

FortisBC (Electrical) Facilities Pest Management Plan

PMP Confirmation #: 799-0012-15/20



Expires May 6, 2020

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1.0 Introduction

1.1 FortisBC Background

FortisBC Inc. is an integrated regulated electric utility based in Kelowna, British Columbia. The Company serves approximately 161,000 customers throughout its service area in the West Kootenay, Okanagan and Boundary areas of the Province.

The Company is cognizant that the presence of pests can adversely impact infrastructure integrity that can threaten worker and public safety and can compromise system reliability. As part of the FortisBC Environmental Responsibility Policy, the Company is committed to the delivery of safe, reliable power in an environmentally responsible manner.

Compliance with environmental regulations is part of the Policy commitments and is a duty that FortisBC takes seriously. The British Columbia *Integrated Pest Management Act* requires that management of vegetation on specified industrial sites be approved under a single, comprehensive Pest Management Plan (PMP). The PMP ensures:

- Compliance with the provisions of the *Integrated Pest Management Act* and other applicable Federal, Provincial and regional laws and regulations;
- The responsible use of pesticides;
- The incorporation and use of integrated pest management; and,
- Public awareness of FortisBC's pest management programs.

The Company is cognizant that the presence of pests can adversely impact infrastructure integrity that can threaten worker and public safety and can compromise system reliability. In 2009, FortisBC developed a Pest Management Plan (PMP) to deal with vegetation issues within its facilities. FortisBC received authorization for this PMP under Confirmation Number 799-0006-10/15.

This PMP has been prepared to replace PMP No. 799-0006-10/15 that expired on May 6, 2015. The PMP uses the principles of integrated pest management and is designed to control and/or eradicate unwanted vegetation on FortisBC Rights-of-way. Noxious weeds and invasive plants are controlled by local weed committees and are not included under this PMP.

1.2 Geographic Boundaries of the Area to Which This Plan

Applies [IPMR Section 58(1)(a)]

This PMP applies to all FortisBC facilities in the FortisBC service area. Attached hereto and marked as Appendix 1 is a map describing the geographic boundaries of the area to which this plan applies.

1.3 Pest Management Plans

Under the British Columbia *Integrated Pest Management Act* a PMP is defined as a plan that describes:

- 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 the program.

According to the Act the term pesticide means a microorganism or chemical or other material that is used to prevent, destroy, repel, or mitigate a pest.

FortisBC, its contractors and agents, will use this PMP when carrying out vegetation management activities on facilities throughout the FortisBC service area.

1.4 Person Responsible for Managing Pests [IPMR Section 58(1)(b)(c)]

Within FortisBC, the person responsible for managing pests and the principal contact for information relating to this PMP is:

Brad Wright
FortisBC Inc.
1975 Springfield Road
Kelowna, BC V1Y 7V7
(250) 717 0804
Brad.Wright@FortisBC.com

1.5 FortisBC Facilities

This PMP covers FortisBC's pest management program within facilities, which include generation facilities (including switching stations), substations, other electrical facilities including all fenced facilities, vacant undeveloped land within facilities, buildings, structures, tower compounds, access roads and poles yards throughout their service area. The term "facilities" will be used in this PMP to encompass the above noted areas.

2.0 Facility Pest Management Using IPM Principles

Operational, safety and aesthetic concerns govern the need to control pests within and around FortisBC facilities. Some of these concerns are:

- Vegetation can become a fire hazard or serve as a fuel source for fires;
- Vegetation can restrict access to electrical components for maintenance, safety inspections and emergency response;
- Vegetation growing adjacent to a facility can serve as a seed source;
- Vegetation can contaminate the crushed rock base at electrical facilities – leading to increased electrical hazard and worker injury;
- Vegetation can increase the risk of tripping and slipping;
- Vegetation can serve as shelter and food for structural insect pests, especially rodents;
- To comply with provisions of the BC Weed Control Act that requires occupiers of land control noxious weeds; and,
- To stop seeds, leaves, and other organic matter from entering electrical facilities.

Vegetation management at switching station and substations is critical for safety reasons. If a lightning strike occurs or there is an electrical fault, electrical current can flow through the structure and into the ground. These can cause potentials (step and touch) that can lead to worker electrocution. Electricity can also be transmitted outside fenced facility by vectors such as vegetation.

2.1 The Principles of IPM

In order to ensure effective vegetation management on all of its facilities, FortisBC has adopted the principles of IPM into company programming. IPM means a process for managing pest populations that includes the following activities:

- **Planning (prevention)** and managing ecosystems to prevent organisms from becoming pests;
- **Identifying** pest problems and potential pest problems;
- **Monitoring** populations of pests and beneficial organisms; damage caused by pests and environmental conditions;
- **Using injury (treatment) thresholds** in making treatment decisions,

- **Suppressing (pest treatment options and method selection)** pest populations to tolerable levels using strategies based on consideration of biological, physical, cultural, mechanical, behavioural and chemical controls in appropriate combinations and environmental and human health protection; and,
- **Evaluating** the effectiveness of pest management strategies.

2.2 Prevention *[IPMR Section 58(2)(a)]*

Preventative measures aimed at stopping the initial growth and spread of unwanted vegetation is an integral part of an IPM program. These measures are considered, where feasible, for incorporation into substation and switching station designs prior construction, and may be implemented during facility upgrades. In some instances, preventative measures may reduce the need for future maintenance using both pesticide and non-pesticide control methods.

2.2.1 Surfacing Materials at Facilities

The proper selection and installation of surfacing materials at FortisBC facilities are important in minimizing growth of unwanted vegetation.

The presence of organic material, such as soil fines, at facilities provides a growth medium for unwanted vegetation. Suitable surfacing material of a correct thickness and free of organic material can reduce the establishment of unwanted vegetation. The following options for surfacing materials will be considered by FortisBC for new construction and upgrading of existing structures:

- Use of crushed rock;
- Use of crushed rock over landscape fabric (geotextile); and,
- Use of asphalt and concrete

2.2.2 Maintaining Perimeter Fences Vegetation Free

Large trees (especially deciduous) and shrubs growing within 6 meters of the outside perimeter fence of substation and switching stations will be removed. These trees and shrubs deposit organic debris into the stations, compromise station security by improving access over the fence, and can create safety and fire hazards if they grow too close to equipment. These can also restrict visibility and inhibit site access roads throughout the facility.

Certain types of low growing vegetation (horsetail, blackberry, groundsel) area considered to be invasive weeds and can grow through/entwine chain link fencing found in substations, switching stations, compounds, office complexes and pole yards.

2.2.3 Seeding Disturbed Areas

Soils disturbed during construction of new facilities, upgrading of facilities or other activities will be seeded if other surface materials are not installed. These areas outside the station fence can become infested with noxious and other weed species. These areas can also be subject to erosion, planting of low growing vegetation, turf, or surfaced with crushed gravel underlain with landscape fabric will be undertaken where feasible.

2.3 Pest Identification *[IPMR Section 58(2)(b)(ii)]*

Unwanted vegetation growing within or adjacent to FortisBC facilities will be termed “weeds” within this PMP. Weeds are a term used to describe vegetation growing where it is not desired (i.e., interfering with human activity and/or causing safety issues), and is therefore considered to be a pest. The accurate identification of unwanted vegetation (i.e., weeds) at FortisBC facilities is important for several reasons:

- Depending on their growth rates and characteristics, and their location within the facility, control may not be warranted or desirable. For example, grass growing in a site where the soil has been disturbed by construction would be desirable;
- Control methods may differ depending on the plant species. Some may be easily controlled by non-chemical methods, but others, may only be managed through the use of certain types of pesticides (called herbicides); and,
- Certain plants may be noxious weeds and must be controlled by law.

There are numerous publications that will assist in the identification of unwanted vegetation. FortisBC staff will use field guides and other identification tools to help them identify weeds. There are many online resources available for information on identifying weeds, including the resources listed in the following table:

Table 1: Vegetation Identification Information Available Online

Ministry of Agriculture and Lands	“Field Guide to Noxious and Other Selected Weeds of British Columbia”	www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm
E-Flora BC	Electronic Atlas of the plants of BC	www.eflora.bc.ca
Central Kootenay Invasive Plant Committee	List of invasive plant profiles covering the Central Kootenay region	www.kootenayweeds.com/profiles.php
Invasive Plant Pest Management Plan for the Southern Interior of British Columbia	BC Ministry of Forest and Range PMP	http://www.for.gov.bc.ca/hra/Publications/invasive_plants/PMPs/PMP%20402-0649%2010-15%20FINAL.pdf
Invasive Species Council of BC	List of invasive species in BC	http://www.bcinvases.ca/

2.4 Monitoring Pest Populations *[IPMR Section 58(2)(c)]*

FortisBC staff and contractors monitor vegetation, including danger trees, on or adjacent to their facilities and their access roads on a regular basis. Monitoring of facilities provides a record of information about weed occurrence and density, and site conditions. Monitoring also includes recording information on changes to weed species composition, distribution, and density over time, as well as changes to adjacent plant communities that could invade the facility. Monitoring is generally done visually, and documented in writing.

2.4.1 Monitoring Methods *[IPMR Section 58(2)(c)(i)]*

Monitoring is generally carried out on foot or by vehicle, depending on the terrain. Monitoring normally consists of a visual inspection, where the density, location and type of vegetation present are documented.

2.4.2 Monitoring Frequency *[IPMR Section 58(2)(c)(ii)]*

Incidental Monitoring:

Sites are normally monitored on a monthly basis as part of a general safety and maintenance inspection. Emerging weed problems are brought to the attention of the appropriate FortisBC Supervisor of Station Services for further assessment.

Annual Monitoring:

FortisBC staff, in conjunction with the vegetation management contractor, annually monitor conditions at facilities to ensure that treatments are applied at the most effective times for weed control. Annual inspections are also a legal requirement for dams and penstocks under Section 18(1) of the BC *Water Act*. At sites where there are electrical concerns or environmental sensitivities, sites may be monitored more frequently.

2.4.3 Data Collected During Monitoring *[IPMR Section 58(2)(c)(iii)]*

During monitoring, each site will be visually assessed to determine if treatments are necessary, and, if treatments are deemed necessary, on the timing of the treatments. The monitoring that is done at each site is visual, and the results may be recorded on a Facilities Site Data Sheet and Management Plan. The percentage weed cover is used to determine the Treatment Threshold (the level above which treatment is warranted) (see next section for details).

The Facility Site Data Sheet and Management Plan will serve as a starting point for the collection of site information for sites requiring integrated vegetation management, primarily substations. A copy of this Site Data Sheet and Management Plan is shown in Appendix 5. Lesser sites for which a Site Data Sheet and Management Plan is not developed will have a prescription prepared prior to treatment. The prescription will contain the following:

- site sensitivities (nearby water bodies, pesticide-free zones, residual-free zones)
- current conditions (surfacing materials, list of weed species within and outside the facility)

- preventive measures that can be taken
- recommended treatment methods, procedures, and timing

2.5 Injury Thresholds and How Treatment Decisions Are Chosen and Applied *[IPMR Section 58(2)(d)]*

Treatment of weeds/vegetation within FortisBC facilities is required when the vegetation reaches a certain level. This level is termed the treatment threshold, which is the level of surface weed cover, expressed as a percentage of the total area, that can be tolerated and still maintain the integrity, security, and safety within the site.

2.5.1 How Injury Thresholds are Chosen *[IPMR Section 58(2)(d)(i)]*

Any percentage weed cover above the established treatment threshold requires a vegetation management action. Treatment thresholds will vary, since vegetation control is more critical for certain areas within each facility. They can be specific and include all weed species (e.g., within a switching station, where there is a low tolerance for vegetation growth), or they may be specific to one weed species (e.g., where a single, tall growing tree or shrub species compromises site safety and security). Consequently, the level of control required is determined by either the:

- Density of weed establishment; or,
- Specific weed problem species.

Appendix 2 indicates the types of problem weeds generally found at FortisBC facilities, and also describes how the location of the weeds within the facility dictates which weeds will be of most concern.

2.5.1.1 Density of Weed Establishment

In sites where the tolerance for weeds is low, the treatment threshold is determined by the density of all weed species and dead organic matter present at the site. This is specific for areas within FortisBC facilities. Areas such as substations and switching stations will have a much lower treatment threshold, for example, than gravel parking areas and access roads.

2.5.1.2 Specific Weed Problem Species

Only specific high-risk weed species will be managed in areas such as areas not in use, along access roads and outside fence perimeters. When present, these species will be selectively controlled in a manner that minimizes the disturbance to adjacent low risk vegetation.

2.5.2 How Injury Thresholds are Applied [IPMR Section 58(2)(d)(ii)]

Treatments will be implemented annually at all FortisBC facilities covered under this PMP to ensure that the surfaces within electrical facilities remain as free of vegetation as possible, and that vegetation encroaching alongside fence lines and access roads is maintained. The vegetation management contractor will visually assess the weed cover at each site, and a decision will be made to take action against weed problems based on the specific treatment thresholds described below. The contractor will only employ approved vegetation management treatments as contained in this PMP, and must be cognizant of all site sensitivities as described in the Facilities Site Data Sheet and Management Plans.

2.5.3 Specific Treatment Thresholds

Specific vegetation management treatment thresholds for the different types of FortisBC facilities covered by this PMP are detailed below:

Within Electrical Compounds (Substations, Switching Stations and Tower Compounds)

Electrical facilities are critical sites for vegetation management for safety reasons. If an electrical fault or lightning strike occurs, current can flow through the structure and into the ground, creating step and touch potentials that can cause injury or death to workers.

Because of serious electrical safety hazards, there is no tolerance for weeds within fenced substations, switching stations and tower compounds. All weeds present at a site when treatment crews are present will be controlled (**0% threshold**), especially any tall-growing species whose roots could reach the grounding system.

In addition, the following areas are maintained weed free (**0%**):

- Under or around electrical equipment
- Under switch operators and equipment control cabinets because of the high risk of people standing at the equipment during an electrical fault
- Around oil-filled transformers and equipment
- Around high voltage equipment with ground level insulators

Outside and Inside Substation, Switchyard and Tower Compound Perimeter Fences

In many FortisBC substations, switchyards and tower compounds, the ground grid extends beyond the perimeter fence for 1.5 to 2 meters for safety reasons (as outlined above). Herbaceous broadleaf and grass species, as well as noxious and invasive weeds, will be controlled where weed density exceeds 5% of the perimeter area within 6 meters of the fence (0% threshold). For safety reasons, all tall growing tree and shrub species within 1 meter of the perimeter fence will be selective controlled (0% threshold), and all other vegetative cover within 6 meters of the fence will be kept below 15 cm in height.

Roads Within Facilities

The majority of roads that is adjacent to FortisBC facilities have either gravel or dirt surfacing and are not paved. Weeds established within or alongside these roads can act as seed sources to rapidly spread weeds to adjacent electrical compounds, or can limit access for safety inspections or for emergency response. When weed levels exceed 15% of the area, control will be initiated (**15% threshold**). The exception is for weeds growing through asphalt -surfaced roadways, where all weeds will be controlled (**0% threshold**), to maintain the resistivity and integrity of the asphalt surface.

Compounds, Equipment Storage Yards, and Around Buildings/Offices

Although the electrical hazard in compounds, storage yards and around buildings is not as high as in electrical facilities, weeds growing in these areas can serve as a seed source, interfere with access to equipment, compromise site security, serve as food and harbourage for ants, rodents and wood pests, increase the rate of corrosion of steel equipment by retaining moisture, increase the fire hazard ,and increase the risk of slipping and tripping Controls will be initiated when weed levels exceed 15% of the area (**15% threshold**).

Pole Yards

For the same reasons as compounds, storage yards, and around buildings and offices, weeds must be controlled in pole yards. Pole yards may either by enclosed within a fenced compound or outside of the fenced areas. The Canadian Standards Association governs the storage of wood poles. CAN/CSA 015, Section 5.7 requires that poles be piled and supported in such a manner that all poles are at least 30 cm above the general ground level, and that no vegetation is permitted underneath stored poles. Under pole bunks, all vegetation will be controlled for safety (fire prevention) reasons (**0% threshold**). Controls will also be initiated when weed cover within 10 meters of the pole bunks exceeds 10% of the area (**10% threshold**). Controls will be initiated throughout the pole yard when weed cover exceeds 15% of the pole yard area (**5% threshold**).

In addition, tall trees and shrubs growing within 1 meter of the pole yard perimeter fence will be removed to reduce the safety hazard.

Vacant and Undeveloped Land Within Facilities

Many of the larger facilities, such as generation sites, have large areas of vacant or undeveloped land. Many of these areas contain vegetation. Although vegetation management is not routinely conducted in these areas, these areas have the potential of being the source of weeds, weed seeds and noxious and invasive weeds that can increase the vegetative cover in electrical facilities. No threshold level is currently established for weeds growing in these areas except for noxious weeds that will be controlled (**0% threshold**).

Generation Facilities

In addition to the areas discussed above, generation facilities include concrete dams, penstocks, spillways and diversion channels. Weeds growing in these areas are a safety concern, and must be removed because:

- Weed roots can penetrate the dam core and increase the risk of water leaks;
- Weeds can reduce access and block sightlines to structures instrumentation during safety inspections to monitor seepage; and,
- Weeds can provide food and shelter for rodents and other pests.

It is important that weeds be managed before they establish extensive root systems that can provide channels for water to move through the dam, spillway and diversion channel structures.

Concrete Dams

Seepage must be continuously monitored around the toe of dams. This requires visual inspections. Weeds growing around the toe of the dam, in cracks, and around the buttresses must be managed to provide clear visibility during inspections. All vegetation growing within 6 meters of the toe of the dam will be removed (**0% threshold**). Controls will be initiated when shrubs and deep-rooted trees over 1 meter in height exceeds 5% cover (**5% threshold**) on the upstream and downstream dam faces. Low growing shrubs, moss, algae and liverworts are usually only controlled if they present a slipping hazard to workers.

Penstocks

Penstocks are large pipes that carry water from the reservoir to the turbines inside the power plant. Their concrete foundations are protected from erosion by means of drainage canals located alongside. Weeds must be managed along the penstock right-of-way, along drainage channels, around the penstock support structure, and to 1 meter below the penstock.

The main reasons to undertake weed management around penstocks is to maintain their structural integrity, allow easy access for safety and maintenance inspections, prevent vegetation from impeding drainage in ditches and waterways, and minimizing fire hazards by removing a source of fuel. Controls will be initiated when weed levels exceed 10% (**10% threshold**) of the area. Tall growing trees and shrubs within 1 meter below the penstock and 5 meters on either side of the penstock will be removed.

Spillways and Diversion Channels (Power Canals)

Spillways are concrete or natural channels designed to pass excess water around the dam without going through the turbines. Diversion channels carry water to the penstocks or to storage reservoirs. Weed control is required around spillways and diversion channels mainly to prevent organic debris from accumulating in the channel and to maintain access for safety inspections and maintenance. Trees and shrubs growing within 5 meters of spillways and drainage channels will be managed when they cover 10% (**10% threshold**) of the area.

Noxious Weeds

There is no tolerance for noxious weeds (**0% threshold**). They will be controlled at all sites as soon as they are noticed, in order to comply with provisions of the BC *Weed Control Act*.

2.6 Treatment Options & Selection Criteria [IPMR Section 58(2)(e)]

IPM involves the use of different techniques to control undesirable vegetation on FortisBC transmission and distribution rights-of-way. The selection of a particular technique will depend on:

- The weed species being targeted;
- Safety, security and economic impacts, and site accessibility;
- Treatment timing;
- Effectiveness;
- Land use within the facility (including public versus private and adjacent land uses);
- Environmentally sensitivities in surrounding areas;
- Site characteristics including: land use, proximity of water sources, bodies of water, biogeoclimatic zones, soil type; and
- The consequences of not treating.

The IPM techniques proposed for use under this PMP at FortisBC facilities include physical controls, cultural controls, biological controls, and chemical controls (herbicides).

Physical controls will be primarily considered in the selection process to manage vegetation growing within or adjacent to FortisBC facilities. Herbicides will be combined with physical treatments where physical treatments alone are not providing effective vegetation management. The targeted purpose for each herbicide approved under this PMP is discussed in detail later in this section. During all use of herbicides, disturbance to low growing vegetation will be minimized when controlling woody vegetation and noxious weeds by selective applications. The timing of herbicide applications to control noxious weeds growing within or adjacent to facilities will be carefully coordinated in areas where biological control agents have been released, to minimize negative impacts to the released insects.

2.6.1 Non-Chemical Treatment Options

2.6.1.1 Physical Control Methods

Physical controls may include manual (placement of geotextiles, weed trimming, hand pulling, selective slashing, girdling, tree removal, pruning) and mechanical (mowing, stump removal). Table 2 provides a description and rationale and the benefits and limitations of each of these physical treatment methods.

Table 2 Description and Rationale, Benefits and Limitations of Physical Control Methods

Description & Rationale	Benefits/Limitations
<p>Selective Slashing is manual treatment for managing woody tree and shrub species using tools such as chain saws, brush saws and axes. Woody vegetation is most commonly found encroaching outside of fence lines. Selective slashing of certain deciduous species is sometimes combined with a follow-up herbicide treatment to reduce re-sprout from the cut stump.</p>	<p>The advantages of selective slashing are that it is selective and meets electrical safety requirements. The disadvantages are that use of power tools to fall trees can pose safety hazards and is expensive and labour intensive.</p>
<p>Girdling is an effective technique to control the growth of certain deciduous species (e.g., alder, birch, cottonwood) that commonly re-sprout following cutting. A strip of bark is removed from around the entire tree trunk with an axe or other hand tool. This causes damage to the phloem tissue within the sapwood. Transport of nutrients (needed for photosynthesis) to the roots is inhibited, which causes the tree to slowly die.</p>	<p>This technique is effective in killing the tree roots, but has no effect on the above ground parts. The technique, which is very labour intensive, is useful in areas adjacent to water bodies or other environmentally sensitive areas where herbicide application is not permitted. Girdling also allows for the selective management of individual stems and species, which can be removed on a tree-by-tree basis.</p>
<p>Hand Pulling is a viable physical control only for certain established weeds that can be easily uprooted such as young tree seedlings and clumps of grass where the roots can be fully removed. It is effective if the number of weeds to be pulled is small and the site is a manageable size. When hand pulling is used to manage weeds, the exposed soil will be immediately covered with existing gravel.</p>	<p>Hand pulling of weeds at electrical facilities is not done very often, as it tends to break down the crushed rock surface. Excessive hand pulling increases the organic matter in the crush rock, which encourages weed establishment. There can also be a serious safety issue with hand pulling weeds within electrical facilities. If the weed roots are in contact with the ground grid, workers hand pulling roots risk electrocution. In areas where there has been little or vegetation management undertaken for an extended period of time, hand pulling can be effective at reducing a large volume of vegetation to a manageable level. Other control methods can then be used to complete the vegetation management work.</p>

Facility Pest Management Plan

Description & Rationale	Benefits/Limitations
<p>Weed-Trimming at the ground surface can be used in areas such as along fence lines, at low priority sites, for removing herbaceous vegetation growing on gravel areas, within cracks in asphalt or concrete and along access roads.</p>	<p>When done early in the season, weed trimming helps to remove seed heads. It does not remove roots and has only limited effectiveness against weed species that reproduce from stem pieces. A common two-step procedure within gravel areas combining weed trimming with a follow-up herbicide application is effective in managing weed growth while removing organic matter. Weeds are cut down, raked up along with the organic matter, bagged and removed off site for disposal. The cut portions of the vegetation that remain on the gravel surface are then treated with an appropriate herbicide.</p>
<p>Mowing is the cutting of problem vegetation, primarily grasses or other low growing herbaceous species. Vegetation will be mowed using commercial lawnmowers, garden tractors or industrial tractors.</p>	<p>Mowing is useful for maintaining vacant or undeveloped areas within a facility. Vacant areas are those that have no electrical facilities or equipment storage, or have been designated for future expansion. The surface of the vacant areas may be covered with grass or other low growing herbaceous vegetation and is maintained only by mowing. Vegetation should be mowed prior to developing seed heads, to reduce the seed source available for dispersal to other areas of low weed tolerance within the facility.</p>
<p>Pruning is useful for the selective removal of limbs and branches from large native trees and domestic shrubs growing on perimeter fencing. Tree pruning can be used where tree removal may not be appropriate. In residential areas, pruning is often a more acceptable method of controlling problem vegetation than other manual/mechanical techniques.</p>	<p>Pruning is useful for the removal of selected branches from trees encroaching along fence lines in areas such as substations and switching stations. The advantage of pruning using proper arboriculture practices is that causes very minimal disturbance to the surrounding environment.</p>
<p>Geotextile is a porous polypropylene fabric that is placed below mulches in landscaped areas such as flower or shrub beds. It works by preventing root growth of the unwanted vegetation.</p>	<p>The use of geotextile under crushed rock may give better control of unwanted vegetation than the use of crushed rock alone. When geotextiles prove beneficial in reducing weed growth, its use will be incorporated into new and upgraded substations and switchyards.</p>
<p>Stump Removal Is the removal of large, mature trees is required adjacent to facilities to improve site safety, security and aesthetics.</p>	<p>Stump removal is often required following tree cutting if the stump is unsafe, aesthetically displeasing, or is in a construction location. Stump removal in construction sites is achieved with heavy machinery, while individual stumps can be ground down with a stump grinder.</p>

2.6.1.2 Cultural Control Methods

Cultural controls involve the establishment of local, low-growing competitive vegetation to minimize the need for long-term control of woody vegetation and noxious weeds, or grass seeding large areas of bare soil. These techniques can be used on undeveloped sites or disturbed area within a facility.

Table 3: Description and Rationale, Benefits and Limitations of Cultural Control Methods

Description & Rationale	Benefits/Limitations
<p>Grass Seeding refers to the manual planting of turf or agricultural grasses. This method is used to reduce the establishment of broad-leaved weeds with rapidly spreading airborne seeds. Required equipment may include cyclone spreaders, seed drills and hydro-seeding machines</p>	<p>The advantages of using grass seeding are that it prevents erosion, inhibits weed growth and promotes aesthetics.</p>

2.6.1.3 Biological Control Methods

Biological control techniques utilize agents such as fungi or insects that specifically target certain problem weed species. The only biological control agent registered for use in Canada for the control of certain species of problem vegetation is Chontrol Paste ®. This biological control product inhibits the re-sprouting and re-growth from the cut stumps of limited species in Facilities and forest vegetation management. This product is a fungus, *Chondrostereum purpureum*, which inhibits re-sprouting of cut stumps by colonizing and decaying the stumps. The fungus is specific to limited species. The product is applied to freshly cut stumps during the growing season, from summer to early fall, and when conditions are conducive for fungal growth and development.

Table 4 Description and Rationale, Benefits and Limitations of Bio-Control Treatment Methods

Description & Rationale	Benefits/Limitations
<p>Biological Control Agent releases can help control noxious weeds and invasive plants by invading the plant and slowly killing it, or by reducing seed production and plant vigour. This method will only be used at large-area sites with a high density of noxious weeds or invasive plants, such as fields or areas with adjacent properties where there is a cooperative effort to control weeds. This type of program is generally employed with the cooperation and guidance of an expert from Agriculture Canada.</p>	<p>The size of the weed stand 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, is not usually effective in eliminating weed populations, but does help to reduce the spread of weeds and may reduce weed densities to a manageable level.</p>

2.6.2 Chemical (Herbicides) Control Methods [IPMR Section 58(2)(e)]

The Need for Herbicide Use

Although a main objective of this PMP is to minimize the use of herbicides for the control of problem vegetation where viable alternatives exist, herbicides are an important tool in vegetation management. This is especially true in areas where non-chemical methods cannot be employed because of safety issues, such as within substations and switching stations.

Mowing, pruning, trimming and cutting remain important parts of FortisBC's integrated pest management program, yet in some instances these methods can be impractical, dangerous for the workers, incompatible with environmental protection values, labour intensive and expensive. There are worker safety issues inherent in attempting to hand pull vegetation within an electrical facility related to contact with ground wires. In certain areas, mechanical methods cannot be used for vegetation control. Steep terrain may limit access by mowers and can be dangerous for a chain saw operator. Exceedingly dense brush can create both a visibility and a physical hazard to workers and can result in an increased incidence of injuries due to slipping and tripping while operating power equipment. Mechanical methods are non-selective, and can also lead to soil erosion by removing a high percentage of the vegetative ground cover. They can also damage compatible plant species such as low growing shrubs and grasses. Biodiversity is reduced when non-selective mechanical methods are used to remove most of the vegetation from a site. Studies have shown that there are worker health risks arising from exposure to power saw exhaust during brushing activities. The exhaust of a brush saw or a chain saw has been shown to contain many toxic compounds, including potent mutagens, carcinogens, irritants and central nervous system depressants. Studies indicate that work done in deep brush and quiet air can result in exhaust concentrations that may impair worker health. There are also the unknown effects of power saw exhaust on the environment. From an economic viewpoint, mechanical methods have been shown to cost, on the average, four times more per hectare than control of the same vegetation using herbicides.

Herbicide use has not been shown to impair applicator health provided that personal protective measures and equipment, as indicated on product labels, are adhered to. With the exception of the active ingredient glyphosate, all herbicides proposed for use are selective in their mode of action. They will not affect grasses growing on a treatment site, thus reducing the chances of soil erosion. Due to their generally selective use (to control re-sprouting of deciduous vegetation), their impacts on biodiversity will be generally less than with mechanical methods.

Effects on biodiversity that result from the use of glyphosate have been shown to be temporary due to its non-residual nature.

Appendix 3 provides details on the properties/use patterns, timing of application, and where and how applied for the herbicide active ingredients proposed for use under this PMP.

2.6.3 Herbicide Identification, Application Equipment, and Application Methods

The herbicide active ingredients proposed for use under this IVMP are shown in Table 5.

Table 5: Herbicide Active Ingredients Proposed for Possible Use Under the IVMP

ACTIVE INGREDIENT		
Aminopyralid	diuron	indaziflam
aminocyclopyrachlor	flumioxazin	imazapyr
chlorsulfuron	fluroxypyr	metsulfuron-methyl
clopyralid	glyphosate	picloram
dicamba	hexazinone	triclopyr
2-4 Dichlorophenoxyacetic Acid (amine and ester)		

Appendix 3 provides a description of soil residual activity, mode of action, selectivity, and application for each of the herbicides.

2.6.4 Herbicide Application Equipment

The application equipment proposed for use in applying herbicides under this PMP include:

Backpack Sprayer

A backpack is a portable, manually operated, pressurized container with a positive shut-off system and a nozzle for applying herbicides. It operates under low pressure, thus minimizing the possibility of drift. It is particularly useful for spraying small areas or individual trees and plants. Within this PMP, backpack sprayers may be used for the foliar or soil application of all the active ingredients for vegetation management at facilities, for the application of the active ingredients glyphosate and triclopyr to cut surfaces (i.e. stumps) following physical controls, and for the control of noxious weeds and invasive plants.

Wick/Wipe On Applicator

Wick/wipe on application may be used to selectively apply herbicides containing the active ingredient glyphosate by wiping it directly onto plants. Only small

amounts of glyphosate are applied, so the need for pumps, control devices and spray tanks is eliminated. Wick/wipe on applications are ideal for vegetation management in areas where no spray drift can be tolerated. Wick/wipe on applications of glyphosate may be used for vegetation management at facilities, for the application to cut surfaces (i.e. stumps) following physical controls, and for the control of noxious weeds and invasive plants

Handgun (Power Hose and Nozzle)

A handgun (power hose and nozzle) is a hand-held spray gun and hose attached to a portable tank filled with herbicide solution, usually with a power driven pump to provide pressure to the herbicide solution in the hose. Handguns are generally used within facilities where large areas of vegetation have to be controlled, but may also be used for the control of noxious weeds and invasive plants. Within this PMP, handguns may be used for the foliar or soil application of all the active ingredients for vegetation management at facilities, and for the control of noxious weeds and invasive plants.

Squirt Bottle

A hand-held, non-pressurized container, used to apply the herbicide active ingredients glyphosate and triclopyr to the cut surface of deciduous stumps to inhibit re-sprouting following physical control methods.

Injection Tools

An automatic lance or battery-powered drill used to inject the herbicide active ingredients glyphosate and triclopyr into individual deciduous stems to inhibit re-sprouting following physical control methods.

2.6.5 Herbicide Application Methods/Techniques

The herbicide application methods/techniques proposed for use under this PMP include foliar, wick/wipe-on, and cut surface applications. A description, rationale for use, and the benefits and limitations of each of these application methods/techniques, is shown in Table 6.

Table 6: Description and Rationale, Benefits and Limitations of Herbicide Application Methods/Techniques

Description & Rationale	Benefits/Limitations
<p>Foliar applications involve use of a manually operated pressurized backpack sprayer or a handgun, and can be used to apply all of the active ingredients. This method/technique is most effective when the target vegetation is actively growing.</p>	<p>Foliar applications can be carried out at any time of the year, provided the target plants are actively growing. As foliar applications are susceptible to drift, caution must be exercised around desirable plants and environmentally sensitive areas. If non-selective herbicides are being applied, they will control both the target vegetation and desirable plants that are growing among them.</p>
<p>Soil applications involve the use of manually operated pressurized backpack sprayer or a handgun, and can be used to apply the active ingredients diuron and simazine for total vegetation control within facilities.</p>	<p>Because both diuron and simazine are non-selective, residual herbicides, they can be used for vegetation control within most facilities where long-term control of all vegetation is the objective. They are effective in preventing seed germination of some broadleaf vegetation, annual and perennial grasses when applied to the soil. Care must be exercised in their use within facilities if used in areas subject to heavy rainfall or snow, as the herbicides may be washed or moved offsite.</p>
<p>Wick-Wipe-on applications involve the use of a wick soaked with the active ingredient glyphosate that is wiped or dragged over the foliage of the target vegetation. The wick applicators are available in various materials and in many sizes. This technique will generally be used where cut stumps have re-sprouted, or for treating small patches of vegetation within facilities in areas where no drift can be tolerated.</p>	<p>This application technique virtually eliminates drift, and is useful for the safe and effective treatment of individual plants or stems located in areas of desirable vegetation. This technique is labour intensive, however, and is only practical to use for small treatment areas or for a small number of individual plants.</p>
<p>Cut Surface applications will be used in conjunction with manual treatments for controlling deciduous vegetation. With this method/technique, the problem vegetation is cut as low to the ground as possible and herbicide is applied to the cut surface of the stump to limit re-sprouting. The active ingredients glyphosate and triclopyr may be applied using this method/technique.</p>	<p>This method/technique is preferable in highly visible areas or in areas where standing dead trees do not meet treatment objectives. Because herbicide application is restricted to the cut surface of freshly cut stumps, there is generally no herbicide drift, resulting in minimal impact to fish, wildlife, and bodies of water, water sources, and food intended for human consumption. Cut surface applications pose little risk of herbicide exposure to workers or the general public. If treatment is not undertaken immediately following physical control, this technique may not be successful.</p>

2.7 Treatment Selection Criteria [IPMR Section 58(2)(e)(iv)]

Integrated vegetation management involves a decision-making process that looks at the various treatment options that are available for any particular vegetation complex. This decision-making process ensures that the most suitable, effective, environmentally compatible and cost-effective method or combination of methods is selected for a particular facility. In making these decisions, FortisBC personnel will generally use the following assessment criteria to justify and evaluate the method(s) chosen:

- Urgency of the required treatment;
- Species of problem vegetation (conifer/deciduous);
- Location of the problem vegetation (under piping, perimeter fences);
- Accessibility to the problem vegetation (terrain, slope, remote areas);
- Safety issues (the public, FortisBC personnel and contractors);
- Risk of fire (fuel loading on the ground);
- Objectives of the vegetation management (reduce fire hazard, access, site security);
- Consequences of not taking action;
- Stem density of problem vegetation;
- Height of problem vegetation;
- Effect on adjacent property owners and land uses;
- First Nations and public concerns;
- Aesthetic considerations;
- Short and long-term impacts of the method(s) being considered;
- Expected efficacy of the method(s) being considered;
- Benefits and limitations of each method;
- Cost effectiveness of each method;
- Environmental considerations (proximity to water sources, bodies of water, food growing or planted for human consumption, riparian areas, wildlife and fish habitat); and,
- For herbicide treatments, the choice of herbicide, application methods/techniques and application equipment.

The Supervisor of Station Services will work closely with the contractor to ensure that treatments are applied at the most effective time for weed control. As an example, it is recommended that the noxious weed, diffuse knapweed, be controlled before it goes to seed to help in reducing its' spread. If the treatment option being considered involves the use of an herbicide, the most effective control will be achieved if the herbicide is applied to the correct growth stage of the weed.

If a site is recommended for herbicide application to manage the weeds, the contractor will have in his possession the most recent copy of the Site Data Sheet and Management Plan for the site during the treatment. At the conclusion of the treatment, the contractor will record on the plan the following information:

- Date and time of treatment;
- The active ingredient(s) applied, application rate, total area treated in square meters;
- The locations of the weeds to which herbicide was applied;

- An estimate of the total percentage weed cover on the site; and,
- The major types of weeds present on the site.

2.8 Post Treatment Evaluations [IPMR Section 58(2)(c)]

All applications of herbicides for facilities vegetation management under this PMP will be undertaken by contracts issued to qualified companies in possession of a valid BC Pest Control Service Licence. All herbicide applications will be made by certified pesticide applicators in the appropriate category of certification or supervised by certified pesticide applicators in the appropriate category of certification.

During their regular operations and maintenance site visits, FortisBC staff will monitor the effectiveness of vegetation management treatments undertaken by each contractor.

Work will be inspected to determine:

- Compliance with the commitments made in this PMP;
- Compliance with the *Integrated Pest Management Act and Regulations*;
- That site objectives have been achieved;
- The success of the treatment methods employed;
- If pesticide free zones, no treatment zones and buffer zones were maintained;
- If any negative environmental impacts have occurred; and,
- If corrective action is required.

Inspections will be undertaken on the ground, and will generally be based on visual evaluations. Evaluations may include both qualitative and quantitative determinations of mortality to the targeted problem vegetation, as well documentation of any non-target mortality that is evident. Effectiveness of the treatments will be determined by comparing pre-treatment and post-treatment vegetation (by percentage of surface area).

The above information can also be used in the Facilities Site Data Sheet and Management Plan.

3.0 Environmental Protection Strategies and Procedures

All pest management activities undertaken under this PMP (both chemical and non-chemical) incorporate measures designed to protect the natural environment including:

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

- Pre-treatment inspection procedures for identifying treatment area boundaries;
- Procedures for monitoring weather conditions and strategies for modifying herbicide application methods for different weather conditions; and,
- Procedures for pre-treatment inspections to ensure protection of human health and the environment during treatment period.

In this PMP, all pesticide free zones (PFZ) and no treatment zones (NTZ) will comply with the standards contained in Division 7 of the IPMR.

3.1 Water Protection PFZs and NTZs

According to the *Integrated Pest Management Regulation (IPMR)*:

Table 7 Definitions of PFZ and NTZ as Stated in the IPMR

Pesticide Free Zone (PFZ)	means an area of land that <ul style="list-style-type: none"> a. must not be treated with pesticide, and b. must be protected from pesticide moving into it
No Treatment Zone (NTZ)	means an area of land that must not be treated with pesticide

The following table lists the minimum no-treatment zones (NTZs) and pesticide-free zones (PFZs) that are followed to protect domestic and agricultural water sources, such as water intakes and wells.

Table 8: Minimum Water Protection Measures for the Protection of Domestic and Agricultural Wells and Water Intakes, Bodies of Water, and Streams

All Pesticides	Required Distance
Domestic and agricultural wells and water intakes	30 meter NTZ
Any water body or stream using any pesticide except glyphosate, subject to label restrictions	10 meter PFZ
Glyphosate Applications	
A water body or stream that is fish bearing and not within an industrial site (as defined by <i>Integrated Pest Management Regulation</i>)	5 meter PFZ
A water body or stream that is fish bearing and within an industrial site (as defined by <i>Integrated Pest Management Regulation</i>)	2 meter PFZ

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A permanent water body that is not fish bearing at any time of the year	2 meter PFZ
Up to high water mark of a temporary free-standing body of water that is not fish-bearing and does not drain directly into fish-bearing water, at any time of year	0 meter PFZ
Dry streams that are not fish bearing at any time of the year and do not drain directly into fish bearing water, at any time of the year	0 meter PFZ

3.2 Environmental Feature Protection Strategies and Procedures

Table 9: Strategies/Procedures for the Protection of Environmental Features

Environmental Feature	FortisBC PMP Protection Strategy/Procedure
Community Watersheds – defined under the BC <i>Forest Range Practices Act</i>	<ul style="list-style-type: none"> • Locations of community watersheds are verified by accessing information from the Ministry of Environment or local governments • Pesticides will not be stored within a community watershed for more than 24 hours prior to their use, and removed from the community watershed within 7 days of their use, unless they are stored in a permanent structure • NTZs are maintained around all lakes and other water bodies consistent with those listed in Section 3.1 • A 100 meter NTZ will be maintained upslope from all licensed water intakes within the community watershed, except when failure to treat weeds could compromise public or worker safety. In those cases, NTZs are consistent with those listed in Table 11 • Pesticide use will be discontinued if pesticide residues or pesticide breakdown products are detected at a community watershed water intake, and further use will not be undertaken until the BC Ministry of Health Services (Medical Health Officer) has been satisfied that all required measures have been implemented to preserve water quality • Prior to the use of pesticides, community watershed maps will be consulted to determine if pesticide treatments are within a community watershed or are within 100 meters upslope of any water intake, or 30 meters downslope of any water intake. These are available on the provincial interactive mapping site “<i>Online Cadastre</i>” (Community Watersheds layer) www.srmwww.gov.bc.ca/sgb/IMF/index.html
Domestic and Agricultural	<ul style="list-style-type: none"> • Domestic and agricultural water sources, including water

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Water Sources, including water intakes and wells	<p>intakes and wells, will be protected by adhering to the PFZs and NTZs listed in Table 6.</p> <ul style="list-style-type: none"> • A visual survey will be done to determine if there are wells present not identified by accessing information from the Ministry of Environment or local governments
Groundwater Sources, Surface Water Intakes	<ul style="list-style-type: none"> • Efforts will be made to identify groundwater sources (watersheds, wells, surface water intakes) in advance of treatment by using the best available information from the Ministry of Environment document/data base entitled “<i>Guide to Using the BC Aquifer Classification Maps for the Protection and Management of Groundwater</i>”, and from local governments • Visual surveys will be conducted in areas adjacent to proposed treatment sites to determine the presence of domestic or agricultural surface water
Riparian Areas, Wildlife, Wildlife Habitat, and Species at Risk	<ul style="list-style-type: none"> • A minimum 15 meter NTZ will be maintained around riparian areas when cleaning or fueling application equipment and refilling pesticide dispensing equipment • Prior to control measures being implemented, the boundaries of any required PFZ or NTZ shall be established and marked • Appropriate precautions shall be taken when applying pesticides in critical wildlife habitat areas
Protection of Food Intended for Human Consumption	<ul style="list-style-type: none"> • Where possible, areas containing food plants for human consumption shall be located, NTZs of appropriate width established around these areas for their protection, and treatment notices posted at public access points to proposed treatment areas advising of treatments. • In addition, all pesticide use under this PMP will be undertaken in a manner that minimizes the possibility of any negative impact on these environmentally sensitive areas. Appropriate precautions that may be taken during weed control operations to avoid contaminating these areas include providing increased buffer zones during herbicide applications or using alternative, non-chemical methods of control where possible. • In the vicinity of certified organic farms, it is the responsibility of the grower to maintain an 8m buffer zone between their organic crops and power poles. As recommended by the Certified Organic Associations of British Columbia (Standard #3, Land and Resource Management).
Monitoring Weather Conditions	<p>Weather conditions will be monitored prior to and periodically during pesticide applications. Wind speed and direction, precipitation, temperature and sky conditions (clear, overcast, cloudy, partly cloudy) will be recorded for foliar herbicide applications using backpacks or handguns. Temperature, precipitation, frost and dew conditions will be recorded for stem, bark, wick/wipe-on and stump</p>

Facility Pest Management Plan

	<p>applications.</p> <p>Pesticide applications will be shut down if:</p> <ul style="list-style-type: none"> • The maximum temperature stated on the herbicide label is exceeded • The wind speed and/or direction cause the application of herbicide to drift and/or miss the weeds • It begins to rain, increasing the chances of excessive runoff and leaching
<p>Procedures for Pre-Treatment Inspections and Identifying Treatment Area Boundaries</p>	<ul style="list-style-type: none"> • A pre-treatment inspection shall be completed prior to pesticide use to protect environmentally sensitive areas and to establish treatment area boundaries. During this inspection, the location of environmentally sensitive areas shall be located and mapped. • A pre-treatment meeting/discussion shall be held and crew members shall be instructed in the flagging/marking requirements (which may include the use of Riparian Zone and PFZ flagging tape), as well as the methodology and procedures for herbicide application and handling and the posting of treatment notices by the contractor at locations that meet regulatory requirements
<p>Private & Public Property</p>	<ul style="list-style-type: none"> • In areas such as on or adjacent to parks, schools, daycare centers, lawns, landscaped areas, flowerbeds, or domestic animals on agricultural lands, all pesticide use will be undertaken in a manner that minimizes the possibility of any negative impact on these environmentally sensitive areas. • Treatment notices will be posted at locations that meet regulatory requirements

4.0 Operational Information

Appendix 4 provides details on the operational information/practices that are required to be included in a PMP, including:

- Qualifications and responsibilities of persons applying herbicides;
- Procedures for safely transporting herbicides [IPMR Section 58(3)(a)(i)];
- Procedures for safely storing herbicides [IPMR Section 58(3)(a)(ii)];
- Procedures for safely mixing, loading and applying herbicides [IPMR Sections 58(3)(a)(ii) and (iii)];
- Procedures for the safe disposal of empty herbicide containers and unused herbicides [IPMR Section 58(3)(a)(iv)];
- Procedures for responding to herbicide spills [IPMR Section 58(3)(a)(v)]; and,
- Identification of each pesticide that will be used under the plan, the manner of its application, and the type of equipment required for each manner of application [IPMR Section 58(3)(c)].

5.0 Reporting, Notification and Consultation

5.1 Reporting

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

5.1.1 Confirmation Holder Use Records

Each contracting firm that applies pesticides for FortisBC must maintain daily records of herbicide use.

Section 37(1) of the *Integrated Pest Management Regulation (IPMR)* describes the requirements for these records. The following records must be kept for each treatment location and day of use:

- The date and time of the pesticide use;
- The name of the pest targeted by the use or the purpose of the pesticide use;
- The trade name of each pesticide used and its registration number under the federal Act;
- For each pesticide used, the method and rate of application and the total quantity used;
- The prevailing meteorological conditions including temperature, precipitation and velocity and direction of the wind, these conditions should be measured at the beginning of each day before starting treatment, re-measured if obvious changes

in environmental conditions occur throughout the day, and re-measured at the end of any treatment day; and,

- A record for each piece of the holder's pesticide application equipment that requires calibration showing when the equipment was calibrated and the data upon which its calibration was based.

5.1.2 Annual Report for Confirmation Holders

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

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

5.2 Notifications

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

5.2.1 Notification of PMP Confirmation

FortisBC will, within 7 days of the plan confirmation date, make available, for the term of the confirmation, a copy of the confirmation and the PMP with relevant maps at their local offices to allow inspection by the public.

5.2.2 Annual Notice of Intent to Treat

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

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

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

- Name and business location of confirmation holder;
- Proposed treatment areas;
- The total area proposed for treatment.

5.2.3 Requests to Amend the PMP

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

5.2.4 Notification of Contraventions

Section 72(1)(d) of the IPMR requires that a confirmation holder give written notice to the administrator on a contravention of the *IPMA* or IPMR that involves the release of a pesticide into the environment. FortisBC commits to abiding by this requirement.

Failure of the contractor to observe the following requirements may be cause for contractor dismissal:

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

5.2.5 Posting of Treatment Notices

Prior to treatment, notification signs will be posted on land being treated with herbicides. The applicator is responsible for posting notification signs according to regulatory requirements.

Signs will be clearly visible and legible from each approach to the treatment area used by public/employees/contractors to access the treatment area or at locations where due diligence would seem to require them. Signs may not be removed for at least 14 days after the herbicides have been applied.

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

5.3 Consultations

5.3.1 Public Consultation Plan

Prior to submitting a Pesticide Use Notice to the Ministry of Environment for PMP confirmation, FortisBC will carry out a consultation process with the public and individuals adjacent to FortisBC property potentially significantly affected by the PMP.

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

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

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

Communities or individuals adjacent to FortisBC property potentially significantly affected by the PMP will be directly forwarded written notice of the development of this PMP, prior to submitting a Pesticide Use Notice as per Section 61(2) of the Regulation.

During the public consultation process, the draft PMP will be accessible to the public in various locations, as stated in the public notifications.

5.3.2 Public Consultation Report

FortisBC will prepare a Public Consultation Report that contains:

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

5.3.3 First Nations Consultation Plan

In addition to the objectives for public consultation outlined in Section 5.3.1, FEI will consult with First Nations to avoid infringement on aboriginal rights, treaty rights, or cultural values during the vegetation management program. Consultation is also undertaken to request authorization to undertake pesticide applications on Federal Reserve lands.

FEI not only has an obligation to consult with First Nations, it must also attempt to address their concerns and accommodate their cultural interests. Consultation processes must take into account the BC Treaty negotiation process, and current litigation actions by First Nations respecting aboriginal land use or sovereignty. Both of these major issues can have an impact on the FEI vegetation management program.

In light of the above sensitivities and special concerns, FEI is committed to establishing and maintaining positive relationships with First Nations through meaningful and respectful consultation.

In conducting these First Nations consultations, FEI will refer to the procedures outlined in the *August, 2011 publication entitled “Draft Guidelines for IPM Proponents Conducting Consultations with First Nations”*, published by the BC Ministry of Environment, Integrated Pest Management Program.

The FEI First Nations consultation plan is outlined below:

- Develop a draft pest management plan (this document) that incorporates all related government policies, procedures, standards and information into a single, comprehensive planning document that incorporates the principles of integrated pest management as the basis for decision making options;
- Hand deliver an introductory letter and hard copy of the draft PMP to all First Nations, inviting their input into the development of the plan and with an offer to meet with Chief and Council or staff if desired
- At minimum three efforts will be made with each First Nation;
- FEI will prepare a report that provides a summary of First Nations consultations, including the names and addresses of those First Nations that provided input,

descriptions of specific aboriginal interests and potential impacts, descriptions of any modifications implemented for accommodation purposes, a communications log, including copies of correspondence, meeting notes, and attempts to communicate;

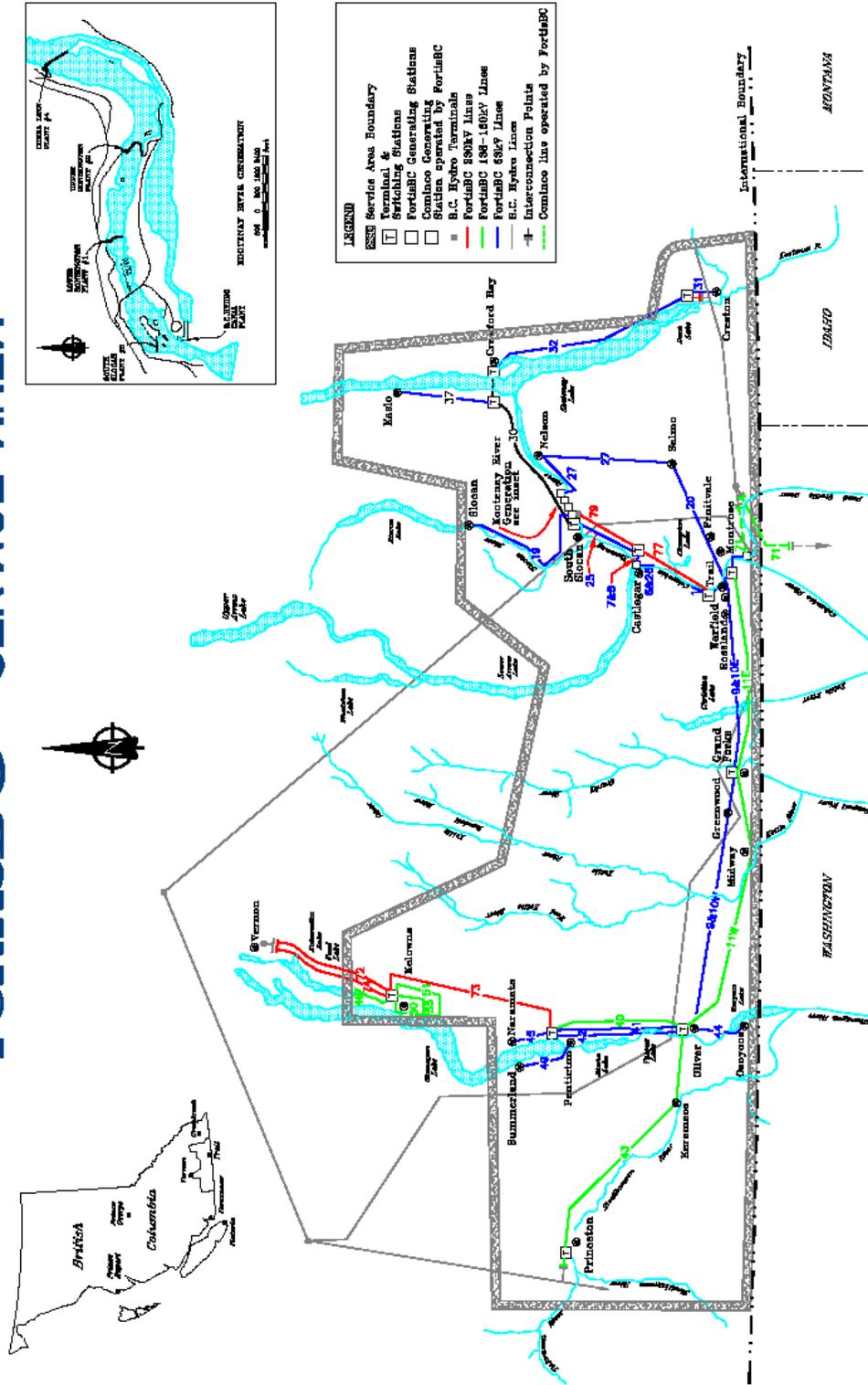
- Summaries of engagement activities and outcomes, and
- Submit a Pesticide Use Notice to the Ministry of Environment confirmation of the PMP

5.3.4 First Nations Consultation Report

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

Appendix 1 The FortisBC Service Area

FORTISBC - SERVICE AREA



DRIVING JAMES, H.V. MAPS SERVICE AREA
 AET UPDATED: 01-21-01

Appendix 2: Types of Problem Vegetation

The location within the facility dictates which vegetation will be of most concern.

Herbaceous Broadleaves and Grasses

Herbaceous broadleaf and grass species are the most frequent types of weeds growing within and immediately adjacent to substations and switching stations, and in other areas where the crushed rock or gravel base is very thin and there is exposed subsoil. Herbaceous broadleaf weeds and grasses are frequently found along access roads, in gravel compounds and pole yards, at the edge of buildings, and growing through cracks in asphalt or concrete, including dams at generation sites. Many of the herbaceous broadleaf weeds are also designated as noxious under the *BC Weed Control Act*.

Woody Vegetation

Woody tree species and shrub species are most problematic when they encroach on the perimeter of fences, or are found in areas where their presence limits visibility or access to a site. They may present a safety hazard if they blow down into an electrical facility, can present a fire hazard if they are overhanging too close to sensitive equipment, can impact site security by providing easier access over security fencing, and can deposit organic debris into stations which increases weed growth. Evergreen and deciduous trees are commonly found adjacent to FortisBC facilities. Manual removal and/or pruning are effective non-chemical methods for the management of evergreen trees. Many deciduous trees and shrubs, however, can re-sprout extensively from the areas where cuts have been made, thereby greatly increasing future management efforts. Deciduous re-sprout can usually only be effectively controlled by the application of a herbicide to the cut surfaces immediately after cutting. A combination of manual and herbicide application to the cut surfaces is also often necessary to manage those woody trees and shrubs that sucker following cutting.

Noxious Weeds

Noxious weeds can negatively impact agriculture, where they can displace or reduce the quality and quantity of crop and forage species. They can also out-compete native plant species, thereby reducing biodiversity and wildlife forage. It is for these reasons that these weeds are designated as noxious under the authority of the *BC Weed Control Act*.

Noxious weeds have been identified and found throughout FortisBC's service area, including within a number of their facilities, and on properties adjacent to these facilities.

Appendix 3: Pesticide Properties/Use Patterns, Timing of Application, and Where and How They Will Be Applied for the Herbicide Active Ingredients Proposed for Use Under This PMP

Active Ingredient	Soil Residual Activity*	Mode of Action	Selectivity **	Where and When Applied ***
aminopyralid	low	translocation	selective	foliage; post emergent
aminocyclopyrachlor	moderate	translocation	selective	foliage; pre and post emergent
chlorsulfuron	low	translocation	selective	foliage; post-emergent
clopyralid	moderate	translocation	selective	foliage; post emergent
dicamba	low	translocation	selective	foliage; post emergent
diuron	moderate	translocation	non-selective	soil; pre emergent
flumioxazin	low	translocation	non-selective	soil; pre emergent
fluroxypyr	moderate	translocation	selective	foliage; post emergent
glyphosate	low	translocation	non-selective	foliage & cut surface; post emergent
hexazinone	moderate	translocation	non-selective	Foliage, soil
indaziflam	moderate	translocation	selective	soil; pre emergent
imazapyr	moderate	translocation	non-selective	foliage; pre and post emergent
metsulfuron-methyl	moderate	translocation	non-selective	foliage; post emergent
picloram	high	translocation	selective	foliage; post-emergent
triclopyr	low	translocation	selective	foliage & basal bark; post emergent
2-4 Dichlorophenoxyacetic Acid (amine and ester)	low	translocation	selective	foliage & basal bark; post emergent

* LOW generally refers to residual soil activity of up to 40 days, MODERATE for residual soil activity of up to one year and HIGH for residual soil activity of greater than one year.

** Herbicides that control all vegetation are termed non-selective, while those that control certain types of vegetation (e.g., only grasses or only broadleaf) are termed selective.

*** Post emergent refers to treatments made after the vegetation has emerged through soil surfaces and pre emergent refers to treatments before the vegetation has emerged through the soil surface.

Appendix 4: Operational Practices in Pesticide Use

This appendix provides details on the operational practices, including contractor responsibilities, on the handling and transport of herbicides used for vegetation management on FortisBC transmission and distribution Facilities.

Qualifications for Persons Applying Pesticides

The majority of pesticide use on FortisBC transmission and distribution Facilities is carried out by outside contractors.

The transportation, storage, handling, application and disposal of pesticides are governed by federal and provincial legislation. All outside contractors and FortisBC personnel working with pesticides will follow safe handling practices including workplace requirements for Workplace Hazardous Materials Information System (WHMIS) labeling and worker education. The required practices for contractors and their workers are detailed in:

- Worker's Compensation Board of British Columbia (1998) *Occupational Health and Safety Regulation – BC Regulation 296/97 as amended by BC Regulation 185/99 – Sections 6.70 to 6.109*;
- B.C Ministry of Environment, Lands and Parks (1995) *Handbook for Pesticide Applicators and Dispensers*; and,
- Worker's Compensation Board of British Columbia (1990) *Standard Practices for Pesticide Applicators*.

Any individual or company (i.e., a contractor) that provides a service to FortisBC by applying commercial or industrial pesticides for vegetation management on FortisBC transmission and distribution Facilities must have a valid B.C Pest Control Service Licence, and each supervising applicator must have a valid B.C. Pesticide Applicator Certificate in the Industrial Vegetation and Noxious Weed Category.

Under the B.C. *Pesticide Control Act Regulation*, a certified pesticide applicator can supervise up to 4 uncertified assistants, provided the assistants are within continuous auditory or visual range at all times while applying pesticides. Individuals must carry proof of their applicator certification with them when applying pesticides for inspection purposes.

Transportation of Pesticides

The transportation of pesticides will comply with all current legislation, federal and provincial, governing their transport. In addition, the following procedures will be followed while pesticides are being transported for application under this PMP:

- Limited amounts of pesticides will be carried in any one vehicle. The quantity will be no more than what is necessary for each project;
- Pesticides will be carried in a secure lockable compartment;
- Pesticides will be transported in original labeled containers;

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- Pesticides will be transported separately from food and drinking water, safety gear and people;
- Spill containment and clean up equipment will be transported separately from pesticides, but in close proximity to them, on each vehicle during transport and use;
- Appropriate documents such as Pest Control Service Operations Records, material safety data sheets (MSDS), this PMP and the PMP approval document, will be available during transport and use of pesticides;
- All documents and placards will be carried in, or placed on, transport vehicles if required under the *Transportation of Dangerous Goods Act* or the *BC Pesticide Control Act*; and,
- All pesticide containers will be inspected for defects prior to transporting, and will be secured against spillage or unauthorized removal.

Spill Treatment Equipment

Spill treatment equipment will be ready and available at storage (including mobile storage), mixing and loading sites, and will include the following:

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

Spill Response Planning

A copy of an approved spill response plan will be available at each work site. All personnel working on a project involving pesticides must be familiar with its contents. If contractors that work under this PMP have their own spill response plan, it must meet or exceed the contents of this plan.

The following procedures must be followed if a spill occurs:

- All personnel will be protected from pesticide contamination by wearing appropriate protective clothing and safety gear;
- Any person exposed to a pesticide will be moved away from the place of the spill and kept warm. First aid will be administered, if required;
- The source of the spill will be stopped;
- The spilled material will be stopped from spreading by creating a dam or ridge;
- The project supervisor will ensure operations cease until the spill is contained and the source is repaired,
- Absorbent material will be spread over the spill, if applicable, to absorb up any liquid;
- The absorbent material will be collected into garbage bags or containers, with the contents clearly marked;
- Contaminated soil or other material will be removed from the spill site and placed in garbage bags or containers;
- Where the pesticide involved in the spill results or may result in its release into the environment, the person responsible for the product will immediately report it to the

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Provincial Emergency Program by telephoning 1-800-663- 3456 or, where that is impractical, to the local police or nearest detachment of the R.C.M.P; and,

- An approved representative of the PMP holder will be notified of the details related to the spill as soon as is practical by the project supervisor.

Pesticide Storage

No vegetation management pesticides will be stored by FortisBC or by contractors at facilities owned or operated by FortisBC. All pesticides will be supplied by the contractor, who must follow, as a minimum, the storage requirements described below.

Pesticides stored on FortisBC property will be in accordance with the *Pesticide Control Act and Regulation* and the Worker's Compensation Board document “*Standard Practices for Pesticide Applicators*”.

In summary, the storage area must:

- Be ventilated to the outside atmosphere;
- Be locked when left unattended;
- Be entered only by persons who are authorized to do so; and,
- Have a placard affixed and maintained on the outside of each door leading into the facility in which the pesticides are stored bearing, in block letters that are clearly visible, the words “WARNING – CHEMICAL - STORAGE -AUTHORIZED PERSONS ONLY”.

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

FortisBC has no direct control of the pesticide storage practices of its contractors while not under contract to them. These companies are still governed by the provisions of the BC Pesticide *Control Act and Regulation* with respect to storage by a Pest Control Service Licencee.

Some contractors may store pesticides for extended periods of time in vehicles when performing a number of pesticide treatments for FortisBC. The vehicle is considered to be a mobile storage unit. Persons responsible for the pesticide storage will ensure that all pesticides are stored in a locked canopy or similar arrangement, separate from the driver and personal protective gear.

Mixing and Loading Pesticides

All mixing and use of pesticides will be carried out by certified pesticide applicators in the appropriate category of certification, or by individuals directly supervised by a certified pesticide applicator in the appropriate category of certification.

Mixing of pesticides must always be conducted in a safe manner. Safety spill kits, spill response plans and first aid supplies will be present on site. Eye wash station(s) and protection clothing as recommended on the respective product labels shall be available on site. Product labels and

MSDSs will be available on site to ensure that quantities of pesticides being mixed and used are consistent with label rates.

There will be no mixing or loading of pesticides within 10 meters of sensitive environmental features.

Pesticide Application Procedures/Conditions

FortisBC will ensure that the following conditions are adhered to for all application of pesticides under this PMP:

- Pesticide applicators will be provided with current labels and Material Safety Data Sheets for the pesticide products they will be using;
- Applicators will inspect each site and plan application procedures before treatment begins. ;
- All pesticides will be applied using only trained and certified personnel who have the required application equipment and protective equipment;
- All pesticide will be applied at the lowest possible application rate that will do the job, and will not exceed the lesser of the pesticide label rate or the rate specified in this PMP;
- Pesticides will only be applied when there is clear evidence of a current or impending pest problem;
- Where possible, pesticides will be applied when target species are at their most susceptible stage;
- Pesticide products and application methods will be selected to maximize the degree of selectivity for the target pest and to minimize the degree of toxicity to non-target organisms, pesticide drift, bystander and worker exposure, and persistence in the environment;
- Pesticide use will be restricted to periods that minimize human exposure and adverse impacts to the environment. Due consideration will be given to the proximity of bystanders, workers, adjacent open windows, high foot-traffic areas and other local sensitive pesticide features. Where possible, pesticides will be applied during periods of low staff or public presence, in the early morning or evening, or on weekends if necessary;
- Unless other required by product labels, outdoor pesticide applications are restricted to conditions where wind speeds due not exceed 8 km/hr; and,
- For outdoor pesticide use, applications will only occur during suitable weather conditions.

Protective Equipment

Protective clothing and equipment required during pesticide mixing, loading, application and disposal will conform with Workers' Compensation Board Occupational Health and Safety Regulations. Equipment such as protective clothing, headgear, eye and face protection, gloves, footwear and respiratory protection equipment must be used where required.

Bystander and Worker Protection/Pesticide Treatment Signs

All of the conditions listed above under pesticide mixing, loading and application are designed, in part, to protect bystanders and workers from exposure to pesticides. Section 8 of this PMP (the next section), will describe the notification requirements that will be adhered to with respect to pesticide use. These conditions relate directly to bystander and worker protection.

At all sites scheduled for pesticide treatment, workers will be advised, either verbally or in writing, of the dates and locations of pesticide treatments, as well as advice or precautions to follow, as appropriate, to minimize their exposure.

Before pesticides are applied, signs will be posted at the treatment site on the day of application. The signs will remain posted for a minimum of 14 days after application. The signs will be visible from both within and outside each treatment area.

Notices will also be posted at all major entry points to sites that receive pesticide treatment. The notices will contain the following information:

- A description of the area to be treated;
- Date and start time of the proposed application;
- Pesticide product name(s) and active ingredient(s); and,
- Precautions, including any applicable re-entry times or conditions, needed for persons to minimize exposure to the pesticide(s) or residues.

Equipment Maintenance and Calibration

All pesticide application equipment used in FortisBC property safe, clean, in good repair, and compatible and appropriate for the pesticide being used.

As a minimum, all pesticide application equipment will be calibrated once per year prior to use, and at regular intervals throughout the season of use. The frequency of calibration will be dictated by factors such as the formulation of pesticides used (e.g., abrasive formulations will result in greater nozzle wear and will require more frequent calibrations), when changing pesticide products, and when nozzle output begins to vary.

Disposal of Pesticide Containers and Residual Pesticides

Disposal of empty containers shall to according to the manufacturer's instructions as noted on the product label or provincial instructions and recommendations that are detailed in the BC Ministry of Environment, Lands and Parks document “ *Handbook for Pesticide Applicators and Dispensers* “ (1995). As a minimum, empty pesticide containers shall:

- Be triple rinsed or pressure rinsed;
- Be made so they cannot be reused by crushing, puncturing or damaging them; and,
- Be disposed of in a permitted sanitary landfill or other approval disposal site.

Appendix 5: Facilities Site Data Sheet and Management Plan

The Site Data Sheet and Management Plan is a document that contains detailed information on a particular site, such as its history, weed coverage, environmental concerns, etc. The Data Sheet also describes how integrated vegetation management activities will be carried out on the site, and may include a detailed map of the facility.

Site Data Sheets and Management Plans have been developed for sites requiring integrated vegetation management, primarily substations. Site Data Sheets and Management Plans may be developed for smaller and lower priority sites on an as needed basis. Lesser sites for which a Site Data Sheet and Management Plan is not developed will have a prescription prepared prior to treatment. The prescription will contain the following:

- site sensitivities (nearby water bodies, pesticide-free zones, residual-free zones)
- current conditions (surfacing materials, list of weed species within and outside the facility)
- preventive measures that can be taken
- recommended treatment methods, procedures, and timing

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SITE DATA SHEET & MANAGEMENT PLAN		V.1 Sept 2009
Site Name:		
Site Location (address or UTM coordinates):		
Type of Site (i.e., substation, pole yard):		
Is the site fenced? YES NO	Size of Fenced area: _____ square meters	
	Size of Area Outside of Fence: _____ square meters	
Description of Vegetation Presence/Density <u>within</u> the Fenced Areas: % Vegetation: _____%		
Description of Vegetation/Presence <u>Outside</u> the Fenced Area: % Vegetation: _____%		
Is Area Landscaped? YES NO Class: A B C		
History of Vegetation Management Methods (Physical and Chemical):		
Slope:		
Drainage: How, and to Where		
Adjacent Land Uses: (i.e., agricultural, residential, industrial, commercial, recreational)		
Adjacent Site Sensitivities: (i.e., permanent and seasonal water bodies, community watersheds, residential areas, habitat or riparian areas, catch basins, potable and non-potable water intakes) *NOTE: Must maintain NTZs and PFZs as per Integrated Pest Management Regulations		

<p>Domestic Water Intakes and Wells: YES NO</p> <p>(if yes, describe location and distance from fenced areas for each)</p>	
<p>Prescription for Vegetation Management <u>Inside</u> Fenced Areas: (Refer to 2.4.3 for Treatment Thresholds)</p>	
<p>Prescription for Vegetation Management <u>Outside</u> Fenced Areas: (Refer to 2.4.3 for Treatment Thresholds)</p>	
<p>Sketch area (attach separate page if required)</p>	