

Southwest Region, Area 1 Integrated Roadside Vegetation Management Plan

2014



**Washington State
Department of Transportation**
Maintenance Operation Divisions

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Summary

This plan explains the Washington State Department of Transportation's (WSDOT) policy and practice for maintenance of roadside vegetation for Maintenance Area 1 within the agency's Southwest Region. This area manages vegetation within approximately 287 miles of state highway corridor in Clark and Cowlitz Counties. In addition to the Interstate 5 corridor between Castle Rock and the Oregon border and all of Interstate 205, the area maintains State Route (SR) 14 through the Columbia Gorge out to just past the Skamania County line, SR 4 in Cowlitz County, and all of State Routes 411, 432, 433, 500, 501, 502, 503, and 504 (Mt. St. Helens Highway). A map of the area is included as **Figure 1** on the following page.

The primary objectives in maintenance of roadside vegetation within the area are in relation to safety of the highway users, preservation of the highway infrastructure, and control of legally designated noxious weeds where they occur on the right-of-way. Other considerations include protection and preservation of natural environment, preserving and enhancing the natural scenic quality of the roadside, and being a good neighbor to the many adjoining property owners. In all cases, roadside vegetation maintenance activities are planned and conducted in a way that discourages or eliminates unwanted vegetation and promotes desirable vegetation. This is the basic premise of Integrated Vegetation Management (IVM) and the foundation of the program.

This document and associated information management tools serve as the primary reference for maintenance of roadside vegetation in the area. Included is detailed information on policies and locations for planned routine maintenance practices, reoccurring weed infestations, sensitive areas, and other areas with special management considerations. Also included are guidelines and prescriptions for best management practices in dealing with roadside vegetation problems and opportunities. In effect, this plan supports WSDOT's compliance with state law (RCW 17.15) by implementing the principles of Integrated Pest Management for the management of roadside vegetation. It also supports WSDOT's long-range goals for the management of roadsides to:

- Create naturally stable, sustainable plant communities
- Improve effectiveness and efficiency in the control of weeds and unwanted trees and brush
- Reduce maintenance cost and herbicide use over time

This plan is organized around the major categories of roadside vegetation maintenance work. The major categories include: Zone 1 (or pavement edge maintenance), Routine Mowing, Noxious Weed Control, Nuisance Weed Control, Tree and Brush Control, and Special Maintenance Areas.

The management of roadside vegetation is a dynamic process and it is intended that this plan be continuously adapted over time based on input from a variety of sources. An integral component of the process is a database for recording IVM treatments for specific vegetation controls and locations, and to record information on follow up evaluation on these treatments. Annual area meetings will be held to discuss what is learned each year and refine the plan over time.

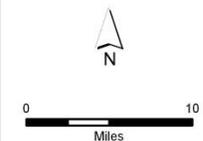
WSDOT is also requesting that local public and private entities with an interest in weed control and roadside vegetation management provide input on the plan and cooperate in efforts where appropriate. Additional copies of the draft plan are available online: http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt_plans.htm, hard copies can also be provided upon request. Please contact Bob Kofstad or Ray Willard at the numbers listed below for questions or comments:

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Data Source: State Routes and County Boundaries from WSDOT at scale of 1:500K.



Washington State Department of Transportation

- City Points
- U.S. Interstate
- U.S. Highway
- State Route
- - - County Lines
- Major River
- Major Lake
- Coast (Major Shoreline)
- National Park
- State Park
- National Forest
- Tribal Reservation
- Military Reservation
- SW Area 1 Outline



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Southwest Region, Area 1 Map
Figure 1

Roadside Management Considerations

The primary objectives for maintenance of roadside vegetation are to provide for safe highway operation and to comply with legal regulations for control of noxious weeds and protection of the environment. Overall WSDOT maintenance policy and procedures for roadside vegetation are defined in Chapter 6 of the WSDOT Maintenance Manual (M51-01, August 2013) <http://www.wsdot.wa.gov/Publications/Manuals/M51-01.htm>

Visual Quality

It is also important to maintain appropriate visual standards in the appearance of the roadside. All maintenance activities should be conducted in a way that minimizes visual impacts such as wide spread “brown-out” from herbicides or shattered limbs from side trimming. Roadside should look as natural as possible throughout the year. Appropriate visual quality for roadsides throughout the state is defined in the WSDOT Roadside Classification Plan (November 2011) <http://www.wsdot.wa.gov/Publications/Manuals/fulltext/M25-31/RCP.pdf>

Operational Zones

WSDOT roadsides are divided into several zones for the purposes of assigning management objectives, maintenance needs, and thresholds for triggering vegetation maintenance actions. Noxious weed species designated for control by state and county law are controlled throughout all zones. Not all management zones occur along all state highways. In some cases the narrow width of the right-of-way or adjoining land-use, limits the operational zones to Zone 1 and/or a narrow Zone 2 only. Roadside vegetation management zones are illustrated in **Figure 2** below and defined as follows:

Zone 1 – The pavement edge zone is maintained in a manner and width necessary to address highway operational functions and safety, pavement preservation, guardrail maintenance, and stormwater management. Zone 1 may include a vegetation-free band adjacent to the pavement edge, particularly when guardrail is present, or may consist of desirable vegetation up to the pavement edge depending on site specific needs. Vegetation-free Zone 1 is maintained using non-selective soil residual herbicides. Routine annual mowing is required in most cases where vegetation is established up to the edge of pavement; periodic grading may also be required to prevent excess edge build up.

Zone 2 – The operational zone extends from Zone 1 to a width necessary to provide for safe errant vehicular recovery, site distance at corners, intersections and for regulatory signs, and to provide for other operational, safety, and environmental protection functions. Zone 2 is typically maintained through periodic mowing and trimming and through selective removal of undesirable trees and brush as needed.

Zone 3 – In areas with sufficient right-of-way width, a buffer or transition zone extends from Zone 2 to the right-of-way line to provide a buffer or transitional area between the highway facility and adjacent land uses. This area is maintained selectively, and to the greatest degree possible as a self-sustaining plant community, to minimize erosion as well as the growth of weeds and undesirable trees and brush.

Roadside Maintenance Activities

All roadside maintenance activities are to be planned and conducted in a way that discourages or eliminates unwanted vegetation and promotes desirable vegetation. This is the basic premise of Integrated Vegetation Management. In every case it is essential that the results of maintenance activities are evaluated and adjusted as necessary to maximize efficiency and effectiveness, and to establish desirable plant communities that are as self-sustaining as possible. However, in some cases maintenance activities are planned and conducted on a regularly scheduled

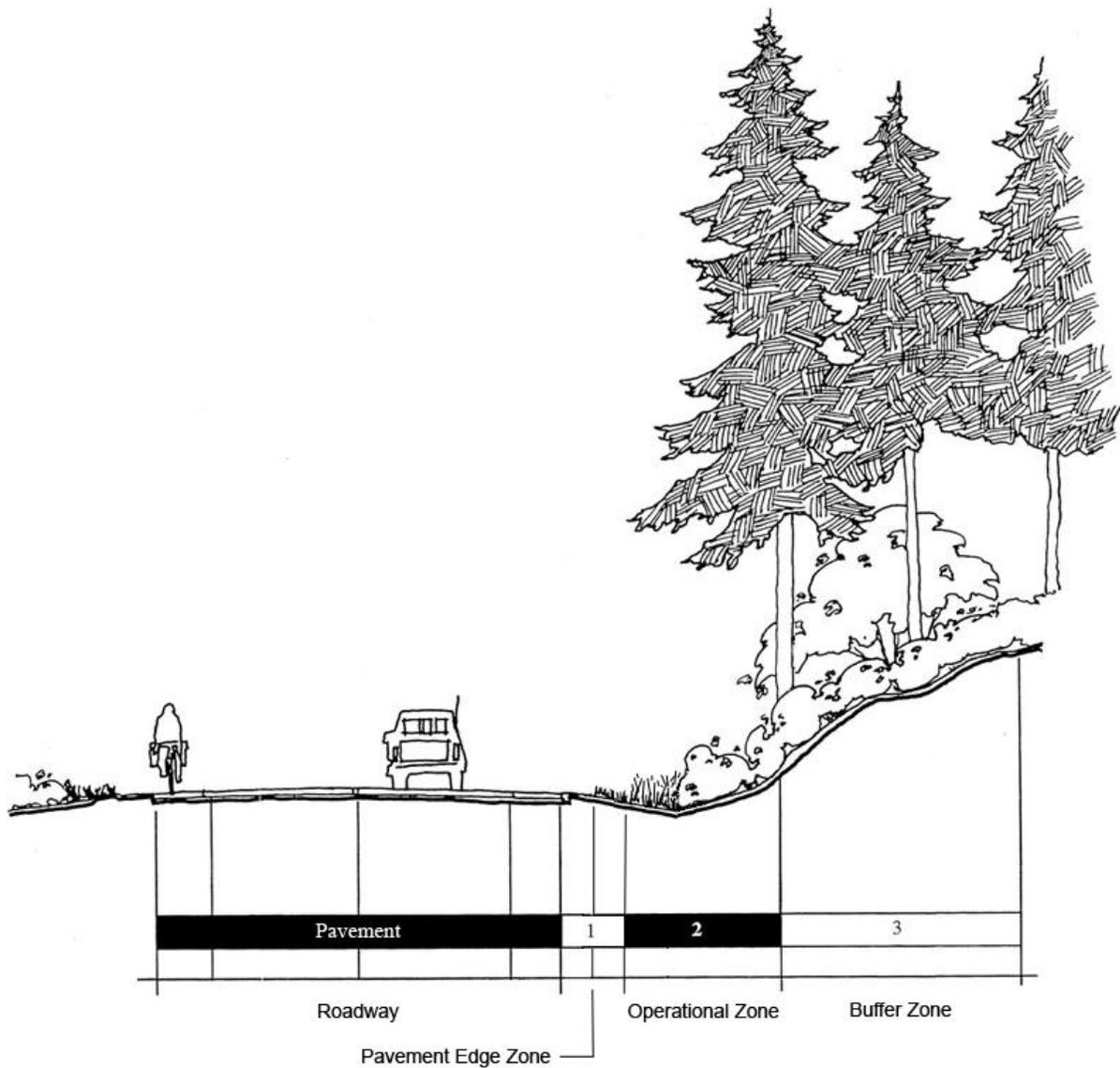
repeating basis, such as maintenance of a vegetation-free Zone 1 and/or routine mowing cycles where appropriate.

Routine Maintenance Activities – When vegetation maintenance activities are required to keep the area of roadside being treated in an annually controlled condition, they are considered routine. This is more critical for areas of vegetated roadside near the travel lanes, edge of pavement, and around guardrails. This plan provides prescriptions and gives locations for routine maintenance activities including maintenance of Zone 1 and annual mowing.

Integrated Vegetation Management Activities – Although all activities are to be planned and conducted in accordance with the principles of IVM, many vegetation maintenance activities are intended to target a specific type or types of unwanted plants. By carefully planning and carrying out these target specific activities it is possible over time to establish desirable vegetation, which will prevent the re-infestation of unwanted plants. The process for determining and carrying out IVM actions is illustrated in **Figure 3** below. This plan provides information, locations, and gives prescriptions for selective control of weeds and other unwanted vegetation and the promotion and establishment of desirable vegetation. Further information and guidance on the application of IVM is available in the document Integrated Vegetation Management for Roadside (WSDOT, July 1997). A copy of this document can be obtained by contacting the state roadside maintenance program manager.

Special Maintenance Areas – In some locations there are unique situations that require special consideration in determining appropriate vegetation maintenance actions. Examples of these are: environmentally sensitive areas, areas with special neighbor concerns, areas where a higher level of maintenance is expected such as gateway interchanges or formally landscaped areas, or along highways that cross tribal or federal lands. This plan provides information and guidance on the locations and unique requirements or restrictions on maintenance activities in all of these situations throughout the area.

Herbicide Use – WSDOT has conducted independent research on herbicide risk from toxicity and environmental fate, based specifically on agency application methods and use rates. Findings from this research have been used to establish an approved palette of herbicides and application limits for state highways. A complete summary of herbicides approved for use on WSDOT rights of way is included in **Appendix B**.



Pavement Edge Zone

Low Growing or Routinely Mowed Vegetation and/or Vegetation-Free Strip
 Maintained using mechanical and/or chemical methods for sight distance, stormwater drainage and filtration, noxious weed control, pavement preservation and roadside hardware maintenance.

Operational Zone

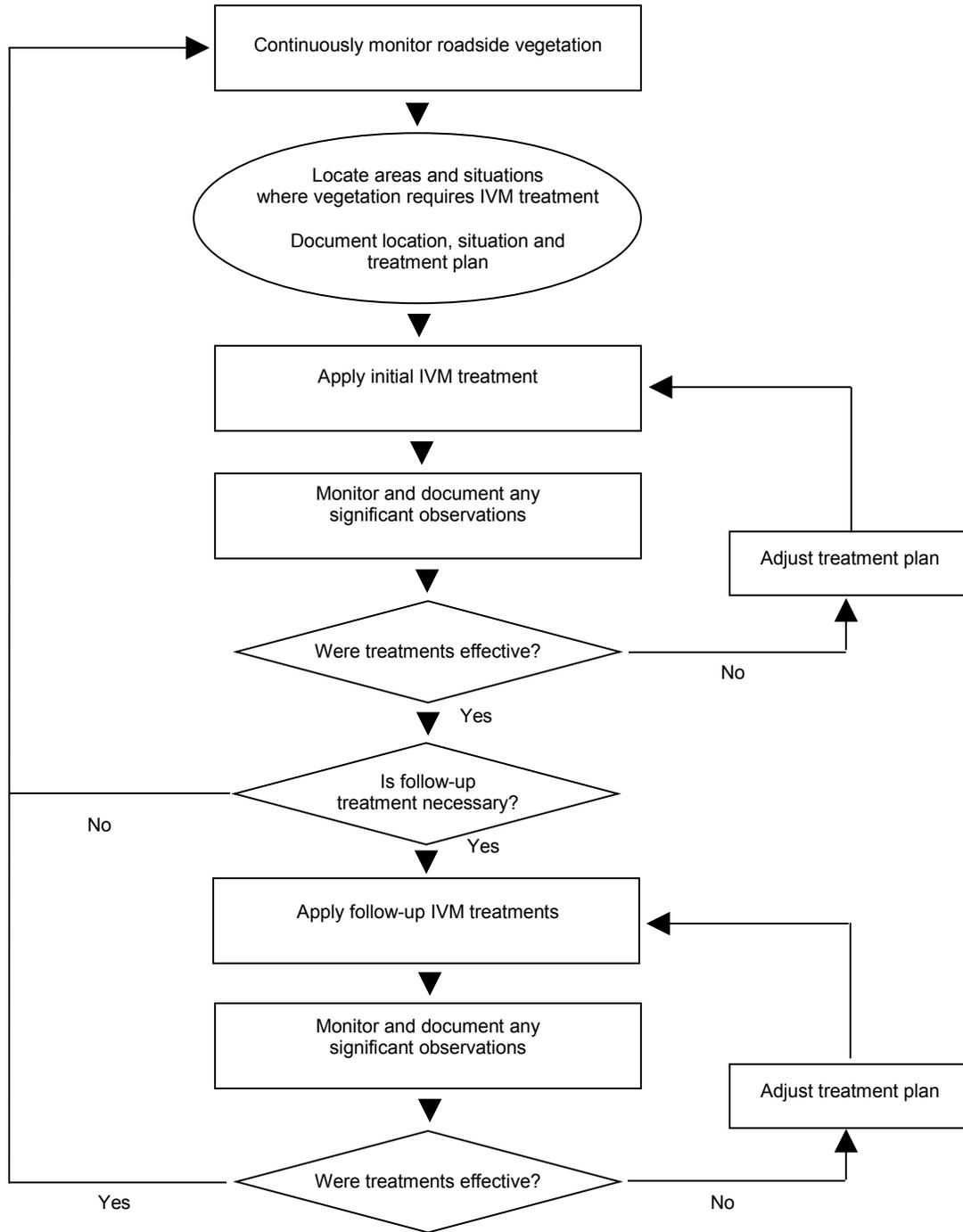
No Vegetation with Stem Diameter Greater than 4"
 Maintained using IVM techniques for sign visibility, sight distance, errant vehicle recovery and weed control.

Buffer Zone

Native or Naturally Occurring Vegetation
 Where adequate right of way exists, maintained using IVM techniques to encourage desirable, self-sustaining plant communities.

Typical Roadside Vegetation Management Zones

Figure 2



The IVM Decision-Making Process

Figure 3

2014 Area IVM Goals

The purpose of this section is to identify the highest priority roadside vegetation management needs in Southwest Region, Area 1 and to describe in general the approach the area will take in addressing these needs in the coming years. Information here is presented in relation to the three major groups for roadside vegetation maintenance performance: Control of Vegetative Obstructions, Noxious Weed Control, and Nuisance Weed Control. This section is intended to supplement the information in the following section, **Southwest Region, Area 1 – Roadside Vegetation Management Plan** which details the guidelines and methods for accomplishing the work of roadside vegetation management along the highways within this maintenance area.

Control of Vegetative Obstructions

The work of this group of maintenance activities relates to the safety and operation of the highway and these items are considered first priority in terms of the overall roadside maintenance needs. Vegetation management goals in this category fall into two groups – Pavement Edge Maintenance/Zone 1, and Tree and Brush Control/Zone 2.

Pavement Edge Maintenance/Zone 1

- Zone 1 will be maintained throughout the area including medians on I-5 and SR 205

Tree and Brush Control/Zone 2

- I-5 SB MP 5.95 to MP 6.35 Tree removal
- SR 503 SB MP 4.6 to MP 8.08 Remove alders and brush
- SR 14 both directions MP 9 to 12.6 tree and blackberry removal
- SR 14 Cape Horn MP 18 to MP 28 brush removal with arm mower and follow up with a herbicide application

Noxious Weed Control

Noxious weeds are those species legally designated by state and county regulations for required control by all property owners. Because laws are enforced with fines and/or control work and billing of property owners by county administration, work under this group is considered second priority after critical safety related locations have been addressed. Control of designated noxious weed species is typically carried out on all highways throughout the area on an as needed basis. However, some locations merit more focused attention and effort to apply multi-year IVM treatments or coordinate with adjacent landowners. The general area-wide approach and areas of focused attention for 2014 include:

- I-5 MP 3 to MP 4 and 6 to 8 – Tansy ragwort and Poison hemlock
- I-5 MP 18 – Tansy ragwort
- I-5 MP 20 to MP 26 – Poison hemlock
- SR 503 MP 12.5 to MP 14 - Meadow knapweed, Tansy ragwort
- SR 503 Spur at MP 33.4 – northbound, Knotweed
- SR 503 MP 9 – MP 30 Knapweed
- SR 433 Rainier Bridge – Poison hemlock
- SR 504 MP 5 - Seaquest - Knapweed
- SR 504 at MP 4.5, both sides of the roadway – Knotweed
- SR 432 MP 8.5 to MP 9.5 – Poison hemlock

- SR 14 164th to 192nd - Butterfly bush
- SR 14 MP 18-20 – Shiny Geranium
- SR 14 MP 0 to 1.5 – Poison hemlock
- SR 14 MP 0 to 1.5 – Poison hemlock
- SR 205 Mill Plain interchange – Tansy ragwort
- SR 205 MP 27 – MP 33 median, Poison Hemlock
- SR 500 MP 0 TO MP 1.0 and MP 2.5 to MP 3.5 – Tansy ragwort

Nuisance Vegetation Control

Nuisance vegetation control includes control/management of weed species that are recommended but not mandated by state and/or county law. It also includes work such as mowing of grass and weeds in areas where a more neatly maintained appearance is desired such as in gateway interchanges or highways in urbanized areas. Because nuisance vegetation control is lower priority after safety related and legally mandated activities, the location and work actions listed below may be postponed depending on availability of resources. For 2014, the overall approach to control of nuisance vegetation and locations where focused efforts will be applied if time and resources allow include:

- Address blackberry and Scotch broom patches in the I-5, and SR 205 corridors with selective mowing and follow-up by treating re-growth with herbicides
- SR 14 follow up mowed area re-growth with herbicide treatment

Southwest Region, Area 1 – Roadside Vegetation Management Plan

1. ROUTINE MAINTENANCE ACTIVITIES

Roadside maintenance activities are considered routine when a regularly occurring cycle of treatment is required to keep vegetative growth from interfering with highway operational and maintenance objectives. Typical routine maintenance activities are maintenance of a vegetation-free band at the edge of pavement where required, and certain types of mowing and trimming operations.

1.1. Shoulder Maintenance (Zone 1)

Some type of routine maintenance is required in most cases for maintenance of vegetation at the edge of pavement. Annual herbicide applications are required where a vegetation-free condition is specified, and regular cycles of mowing and/or grading are required where grass is allowed to grow up to the edge of pavement. Determination on maintenance practices and cycles for vegetation at the edge of pavement varies by roadway section. Key factors in determining the best management approach include: Lowest life cycle cost, pavement edge design/construction, environmental precautions for herbicide use, and available area resources.

1.1.1. Guidelines

- Annual Zone 1 treatments are intended to remove all vegetation growth in a solid band adjacent to the pavement edge. Limited re-growth of grasses and other non-weed species in the year following each treatment is acceptable.
- Zone 1 is maintained with the annual application of herbicides under all guardrail installations and throughout most of the area.
- Zone 1 is not maintained on secondary roads in urban areas, vegetated median areas along I-5, or in the Mt. St. Helens National Volcanic Monument.
- Where maintained, Zone 1 is 3' band width or less.

1.1.2 Methods

- Zone 1 is maintained using an annual application of combined non-selective, post- and pre-emergent soil residual herbicides
- Applications typically occur beginning mid-May depending on weather patterns and plant growth.
- Pavement edges will be monitored for surface drainage problems resulting from sod build-up in areas where Zone 1 is not maintained and will be graded in select locations as necessary to allow for hydraulic flow of storm water off the roadway surface.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 1 Maintenance**

1.1.3 Locations

- Delineation for Zone 1 maintenance can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

1.2. Mowing/Trimming (Zone 2)

Regular mowing cycles are required in locations where seasonal grass growth next to the pavement is tall enough to interfere with traffic operations and safety. In some locations, particularly on secondary highways with narrow rights of way, periodic trimming is required to prevent growth of shrubs/brush or side branches on trees from interfering with traffic operations and safety.

1.2.1.Guidelines

- Routine annual mowing of roadside grass stands occurs throughout the area in at least one pass, at least once per year immediately adjacent to the edge of pavement, to prevent vegetation from encroaching on traffic operations.
- On limited access highways, routine annual mowing areas are designated as either single pass or multiple pass.
- Detailed description of mowing practice along the major freeway corridors in the area is provided in **Appendix C, Routine Mowing Plan**.
- Additional annual mowing or trimming will be conducted throughout the growing season as needed for select locations on secondary highways to preserve site distance at curves, intersections and any other highway entry points.
- In areas beyond the identified routine mowing limits, mowing is only used occasionally as part of planned IVM treatments for target specific weed and/or tree and brush control as described below in **Section 2**.
- Other areas that may be routinely mowed include grass areas in park and ride lots, narrow grass strips along highway infrastructures, and fence-lines adjacent to neighboring properties as deemed necessary by the Area Superintendent.

1.2.2.Methods

- Timing and mowing heights are set to encourage root development and health of the grass stands.
- Single pass mowing consists of one pass up to the maximum width of mowing equipment (25' max.) but may be as narrow as 6' depending on mowing equipment and the presence of existing visual lines such as ditches.
- In areas designated as multiple pass mowing roadsides are mowed out from edge of pavement to the right of way line, the edge of shrub or tree lines, or across the entire median widths.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 2 Maintenance**

1.2.3.Locations

- Routine mowing locations can be researched using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

1.3. Hazard Tree Monitoring and Removal (Zone 3)

In areas where there is adequate right of way width to accommodate Zone 3 the main objective is to establish vegetation that requires as little maintenance as possible. Whatever activities are conducted are targeted selectively at removal of unwanted vegetation and establishment of desirable vegetation. However, large trees with health or structural problems can pose a significant threat to the highway,

therefore both monitoring for the presence of potential hazard trees and removal when necessary are considered routine and ongoing roadside maintenance activities.

1.3.1. Guidelines

- Hazard tree removal is considered a routine maintenance activity because maintenance is constantly on the lookout for any trees that pose an imminent threat to the highway or traffic.
- Whenever hazard trees are identified they are routinely removed as soon as possible.
- Hazard trees may be dead, diseased, leaning, or structurally unsound. Best horticultural judgment will be used in evaluating trees that appear diseased or structurally unsound or are believed to pose a long-term threat to determine the best course of action.
- Another consideration in removal of trees is the contribution to shading in areas prone to frost and ice formation on the highway surface. When such areas are identified, the surrounding canopy may be thinned through selective removal of large trees on the right of way.

1.3.2. Methods

- Hazard trees are removed in such a manner to minimize damage and impact to the highway structure and to other healthy trees and under-story vegetation.

2. INTEGRATED VEGETATION MANAGEMENT ACTIVITIES

All roadside vegetation maintenance activities technically fall under IVM. IVM is a coordinated decision making process that uses the most appropriate vegetation management methods and strategy, along with a monitoring and evaluation system, to achieve long-term roadside maintenance goals and objectives in an environmentally and economically sound manner. Even routine activities should be evaluated for effectiveness and refined whenever possible to reduce annual maintenance requirements. However, for the following activities the ultimate goal is to eliminate and prevent the future growth of unwanted plants, and to promote and enhance desirable vegetation. Activities are planned and carried out using the decision making process diagrammed in **Figure 3** on page 7. The goal in utilizing the IVM approach is the establishment of stable, low maintenance native or naturalized plant communities on the roadside that are compatible with:

- Highway maintenance and safety objectives
- Preservation of environmental quality
- Weed control requirements
- The concerns of WSDOT's customers and neighbors

Long term, the use of the IVM approach can reduce the intensity and cost of maintenance as well as minimizing the need to use herbicides.

2.1. Integrated Vegetation Management Planning and Tracking Database

2.1.1.Guidelines

- An Integrated Vegetation Management Records database is available for use. This database is accessed through the same WSDOT network application as the Pesticide Application Records database.
- Any activities focused on treatment of a specific location and species infestation, or focused on treatment of any types of unwanted vegetation throughout the area will be documented with an initial IVM record outlining the long-term treatment plan. These same records will be updated over time whenever planned treatments are carried out, or when observations are made as to the success or failure of past treatments.
- Treatment records may be printed out and inserted into **Appendix E** of plan binders for reference.

2.2. Noxious Weed Control

WSDOT defines noxious weeds as any species listed for mandatory control under state law (WAC 16-750) or by the local county codes. Other weed species that may be listed as noxious weeds on the state and county lists but not legally mandated for control are defined as nuisance weeds and managed as described under section 2.3 in this plan.

2.2.1.Guidelines

- Noxious weed control is a high priority for WSDOT because of state law requiring control of designated species. Transportation rights of way are high priority locations for control of noxious weed species within the state because they cross and link so many adjacent properties and land uses.

- Whenever possible treatment of designated noxious weed species and infestations locations will be documented and treated following plans as defined by IVM record forms in the database.
- Washington State Law classifies noxious weeds in three classes: A, B, and C. All Class A species are required control wherever they occur statewide. The law allows for individual county weed boards to designate individual Class B and C weeds for control within the counties depending on how widespread and potentially harmful they are at the local level.
- At this time the Clark County Weed Board is more active than the Cowlitz County Board and the weed list for Clark County will be applied to all of SW Region, Area 1 in Cowlitz County.
- For SW Region, Area 1 the following weeds designated for control are known to exist on state highway rights of way in Cowlitz and Clark Counties:

Class A

Class A noxious weeds are non-native species with a limited distribution in the state. No Class A weeds are known to exist on WSDOT rights of way in this area.

Class B

Class B weeds are more widespread than Class A, with control mandated by law only if infestations are generally limited and the species are designated within the individual counties by the County Noxious Weed Control Boards. The following Class B species are known to exist on WSDOT right of way in SW Region, Area 1. ♦ denotes which species are required for control in each of the counties:

Common Name/Botanical Name	Cowlitz	Clark
Knotweed sp./ <i>Polygonum sp.</i>	♦	
Dalmation toadflax/ <i>Linaria dalmatica ssp. Dalmatica</i>	♦	
Ragwort tansy/ <i>Senecio jacobaea</i>	♦	
Knapweed sp./ <i>Centaurea sp.</i>	♦	♦
Poison hemlock/ <i>Conium maculatum</i>	♦	♦
Puncturevine/ <i>Tribulus terrestris</i>	♦	♦
Butterfly bush/ buddleia davidii	♦	
Scotchbroom/	♦	
Gorse/ <i>Ulex europaeus</i>	♦	

Class C

Class C noxious weeds are widely established throughout Washington or may impact the agricultural industry. The County Noxious Weed Control Boards also have the power to designate Class C species for control. The following designated Class C noxious weeds are known to exist on state right of way in SW Region, Area 1. ♦denotes which species are required for control in each of the counties:

Common Name/Botanical Name	Cowlitz	Clark
Canada thistle/ <i>Cirsium arvense</i>	♦	♦
Bull thistle/ <i>Cirsium vulgare</i>		♦
Common Tansy/ <i>Tanacetum vulgare</i>	♦	♦

- Pictures of designated control noxious weeds are included for reference in **Appendix D**.

2.2.2. Methods

- Because noxious weed species are often difficult to control, herbicides treatments are often the primary, initial means of control.
- If infestations are limited to a few plants, hand pulling is also effective when the entire root system is also removed. Maintenance employees are encouraged to be aware of and look for new noxious weed occurrences, and to stop and pull these plants whenever possible.
- In conjunction with weed control treatments, a variety of other measures may be taken to promote natural vegetative competition through seeding, planting, and soil enhancement. The IVM Record and database are essential to tracking the execution and success of these control measures.
- For recommended treatments specific to noxious weed species, see **Appendix A, IVM Prescriptions, Noxious Weed Control**

2.2.3. Locations

- Priority locations for control of designated noxious weeds species in SW Region, Area 1 can be found using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

2.3. Nuisance Weed Control

2.3.1. Guidelines

- For the purposes of this plan, nuisance weed species are defined as species listed as Class B and C weeds on the state noxious weed lists, but not required for control within individual counties.
- Nuisance weed control, while not required by state law, provides many positive benefits to the overall condition of the roadside, enhances ecological function by maintaining and enhancing native plant communities, reduces the potential for continuing spread of weed infestations, and enhances visual quality.
- Nuisance weed species will be controlled when time and budget allows.
- Priority will be given to locations with the highest chance for success including relatively new infestations and where there is potential for infestations to spread to un-infested areas of the right of way or to un-infested neighboring properties.
- Species designated as nuisance weeds in SW Region, Area 1 that are known to exist on the highway right of way include:

Common Name/Botanical Name
St. Johnswort/ <i>Hypericum perforatum</i>
Scotch broom/ <i>Cytisus scoparius</i> (required control in Cowlitz county)
Common mullein/ <i>Verbascum thapsus</i>
Himalayan blackberry/ <i>Rubus discolor</i>

- Pictures of nuisance weeds are included for reference in **Appendix D**.

2.3.2.Methods

- Control measures for nuisance weed are dependent on the type of plant.
- Woody species such as Scotch broom and Himalayan blackberry are most effectively treated with a combination of cutting, herbicide treatments and encouragement of native vegetation.
- Perennial species such as Canada thistle are most effectively controlled by succeeding years of properly timed herbicide applications.
- Annual or biennial species such as bull thistle and common tansy may also be effectively controlled with herbicide applications when plants are in the rosette stage in spring, or by hand pulling prior to seed set.
- See **Appendix A, IVM Prescriptions, Nuisance Weed Control.**

2.3.3.Locations

- Locations for nuisance weed control activities will be identified in the **Area IVM Goals** section of the plan beginning on Page 7.

2.4. Tree and Brush Control

2.4.1.Guidelines

- Trees and brush are controlled for safety reasons including preservation of sight distance at curves and intersections, and for visibility of signs, and preventing trees with large trunk diameter from growing too close to traffic lanes.
- Native shrub and small tree species should be allowed to grow and mature in Zone 2 and selectively trimmed if they begin to encroach on site distance or other traffic operational requirements.
- Large tree species left to grow in Zone 2 and in some cases parts of Zone 3, can reach substantial size over a relatively short period of time and causing a hazard either to errant vehicle recovery, contributing to shading and winter ice formation.
- Fast-growing pioneer species such as big leaf maple, alder, or cottonwood, present a risk from falling on the road when mature. Wherever these trees emerge within 70' of the pavement on highway right of way, they should be removed within the first two to three years of growth or as soon as possible.
- Any tree with a trunk diameter of 4" or greater is considered a hazard for errant vehicles in Zone 2 and should be removed when young. The Design Clear Zone and is typically maintained to a width of 30' from the traffic lane edge where guardrail or concrete barrier does not exist. Actual minimum widths are determined by roadway alignment, traffic speed and volume, and cross-section of the roadside. Clear Zone widths are specified in the WSDOT Design Manual, Chapter 700.04.
<http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>

2.4.2.Methods

- Removal of undesirable tree and brush species is typically accomplished by properly timed selective mowing, properly timed herbicide applications, hand cutting, hand pulling, or combinations thereof.

- In some locations it is most effective to mow back the majority of the existing vegetation and then selectively treat undesirable re-growth with herbicides in succeeding years, allowing desirable vegetation to grow up around and form a competitive cover.
- In some cases when tree and brush species are cut by hand, the debris can be fed through a chipper and placed back on the roadside in the form of mulch for soil enhancement and weed prevention.
- Timing of activities has a significant effect on how the vegetation grows back. Herbicide applications made by hand, directly to the cut surfaces of undesirable plants may be used to reduce or eliminate grow back.
- Chemical control methods will not be used on conifers greater than 2 feet in height and/or large dense patches of seedling trees, to avoid unnecessary negative visual impacts from “brown-out”.
- Chemical control methods will not be used on deciduous trees and shrubs until after the first of September, except for as stump treatments in conjunction with mechanical cutting to eliminate grow-back.
- When possible, safe and practical, seedling of desirable trees may be dug or pulled by hand and transplanted to areas where there growth will be beneficial and appropriate. Agreements may be signed to allow private citizens to collect seedlings for use as transplants.
- See **Appendix A, IVM Prescriptions, Tree and Brush Control.**

3. SPECIAL MAINTENANCE AREAS

Special Maintenance Areas are any locations with unique maintenance requirements or special considerations for roadside management. These areas may include interchanges, community entrances or enhancement areas, areas maintained by cities, bicycle paths, storm water retention ponds, state park land, wellheads, environmentally sensitive areas, school zones and roadsides adjacent to individual properties with current or annual no-spray agreements.

3.1. Interchanges/Intersections

3.1.1.Guidelines

- Interchange areas are sometimes developed to a greater level than general roadside areas to include storm water management facilities, pedestrian areas, and permanent vegetation designed for screening, and visual enhancements for community entrances.

3.1.2.Locations

- Interchanges and intersections with unique maintenance considerations and/or interchanges that are considered urban gateways along with a description of special maintenance activities can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.2. Formally Landscaped Sections

3.2.1.Guidelines

- On areas along I-5, I-205 and some sections of SR14 and 500 in or near Vancouver, the roadsides have been planted with ornamental landscaping and require a higher level of maintenance than the more natural roadsides in outlying areas.

3.2.2.Methods

- These areas are typically intended to grow and develop with only the plants as initially designed and constructed. Therefore a higher level of maintenance is required to remove and prevent any and all non-planted vegetation from the areas.
- Additional trimming and pruning may be required to maintain a neat and well-kept appearance.
- Lawn areas, if present may include irrigation systems and weekly mowing routines during the growing season.

3.2.3.Locations

- Areas considered as formally landscaped can be referenced along with notes describing general practices for each location using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.3. Bicycle/Pedestrian Paths

3.3.1.Guidelines

- In some cases agreements were made in the project development and design process, requiring WSDOT to maintain pathways and sidewalks.
- Paths and sidewalks may require special attention from maintenance to ensure the safety of users and to enhance the appearance of the local community.

3.3.2. Locations

- Locations where sidewalks or bicycle paths are maintained by WSDOT can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.4. City Maintenance Areas

3.4.1. Guidelines

- In most cases where non-limited access highways exist within city limits, the roadside (all area outside the highway pavement and drainage systems) are maintained by the local city government.

3.4.2. Locations

- Areas where roadsides are maintained by cities can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.5. Herbicide Sensitive Areas

3.5.1. Guidelines

- In some situations herbicide use is limited or restricted because of legal requirements, neighbor concerns, or WSDOT imposed environmental safety precautions.
- In these locations, vegetation must be managed without the use of herbicides or with only a limited palette of herbicide types.
- In some locations, individuals have registered with Washington State Department of Agriculture as being pesticide sensitive. If these individual reside within ½ mile of the highway, the law requires that WSDOT notify them prior to application of herbicides.

3.5.2. Locations

- SW Region, Area 1 currently does not have any locations that require special considerations for herbicide use.
- The list of pesticide sensitive individuals changes annually, supervisors and herbicide applicators should reference the most current list to see if any notifications are required prior to spraying in any location.

3.6. Adopt-a-Highway and Neighbor Maintained Agreements

3.6.1. Guidelines

- In some locations WSDOT has signed agreements with private citizens or neighboring businesses for maintenance of roadside vegetation.

3.6.2.Locations

- Areas with existing agreements for others to maintain a portion of the roadside, along with notes describing arrangements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.7. Storm Water Management Facilities

3.7.1.Guidelines

- Storm water management facilities include bio-filtration swales, retention ponds and infiltration ponds.
- Storm water management facilities are managed for noxious and nuisance weeds, and hazard trees following the same guidelines mentioned in previous sections. The primary objectives with regards to vegetation management within these facilities are maintenance of the functionality in terms of the designed volume of retention and water flow, and the maintenance of the surrounding fence
- Trees and brush should be cleared along both sides of the perimeter fencing for a width of approximately 8 feet as needed.
- Inlets and outfalls should be kept clear of vegetation and debris.

3.7.2.Locations

- Storm water management facilities, along with notes describing general maintenance requirements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.8. Wetland Mitigation Sites

3.8.1.Guidelines

- Wetland mitigation sites are carefully monitored through WSDOT's Environmental Services Office for up to 10 years following their creation to ensure compliance with environmental regulation.
- In most cases vegetation in these sites is planted and established through the construction and long-term monitoring process so that once they are turned over to maintenance, actions are not required unless noxious weeds or hazardous trees become an issue.
- In cases where mitigation sites have fulfilled their original permit requirements and have been turned back to maintenance, sites should be inspected on an annual basis to determine if any repairs or weed control is necessary.

3.8.2.Locations

- All wetland mitigation sites within SW Region, area 1 along with notes describing dates constructed and permit requirements for each location can be referenced using a web base map viewer application at: [IVM Map Viewer](#)

Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.9. Protected Terrestrial Species

3.9.1. Guidelines

- WSDOT is currently working with the Department of Fish and Wildlife to identify highway locations where known populations of federally listed threatened and endangered terrestrial species exist on or near the highway right-of-way. These locations are then being matched against maintenance activities with potential to have adverse impacts on the protected species so that necessary maintenance activities can be timed to avoid impacts wherever possible.
- Methods and timing of roadside maintenance activities to avoid impacts on protected terrestrial species are described in the SW Region Highway Maintenance Environmental Compliance Guide for Protected Terrestrial Species.

3.9.2. Locations

- Once locations and guidelines have been finalized in the region compliance guide, locations and descriptions of limitations on vegetation maintenance activities will be added to the map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.10. Railroad Crossings

3.10.1. Guidelines

- State law requires that all trees and brush be kept clear on highway rights-of-way within 100' of railroad crossings.
- To maximize safety at rail crossings, trees and brush should be cleared as far back as practical to maximize site distance.

3.10.2. Locations

- Locations of all railroad crossings in SW Region, Area a can be referenced using a web based map viewer application at: [IVM Map Viewer](#)
Data and locations represented on this map are for general reference and planning purposes only and are subject to change without notice. WSDOT cannot guarantee complete accuracy.

3.11. IVM Treatment Sites

3.11.1. Guidelines

- As discussed in **Section 2.1**, selected sites are designated for planning, carrying out and monitoring multi-year IVM treatments for control of weeds or other unwanted vegetation.
- IVM treatment sites are documented with an initial record in the IVM Treatment Database, to identify the problem to be addressed, location(s), management goals, and integrated treatment plan.
- Records are updated each time a treatment is made, results observed, or when the treatment plan is modified based on observations.

Zone 1 Maintenance - Bareground Treatment

OPTION 1

TREATMENT TYPE:	Pavement Edge			
MANAGEMENT GOALS:	Vegetation free			
METHOD:	Annual herbicide application			
EQUIPMENT:	Spray truck w/ boom mounted nozzles			
MATERIALS:	Method 240 SL 12.69 oz./acre + Rodeo 51 oz./acre+ Escort 1.5 oz./acre+ Sulfomet XP 3oz./acre+ Climb 1oz./acre+ Insist 16 oz./acre			
TIMING:	Spring			
IVM FOLLOW-UP:	Evaluate control			
REMARKS:	Typically applied in a 2 to 3 ft. band.			

Zone 2 Maintenance - Tree and Brush

	OPTION 1	OPTION 2		
TREATMENT TYPE:	Tree and Brush	Tree and Brush		
MANAGEMENT GOALS:	Control vegetation obstruction	Control vegetation obstruction		
METHOD:	Stump Treatment	Stump Treatment		
EQUIPMENT:	Backpack	Backpack		
MATERIALS:	Polaris	Element 3A non diluted or 1:1		
TIMING:	Anytime	Anytime		
IVM FOLLOW-UP:	Evaluate control	Evaluate control		
REMARKS:	Avoid brown out by spraying late in the season and spray only to appropriate height.			

Noxious and Nuisance Weed Control - General

	OPTION 1	OPTION 2	OPTION 3	OPTION 4
TREATMENT TYPE:	Chemical application	Chemical application	Chemical application	Chemical application
ACTION THRESHOLD:	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)	Where ever present (dependent on available resources)
MANAGEMENT GOALS:	Eradication and control only if your county requires.	Eradication and control only if your county requires.	Eradication and control only if your county requires.	Eradication and control only if your county requires.
METHOD:	Spot treatment w/ herbicide	Spot treatment w/ herbicide	Spot treatment w/ herbicide	Spot treatment w/ herbicide
EQUIPMENT:	Handgun	Handgun	Handgun	Handgun
MATERIALS:	Milestone 7ozl./acre	Element 4 48ozl./acre	Ranger Pro 64ozl./acre	Polaris 64ozl./acre
TIMING:	During growing season	During growing season	During growing season	During growing season
IVM FOLLOW-UP:	Reapply if necessary following year. Restore site w/ native vegetation.	Reapply if necessary following year. Restore site w/ native vegetation.	Reapply if necessary following year. Restore site w/ native vegetation.	Reapply if necessary following year. Restore site w/ native vegetation.
REMARKS:	Option 1: Canada Thistle --- Option 2: Poison Hemlock, Thistle, Tansy Ragwort, Blackberry --- Option 3: Shiny Geranium, Yellow Nutsedge --- Option 4: Knotweed			

Noxious and Nuisance Weed Control - General

OPTION 5

TREATMENT TYPE:	Chemical application			
ACTION THRESHOLD:	Where ever present (dependent on available resources)			
MANAGEMENT GOALS:	Eradication and control only if your county requires.			
METHOD:	Spot treatment w/ herbicide			
EQUIPMENT:	Handgun			
MATERIALS:	Element 3A 64ozl./acre			
TIMING:	During growing season			
IVM FOLLOW-UP:	Reapply if necessary following year. Restore site w/ native vegetation.			
REMARKS:	Option 5: Thistle, Blackberry, Tansy Ragwort, Teasel, Shiny Geranium, Poison Hemlock			

Herbicides Approved for Use on WSDOT Rights of Way

When making herbicide applications:

1. Always read and follow product labels
2. Always use personal protective equipment when mixing, loading, and applying

Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
2,4-D	Agri Star 2, 4-D LV4, Basecamp Amine 4, Clean Amine, Crossbow, Curtail, ES, Escalade, Low Vol 4 Ester, Platoon, Rangestar, Savage, Solution, Veteran 720, Weedar 64, WeedDestroy, Weedmaster, Weedone LV4	Growth regulator - phenoxy synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Ester and acid formulations of 2,4-D may provide a good alternative to amine formulations. A number of the 2,4-D products come premixed with other herbicides.	Amine formulations of 2,4-D are restricted for use within 60' of all water	Amine formulations cause irreversible eye damage and are highly toxic to rainbow trout. All 2,4-D products pose risks when applied near grapes and other sensitive crops.
Aminocyclopyrachlor	Perspective Plainview Streamline Viewpoint	Growth regulator - mimics plant hormones, synthetic auxin (4)	Nuisance and noxious weed control Zones 2 and 3, Plainview is a bare-ground mixture	Depending on which mixture, can be either selective broadleaf or non-selective pre-emergent control	Each product is premixed with other herbicide to achieve either selective or non-selective control	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels
Aminopyralid	Milestone Milestone VM Milestone VM Plus Capstone	Growth regulator - mimics plant hormones, synthetic auxin (4)	Nuisance and noxious weed control Zones 2 and 3	Selective broadleaf treatment	Effective on many perennial weed species due to some amount of soil residual activity on suppressing seed germination	No WSDOT use restrictions beyond those specified on product labels	Refer to product label
Bromacil	Krovar 1 DF Hyvar	Photosynthetic inhibitor photosystem II, site A (5)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Krovar is premixed with diuron	Westside - Restricted use Eastside - Krovar restricted for use within 60' of all water	Bromacil is potentially mobile in soil, use caution if rain is possible.
Bromoxynil	Buctril 2EC BroClean Brox 2E Maestro 2EC	Photosynthetic inhibitor photosystem II, site C (6)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Effective broadleaf weed control without grass seed suppression	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Can cause irreversible eye damage, highly toxic to fresh water fish
Chlorsulfuron	Telar XP Landmark XP Throttle XP Perspective	Amino acid synthesis inhibitors - ALS inhibitor (2)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Product highly effective on difficult perennials such as Canadian thistle and horsetail. Landmark is premixed with Oust.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels
Clopyralid	Transline Curtail	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Curtail is premixed with 2,4-D, Pathfinder is premixed with triclopyr	Curtail and Pathfinder are restricted for use within 60' of all water because of mixture with other restricted herbicides.	Curtail contains 2,4-D amine which causes irreversible eye damage and is highly toxic to rainbow trout

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Dicamba	Vanquish Veteran 720 Dicamba HD E2 Escalade Range Star Viewpoint	Growth regulator - benzoic acids/synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Vanquish is the dicamba formulation without 2,4-D	Veteran 720 is restricted for use within 60' of all water because of 2,4-D amine content	Veteran 720 contains 2-4-D amine which causes irreversible eye damage and is highly toxic to rainbow trout
Dichlobenil	Norosac 4G Casoron	Cell wall (cellulose) synthesis inhibitor (20)	Ornamental planting beds	Pre-emergent weed control in ground cover beds. Post emergent control of grasses.	Highly effective for pre-emergent control of unwanted weeds in ornamentals	Restricted for use within 60' of all water	Dichlobenil is highly toxic to aquatic insects
Diflufenzopyr	Overdrive	Auxin transport inhibitor (19)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment		No WSDOT use restrictions beyond those specified on labels	Refer to product label
Diuron	Karmex Diuron 4 L Diuron 80 DF Parrot Sahara DG Imazuron	Photosynthetic inhibitor - photosystem II, site B (7)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Cost effective weed control for Zone 1 in Eastern Washington	<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	Highly toxic to fish.
Flumioxazin	Payload	Cell membrane disrupter - PPO inhibitor (14)	Zone 1 bare-ground	Nonselective pre-emergent weed control	Requires constant agitation to keep in suspension	Restricted for use within 60' of all salt water	Highly toxic to estuarine invertebrates
Fluroxypyr	Vista E2 Escalade	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Highly effective on Kochia	No WSDOT use restrictions beyond those specified on product labels	Highly toxic to Eastern Oyster, high surface runoff potential
Fosamine	Krenite S	Growth regulator - inhibits bud and leaf formation (27)	Tree and brush control in Zones 2 & 3	Selective broadleaf treatment	Effective broadleaf tree control without visual impacts	No WSDOT use restrictions beyond those specified on labels	Refer to product labels
Glyphosate	Roundup Pro Razor Pro Buccaneer Aquaneat Rodeo Aquamaster Mad Dog Plus Ranger Pro	Amino acid synthesis inhibitor - EPSP synthase inhibitor (9)	Zone 1, spot spray around shrub and tree plantings, aquatic weed control (Rodeo, Aquamaster)	Nonselective control of all vegetation	Rodeo, Aquamaster and Aquaneat are approved for use in or over water. Aquatic versions of glyphosate products are approved for use with NPDES permit.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Imazapic	Plateau	Amino acid synthesis inhibitors - ALS inhibitor (2)	All zones	Pre-emergent control of undesirable grasses	WSDOT tests plots show a significant impact on desirable perennial grasses at rates above 6 oz per acre.	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Moderate to high potential to leach into groundwater
Imazapyr	Arsenal Habitat Polaris Sahara DG Imazuron	Amino acid synthesis inhibitors - ALS inhibitor (2)	All zones	Pre and post-emergent non-selective control of all vegetation	Habitat is an aquatic version of Arsenal - good alternative to glyphosate in certain cases, approved for use with NPDES permit.	No WSDOT use restrictions beyond those specified on product labels	High surface runoff potential
Indaziflam	Esplanade	Cellulose-biosynthesis inhibitor (21)	Zone 1 bare-ground	Nonselective pre-emergent weed control	Effective control of annual weeds such as marestalk, kochia, and crab grass	Restricted for use within 60' of all water	Toxic to fish and aquatic invertebrates
Isoxaben	Gallery 75DF	Cell wall (cellulose) synthesis inhibitor (20)	Turf & Ornamental	Pre-emergent weed control in ground cover beds	Works well by itself or with Ronstar	Restricted for use within 60' of all water	Moderate to high potential to leach into groundwater
Metsulfuron-methyl	Escort XP Metsulfuron Methyl 60 DF MetCel VMF Streamline	Amino acid synthesis inhibitors - ALS inhibitor (2)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf and conifer treatment	Good control on many difficult perennials.	No WSDOT use restrictions beyond those specified on product labels	Refer to product labels
Norflurazon	Predict	Bleaching - carotenoid biosynthesis inhibitor (12)	Zone 1 bare-ground	Pre-emergent weed control in Zone 1 and ground cover beds	Good Zone 1 product but may be difficult to keep in suspension	Restricted for use within 60' of all water	High surface runoff potential
Oryzalin	Oryzalin A.S. Surflan A.S	Seedling growth inhibitor - microtubule assembly inhibitor (3)	Zone 1 Ornamental planting beds	Pre-emergent weed control in Zone 1 and ground cover beds	Product requires additional rinsing to thoroughly remove residues from empty container	Restricted for use within 60' of all water	Highly toxic to fish
Oxadiazon	Ronstar G Ronstar WSP	Cell membrane disrupter - PPO inhibitor (14)	Turf & Ornamental	Pre-emergent weed control in ground cover beds	Works well by itself or with Gallery	Restricted for use within 60' of all water, gardens, plants bearing edible fruit	Highly toxic to fish
Pendimethalin	Pendulum 2G Pendulum Aqua	Seedling growth inhibitor - microtubule assembly inhibitor (3)	Zone 1 Turf & Ornamental	Nonselective/Selective depending on rate, Pre-emergent grass and weed control		Westside - Restricted use Eastside - Restricted for use within 60' of all water	Highly toxic to fish, high potential for loss on eroded soil
Picloram	Tordon	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, Zones 2 and 3	Selective broadleaf treatment	Highly effective for conifer and broadleaf weed control in Eastern Washington	Westside - Restricted use Eastside - Restricted for use within 60' of all water	Highly mobile in soil and readily adsorbed through roots of desirable trees
Pyraflufen	Edict Edict 2SC	Cell membrane disrupter - PPO inhibitor (14)	Noxious and nuisance weed control, Zones 2 and 3	2,-4-D substitute, effective on Kochia, Russian thistle	Effective with Roundup for Kochia control	Restricted for use within 60' of all water	Irreversible eye damage, highly toxic to Rainbow Trout

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When making herbicide applications:

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Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Sulfentrazone	Portfolio Throttle XP	Cell membrane disrupter - PPO inhibitor (14)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Use caution in sandy soils	<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	High surface runoff potential, potentially mobile in soil if rain is possible.
Sulfometuron-methyl	Oust Landmark XP Sulfomet Throttle XP	Amino acid synthesis inhibitors - ALS inhibitor (2)	Zone 1 bare-ground	Nonselective pre/post emergent grass and weed control	Landmark is a premix with Oust and Telar	Refer to product labels	Oust has been proven to move with wind if not watered in to the ground
Tebuthiuron	Spike 80DF	Photosynthetic inhibitor photosystem II, site B (7)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control		<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	High surface runoff potential, potentially mobile in soil if rain is possible.
Topramezone	Frequency	Bleaching - carotenoid biosynthesis inhibitor (12)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Use in combination with another bare-ground chemical	Refer to product label	Refer to product label
Triclopyr Amine	Capstone, Element 3A, Garlon 3A, Milestone VM Plus	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Works well for scotch broom control	Refer to product label	Can cause irreversible eye damage
Triclopyr Ester	Crossbow, Crossbow L, Element 4, Garlon, Pathfinder	Growth regulator - pyridinecarboxylic acid synthetic auxin (4)	Noxious and nuisance weed control, and tree and brush control, Zones 2 and 3	Selective broadleaf treatment	Works well for cut-stump or basal treatments applications. Crossbow is premixed with 2,4-D, Pathfinder with clopyralid	Restricted for use within 60' of all water	Highly toxic to fish

Routine Annual Mowing

This plan describes the limits of routine mowing for the limited access highways within Maintenance Area 1 in the Southwest Region. Designated areas that are routinely mowed are intended to be maintained as permanent grass stands. Any mowing beyond annually mowed areas will only be on an as needed basis, when planned as part of Integrated Vegetation Management (IVM) treatments for control of weeds and other undesirable brush and trees.

General Guidelines for Annual Mowing Areas

- 1) Designated interchanges and landscape areas described below will receive first priority mowing and may be mowed multiple times throughout the growing season. All other roadside areas will be mowed once per year in the widths and timing described below. The goal in these areas is to maintain a roughly mowed appearance and to prevent the establishment of unwanted brush and trees.
- 2) Annual mowing typically will begin around the first of May starting with interchanges and urban landscape areas. These areas may be mowed again as needed throughout the summer as time and budgets allow. The goal in these areas is to maintain a neatly mowed appearance throughout the year.
- 3) Mowing height should be set at a minimum of 6 inches.
- 4) Avoid mowing steep slopes or wet areas with equipment that may result in tearing or rutting of the grass stand. Any areas with exposed soil from mowing practices or traffic accidents should be re-seeded with grass the following fall or spring.
- 5) When mowing around or next to desirable shrubs leave a 3 to 6 ft. buffer when possible to allow these plant populations to expand over time.

Landscape Mowing Areas

Grass within the following designated landscape areas will be mowed beginning in the spring as conditions allow. These areas may be mowed several times throughout the spring and summer to maintain a neatly mowed appearance.

- I-5 at MP 0-3
- Woodland Exit 21

General Roadside Mowing Areas including interchanges

- 1) Road shoulders in all other areas, both outside shoulders and median, will be mowed once a year with a single pass. Mowing of these areas will be timed to begin once top growth on grasses has matured and seed heads have developed, but no earlier than the first of June. The goal is to have all general roadside mowing areas completed by the first of July. Width of mowing in areas designated as single pass will be determined by the width of mowing equipment but will be no wider than 25 ft. Outside shoulders adjacent to steep (2:1 or greater) cut slopes will only receive one pass mowing adjacent to pavement. Steep fill slopes behind guardrail will only be mowed if accessible, and otherwise treated with IVM for control of unwanted vegetation.

I-5 – MP 9 to MP 52 include median shoulders

I-205 – MP 27.1 to MP 37 include median shoulders

SR14 – MP 0 to MP 12 Right shoulders

SR411 - Single pass where accessible

SR432 – Single Pass where accessible

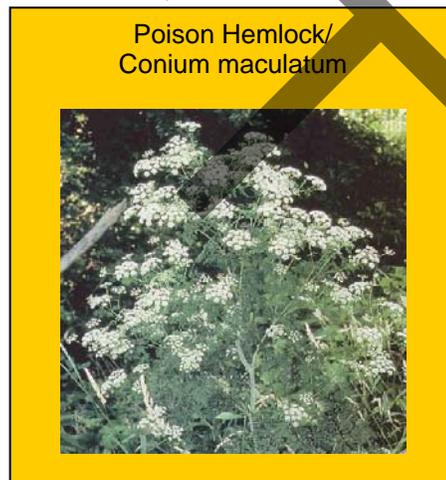
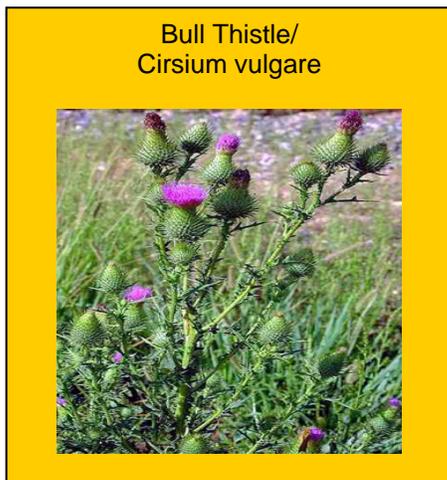
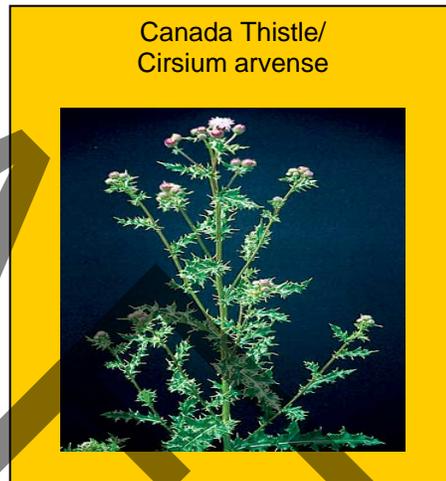
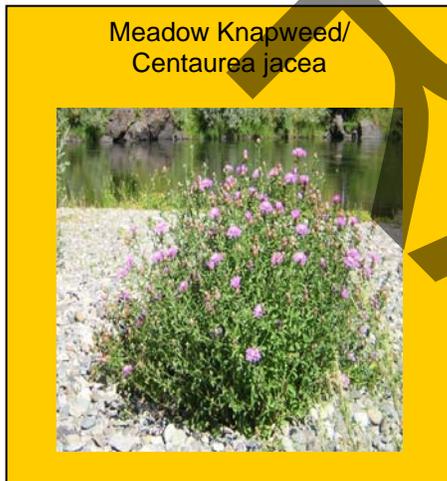
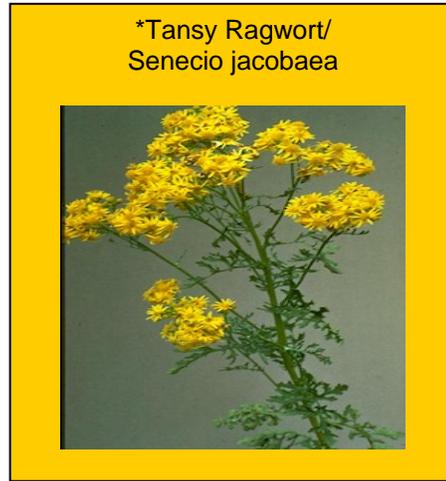
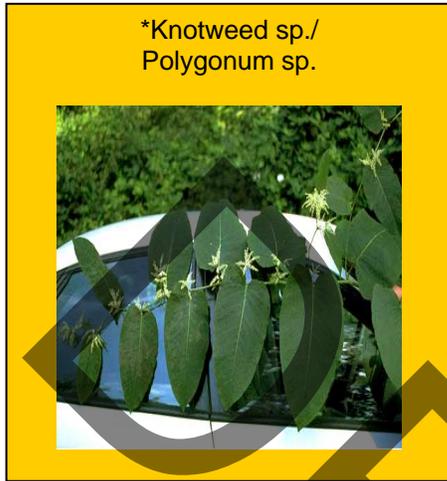
SR433 – Interchange Single Pass

SR500 – MP 2 to MP 17 Right Shoulders

SR503 – MP 8.3 to MP 54 Single Pass where accessible

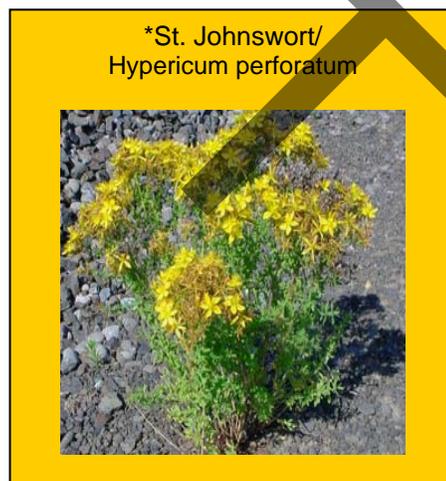
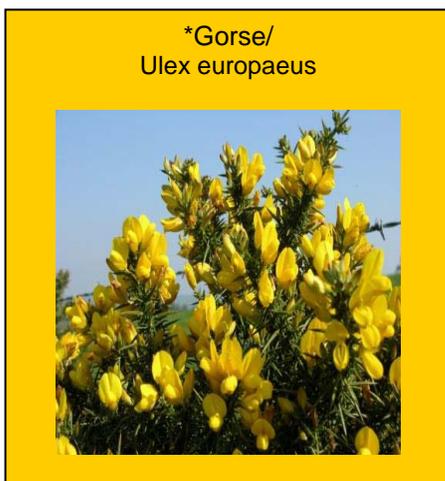
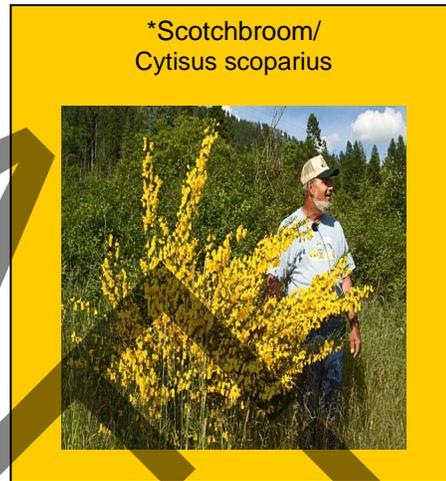
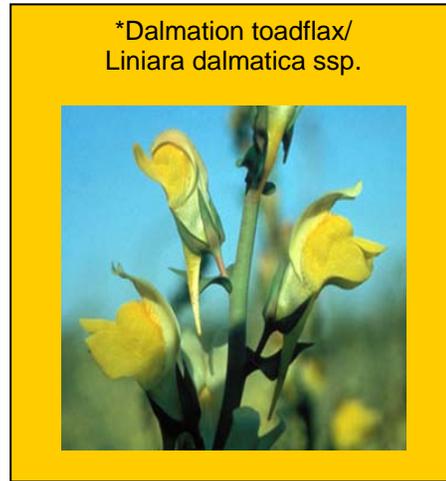
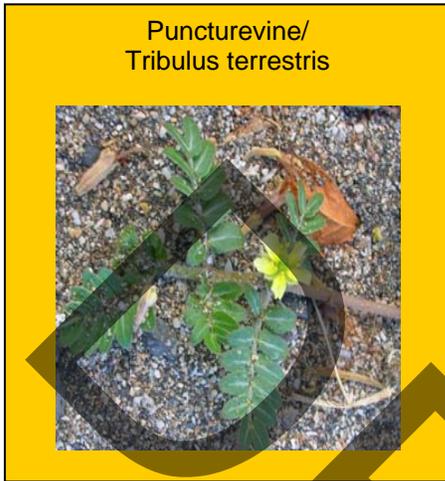
SR504 – MP 0 to MP 52 Single Pass where accessible

Designated for control in SW area 1:
(Clark and Cowlitz County)



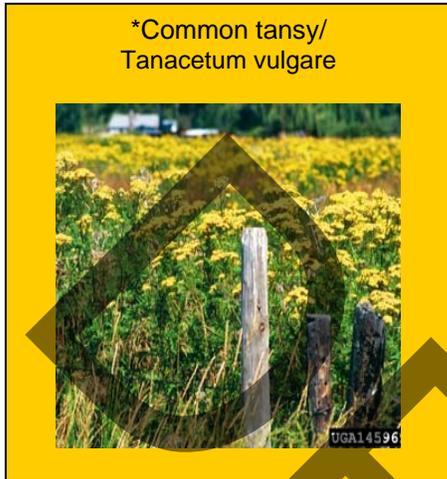
***Designated only in Cowlitz County**

Designated for control in SW area 1:
(Clark and Cowlitz County)



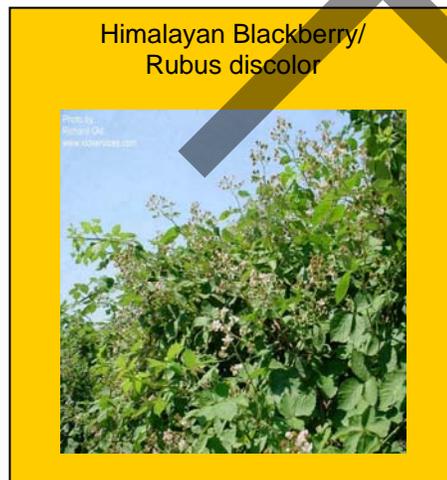
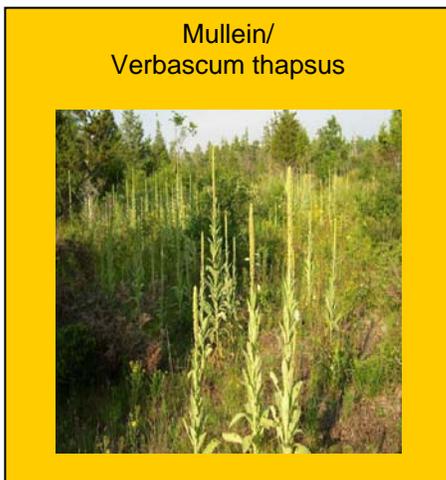
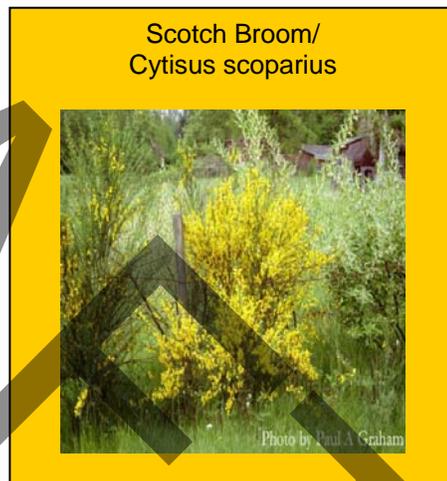
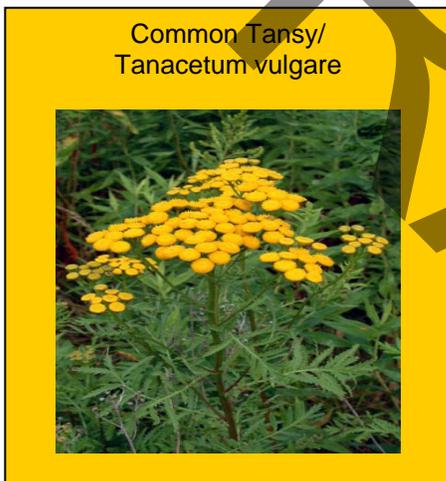
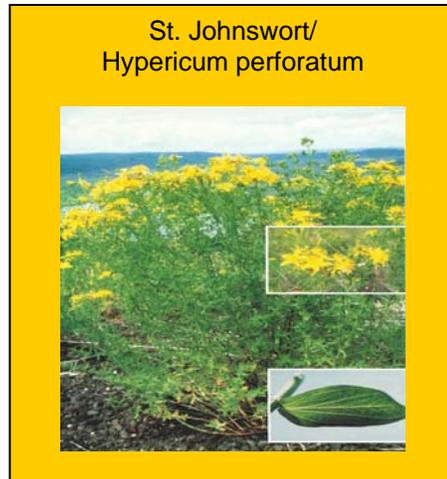
***Designated only in Cowlitz County**

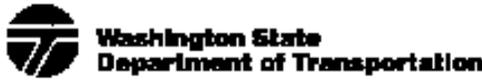
Designated for control in SW area 1:
(Clark and Cowlitz County)



***Designated only in Cowlitz County**

Nuisance weeds in SW area 1:
(Clark and Cowlitz County)





Integrated Vegetation Management Record

Org. Code	County	Date 6/13/2007	Vegetation Management Zone(s) <input type="checkbox"/> Zone 1 <input type="checkbox"/> Zone 2 <input type="checkbox"/> Zone 3																									
Area SE _____ MP _____ to MP _____		Location _____																										
Check Appropriate Boxes: <table border="0" style="width:100%"> <tr> <td><input type="checkbox"/> NB</td> <td><input type="checkbox"/> EB</td> <td><input type="checkbox"/> Roadside</td> <td><input type="checkbox"/> Landscaped Area</td> <td><input type="checkbox"/> Interchange</td> <td><input type="checkbox"/> Mitigation Site</td> <td><input type="checkbox"/> Third Party Damage</td> <td><input type="checkbox"/> Sensitive Sites</td> </tr> <tr> <td><input type="checkbox"/> SB</td> <td><input type="checkbox"/> WB</td> <td><input type="checkbox"/> Shoulder</td> <td><input type="checkbox"/> Rest Area</td> <td><input type="checkbox"/> Bridge</td> <td><input type="checkbox"/> Stormwater</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> Aquatic</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Median</td> <td><input type="checkbox"/> Park-n-Ride</td> <td><input type="checkbox"/> Ramp</td> <td><input type="checkbox"/> Yard/Stockpile</td> <td></td> <td><input type="checkbox"/> Wetlands</td> </tr> </table>					<input type="checkbox"/> NB	<input type="checkbox"/> EB	<input type="checkbox"/> Roadside	<input type="checkbox"/> Landscaped Area	<input type="checkbox"/> Interchange	<input type="checkbox"/> Mitigation Site	<input type="checkbox"/> Third Party Damage	<input type="checkbox"/> Sensitive Sites	<input type="checkbox"/> SB	<input type="checkbox"/> WB	<input type="checkbox"/> Shoulder	<input type="checkbox"/> Rest Area	<input type="checkbox"/> Bridge	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Yes	<input type="checkbox"/> Aquatic			<input type="checkbox"/> Median	<input type="checkbox"/> Park-n-Ride	<input type="checkbox"/> Ramp	<input type="checkbox"/> Yard/Stockpile		<input type="checkbox"/> Wetlands
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Target: <input type="checkbox"/> Noxious Weeds <input type="checkbox"/> Brush/Trees <input type="checkbox"/> Other _____ <input type="checkbox"/> Nuisance Weeds <input type="checkbox"/> Hazard Tree _____																												
Reason for Action: <input type="checkbox"/> Noxious Weeds <input type="checkbox"/> Nuisance Weeds <input type="checkbox"/> Fire Prevention <input type="checkbox"/> Restore Native Veg. <input type="checkbox"/> Zone 1 Pilot <input type="checkbox"/> Aesthetic <input type="checkbox"/> Site Distance <input type="checkbox"/> Hazard Vegetation <input type="checkbox"/> Customer Request <input type="checkbox"/> Enhance Vegetation <input type="checkbox"/> Slope Stabilization <input type="checkbox"/> Other _____																												
Long term IVM plan (Describe goals/objectives and a step-by-step approach over time) _____ _____ _____																												
Approximate Acres to Accomplish _____																												
<table border="1" style="width:100%"> <thead> <tr> <th>Activities</th> <th>Planned date of Treatment</th> <th>Actual date of Treatment</th> </tr> </thead> <tbody> <tr> <td> Manual <input type="checkbox"/> Digging <input type="checkbox"/> Pulling <input type="checkbox"/> Planting <input type="checkbox"/> Logging <input type="checkbox"/> Staking <input type="checkbox"/> Other _____ </td> <td>_____</td> <td>_____</td> </tr> <tr> <td> Mechanical <input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Clean <input type="checkbox"/> Manual Brush Cutting <input type="checkbox"/> Tractor Mower <input type="checkbox"/> Other _____ </td> <td>_____</td> <td>_____</td> </tr> <tr> <td> Bio-Control <input type="checkbox"/> Insect <input type="checkbox"/> Pathogen <input type="checkbox"/> Parasite _____ Type/Species _____ </td> <td>_____</td> <td>_____</td> </tr> <tr> <td> Cultural <input type="checkbox"/> Burning <input type="checkbox"/> Grading <input type="checkbox"/> Seeding <input type="checkbox"/> Mowing <input type="checkbox"/> Grazing <input type="checkbox"/> Soil Amendment <input type="checkbox"/> Other _____ </td> <td>_____</td> <td>_____</td> </tr> <tr> <td> Chemical _____ Record Number _____ </td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>					Activities	Planned date of Treatment	Actual date of Treatment	Manual <input type="checkbox"/> Digging <input type="checkbox"/> Pulling <input type="checkbox"/> Planting <input type="checkbox"/> Logging <input type="checkbox"/> Staking <input type="checkbox"/> Other _____	_____	_____	Mechanical <input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Clean <input type="checkbox"/> Manual Brush Cutting <input type="checkbox"/> Tractor Mower <input type="checkbox"/> Other _____	_____	_____	Bio-Control <input type="checkbox"/> Insect <input type="checkbox"/> Pathogen <input type="checkbox"/> Parasite _____ Type/Species _____	_____	_____	Cultural <input type="checkbox"/> Burning <input type="checkbox"/> Grading <input type="checkbox"/> Seeding <input type="checkbox"/> Mowing <input type="checkbox"/> Grazing <input type="checkbox"/> Soil Amendment <input type="checkbox"/> Other _____	_____	_____	Chemical _____ Record Number _____	_____	_____						
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Chemical _____ Record Number _____	_____	_____																										
#1 Evaluation and Date _____ _____																												
#2 Evaluation and Date _____ _____																												
#3 Evaluation and Date _____ _____																												

	USDA, Forest Service	OMB 0396-0217 FS-1500-15
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Exhibit x

PESTICIDE - USE PROPOSAL (Reference FSM 2150)	DEPARTMENT/AGENCY		CONTACT/PHONE NO.
	REGION	FOREST	DATE SUBMITTED
1) OBJECTIVE a) Project No. b) Specific Target Pest c) Purpose			
2) PESTICIDE a) Common Name b) Formulation c) % AI, AE, or lb / Gal. d) Registration No.			
3) a) Form Applied b) Use Strength (%) or Dilution Rate c) Diluent			
4) lbs. AI Per Acre or Other Rate			
5) APPLICATION a) Method b) Equipment			
6) a) Acres or Other Unit to be Treated b) Number of Applications c) Number of Sites d) Specific Description of Sites			
7) a) Month(s) of Year b) States			
8) SENSITIVE AREAS a) Areas to be Avoided b) Areas to be Treated with Caution			
9) REMARKS a) Precautions to be Taken b) Use of Trained / Certified Personnel c) State and Local Coordination d) Other Pesticides Being Applied to Same Site e) Monitoring f) Other			

Entity	Mailing Address	Contact Person	Title	Phone	E-Mail
Clark County	11104 NE 149th St. Building C Suit 200 Brush Praire, WA 98606	Kevin Tyler	Weed Management Director	(360) 397-6140 Fax: (360) 397-6122	kevin.tyler@clark.wa.gov
Cowlitz County	207 4th Ave. North Kelso, Wa 98626	Angelica Velaquez	Noxious Weed Coordinator	(360) 577-3117	velaqueza@co.cowlitz.wa.us
Skamania County	171 N. Vancouver Ave Stevenson, WA 98648	Emily Stevenson	Noxious Weed Coordinator	(509) 427-3941	estevenson@co.skamania.wa.us
City of Vancouver	4500 SE Columbia Way Vancouver, WA 98661-5580	Brian Carlson	Director of Public Works	(360) 487-7130	brian.carlson@cityofvancouver.us
City of Camas	616 NE 4th Ave Camas, WA 98607		Public Works	(360) 817-1561	
City of Kelso	203 S. Pacific, Suite 205 Kelso, WA 98626		Public Works	(360) 423-6590 Fax: (360) 423-6591	
City of Longview	1525 Broadway Longview, WA 98632	Jeff Cameron	Director of Public Works	(360) 442-5221 Fax: (360) 442-5953	jeff.cameron@ci.longview.wa.us
City of Woodland	300 East Scott Ave. Woodland, WA 98674	Bart Stepp	Director of Public Works	(360) 225-7999 Fax: (360) 225-7467	steppb@ci.woodland.wa.us
City of Battle Ground	109 SW 1st St., Suite 122 Battle Ground, WA 98604	Scott Sawyer	Director of Public Works	(360) 342-5070 Fax: (360) 342-5059	scott.sawyer@cityofbg.org
City of Ridgefield		Steven Wall	City Engineer	(360) 887-8251 Fax: (360) 887-2507	steve.wall@ci.ridgefield.wa.us
City of Washougal	1701 C. Steet Washougal, WA 98671	Trevor Evers	Director of Public Works	(360) 835-2662 Fax: (360) 835-0792	tevers@ci.washougal.wa.us
City of Castle Rock	360 A St. SW Castle Rock, WA 98611	David Vorse	Director of Public Works	(360) 274-7478 Fax: (360) 274-4876	crpwd@ci.castle-rock.wa.us
Mt. St. Helens National Volcanic Monument	42218 N.E. Yale Bridge Rd. Amboy, WA 98601			(360) 449-7800 Fax: (360) 449-7801	
Ridgefield National Wildlife Refuge	28908 NW Main Ave. Ridgefield, WA 98642			(360) 887-4106	
City Kalama	6315 Old Pacific Hwy. South Kalama, WA 98625	Adam Smee	Director of Public Works	(360) 673-3265	asmee@kalama.com