

Olympic Region, Area 2 **Integrated Roadside** **Vegetation Management** **Plan**

2014



Washington State
Department of Transportation
Maintenance Operations Division

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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 2 within the agency's Olympic Region. This area manages vegetation within approximately 260 miles of state highway corridor, primarily in Kitsap and Mason Counties but with short sections in Pierce and Jefferson as well. The main corridor in the area is State Route (SR) 16 between Tacoma and Bremerton, but the area also maintains portions of other major limited access highways along SR 3 and US 101. There are many secondary routes in the area, mostly forested and rural in character, some are exceptionally high in scenic quality. 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 agency, region, and area policies along with locations for planned routine maintenance practices, reoccurring noxious 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 the most naturally stable, sustainable plant communities possible
- Improve effectiveness and efficiency in the control of weeds and unwanted trees and brush
- Reduce maintenance cost and herbicide use over time

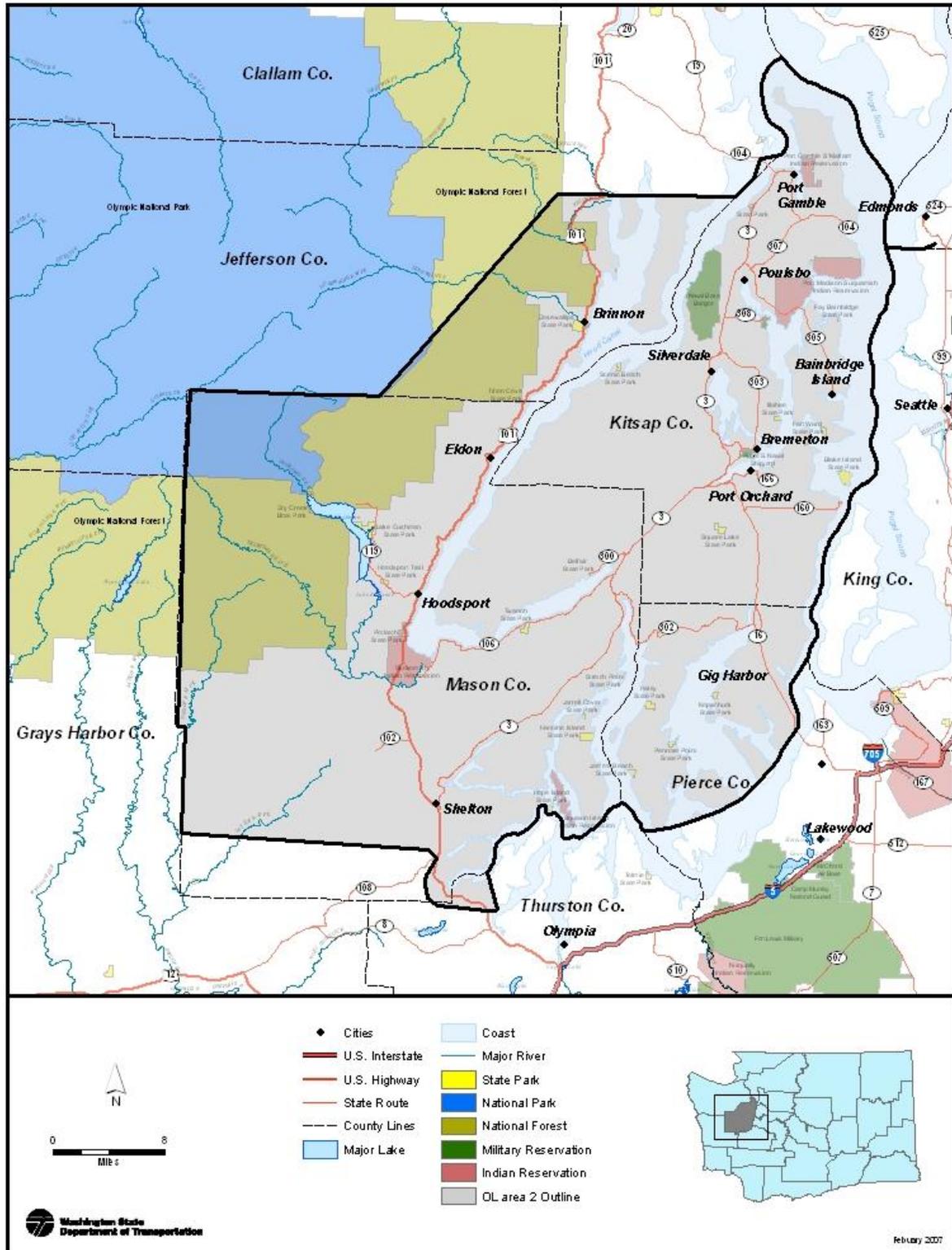
This plan is organized around six major categories of roadside vegetation maintenance work. The major categories include: Zone 1 (or pavement edge maintenance), Routine Mowing, Noxious Weed Control, Nuisance Weed Control, Tree and Brush Control, and Special Maintenance Areas.

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 are 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 Duke Stryker or Ray Willard at the numbers listed below for questions or comments:

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Olympic Region, Area 2
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 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. This is particularly important in Area 2, with much of the local economy dependent on the tourist industry. All maintenance activities will be conducted in a way that minimizes visual impacts such as wide spread “brown-out” from herbicides or shattered limbs from side trimming. Roadsides 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, or to accommodate large cut or fill slopes. 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.

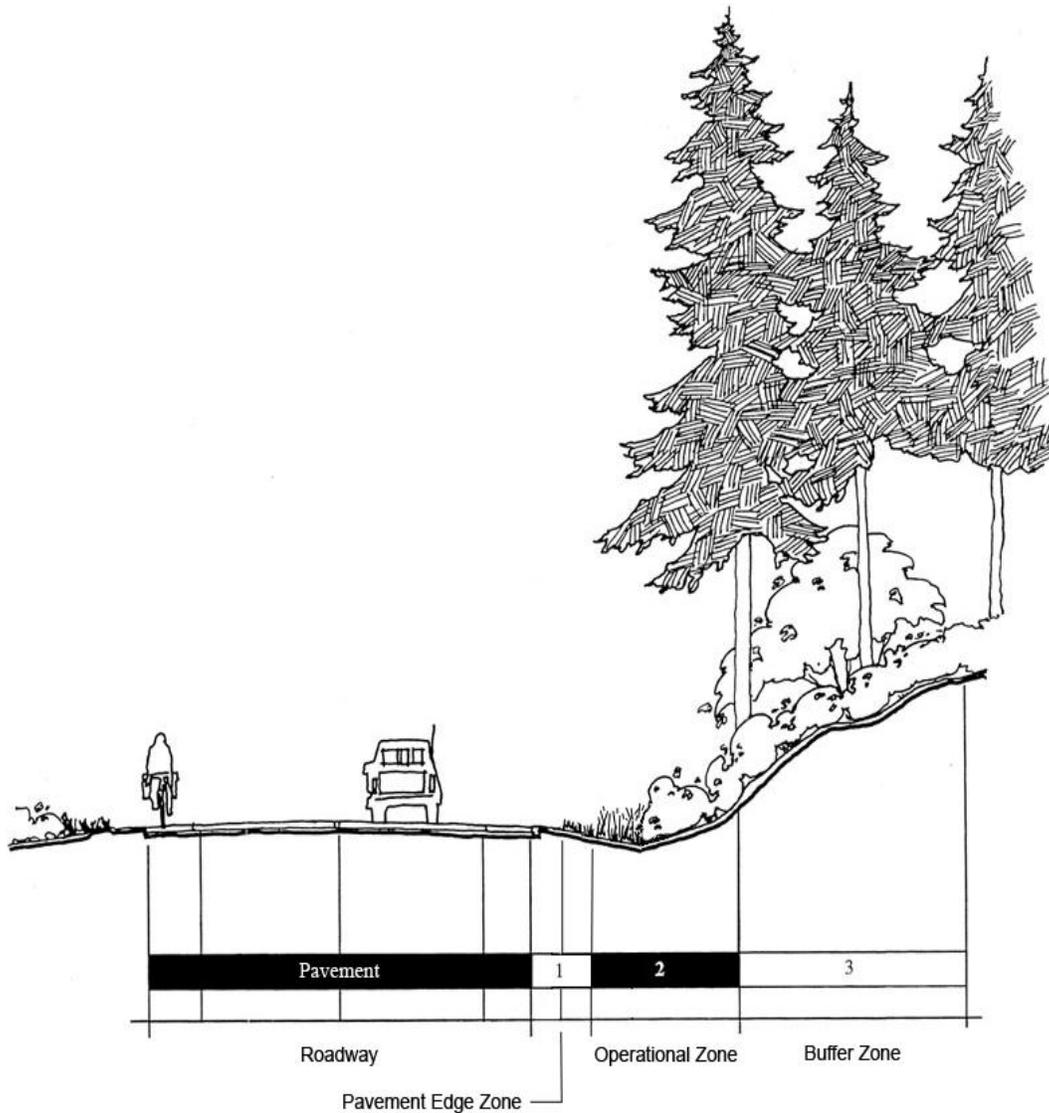
Routine Maintenance Activities – When vegetation maintenance activities are required to keep the area of roadside being treated in an annually controlled condition, activities are considered routine. This is more critical for areas of vegetated roadside near the travel lanes, edge of pavement, and around 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 right-of-ways 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 H) 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

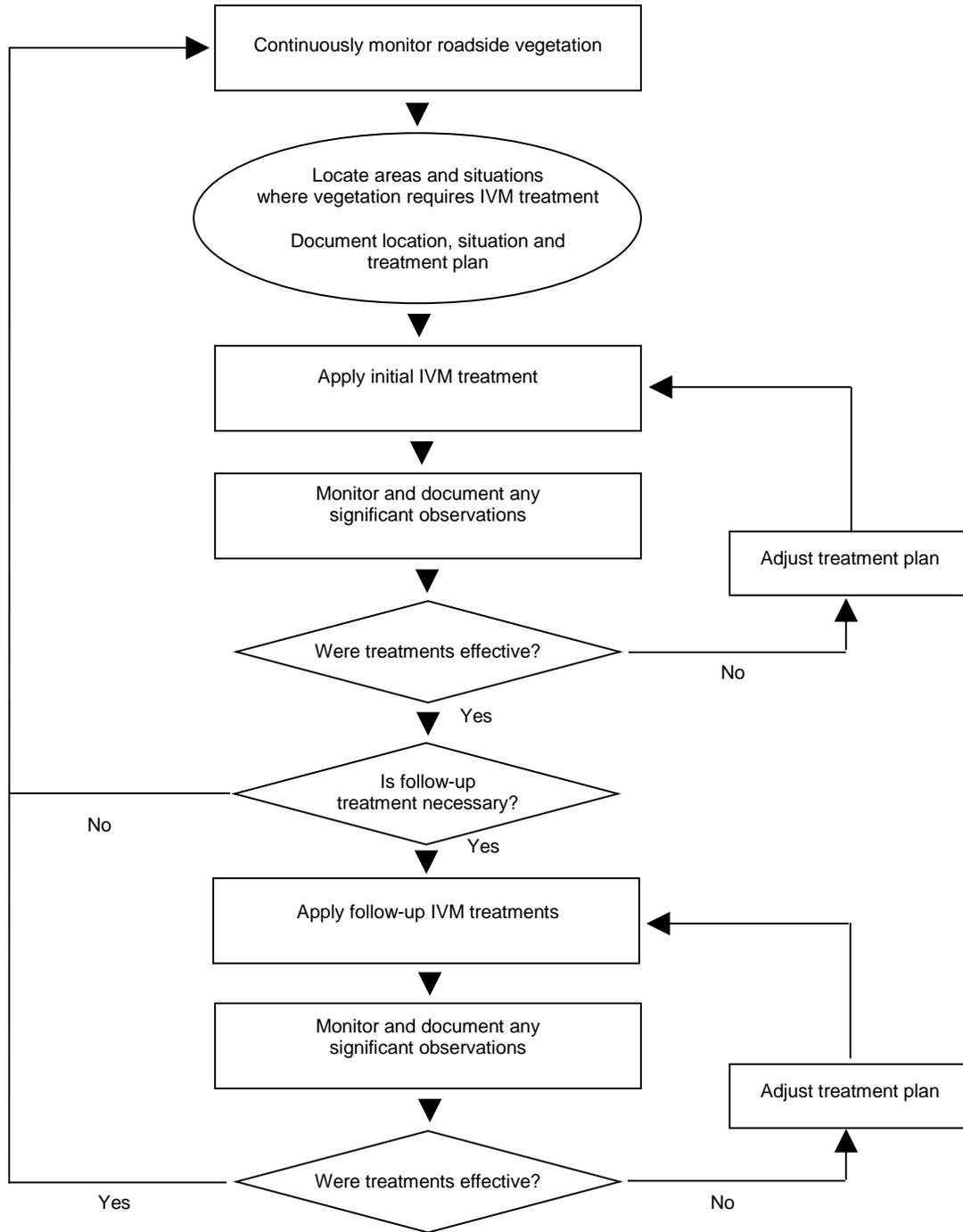
No Vegetation with Stem Diameter Greater than 4"
 Maintained using IVM techniques for sign visibility, sight distance, errant vehicle recovery and weed control.

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

2014 Area IVM Goals

The purpose of this section is to identify the highest priority roadside vegetation management needs in Olympic Region, Area 2 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, ***Olympic Region, Area 2 – 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 Vegetation 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 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

Both East and West sides

- Continue to utilize a snowplow with steel blade to cast off built up material on the shoulders where needed on an annual basis to correct/prevent channelization of water in all sections/SR's.
- Additionally, will continue to utilize DOC crewmembers to manually remove buildup under hardware where possible.
- Deliver Zone 1 non selective and pre-emergent herbicide treatment in all sections except along the curb side, waterways and sensitive areas.

Tree and Brush Control/Zone 2

Both East and West sides

- Continue to mow vegetation obstructions as needed to maintain, increase or re-establish site distance where needed.
- Concentrate on removing woody species from around and behind hardware in all sections by mowing where necessary and treat hardware with herbicide to suppress regrowth.
- On both the east and west sides we will continue to identify and remove trees of concern throughout the year on all SR's.

Westside/Shelton

- SR 101 MP 294.6 to 360 Plan to mow beyond one pass in areas that have or develop sight distance issues.
- SR 101 MP 314 to 317 Plan to conduct tree trimming in the MT Walker section where limbs are hanging over road starting to make a large canopy.
- SR 003 MP 1.0 to 25 Plan to continue our efforts to control scotch broom by selectively mowing in order to enhance the further re-establishment of native vegetation in the corridor.
- SR 106 MP 1.0 to 20 Plan to mow with sidearm beyond one pass in areas that have or develop sight distance issues.
- SR 106 MP 0.0 to 20 Plan to continue work trimming trees/brush for sight distance and encroachment issues.
- SR 003 MP 1.0 to 25 Plan to mow with sidearm beyond one pass in areas and intersections for sight distance.
- SR101, 106, 003, 119 Plan to use the bucket truck/man lift as it comes available to remove canopy shading roadway and clear sign sight distance for safety.

Eastside/Port Orchard

- SR 307 MP 0.2 to MP 5.2 Plan to mow beyond one pass as needed for sight distance and remove woody species crowding back of hardware.
- SR 305 MP 0.0 to MP 10.3 plan to mow beyond one pass as needed for sight distance and remove woody species behind hardware.
- SR 160 MP 1 to MP 7.1 Mow beyond one pass as needed for sight distance and remove woody species behind hardware.
- SR 016 MP 7.2 to 29 Plan to continue and finish removing trees/vegetation blocking sign site distance as the man lift/bucket truck becomes available.
- SR 016 MP 9 to 29, mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR 003 MP 36.5 to 53, mow beyond one pass as needed for sight distance and to increase sign visibility.
- SR 003 MP 36 to 60 Plan to begin removing trees/vegetation blocking sign site distance if man lift/bucket truck is available.
- SR 300 MP 0.0 to 3.0 Plan to mow beyond one pass up to twice annually as needed to increase and maintain site distance/safety in this well vegetated and challenging section of roadway.
- Mow out Scotch broom at the Bremerton Airport to the right-of-way fence to address security concerns.

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 by 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 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:

Westside/Shelton

- SR 101 MP 360 to 295 Plan to treat noxious weeds as needed.
- SR 101 and SR 106 Skokomish Indian Reservation we will continue to work with the Department of Natural Resources to address noxious weeds and will monitor for reappearance of knotweed and treat as needed.
- SR 101 MP 335.7 Planned follow up treatment to inject giant hogweed patch for eradication.
- SR 003 MP 1-25 Plan to treat for noxious weeds and follow up treatment of tansy ragwort.
- SR 106 MP 2-20 Plan to treat for noxious weeds as needed.
- SR 119 and SR 102 Plan to treat as necessary on these routes with the intent to control and possibly eradicate the small populations present.

Eastside/Port Orchard

- SR 305 MP 0.27 to 6.8 Plan to treat noxious weeds including poison hemlock and tansy ragwort Bainbridge Island.
- SR 003 SB MP 37.8 Plan a follow up treatment of knotweed patches.
- SR 302 MP 15 Plan to treat knotweed patch for eradication.
- SR 016 MP 27.8 to 28.1 Plan a follow-up treatment of knotweed regrowth in the median.
- SR 016 MP 28.5 WB Plan a follow up treatment of knotweed on right shoulder.
- SR 300 MP 2.3 to 3.0 Plan to treat knotweed along shoulder between roadway and Hood Canal.
- SR 003 MP 35 to 36.5 Plan a follow up treatment to knapweed on right shoulder.
- SR 003 MP 53.38 Plan a follow up treatment of knapweed patch.
- SR 166 MP 0.0 to 2.0 Plan to work together with City of Port Orchard to address large patches of knotweed and butterfly bush in corridor and along waterway behind hardware.

Nuisance Vegetation Control

Nuisance vegetation control includes control/management of weed species that are recommended but not mandated by state 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:

Westside/Shelton

- SR 101 MP 360-295 Plan to treat with a fall brush application after Sept 1st.
- SR 106 MP 0.0 to 20.9 Plan to do some spot treatment where possible to suppress/eradicate small woody species breaking out of native vegetation.
- SR 003 MP 1-25 Plan to make fall application after Sept 1st to maintain gains made with prior treatments and mowing, encouraging native vegetation return.

Eastside/Port Orchard

- SR 003 MP 37 to 53 Plan to mow center median as it is on a 3-4 year rotation and is in need due to woody species reappearing.
- SR 003 MP 36 to 34.5 SB Plan to treat poison oak growing on rock face.
- SR 016 MP 10.8 to 26.95 and 27.75 to 28 Plan to remove non-native and unwanted fast growing native tree species out of planted median and stump treat.
- SR 003 MP 45.6 to 46.2 and MP 46.6 to 47.2 Plan to remove non-native and fast growing native tree species out of planted median and stump treat.
- SR 302 MP 10.5 to 12.5 Multi pass mowing for sight distance concerns.
- SR 104 MP 15.6 to 20.5 Multi pass mowing for sight distance concerns.

Olympic Region, Area 2 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. Routine maintenance activities include maintenance of a vegetation-free band at the edge of pavement where required, certain types of mowing and trimming operations, and removal of trees that pose an identifiable threat to the highway or neighboring property.

1.1. Bare Ground Shoulder Maintenance (Zone 1)

In some locations/situations it is most efficient and effective to maintain a vegetation free band of shoulder rock along the edge of pavement. In most cases this is achieved through the annual application of herbicides. Annual herbicide applications are required where a vegetation-free condition is specified.

1.1.1. Guidelines

- In Olympic Region, Area 2, Zone 1 is maintained as vegetation free under guardrails and in specific locations to facilitate surface drainage.
- A vegetation-free Zone 1 is not maintained along certain designated sections of highways due to environmental sensitivity, including all of SR 106, portions of SR 101 along the Hood Canal, and SR 305 on Bainbridge Island. Along 106 and 101 these sections Zone 1 will only be maintained under guardrail with the use of a non-selective, post-emergent herbicide labeled for aquatic applications. On Bainbridge, grass will be allowed to grow under guardrail and broad-leaf weeds and brush be managed in these locations with selective herbicides.
- Annual Zone 1 treatments where applied 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 in some cases.

1.1.2. Methods

- Zone 1 is maintained using an annual application of non-selective, post-emergent 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 and will be graded in select locations as necessary to allow storm water flow off the roadway surface.
- See **Appendix A, Zone 1 Maintenance – Bare Ground 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 most locations where a vegetation-free Zone 1 is not maintained and grass is established up to the edge of pavement. Even in some locations where a vegetation-free Zone 1 is maintained, seasonal grass growth near the road edge is tall enough to interfere with traffic operations and safety. In addition, some locations, particularly on secondary highways with narrow right-of-ways, regular periodic

side 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

- Single pass mowing is conducted at least once per year on all shoulders where Zone 1 is not maintained and in other areas as required.
- Annual mowing or trimming beyond one pass is also conducted as needed for locations on all highways to preserve site distance at curves, intersections and any other highway entry points. However SR 3 MP 36.5 to 38.5 in both directions will receive a 30' mowing pass yearly to visually enhance gateway interchanges.
- Some areas and interchanges along limited access highways are mowed out for aesthetic purposes as described in **Appendix C, Routine Mowing Plan** (not included in the plan at this time).
- 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**.

1.2.2.Methods

Mowing

- Timing and mowing heights are set to encourage root development and health of the grass stands. Grass should be mowed at a minimum height of 6 inches. When one mowing per year is all that is required, timing should be any time after seed set typically around the middle of June at the earliest.
- Single pass mowing consists of one pass up to the maximum width of mowing equipment but may be as narrow as practical depending on mowing equipment, the presence of existing visual lines such as ditches, and the configuration of roadside cut and fill slopes.

Trimming

- Whenever possible, side arm brush trimming will be conducted as late in the season as possible or over winter months if time allows to avoid negative visual impacts during the tourist season. Early trimming in late winter or early spring, prior to leaf out is appropriate when soil and weather conditions permit.
- Chemical control methods on evergreen trees or foliar applications to other undesirable vegetation will occur after mid-September to avoid brown outs and potential contact with edible berries.
- See **Appendix A, Routine Maintenance Prescriptions, Zone 2 Maintenance**

1.2.3.Locations by Milepost

- Single pass routine mowing occurs on all roadsides in the area, except for inaccessible steep slopes behind Jersey barrier or guardrail
- **Appendix C, Routine Mowing Plan** (not included at this time) describes mowing priorities, timing and limits major limited corridors in the area.

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. Activities conducted are targeted selectively at removal of unwanted vegetation and preservation 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 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 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.
- In some cases trees threatening the highway may be growing on neighboring property. In these cases WSDOT has the legal right to remove the trees after informing and consulting with the neighboring property owner.

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.

2.1.2. Sample forms

- A copy of the Integrated Vegetation Management Record is included in **Appendix E, Forms and Records**.

2.1.3. Instructions for use

- Maintenance supervisors and technicians can access the IVM Record through the existing Pesticide Application Record Keeping system available over the computer network from the area office or maintenance sheds.

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 require eradication wherever they occur statewide. The law allows for individual county weed boards to designate individual Class B and C weeds for control (preventing seed production and spread) within the counties depending on how widespread and potentially harmful they are at the local level.
- For Olympic Region, Area 2 the following weeds designated for control are known to exist on state highway right-of-ways in Mason County:

Class A

Class A noxious weeds are non-native species with a limited distribution in the state. There is one Class A species found on the right-of-way in Olympic Region, Area 2, along US 101 on the Skokomish Reservation and in scattered occurrence along SR 106:

Common Name/Botanical Name
Giant hogweed/ <i>Heracleum mantegazzianum</i>

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. Olympic Region, Area 2 boundaries include highways in Kitsap and Mason Counties. The area also includes a portion of US 101 in Jefferson County in the north and several miles of SR 16 and 302 in Pierce County on the south. Designated control species known to exist on the right-of-way in Area 2 and designated as noxious weeds in this plan by county are described in the following table:

Common Name/Botanical Name	Kitsap	Pierce	Jefferson	Mason
Butterfly bush/ <i>Buddleha davidii</i>	◆	◆	◆	
Knotweed sp./ <i>Polygonum</i> sp.	◆		◆	
Knapweed sp./ <i>Centaurea</i> sp.	◆	◆	◆	◆
Poison hemlock/ <i>Conium maculatum</i>	◆	◆	◆	◆
Tansy ragwort/ <i>Senecio jacobaea</i>	◆	◆	◆	◆
Wild chervil/ <i>Anthriscus sylvestris</i>		◆	◆	◆
Yellow Hawkweed/ <i>Hieracium C.</i>		◆	◆	◆
Orange Hawkweed/ <i>Hieracium a.</i>			◆	◆
Sulfur cinquefoil/ <i>Potentilla recta</i>	◆		◆	◆
Purple Loosestrife/ <i>Lythrum salicaria</i>	◆		◆	◆
Common Reed/ <i>Phragmites australis</i>			◆	◆

Species listed above as designates in some counties but not others will be given highest priority for control as nuisance weeds as described in the following section for neighboring counties where they are not designated.

Class C

Class C noxious weeds are widely established throughout Washington and/ or may impact the agricultural industry. Counties may require control of certain Class C weeds at their own discretion but none of the counties in Olympic Region, Area 2 have done so. Unless designated by the county weed boards for required control, WSDOT uses the term “nuisance weeds” Class C species.

Nuisance weeds and treatment options are described in **Section 2.4** of this document.

- 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 weed species in Olympic Region, Area 2 can be found by 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 listed above as designates in some counties but not others will be given highest priority for control as nuisance weeds in neighboring counties where they are not designated.
- Species designated as nuisance weeds in Olympic Region, Area 2 that are known to exist on the highway right-of-way include:

Common Name/Botanical Name
Himalayan blackberry/Rubus discolor
Scotch broom/Cytisus scoparius
Common tansy/Tanacetum vulgare
St. Johnswort/Hypericum perforatum
Common mullein/Verbascum Thapsus
Bull Thistle/Cirsium vulgare
Canada thistle/Cirsium arvense
Musk thistle/Carduus nutans
Knotweed sp./Polygonum sp.

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

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 8.

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 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 (locations will be available in map viewer version 2)

- Mowing routines in designated limited access gateway interchanges are described in **Appendix C, Routine Mowing Plan** (not included in plan at this time).
- Interchanges and intersections with unique maintenance considerations and/or interchanges that are considered urban gateways along with a description of special maintenance activities can also 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. City Maintenance Areas

3.2.1. 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.

3.2.2. Locations (locations will be available in map viewer version 2)

- Limits for city maintained roadsides 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.

3.3. Herbicide Sensitive Areas

3.3.1. Guidelines

- WSDOT has identified certain areas where herbicide use will be limited to reduce any potential risk to human health or the environment. In these areas, no residual herbicide will be applied to the shoulders and grasses will be allowed to establish to the edge of pavement.
- Herbicide applications made in these designated areas for noxious or nuisance weed control, or in combination with mechanical methods for control of undesirable trees will be made selectively by hand.

3.3.2. Locations (locations available in map viewer version 2)

- 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.

- The list of pesticide sensitive individuals change annually, supervisors and herbicide applicators should reference the most current list to see if any notifications are required prior to spraying in any location.

3.4. Adopt-a-Highway and Neighbor Maintained Agreements

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

- 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.

3.5. Pit Sites and Stockpile Sites

WSDOT pit sites are often actively used for construction projects over an extended period of time and as maintenance stockpile sites. Other maintenance stockpile sites area found adjacent to the highway that are used to temporarily store maintenance sand, debris cleared from the roadway, and drainage components.

3.5.1.Guidelines

- Pit sites and maintenance stockpile sites will be managed for noxious and nuisance weeds as required.
- Maintenance stockpile sites immediately adjacent to the highway will be maintained as part of routine Zone 2 maintenance.
- For security and visual quality, vegetative screening will be used where possible to screen maintenance stockpile sites from the highway.

3.5.2.Locations (locations will be available in map viewer version 2)

- Pit locations 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, in-shoulder filtration systems, retention ponds and infiltration ponds.
- Storm water management facilities are managed for noxious and nuisance weeds, and vegetative obstructions 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.

- Some facilities have special requirements for mowing thresholds and removal/disposal of cut vegetation.
- Trees and brush should be cleared along both sides of the perimeter fencing around ponds for a width of approximately 8 feet as needed.
- Inlets and outfalls should be kept clear of vegetation and debris.

3.6.2. Locations (locations will be available in map viewer version 2)

- 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 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.

3.7.2. Locations (locations will be available in map viewer version 2)

- All wetland mitigation sites within Olympic Region, Area 2 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 (locations will be available in map viewer version 2)

- 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 will be available in map viewer version 2)

- Locations of all railroad crossing in Olympic Region, Area 2 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 Olympic Region, Area 2 can be referenced through records in the Statewide Pesticide Tracking Database.

Zone 1 Maintenance - Bareground Treatment

	OPTION 1	OPTION 2	OPTION 3	
TREATMENT TYPE:	Pavement Edge	Pavement Edge	Pavement Edge	
MANAGEMENT GOALS:	Vegetation free	Vegetation free	Vegetation free	
METHOD:	Annual herbicide application	Annual herbicide application	Annual herbicide application	
EQUIPMENT:	Spray truck w/ boom mounted nozzles	Handgun	Handgun	
MATERIALS:	Frequency 4 ozl./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	Perspective 8 ozd./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	Payload 10 ozd./acre + Sulfomet 3 ozd./acre + Ranger Pro 64 ozl./acre	
TIMING:	Spring	Spring	Spring	
IVM FOLLOW-UP:	Evaluate control	Evaluate control	Evaluate Control	
REMARKS:	Typically applied in a 2 to 3 ft. band.			

Zone 2 Maintenance - Tree and Brush

	OPTION 1	OPTION 2	OPTION 3	
TREATMENT TYPE:	Tree and brush	Tree and brush	Tree and brush	
MANAGEMENT GOALS:	Control vegetation obstruction	Control vegetation obstruction	Control vegetation obstruction	
METHOD:	Herbicide treatment	Stump treatment	Herbicide treatment	
EQUIPMENT:	Handgun	Cut stump applicator	Handgun	
MATERIALS:	Element 3A 64ozl./acre	Element 3A non diluted or 1:1	Capstone 8pints/acre	
TIMING:	During growing season	Anytime	During growing season	
IVM FOLLOW-UP:	Evaluate control	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	Where ever present	Where ever present	Where ever present
MANAGEMENT GOALS:	Eradication	Eradication	Eradication	Eradication
METHOD:	Spot spray w/ herbicide	Spot spray w/ herbicide	Spot spray w/ herbicide	Spot spray w/ herbicide
EQUIPMENT:	Backpack	Handgun	Handgun	Handgun
MATERIALS:	Element 3A 64 ozl./acre	Milestone 7 ozl./acre	Element 3A 64 ozl./acre + Landmark XP 4ozd./acre	RangeStar 64 ozl./acre + Metcel VMF 1ozd./acre
TIMING:	During growing season	During growing season	During growing season	During growing season
IVM FOLLOW-UP:	Reapply if needed	Reapply if needed	Reapply if needed	Reapply if needed
REMARKS:	Option 1,2&3: Poison Hemlock, Tansy Ragwort, Giant Hogweed, Blackberry, Scotch broom, Sulfur Cinquefoil, Wild Chervil --- Option 4: Tansy Ragwort, Alder, Scotch broom			

Appendix B

Herbicide Guidelines

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 labels
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	<u>Westside</u> - Restricted use <u>Eastside</u> - 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	<u>Westside</u> - Restricted use <u>Eastside</u> - 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 acidsynthetic 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

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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.	<u>Westside</u> - Restricted use <u>Eastside</u> - 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		<u>Westside</u> - Restricted use <u>Eastside</u> - 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	<u>Westside</u> - Restricted use <u>Eastside</u> - Restricted for use within 60' of all water	Highly mobile in soil and readily adsorbed through roots of desirable trees

Appendix B

Herbicide Guidelines

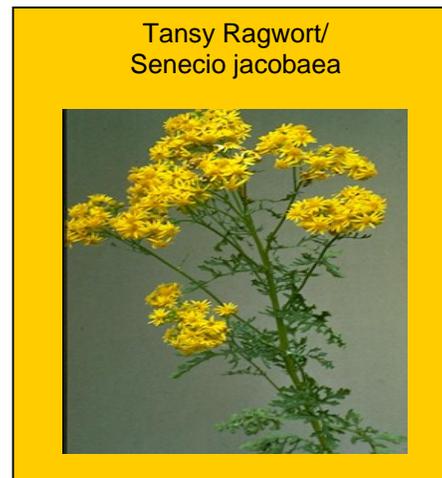
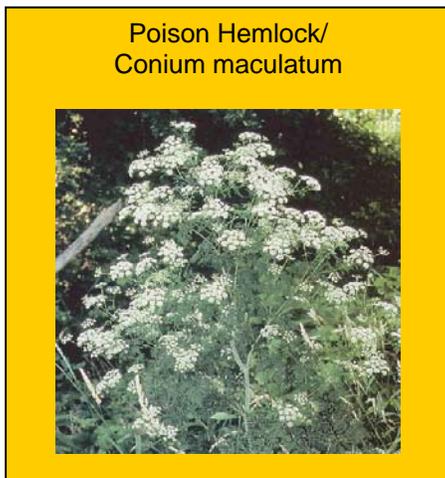
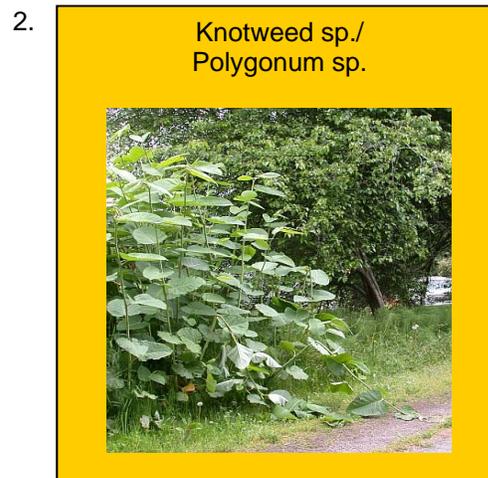
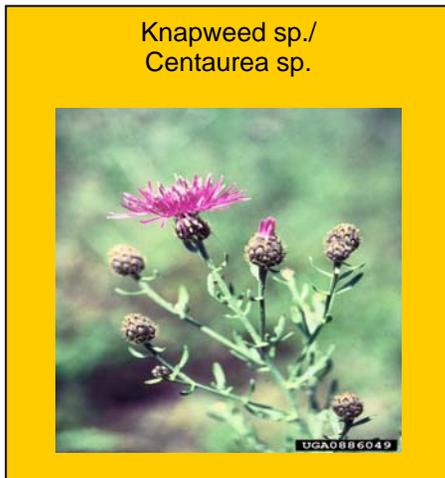
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1. Always read and follow product labels
2. Always use personal protective equipment when mixing, loading, and applying

Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
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
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 OL area 2:
(Jefferson, Pierce, Mason, and Kitsap County)



- 1. Nuisance in Mason County
- 2. Nuisance in Pierce, Mason Counties

Designated for control in OL area 2:
(Jefferson, Pierce, Mason, and Kitsap County)

3.

Wild Chervil/
Athriscus sylvestris



4.

Yellow Hawkweed/
Hieracium caespitosum



5.

Orange Hawkweed/
Hieracium a.



6.

Sulfur Cinquefoil/
Potentilla recta



7.

Purple Loosestrife/
Lythrum salicaria



5.

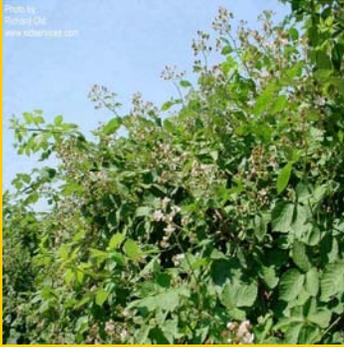
Common Reed/
Phragmites australis



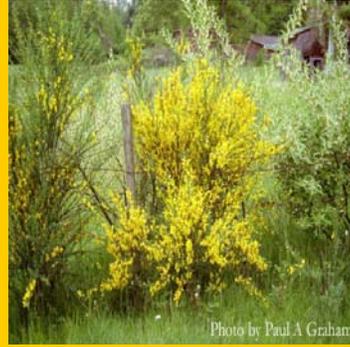
- 3. Nuisance in Kitsap County
- 4. Nuisance in Kitsap County
- 5. Nuisance in Kitsap County
- 6. Nuisance in Kitsap County
- 7. Nuisance in Pierce County

Nuisance weeds in OL area 2:
(Jefferson, Pierce, Mason, and Kitsap County)

Himalayan Blackberry/
Rubus discolor



Scotch Broom/
Cytisus scoparius



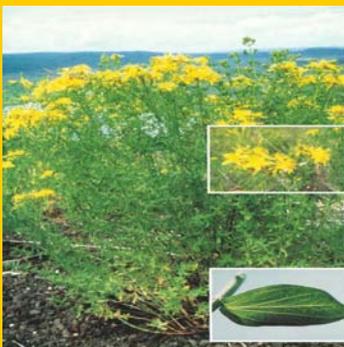
Musk Thistle/
Carduus nutans



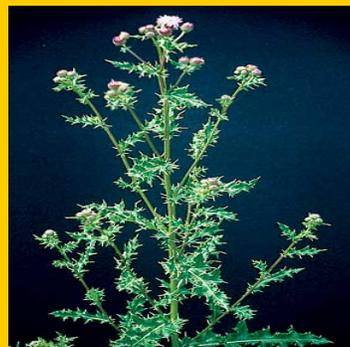
Common Tansy/
Tanacetum vulgare



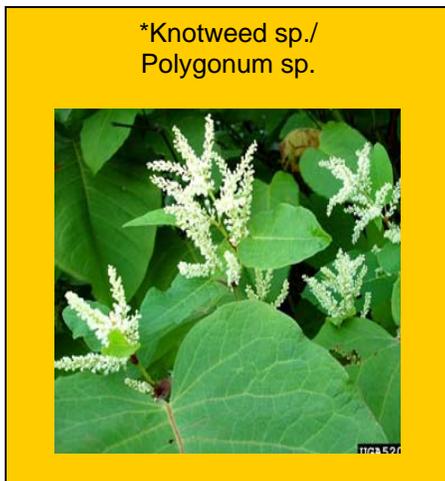
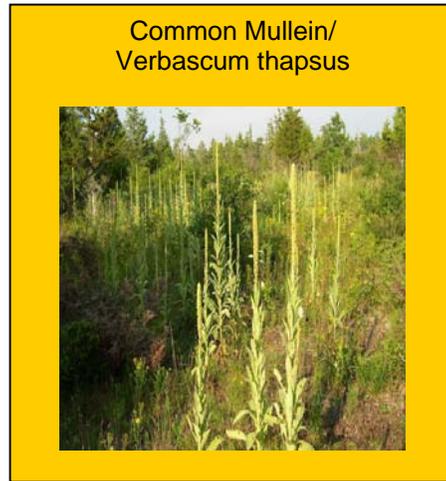
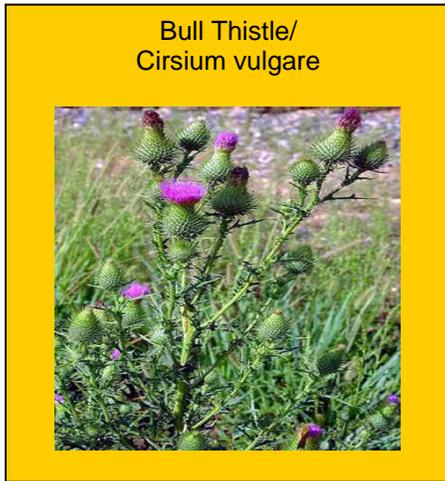
St. Johnswort/
Hypericum perforatum



Canada Thistle/
Cirsium arvense



Nuisance weeds in OL area 2:
(Jefferson, Pierce, Mason, and Kitsap County)



*Noxious in Pierce and Mason Counties



Washington State
Department of Transportation



Integrated Vegetation
Management Record

Dist. 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 SR _____ MP _____ to MP _____		Location _____		
Class Appropriate Items:		<input type="checkbox"/> Roadside	<input type="checkbox"/> Landscaped Area	<input type="checkbox"/> Interchange
<input type="checkbox"/> NB	<input type="checkbox"/> EB	<input type="checkbox"/> Shoulder	<input type="checkbox"/> Rest Area	<input type="checkbox"/> Bridge
<input type="checkbox"/> SB	<input type="checkbox"/> WB	<input type="checkbox"/> Median	<input type="checkbox"/> Park-n-Ride	<input type="checkbox"/> Ramp
		<input type="checkbox"/> Mitigation Site	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Yard/Stockpile
		Third Party Damage <input type="checkbox"/> Yes		Sensitive Sites <input type="checkbox"/> Aquatic <input type="checkbox"/> Wetlands
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	List Target/Species: _____
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"/> 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"/> Aesthetic <input type="checkbox"/> Other _____				
Long term IVM plan (Describe goals/objectives and a step-by-step approach over time)				
Approximate Acres to Accomplish		_____		
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"/> Sealing <input type="checkbox"/> Other _____	_____	_____	
Mechanical	<input type="checkbox"/> Aerial Saw Work <input type="checkbox"/> Tractor Brush Cutter <input type="checkbox"/> Mower/Chop <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"/> Fertilizing <input type="checkbox"/> Grazing <input type="checkbox"/> Soil Amendment <input type="checkbox"/> Other _____	_____	_____	
Chemical	_____ Record Number	_____	_____	
#1 Evaluation and Date				
#2 Evaluation and Date				
#3 Evaluation and Date				

	USDA, Forest Service	OMB 0596-0217 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
City of Poulsbo	780 NE Iverson St. Poulsbo, WA 98370	Dan Wilson	Public Works Superintendent	(360) 779-4078 Fax (360) 779-6384	publicworks@cityofpoulsbo.com
City of Bainbridge Island	280 Madison Ave. N. Bainbridge Island, WA	Barry Loveless	Public Works Director	(206) 842-2016	pwom@bainbridgewa.gov
City of Bremerton	100 Oyster Bay Ave. N Bremeton, WA 98312	Chal Martin	Public Works Director	(360) 473-5758	chal.martin@ci.bremerton.wa.us
City of Port Orchard	216 Prospect St. Port Orchard	Mark Dorsey	Public Works Director	(360) 876-4991 Fax (360) 876-4980	publicworks@cityofportorchard.us
City of Gig Harbor	3510 Grandview St. Gig Harbor, WA 98335	Jeff Langhelm	Public Works Director	(253) 851-6170	langhelmi@cityofgigharbor.net
City of Shelton	525 W. Cota St. Shelton, WA 98584	Greg Clark	Public Works Director	(360) 426-9731	publicworks@ci.shelton.wa.us
Jefferson County	201 W Patison Port Hadlock, WA 98339	Eve Dixon	Noxious Weed Coordinator	(360) 379-5610 Fax (360) 379-5617	edixon@co.jefferson.wa.us
Mason County	303 N 4th Street Shelton, WA 98584	Pat Grover	Noxious Weed Coordinator	(360) 427-9670 Fax (360) 427-7264	pgrover@wsu.edu
Kitsap County	345 6th St., Suite 550 Bremerton, WA 98337	Dana Coggan	Noxious Weed Coordinator	(360) 307-4242	dcoggon@co.kitsap.wa.us