

Northwest Region, Area 4

Integrated Roadside Vegetation Management Plan

2014



**Washington State
Department of Transportation**
Maintenance Operations Division

Table of Contents

Summary	1
Area Map	2
Roadside Maintenance Considerations	3-5
The Integrated Vegetation Management (IVM) Decision-Making Process.....	6
Area 2014 IVM Work Plan	7-8
Northwest Region, Area 4 – Roadside Vegetation Management Plan.....	9
1. ROUTINE MAINTENANCE ACTIVITIES	9
1.1. Shoulder Maintenance (Zone 1).....	9
1.1.1. Guidelines	9
1.1.2. Methods.....	9
1.1.3. Locations	9
1.2. Mowing/Trimming (Zone 2)	9
1.2.1. Guidelines	9-10
1.2.2. Methods.....	10
1.2.3. Locations	10
1.3. Hazard Tree Monitoring and Removal (Zone 3).....	10
1.3.1. Guidelines	10
1.3.2. Methods.....	11
2. INTEGRATED VEGETATION MANAGEMENT ACTIVITIES	12
2.1. Integrated Vegetation Management Planning and Tracking Database ..	12
2.1.1. Guidelines	12
2.2. Noxious Weed Control	12
2.2.1. Guidelines	12-13
2.2.2. Methods.....	13
2.2.3. Locations	14
2.3. Nuisance Weed Control	14
2.3.1. Guidelines	14
2.3.2. Methods.....	14-15
2.4. Tree and Brush Control.....	15
2.4.1. Guidelines	15
2.4.2. Methods.....	15
3. SPECIAL MAINTENANCE AREAS	16
3.1. Interchanges/Intersections	16
3.1.1. Guidelines	16
3.1.2. Locations	16
3.2. Formally Landscaped Sections	16
3.2.1. Guidelines	16
3.2.2. Locations	16
3.3. City Maintained Areas	16
3.3.1. Guidelines	16
3.3.2. Locations	16
3.4. Herbicide Sensitive Areas	17
3.4.1. Guidelines	17
3.4.2. Locations	17

Table of Contents, Continued

3.5. Adopt-a-Highway and Neighbor Maintained Agreements	17
3.5.1. Guidelines	17
3.5.2. Locations	17
3.6. Storm Water Management Facilities	17
3.6.1. Guidelines	17
3.6.2. Locations	17-18
3.7. Wetland Mitigation Sites.....	18
3.7.1. Guidelines	18
3.7.2. Locations	18
3.8. Protected Terrestrial Species	18
3.8.1. Guidelines	18
3.8.2. Locations	18
3.9. Railroad Crossings.....	18
3.9.1. Guidelines	18-19
3.9.2. Locations	19
3.10. IVM Treatment Sites	19
3.10.1. Guidelines	19
3.10.2. Locations.....	19
Appendix A	Integrated Vegetation Management Prescriptions
Appendix B	Herbicide Guidelines
Appendix C	Routine Mowing Plan (not included at this time)
Appendix D	Weed Identification Photos
Appendix E	Forms and Records
Appendix F.....	Stakeholder Contact List

Summary

This plan explains the Washington State Department of Transportation's (WSDOT) policy and practice for maintenance of roadside vegetation for Maintenance Area 4 within the agency's Northwest Region. This area manages vegetation within approximately 235 miles of state highway corridor in south King and eastern Pierce Counties. Highways in this area carry some of the highest traffic volumes in the state. Major corridors include portions of Interstates 5 and 405. Other limited access corridors include State Routes 18, 167, 518, and a portion of 509. SR 410 east of Enumclaw is referred to as the Mather Memorial Parkway and has been designated as an All American Road. 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 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

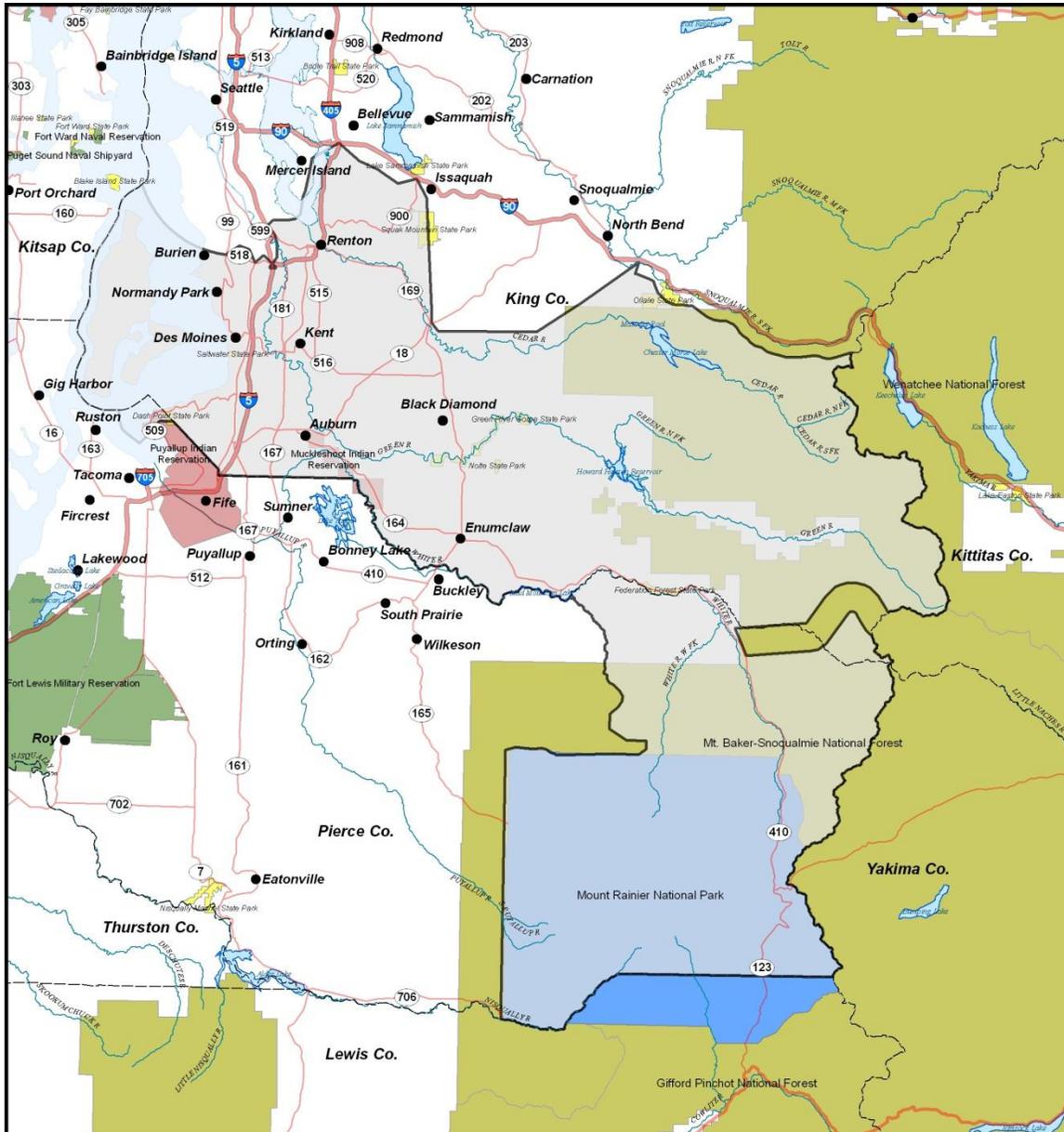
This plan is organized around the major categories of roadside vegetation maintenance work. The major categories include: Zone 1 (or pavement edge maintenance), Routine Mowing, Noxious Weed Control, Nuisance Weed Control, Tree and Brush Control, and Special Maintenance Areas.

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 plan is a database for recording Integrated Vegetation Management (IVM) treatments for specific vegetation controls and locations, and to record information on follow up evaluation on these treatments. This information will be used to refine planned treatments over time.

WSDOT is also requesting that local public and private entities with an interest in weed control and vegetation management provide input on the plan and cooperate in efforts where appropriate. Copies of the complete 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 Jerry Althausser or Ray Willard with questions or comments:

Jerry Althausser
Superintendent, NW Region Area 4
althaug@wsdot.wa.gov
(253) 372-3900
26620 68th Avenue S.
Kent, WA 98032-7270

Ray Willard
Roadside Maintenance Program Manager
willarr@wsdot.wa.gov
(360) 705-7865
PO Box 47358
Olympia, WA 98504-7358



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

● Cities
 — U.S. Interstate
 — U.S. Highway
 — State Route
 - - - County Lines
 Major Lake
 Coast

Major River
 NW area 4 Outline
 National Forest
 National Park
 State Park
 Tribal Reservation
 Military Reservation

Washington State Department of Transportation
 March 2009

Northwest Region, Area 4 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 are defined in Chapter 6 of the [WSDOT Maintenance Manual](#) (M51-01, August 2014)
<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 or across the median 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. In some urban and suburban settings, additional maintenance is required on fence lines behind Zone 3.

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 intended 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.

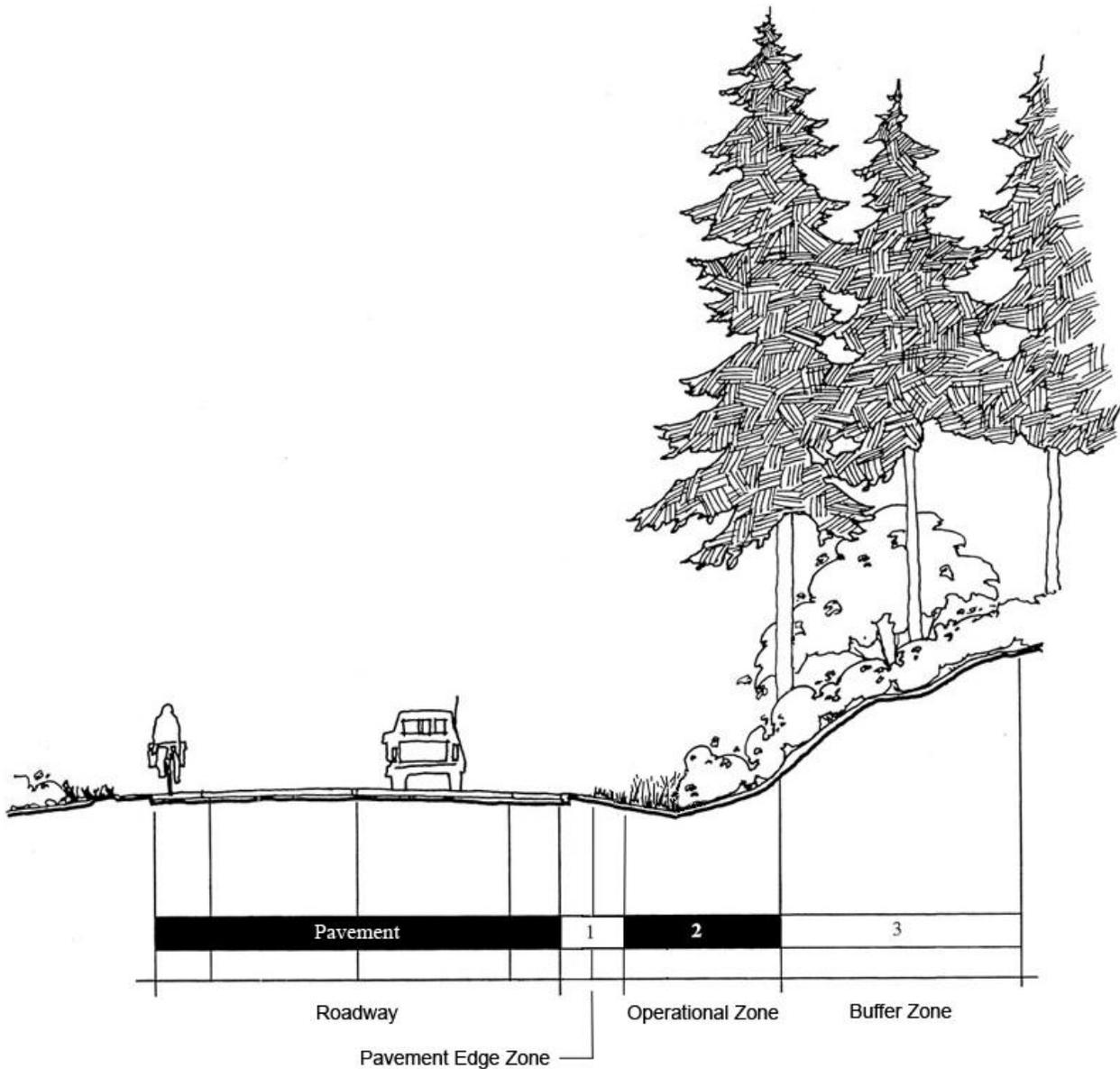
Integrated Vegetation Management Activities – Although all activities are to be planned and conducted in accordance with the principles of IVM, many vegetation maintenance activities are intended to target a specific type or types of unwanted plants. By carefully planning and carrying out these target 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 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**.

For all planned herbicide applications made on US Forest Service land WSDOT will submit a Pesticide Use Proposal Form (see Appendix E) to the Forest Service R6 Pesticide Use Coordinator at the start of each season, or at least one week prior to any scheduled application. At the end of each season the WSDOT HQ Maintenance Office will submit a report outlining herbicide use performed for highway sections in each National Forest.



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

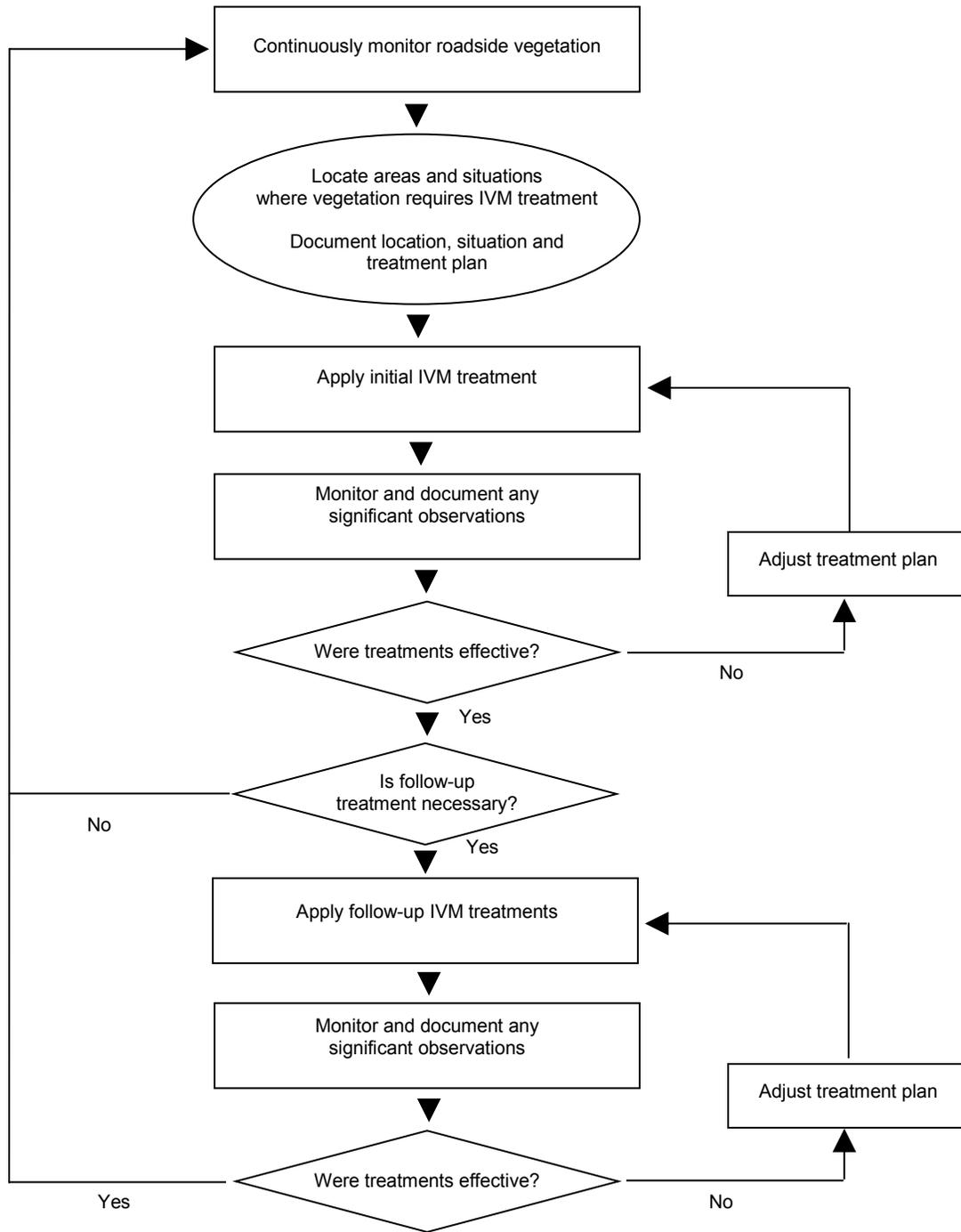
No Vegetation with Stem Diameter Greater than 4"
 Maintained using IVM techniques for sign visibility, sight distance, errant vehicle recovery and weed control.

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

Area 2014 IVM Work Plan

The purpose of this section is to identify the highest priority roadside vegetation management needs in Northwest Region, Area 4 and to describe in general the approach the area will take in addressing these needs in the coming year. The listed actions are goals and will be adjusted throughout the season as needed depending on unforeseeable circumstances.

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, ***Northwest Region, Area 4 – 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

- Reclaim roadway edge to bare earth to improve water runoff from shoulder in locations with pooling water (SR 18, I-5, SR 167)
- Mow 1 pass 1 time on all routes
- SR 164, MP 4.7 to 13.5 EB/WB, mow out further as needed at intersections.
- SR 167 mow out further as needed at interchanges
- SR 169, MP 1 to 4 NB/SB, mow out further as needed at intersections.

Tree and Brush Control/Zone 2

- I-5 NB S 200th to 405 interchange control alder trees in median ditch line and side slope
- SR 18 EB MP 1.25 to MP 2.45 remove danger trees
- SR 18 east and west MP 4 – 16.5 control alder and danger trees
- Continue to trim tree branches on selective routes to improve sight distances
- I-5 HOV By-pass ramps at 405 interchange cleared of brush for sight distance
- SR167 cut back cottonwood trees both directions between 180th and I-405
- SR 167 NB/SB S 272nd to W Main St MP 17-9 to MP 14.7 control willows, brush and remove danger trees
- SR 410 east and west MP 30 – 33 control alder and danger trees
- SR 410 east and west MP 44 – 61 control alder and danger trees
- SR 900 selectively trim encroaching brush and side branches, remove low-hanging overhead branches

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 Control Butterfly bush in median S188th to S144th using cutting and selective chemical application
- SR167 Continue to monitor and control policeman's Helmet in Mill Creek area around SR 18 interchange by hand pulling
- SR 509 Continue to monitor location for previously controlled infestation of policemen's helmet near Des Moines Way in the vicinity of S. 168th St. and Miller Creek.
- Attempt to treat all locations and species as noted by the King and Pierce County Noxious Weed Control Boards and shown on IVM GIS layers.

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:

- 415430 – Mow out interchanges on SR 518, 509, 516 and the North end of SR 167 and I-405 every other year starting this season. The SeaTac Airport gateway will be mowed annually for esthetic purposes.
- 415420 – Control blackberry and leaning trees on the South Center wall SB I-5 at MP 154.1 to MP 153.5
- Mow 2nd pass in locations needing additional sight distance requirements
- I-5 control blackberries, brush, and lower tree limbs by mowing and cutting in S 200th, S 320th and SR 516 interchanges for gateway/visibility impacts
- SR 509, control scotch broom in S. 160th I/C quadrants
- SR 518, Control blackberries in planting beds and scotch broom in SR 99 I/C quadrants and entrance to SeaTac Airport.
- SR 516 MP 2.3 to 3.3 control scotch broom and blackberry to enhance this section as a gateway into Kent.
- SR410, MP 27.4 to MP 27.9 mow all right-of-way for appearance of parking for horse trail riding.
- SR 410 at view point on and continue east on SR 410 to MP 57.7, continue spraying and removing or mowing Scotch broom.

Northwest Region, Area 4 – 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

- A vegetation-free Zone 1 is maintained in reclaimed locations as well as under and around guardrail or cable rail in NW Region, Area 4.
- A vegetation-free Zone 1 under guardrail or cable rail is maintained at 3' width or less when the rail is immediately adjacent to the pavement edge.
- All shoulders where a vegetation-free Zone 1 is not maintained will be mowed at least once a year to control grass height as needed. Edge build-up in these areas will be addressed through routine annual winter maintenance (plowing) and/or shoulder sweeping operations.

1.1.2 Methods

- Zone 1 under guardrail or cable rail is maintained with an annual application of non-selective post-emergent and soil residual pre-emergent herbicides in May.
- All shoulders will be monitored for edge build-up and low spots where storm water ponds on shoulder will be selectively graded as needed.
- See **Appendix A, Zone 1 Maintenance – Bareground Treatment**

1.1.3 Locations

- Delineation for Zone 1 maintenance 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.

1.2. Mowing/Trimming (Zones 1 and 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 only occurs on limited access highways and in designated areas along secondary highways adjacent to edge of pavement in Zone 2, and beyond Zone 2 in designated focus areas such as interchanges, intersections and urban segments . In all other areas mowing is only used occasionally as part of IVM treatments for weed and brush control as described below in **Section 2**.
- Routine annual mowing occurs on all secondary roads in NW Region, Area 4. Routine mowing on secondary roads extends one pass along the edge of pavement, except where additional width is required for site distance on curves or at intersections. Mowing in these locations is conducted at least once per year.

1.2.2.Methods

- On limited access corridors, routine annual mowing areas are designated as either single pass or multiple pass.
- Single pass mowing consists of one pass up to the maximum width of mowing equipment, which typically extends 6' to 8' from the edge of pavement.
- In areas designated as multiple pass mowing on limited access highways, 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 depending on the location and the presence of desirable vegetation.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 2 Maintenance**

1.2.3.Locations

- Single pass routine mowing occurs on all roadsides in the area, except for inaccessible steep slopes behind Jersey barrier or guardrail.

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 or private property, therefore both monitoring for the presence of potential hazard trees and removal when necessary are consider 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, private property, or traffic, and 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 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 6. 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 statewide. 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** in the plan binder.

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, 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 require eradication 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.

Class A

Class A noxious weeds are non-native species with a limited distribution in the state. Giant hogweed is 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 weeds are known to exist on state right-of-way and are designated for mandatory control in King and/or Pierce Counties:

Common Name/Botanical Name	King	Pierce
Policeman’s helmet/ <i>Impatiens glandulifera</i>	◆	Not present
Ragwort tansy/ <i>Senecio jacobaea</i>	◆	◆
Knapweed sp./ <i>Centaurea sp.</i>	◆	◆
Purple loosestrife/ <i>Lythrum salicaria</i>	◆	◆
Wild chervil/ <i>Anthriscus sylvestris</i>	◆	◆
Sulfur cinquefoil/ <i>Potentilla recta</i>	◆	◆
Hawkweed sp./ <i>Hieracium sp.</i>	◆	◆
Dalmatian toadflax/ <i>Linaria dalmatica</i>	◆	◆
Gorse/ <i>Ulex europaeus</i>	◆	◆
Poison hemlock/ <i>Conium maculatum</i>	Not selected	◆
Common reed/ <i>Phragmites australis</i>	◆	Not present

Class C

Class C noxious weeds are widely established throughout Washington or may impact the agricultural industry. County weed boards may still designate Class C species for control if they are limited in distribution in the county and they pose a significant potential threat. Absinth wormwood and hawkweed are known to exist on state right-of-way which are designated for mandatory control in King and/or Pierce Counties.

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 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 weed species in NW Region, Area 4 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 selected for mandatory 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 considered nuisance weeds in NW Region, Area 4 and known to exist on state rights of way include:

Common Name/Botanical Name	King	Pierce
Butterfly bush/ <i>Buddleja davidii</i>	◆	◆
Poison hemlock/ <i>Conium maculatum</i>	◆	Noxious
Knotweed sp./ <i>Polygonum sp.</i>	◆	◆
St. Johnswort/ <i>Hypericum perforatum</i>	◆	◆
Common tansy/ <i>Tanacetum vulgare</i>	◆	◆
Bull thistle/ <i>Cirsium vulgare</i>	◆	◆
Canada thistle/ <i>Cirsium arvense</i>	◆	◆
Scotch broom/ <i>Cytisus scoparius</i>	◆	◆
Common Mullein/ <i>Verbascum thapsus</i>	◆	◆
Himalayan blackberry/ <i>Rubus discolor</i>	◆	◆

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 where they will occur if time and resources are available are identified in the **Area IVM Goals** section of the plan beginning on Page 9.

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.
- If present, native large shrub and small tree species should be allowed to grow and mature in Zone 2 and side trimmed if they begin to encroach on site distance or other traffic operational requirements.
- Large coniferous or hardwood deciduous tree species such as Douglas fir, big leaf maple, alder, or cottonwood 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 should be removed when young.

2.4.2. Methods

- Removal of undesirable tree and brush species is typically accomplished by hand cutting, hand pulling, properly timed selective mowing, properly timed herbicide applications, or combinations thereof.
- In some locations it is most effective to mow or cut 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.
- Timing of these 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.
- Chemical control methods will not be used on deciduous tree and brush species until after the first of September, except for as stump treatments in conjunction with mechanical cutting to eliminate grow-back.
- Whenever possible, safe and practical, seedling trees will be dug or pulled by hand and transplanted to areas where their 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

- Interchange 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

- In some areas such as around the entrance to SeaTac airport, the roadsides have been planted with ornamental landscaping. In general, Zone 3 in roadsides on limited access highways in urban areas are maintained to a higher level when possible.

3.2.2.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. City Maintenance Areas

3.3.1.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.

3.3.2.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.

3.4. Herbicide Sensitive Areas

3.4.1.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.

3.4.2.Locations

- Herbicide sensitive areas and reason/type of limitations on herbicide use 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. Adopt-a-Highway and Neighbor Maintained Agreements

3.5.1.Guidelines

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

3.5.2.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.

3.6. Storm Water Management Facilities

3.6.1.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 following the same guidelines mentioned in previous sections. The primary objectives with regard vegetation management within these facilities are maintenance 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.

3.6.2.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.

3.7. Wetland Mitigation Sites

3.7.1.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 process so the maintenance actions are not required unless noxious weeds or hazardous trees become an issue.

3.7.2.Locations

- All wetland mitigation sites within Northwest Region, Area 4 along with notes describing dates construction 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.

3.8. Protected Terrestrial Species

3.8.1.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 Region Maintenance Environmental Compliance Guidance for Protected Terrestrial Species.

3.8.2.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 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. Railroad Crossings

3.9.1.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.

3.9.2. Locations

- Locations of all railroad crossing in NW Region, Area 4 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.

3.10. IVM Treatment Sites

3.10.1. 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.

3.10.2. Locations

- All designated IVM treatment sites with NW Region, Area 4 can be referenced through records in the Statewide Pesticide Tracking Database.

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:	Perspective 8 ozd./acre Sulfomet 5 ozd./acre Ranger Pro 64 ozl./acre Insist 16 ozl./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

TREATMENT TYPE:	Tree and Brush			
MANAGEMENT GOALS:	Control vegetation obstruction			
METHOD:	Herbicide treatment			
EQUIPMENT:	Spray truck w/ boom mounted nozzles			
MATERIALS:	Krenite S 192 ozl./acre MSO 16 ozl./acre			
TIMING:	Fall season			
IVM FOLLOW-UP:	Evaluate control			
REMARKS:				

Noxious and Nuisance Weed Control - General

OPTION 1

TREATMENT TYPE:	Chemical application			
ACTION THRESHOLD:	Where ever present (dependent on available resources)			
MANAGEMENT GOALS:	Eradication of noxious weed			
METHOD:	Spot treatment w/ herbicide			
EQUIPMENT:	Handgun			
MATERIALS:	Element 3A 48 ozl./acre Milestone 5 ozd./acre MSO 16 ozl./acre			
TIMING:	During growing season			
IVM FOLLOW-UP:	Reapply if necessary following year. Restore site w/ native vegetation.			
REMARKS:				

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

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
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	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

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
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

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
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

Designated for control in NW area 4:
(Pierce and King County)

Policeman's Helmet/
Impatiens glandulifera



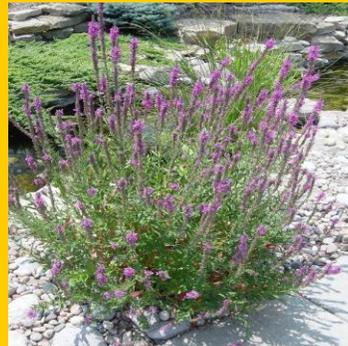
Tansy Ragwort/
Senecio jacobaea



Knapweed sp./
Centaurea sp.



Purple Loosestrife/
Lythrum salicaria



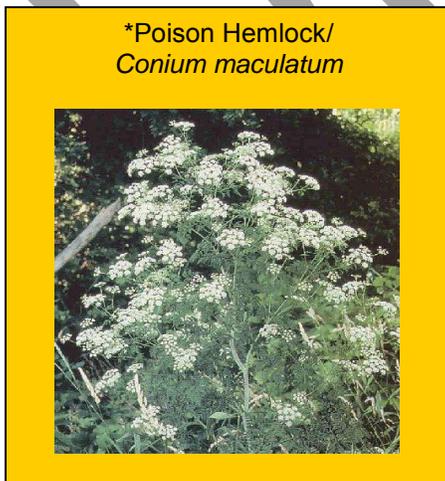
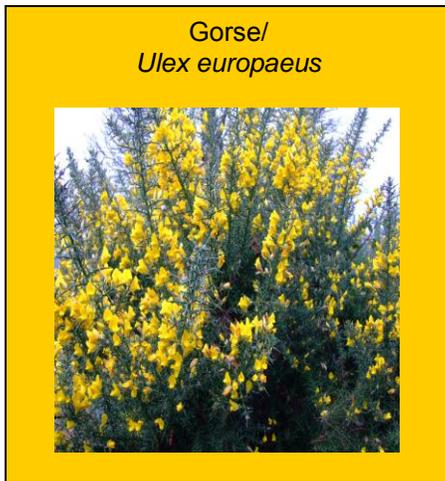
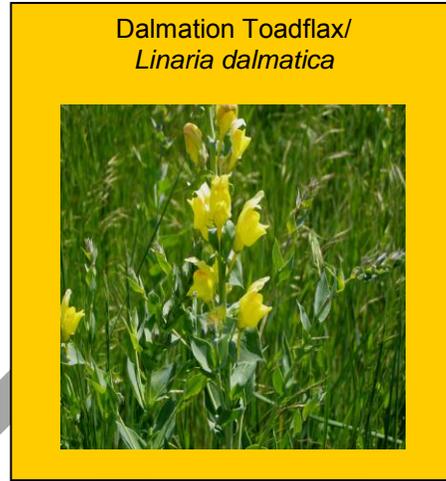
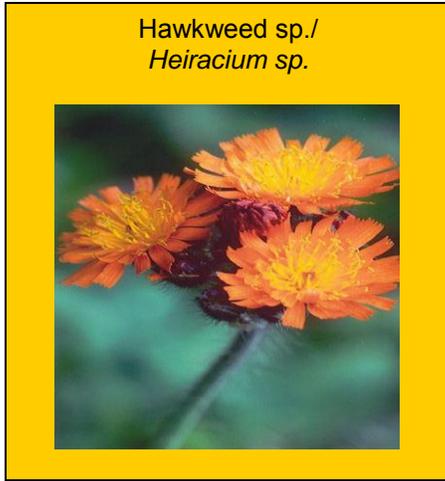
Wild Chervil/
Anthriscus sylvestris



Sulfur Cinquefoil/
Potentilla recta

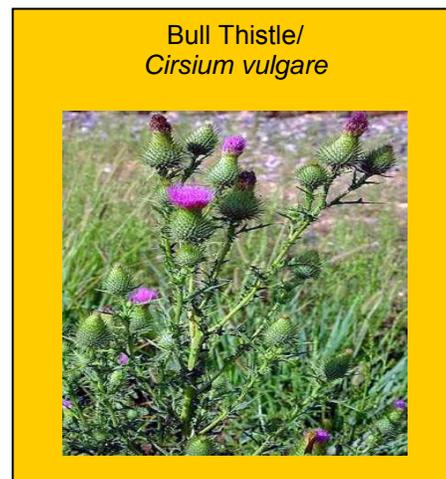
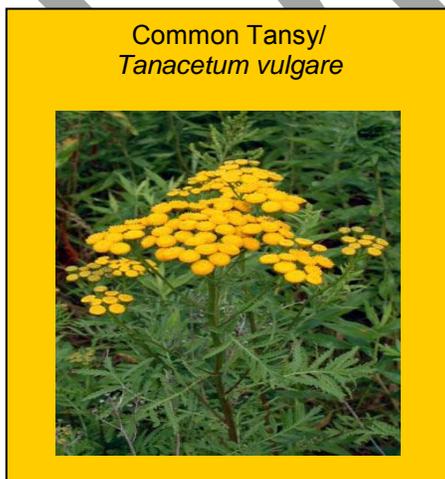
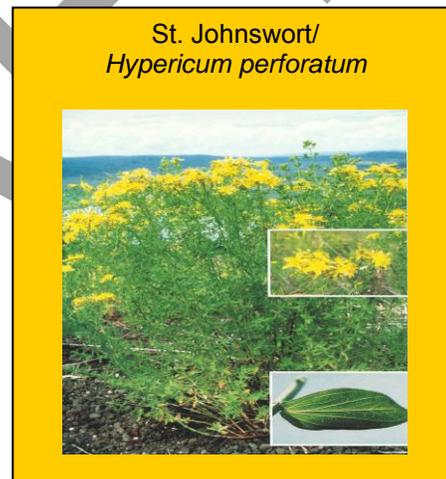
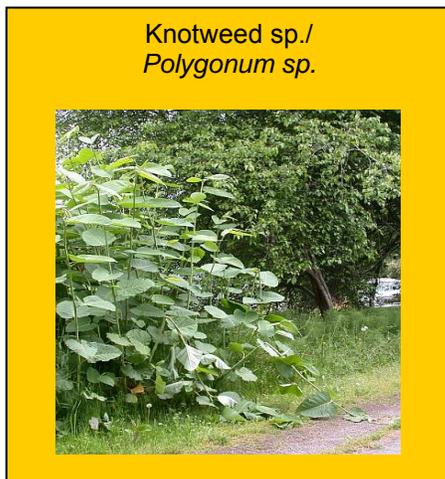
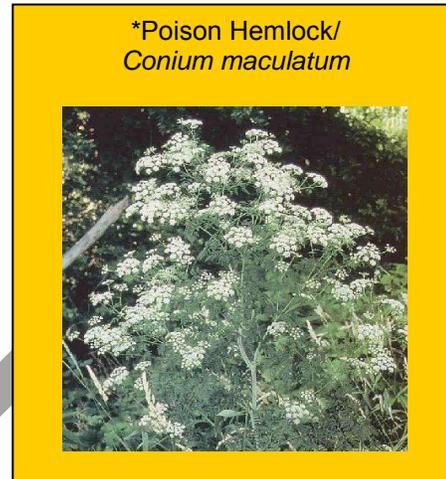


Designated for control in NW area 4:
(Pierce and King County)



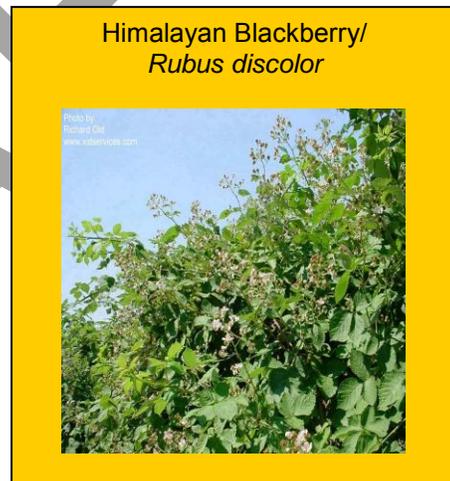
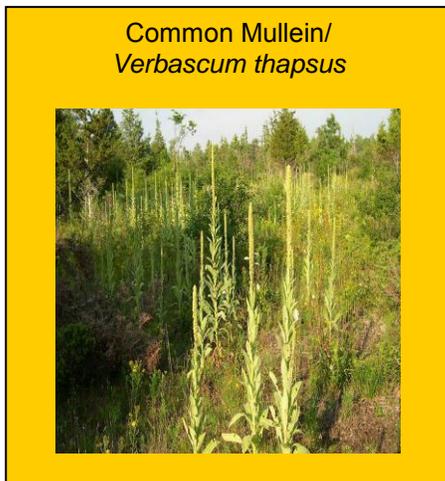
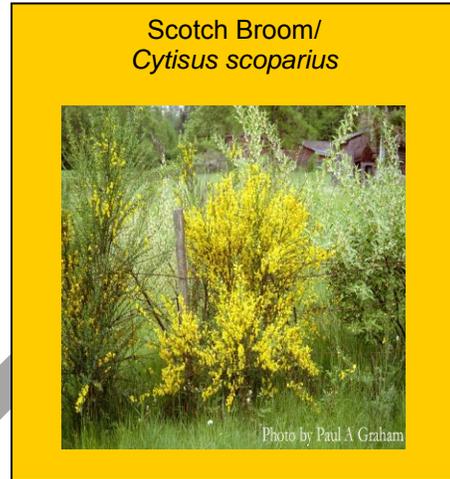
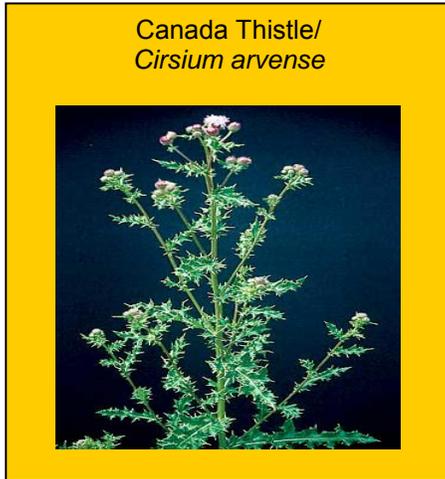
*Designated for control in Pierce County, nuisance in King County

Nuisance weeds in NW area 4:
(Pierce and King County)



*Nuisance in King, designated for control in Pierce County

Nuisance weeds in NW area 4:
(Pierce and King County)





Integrated Vegetation Management Record

Org. Code 435420	County Grays Harbor	Date 8/7/2006	Vegetation Management Zone(s) <input checked="" type="checkbox"/> Zone 1 <input checked="" type="checkbox"/> Zone 2 <input type="checkbox"/> Zone 3	
Area SR 101 MP 104 to MP 137		Location		
Check Appropriate Boxes: <input checked="" 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 checked="" type="checkbox"/> NB <input type="checkbox"/> EB <input checked="" 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 checked="" type="checkbox"/> SB <input type="checkbox"/> WB <input type="checkbox"/> Median <input type="checkbox"/> Park-n-Ride <input type="checkbox"/> Ramp <input type="checkbox"/> Yard/Stockpile <input type="checkbox"/> Wetlands				
Target		List Target/Species:		
<input checked="" type="checkbox"/> Noxious Weeds <input type="checkbox"/> Brush/Trees <input type="checkbox"/> Other <input type="checkbox"/> Nuisance Weeds <input type="checkbox"/> Hazard Tree		Orange Hawkweed		
Reason for Action:				
<input checked="" 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)				
To control and eradicate this weed from zones 1 & 2. This was the first treatment this year but we are seeing good results from the previous treatments from the year before.				
Approximate Acres to Accomplish		1.5		
Activities				
Manual		Planned date of Treatment	Actual date of Treatment	
<input type="checkbox"/> Digging <input type="checkbox"/> Pulling <input type="checkbox"/> Planting <input type="checkbox"/> Logging <input type="checkbox"/> Scalping <input type="checkbox"/> Other				
Mechanical				
<input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Chem <input type="checkbox"/> Manual Brush Cutting <input type="checkbox"/> Tractor Mower <input type="checkbox"/> Other				
Bio-Control				
<input type="checkbox"/> Insect <input type="checkbox"/> Pathogens <input type="checkbox"/> Parasites		Type/Species		
Cultural				
<input type="checkbox"/> Burning <input type="checkbox"/> Grading <input type="checkbox"/> Seeding <input type="checkbox"/> Fertilizing <input type="checkbox"/> Grazing <input type="checkbox"/> Soil Amendment <input type="checkbox"/> Other				
Chemical	3119456	Record Number		8/7/2006
#1 Evaluation and Date				
#2 Evaluation and Date				
#3 Evaluation and Date				



Pesticide Application

Main Menu
 Print
 New Record
 Form 8420
 List View
 Blank Record
 Delete Record
 Find Record

Org. Code 415520	County King	Date of Application 10/13/2006	Start 12:30	<input type="radio"/> AM <input checked="" type="radio"/> PM	ICP 051A	Stores Issue Ticket Number(s) F42735/F42733/42734		
Area SR 99 MP 25.12 to MP 26.01 and MP to MP and MP to MP and MP to MP								
Check Appropriate Boxes: <input type="checkbox"/> Roadside <input type="checkbox"/> Landscaped Area <input type="checkbox"/> Interchange <input type="checkbox"/> Yard/Stockpile <input checked="" type="checkbox"/> Spot Spray <input type="checkbox"/> Aquatic <input checked="" type="checkbox"/> NB <input type="checkbox"/> EB <input checked="" type="checkbox"/> Shoulder <input type="checkbox"/> Rest Area <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Blanket Spray <input type="checkbox"/> Wetlands <input checked="" type="checkbox"/> SB <input type="checkbox"/> WB <input type="checkbox"/> Median <input type="checkbox"/> Park-n-Ride <input type="checkbox"/> Ramp <input type="checkbox"/> Banded Width								
<input type="checkbox"/> Weeds <input checked="" type="checkbox"/> Noxious Weeds <input type="checkbox"/> Disease <input type="checkbox"/> Brush <input type="checkbox"/> Insects <input type="checkbox"/> Other List Per(s): <u>Common Reed grass, Japanese knotweed, Blackberries</u>								
Start Weather Conditions Temperature <u>54</u> °F Wind (Direction From) <u>NW</u> Wind (Range) <u>2</u> mph(kmh) <input type="radio"/> Sunny <input checked="" type="radio"/> Broken <input type="radio"/> Overcast No Rain <input type="radio"/> Light Scattered Showers <input type="radio"/> Hard Showers								
Finish Weather Conditions Temperature <u>60</u> °F Wind (Direction From) <u>NW</u> Wind (Range) <u>4</u> mph(kmh) <input checked="" type="radio"/> Sunny <input type="radio"/> Broken <input type="radio"/> Overcast No Rain <input type="radio"/> Light Scattered Showers <input type="radio"/> Hard Showers								
Tank No.	Material Name	Material Type	EPA Reg. No.	Lot Number	Product Per Acre (Gallons)	Unit	Total Daily Usage	Unit
1	Water	Carrier	-----	Spokane St.	100	Gal	50	Gal
1	Aquamaster	Pesticide	524-343	MTR00805AJ	96	Ozl	48	Ozl
1	MSO	Adjuvant	-----	77562	32	Ozl	16	Ozl
1	Turf Trax	Adjuvant	-----	34294	32	Ozl	16	Ozl
Total 0.50 Acres(hectares) Treated at 100 gallons(liters) of spray per acre(hectare).								
Equipment Number 21A36-5	Tank Size 1 200 3 5	Calibration Date 09/25/2006	Vehicle Speed n/a mph(kmh)	Nozzle Pressure 5 PSI(kPa)	Width of Spray Pattern N/A No(meter)			
<input type="checkbox"/> Hand sprayer <input checked="" type="checkbox"/> Handgun <input type="checkbox"/> Boom <input type="checkbox"/> Backpack <input type="checkbox"/> Fixed Nozzle <input type="checkbox"/> Other (Specify) _____			<input checked="" type="checkbox"/> Tank Mix (Conc.) <input type="checkbox"/> Injection <input type="checkbox"/> Invert					
Operator Name Gabriel Olivias		Operator Pesticide License No. 52698		Operator Signature		Driver Name Richard Blair		
Remarks No water was present at the time of spray.						Buffer Tractor Driver's Name		
						Pesticide Sensitivity Registration Apply: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
						Contact		
Division of Emergency Management (1-800-258-5990)						Additional Notes		

DOI Form 540-506 EF Distribution: OSC Maint. Operator Region File Gal= Gallons Dry Lt= Pounds g= gram kg= kilo gram
 Revised 9/2001 Send OSC Copy Within 5 Days Gal= Gallons Liquid Ga= Gallon ml= Milliliter L= Liter
 P= Pint Q= Quart

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

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	_____ _____ _____ _____ _____ _____		