded include:

- Fire hazards
- IVMP compliance, including boundary and PFZ marking as required, offsite treatment, and protection of riparian areas/habitat
- IVMP consultation compliance with respect to components of the land that are valued by local stakeholders, cultural groups, and Indigenous Peoples
- Whether the objectives of treatment were met – efficacy and impacts to targets will be made as ocular estimates of qualitative control (poor, fair, good, excellent)
- Overall impacts to vegetation including targets and non-targets – the need for further monitoring will inform pre-treatment monitoring plans for the next season.
- Suitability of treatment selected, contractor performance, and recommendations for changes

In cases where non-Enbridge contracted personnel conduct post-treatment evaluations sites requiring additional follow-up evaluation or treatment will be noted on the annual evaluation and be included in vegetation management plans for the site in future as required. These observations will be used to improve future vegetation management programs.

## 8.4 – Annual Notice of Intent to Treat, IPMR (1) to (6)

After weed and site assessments are done and SMPs have been completed, and 21 days prior to the commencement of treatments for the applicable calendar year, a Notice of Intent to Treat (NIT) will be submitted to the Pesticide Management Officer by email (ipmreporting@gov.bc.ca) with the following information:

- Name and business location of confirmation holder (PMP holder)
- A description of the proposed area of treatment, and a map or diagram of that area showing geographic features that may require pesticide-free zones
- Proposed pesticide use and method of application
- Proposed total area of treatment in that calendar year

Enbridge will retain all records of site assessments, vegetation and invasive weed inventories, control treatments, methods, and activities for three years.

A detailed map of the treatment area will be available for viewing within three business days of request by the administrator from the Regional MoE office.

## 8.5 – Inter-agency Coordination

Vegetation management control programs are sometimes implemented in conjunction with other agencies (e.g., regional invasive weed control programs). These cooperative programs may be initiated by Enbridge or led by other agencies along with Enbridge.

Enbridge also may conduct its vegetation management efforts within B.C. in communication or cooperation with other “*land occupiers*”. Examples may include: annual meetings with range licensees, invasive weed committees, Indigenous communities, and Regional Districts.

## 8.6 – Public Notification and Consultation

### 8.6.1 – Notifications for General Public

#### Pesticide Use Notice

Enbridge will publish two Notices of Intent to Submit an IVMP for review in local newspapers for a two-week period. The notices must be published at least 45 days prior to submitting a Pesticide Use Notice (PUN) requesting a confirmation number from the MoE. Enbridge must receive comments regarding the IVMP in writing within 30 days of the publication of the newspaper notification.

#### Signs Identifying Treatment Locations, IPMR 64

A treatment notice must be posted on public land prior to implementing vegetation management treatments. This water-resistant sign (at least 550cm<sup>2</sup>) must be clearly visible and legible to public approaching the treatment area. The number of signs posted at each site will be determined by factors including the size of the treatment site, access points, and residential density.



Each herbicide treatment sign will specify:

- Title: “NOTICE OF HERBICIDE USE” (bold block letters)
- Proposed date and start time of application
- Name of target pest
- Confirmation (PMP) #
- Pesticide active ingredient name and *Pest Control Product Act* registration number (PCP)
- Pesticide trade name
- Common names of the herbicide active ingredients
- Phone number at which a licensee or proponent can be reached for further information about the pesticides used
- Precautions that can be taken to minimize exposure to people entering the treatment area

Signs will also be posted where due diligence would seem to require it, such as areas where the public may generally be expected to enter, walk, or stop at access points on primary roads. For corridor treatments, postings will be done along the edge of the corridor where the treatment begins, where it ends, and at reasonable intervals in between. On fenced facilities the sign may be placed on the gate. Signs will remain posted for a minimum of 14 days post-treatment.

### 8.6.2 – Property Owner Pesticide Notice

In addition to these site-specific treatment signs, at least 14 days before pesticide use, the licensee must give written notice to the owner of any property within 150m of the treatment area.

Each notice will include:

- A description of the treatment area and the date of application
- Reason for pesticide use
- Pesticide trade name
- Common names of the herbicide active ingredients
- *Pest Control Product Act* registration number (PCP)
- Name, address, contact names, and phone number of the licensee
- Width of the no-treatment zone from a water supply intake or well
- A request that the recipient supply the licensee with the location of water supply intakes or wells

Refer to the IPMA and IPMR 62, *Licensees in Respect of Forest Land*, for further requirements.

### 8.6.3 – Notification to Organizations and Communities

If a proposed pesticide use under an IVMP has the potential to significantly impact an individual or member of a organization or community the confirmation holder must make reasonable efforts starting at least 45 days prior to submitting a pesticide use notice to the administrator, to contact and consult those individuals. This notification includes the newspaper advertisements. Notification to those who may be “significantly impacted” only needs to be done once every five years during

the development of the IVMP, unless other arrangements or agreements have been made with landowners, land managers, or groups.

“Significantly impacted” requires that a direct and demonstrable link be identified between the proposed pesticide use and a person’s avocation, livelihood, water source, or means of support, provided that the person cannot reasonably conduct their activities elsewhere. Notification only and not consent is required during this process.

#### 8.6.4 – Consultation Requirements

A consultation report is prepared as an attachment when this IVMP is submitted with a Pesticide Use Notice (PUN) to the MoE. The IVMP confirmation holder must record and maintain a consultation report as a part of this filing. **This process is only required during the development of the IVMP.** The consultation report should include:

- A record of what and when the newspaper advertisements were completed
- A summary of written and verbal responses by the public
- A summary of written and verbal responses by the proponent
- A summary on any public or private meetings held
- Any agreement made to an individual or group stating notification before pesticide use

#### 8.7 – Indigenous Communities Notification and Consultation

Enbridge is committed to establishing and maintaining positive relationships with Indigenous communities through meaningful and respectful consultation.

Appropriate consultation is necessary when industry and government agencies develop plans for pest management activities that may potentially adversely impact Indigenous peoples’ rights or interests. Enbridge consults with Indigenous groups to address their concerns and accommodate any impacts on their rights and interests as appropriate.

Indigenous consultation will follow policy and procedure from the:

- Ministry of Indigenous Relations and Reconciliation (MIRR)
- MoE draft guidelines for consultation with Indigenous communities
- IPMA and IPMR
- Enbridge’s policies

All correspondence with Indigenous communities will be summarized in an Indigenous Communities Consultation Report and submitted to the MoE along with the PUN for this IVMP.

## 8.8 – Annual Reporting

### 8.8.1 – Annual Notification, IPMR 39 (1)(2)(4)

Enbridge will forward a written *Annual Summary of Pesticide Use Records* to the administrator prior to January 31<sup>st</sup> of the next calendar year for the work completed the previous year.

The summary for the previous year will include:

- Name and address of the confirmation holder (PMP holder)
- Herbicide trade name
- Active ingredient (a.i.)
- Amount of kilograms used and total area treated
- Methods used to apply pesticides
- Methods of non-pesticide controls used and estimated area treated
- Maps and/or descriptions of treated areas

### 8.8.2 – Amendments, IPMR 42 (4)(5)(6)

Enbridge will forward to the Administrator the appropriate information as per the IPMR:

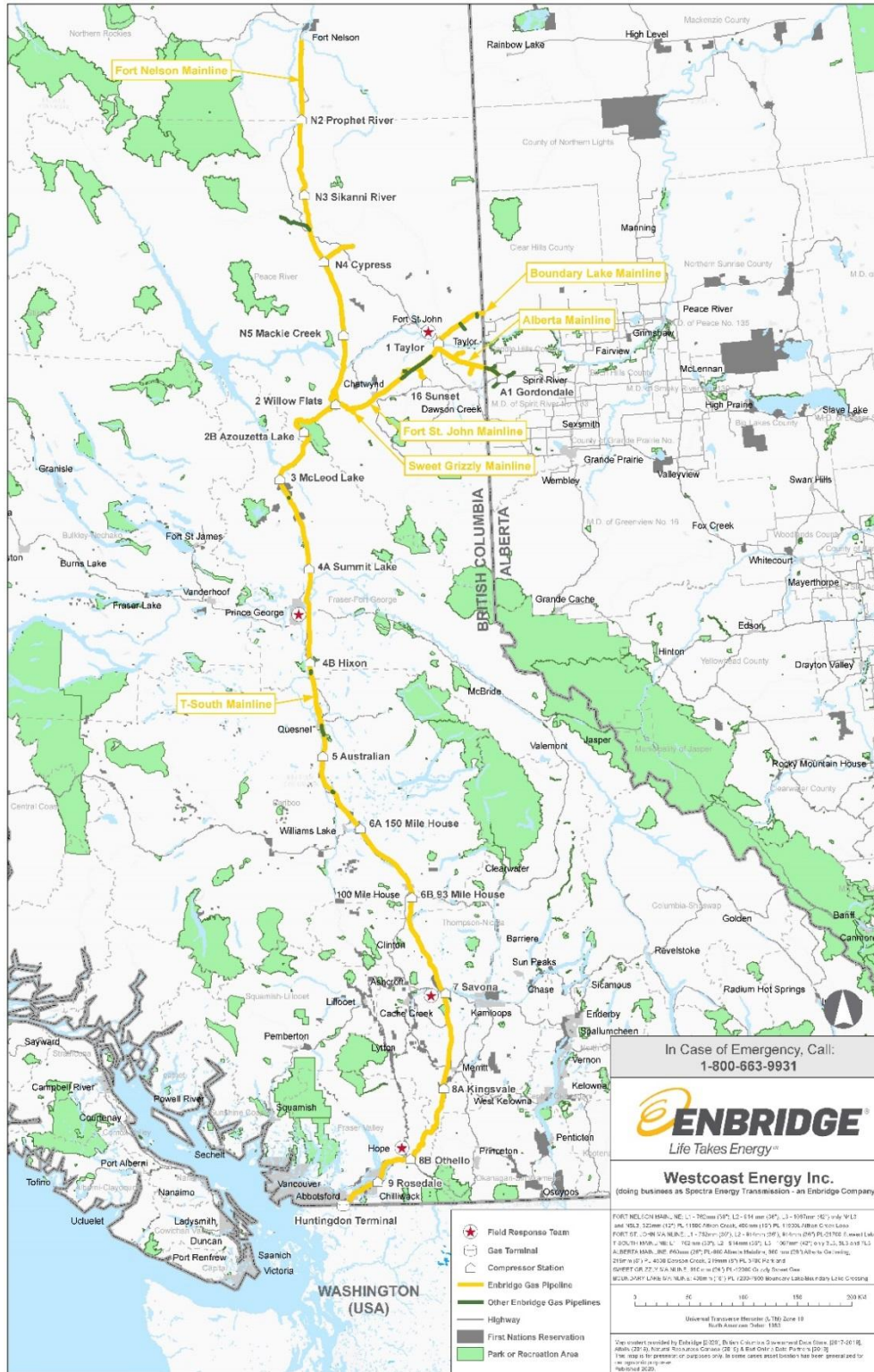
- At least 2 days in advance if an amendment is needed to increase the area treated with herbicides by **up to 10%**.
- At least 21 days in advance if an amendment is needed to increase the area treated with herbicides by **greater than 10%**. A new Notice of Intent to Treat must be sent to the administrator under the IPMR s. (42)(3).

The Ministry of Environment and Climate Change Strategy contact for reporting under this IVMP will go to:

Senior Pesticide Management Officer, Ministry of Environment

Email: [ipmreporting@gov.bc.ca](mailto:ipmreporting@gov.bc.ca)

# Appendix 1 – Map of Areas of Operation



## Appendix 2 – Problem Vegetation Treatment Options

A variety of treatment options will be employed by Enbridge to control problem vegetation. When selecting the most appropriate methods, consideration will be given to the type of vegetation, treatment timing, land use, and environmental and social aspects. A wide variety of problem vegetation complexes may exist on any given site, so multiple techniques and variable timing may be required to best address these, including manual/mechanical, cultural, or chemical options.

The benefits and limitations of each of these treatment options is considered when making treatment selection decisions as described in Section 4.7 – and Section 5 – .

### Mechanical Treatments

**Table 7 – Mechanical Treatment Options, Benefits and Limitations**

Mowing / Mulching	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Can improve aesthetics on some sites.</li> <li>• Fast and effective on large areas.</li> <li>• Works well on plant pests that propagate through seed if timed correctly.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety issues due to flying debris.</li> <li>• Can create significant debris and potential fire and safety hazards on sites with extensive deciduous shrub, bush, and tree problems.</li> <li>• Does not work well on plants pests that propagate through roots and rhizomes.</li> <li>• Repeated treatments are required.</li> <li>• Non-selective; impacts all vegetation cover.</li> </ul>
Mechanical Weed Cutting (brush saw etc)	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Can improve aesthetics on some sites.</li> <li>• Logistically easy to apply this technique to smaller dispersed sites.</li> <li>• A method commonly used by local contractors.</li> <li>• Works well on shrubs and plant pests that propagate through seed or annuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety/health issues due to flying debris and two-cycle motor exhaust fumes.</li> <li>• Can create significant debris and potential fire and safety hazards onsite</li> <li>• Does not work well on plant pests that propagate through roots and rhizomes.</li> <li>• Repeated treatments are required.</li> </ul>

Hand Pulling and Digging	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Can be applied any time of year.</li> <li>• Logistically easy to apply this technique to smaller dispersed sites.</li> <li>• A method commonly used by local contractors.</li> <li>• Works well on plant pests that propagate through seed or annuals.</li> <li>• Works well in environmentally sensitive areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety/health issues due to fatigue and strain.</li> <li>• Ineffective on extensive populations.</li> <li>• Labour-intensive and time-consuming.</li> <li>• Does not work well on plant pests that propagate through roots and rhizomes.</li> <li>• Repeated treatments are required.</li> </ul>
Discing and Ploughing	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Can be used effectively on large areas for rehabilitation.</li> <li>• Works well on plant pests that propagate through seed or annuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Not suitable for non-agricultural areas or smaller sites.</li> <li>• Does not work well on plant pests that propagate through roots and rhizomes.</li> <li>• Follow-up treatment of some other type may be required.</li> <li>• Disturbs soil, providing a seeding area for new infestations.</li> <li>• Brings weed seed in the soil seed bank to the surface, which can stimulate new growth.</li> </ul>
Cultural Controls	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Native vegetation is reintroduced to the site.</li> <li>• Easily applied to small areas where recent disturbance has occurred.</li> </ul>	<ul style="list-style-type: none"> <li>• Not suitable on all sites due to soil and site conditions.</li> <li>• Can be difficult to obtain appropriate seed.</li> <li>• Logistically challenging on some sites.</li> </ul>

## Herbicide Treatments

**Table 8 – Herbicide Treatment Options, Benefits and Limitations**

Basal Bark Streamline	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Highly selective with little or no off-target drift.</li> <li>• Works well on undesirable trees and brush.</li> <li>• Can be used at most times of the year.</li> <li>• Cost-effective in areas with stem densities of less than 10,000 st/ha and stems less than 2.5cm at stump.</li> <li>• Easily applicable to large or small infestations of undesirable trees and brush.</li> </ul>	<ul style="list-style-type: none"> <li>• Dead vegetation is unsightly.</li> <li>• Public concerns over herbicide use.</li> <li>• Does not translocate well and vegetation prone to suckering may show diminished efficacy over time.</li> <li>• High densities or large stems bring higher costs and more herbicide usage.</li> </ul>
Cut Surface Treatments	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Highly selective with little or no off-target drift.</li> <li>• Works well on undesirable trees and shrubs prone to suckering if glyphosate is applied.</li> <li>• Cost-effective in areas with high stem densities (in excess of 10,000 st/ha) where basal streamline is limited.</li> <li>• Visually more beneficial than basal streamline as the stem is cut.</li> <li>• Easily applicable to large or small infestations of undesirable trees and brush.</li> </ul>	<ul style="list-style-type: none"> <li>• Cut stumps and debris can be a hazard (fire and worker safety).</li> <li>• Time-consuming and expensive.</li> <li>• Public concerns over herbicide use.</li> <li>• High densities or large stems bring higher costs.</li> <li>• Safety/health issues due to flying debris and two-cycle motor exhaust fumes.</li> </ul>
Foliar Treatments	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Can be used very selectively.</li> <li>• Work well on most types of vegetation.</li> <li>• Cost-effective and efficient use of labour and herbicides.</li> <li>• Easily applicable to large or small infestations of plant pests.</li> <li>• Application rates and dosage can be varied depending on target requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Physically demanding.</li> <li>• Public concerns over herbicide use.</li> <li>• Applications are weather and seasonally dependent.</li> </ul>

Soil and Bare Ground Applications	
Benefits	Limitations
<ul style="list-style-type: none"> <li>• Works well on most types of vegetation.</li> <li>• Application rates and dosage can be varied depending on target requirements.</li> <li>• Cost-effective, with efficient use of labour and herbicides.</li> <li>• Easily applicable to large or small infestations of undesirable trees and brush.</li> </ul>	<ul style="list-style-type: none"> <li>• Physically demanding.</li> <li>• Public concerns over herbicide use.</li> <li>• Applications are weather and seasonally dependent.</li> </ul>



## Appendix 3 – Daily Operations Record

### Enbridge Daily Operations Record

The next two pages show the *Daily Operations Record* (DOR) used by Enbridge.





## Appendix 4 – Emergency Reporting

### Incident/Emergency Reporting Procedure

Spills will be reported to “Report a Spill” (formerly called Provincial Emergency Program) following the steps established by Enbridge’s “**One window reporting for Federal and Provincial Incidents.**” If the spill occurs in a location where immediate contact cannot be made, the report should be made as soon as possible.

**BC Pipeline / Field Services: 1-800-663-9931**

#### One Window Reporting for Federal and Provincial Incidents

1. Report incidents that involve one or more of the following:
  - Spills, leaks, unplanned/uncontrolled emissions
  - Emergency flaring from processing plants
  - Public complaints
  - Injuries
  - Fire or explosions
  - Pressure equipment failures
  - Maximum operating pressure (MOP) excursions
  - Security-related incidents (any police contact)
2. *Witness of incident:* Contact the On-call or On-site Supervisor and initiate the emergency response plan if required.
3. *On-call or On-site Supervisor:* Ensure a call is made to the BC Field Services.
4. *BC Field Services:* Document the caller’s information including contact number, and phone the On-call Incident Supervisor.
5. *On-call Incident Supervisor:* Contact the On-call or On-site Supervisor and determine the regulatory reporting requirements for the incident.
6. *On-call Incident Supervisor:* If the incident escalates to level two or level three, activate the Crisis Management Team.
7. *On-call Incident Supervisor:* Work with subject matter experts (EHS, Regulatory Affairs, Engineering, etc.) and ensure regulatory agencies are notified.

Table 9 – Spill Reporting Responsibility

Type of Spill	Reporting Responsibility	Report to Whom
Mix and loading	Mixer or loader	On-site Supervisor Program and Enbridge Representative BC Field Services
Pesticide application	Applicator or supervising applicator	On-site Supervisor Program and Enbridge Representative BC Field Services
All spills	Project supervisor	On-site Supervisor Program and Enbridge Representative BC Field Services

Table 10 – Emergency Contacts

When	Agency	Phone Number
Any Emergency, 24 hours	<b>FIRST CALL</b> – Enbridge Emergency	1-800-663-9931
In case of spill	BC Pipeline, BC Field Services	1-800-663-9931
	Enbridge Contract Representative	As per contract
	Enbridge Environmental Advisor	As per contract
	Canadian Transport Emergency Centre (CANUTEC)	1-888-CAN-UTEC (1-888-226-8832) 613-996-6666 *666 on cellular device
Medical emergency	BC Drug and Poison Information Centre	1-800-567-8911
	Enbridge Contract Representative	As per contract