

# NC Region, Area 1

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# Integrated Roadside Vegetation Management Plan

2014



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

## **Table of Contents**

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Summary .....	1
Vicinity Map.....	2
Program Goals.....	3-4
Work Plans .....	5-9
Roadside Maintenance Considerations .....	10
Typical Roadside Vegetation Management Zones.....	11
Special Considerations .....	12
Roadside Design and Construction Considerations.....	13
Integrated Vegetation Management (IVM) Decision Making Process.....	14
Roadside Vegetation Management Plan.....	15
1.0 Integrated Vegetation Management.....	15
1.1 Integrated Vegetation Management Planning and Tracking Database .....	15
1.1.1 Description.....	15
1.1.2 Sample Forms .....	15
1.1.3 Instructions for Use.....	15
1.2 Shoulder Maintenance (Zone 1 Bare-Ground) .....	15
1.2.1 Policy and Objectives .....	15
1.2.2 Action Thresholds .....	15
1.2.3 Methods (Timing and Procedures).....	16
1.2.4 Prescriptions .....	16
1.3 Mowing Operations.....	16
1.3.1 Policy and Objectives .....	16
1.3.2 Methods (timing and procedures) .....	16-17
1.3.3 Prescriptions .....	17
1.4 Noxious Weed Control.....	17
1.4.1 Policy and objectives .....	17-22
1.4.2 Methods .....	22
1.4.3 Action Thresholds .....	22-23
1.4.4 Prescriptions .....	23
1.5 Nuisance Weed Control.....	23
1.5.1 Policy and objectives .....	23
1.5.2 List of Species Currently Present.....	23
1.5.3 Methods .....	23
1.5.4 Action Threshold For Nuisance Weed Control.....	24
1.5.5 Prescriptions .....	24
1.6 Tree and Brush Control .....	24
1.6.1 Policy and Practice .....	24
1.6.2 Methods .....	24-25
1.7 Hazard Tree .....	25
1.7.1 Policy and Practices .....	25
2.0 Special Maintenance Areas.....	26
2.1 Herbicide Sensitive Areas .....	26
2.1.1 Policy and Objectives .....	26
2.2 U.S. Forest Service Easement .....	26

2.3	Adopt-a-highway and Owner Will Maintain Agreements.....	26
2.3.1	Policy and Objectives .....	26-27
2.3.2	Locations by Milepost .....	27
2.4	Environmental Sensitive Areas.....	27
2.4.1	Policy and Objectives .....	27
2.4.2	Locations .....	27
2.5	Storm Water Management Facilities.....	27
2.5.1	Policy and Objectives .....	27
2.5.2	Methods.....	28
2.6	Wetland Mitigation Sites .....	28
2.6.1	Policy and objectives .....	28
2.6.2	Locations by Milepost .....	28

Appendix A	Integrated Vegetation Management Prescriptions
Appendix B	Herbicide Guidelines
Appendix C	Zone 1 Bare-ground
Appendix D	Weed Locations (currently not in plan)
Appendix E	Special Maintenance Areas
Appendix F	Forms and Records
Appendix G	Stakeholders List

## Summary

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The Washington State Department of Transportation (WSDOT), North Central Region, Area 1 manages approximately 560 miles of roadside right-of-way throughout Chelan, Douglas, King and Kittitas counties. This right-of-way is part of the state highway system including US 2, US 97, US 97A, SR 285, SR 971, SR 207, SR 150, and SR 28 as well as several other state routes in the area.

As a landowner in this area WSDOT is required to control all designated noxious weeds that occur on this right-of-way by state law (RCW 17.10 and 15.15.010). It is important to WSDOT to not only meet the legal requirements, but also to consider the needs and concerns of adjacent landowners in this area.

In order to better manage these roadsides WSDOT has developed an Integrated Vegetation Management Plan (IVM) for this area. This plan serves as the primary guidance document for maintenance of roadsides in this area and will provide detailed weed control and planting guidance as well as overall policy and procedures. This plan supports WSDOT's long-range goals of managing these roadsides to:

- Reduce maintenance costs
- Improve weed control
- Enhance roadside vegetation by providing stable, sustainable plant communities

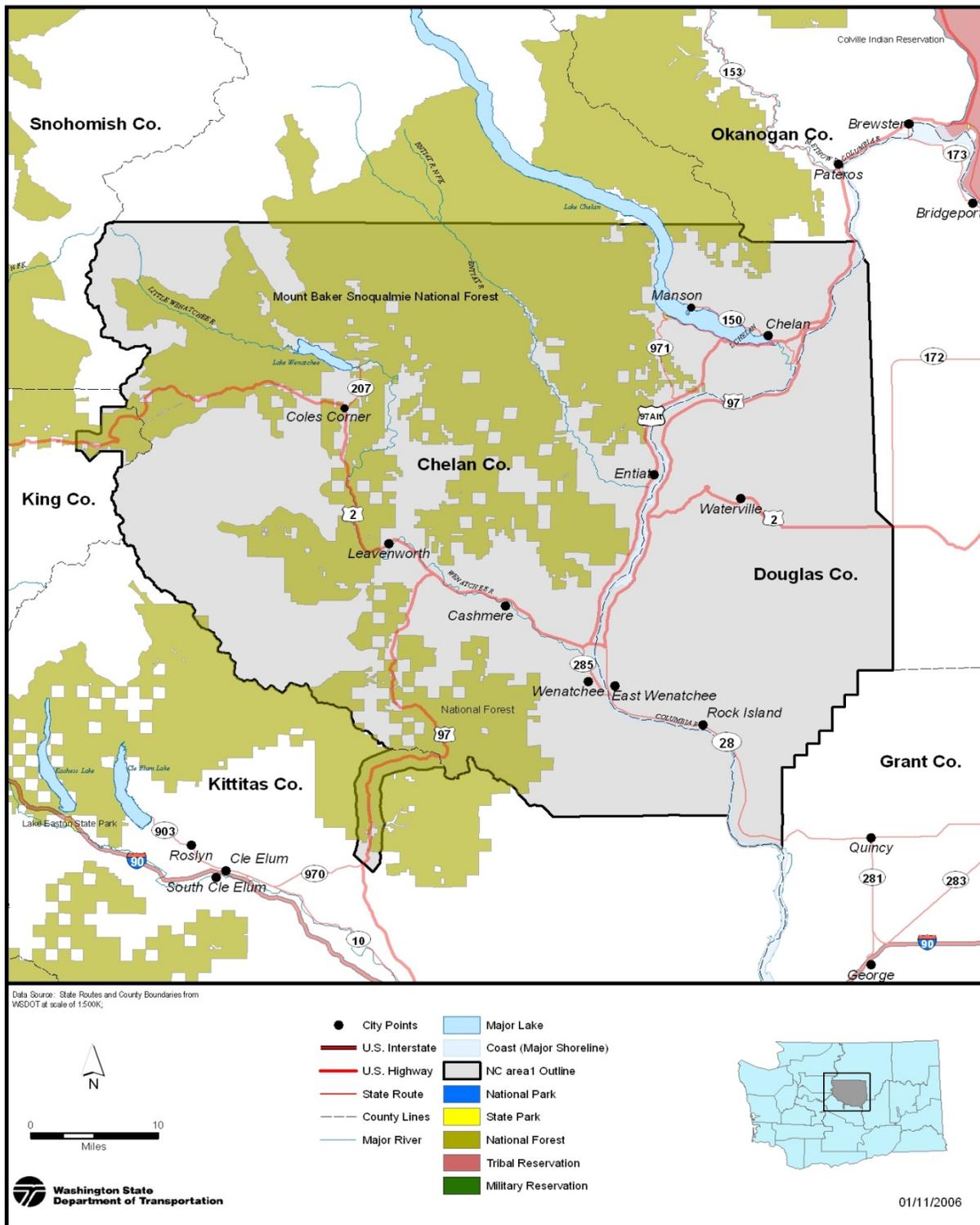
The attached plan consists of four main sections:

1. **Introduction:** This section provides an overview of the maintenance area discussed in the plan. This section also provides contacts, pertinent links and references and the annual work plan while giving the reader a general understanding of the WSDOT roadside program.
2. **Plan:** This is the main body of the document and includes detailed descriptions of specific maintenance activities, policies and objectives.
3. **Appendices:** This section contains prescriptions for weed control and revegetation, noxious and nuisance weed locations, locations of special maintenance areas, forms and records, and a list of local public and private stakeholders.

This plan is a dynamic document that will be developed and updated over time with input from a variety of sources. WSDOT welcomes comments and suggestions from local, private, and public entities. An electronic version of the North Central Region, Area 1 plan is available at [http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt\\_plans.htm](http://www.wsdot.wa.gov/Maintenance/Roadside/mgmt_plans.htm) or available in hard copy upon request. Please contact Rick Wood or James Morin at the numbers listed below for questions or comment.

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Vicinity Map  
Figure 1

## **Program Goals**

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The purpose of this section is to identify short and long term operational goals within NC Region, Area 1. These goals will help direct decisions that affect roadside management and the construction of roadside. These goals will be updated and evaluated on a yearly basis during the annual Winter Planning Meeting.

### **Long-Term Goals (2007-2017)**

Long-term goals should be achievable within a 5 biennium's/10 year period of time and have clearly stated objectives. Long-term goals may be general in nature and should provide direction for short term operational goals.

1. **Zone 1**
  - Eliminate Zone 1 as a standard operating procedure by 2011 within the Leavenworth sub area (org # 425120).
  - Reduce Zone 1 acreage by approximately 10% annually over the next 10 years.
2. **Revegetation**
  - Revegetate all disturbed areas as a result of maintenance practices.
  - Revegetate approximately 10 acres of roadside yearly, focusing on areas that are heavily infested with invasive plant species.
  - Evaluate the use of fertilizer as a roadside treatment method in NCR, Area 1.
3. **Weed Control**
  - Eliminate Scotch Broom from North Central Region Area 1. This is an ongoing goal that requires elimination of any plants identified.
  - Increase the use of Biological controls throughout NCR Area 1 where practical, focusing on Dalmatian Toadflax and Knapweed species.
4. **Communication**
  - Work with Scoping, Design and Construction programs to communicate Area IVM goals and improve roadsides in new projects.

### **Short-Term Goals (2007)**

Short-term goals should be attainable within a 1-2 year period of time. Short-term goals should be specific goals with clear objectives that can be measured and reported.

1. **Zone 1** - Eliminate zone 1 residual applications on:
  - US 2 MP 56.78 to 64.73
  - US 97 MP 177 to 185
  - SR 28 MP 18 to 19 Test Plot
  - US 2 North and South Interchanges
2. **Revegetation** - Prepare and plant the following areas:
  - US 2 MP 89.93 to 90.56 Green Bridge to Chiwaukum Creek Bridge
  - SR 28 MP 18 to 19, both sides.
3. **Weed Control** -
  - Place biological control agents on:
    - In Chelan Falls area for Dalmatian Toadflax, 2 acres
    - SR 150 for Diffuse Knapweed, 1 acre
    - US 2 Easy St. for Dalmatian Toadflax, 1 acre.
    - US 97 MP 184.55 to 185 for Dalmatian Toadflax 1 acre
  - Treat any Scotch Broom that is identified.
  - Tiger claw
  - US 2 MP 101.82 to 102.37 and 102.62 to 103.05
4. **Communication with Scoping, Design and Construction**

- US 2 Leavenworth to Cashmere Paver, Right lane construction at Saunders Rd.
- US 2 /97 Peshastin East Interchange. Add- Fall 2007, Construction 2008.

## **2010 Work Plan**

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The purpose of this section is to identify the short and long term operational goals within NC Region, Area 1. These goals will help direct decisions that affect roadside management and the construction of roadside. These goals will be updated and evaluated on a yearly basis during the annual Winter Planning Meeting.

### **Long-Term Goals (2009-2013)**

Long-term goals should be achievable within a 5 year period of time and have clearly stated objectives. Long-term goals may be general in nature and should provide direction for short term operational goals.

- **General Weed Control**
  1. Improve consistency and predictability in Vegetation Management (VM) program.
  2. Maintain good communication with Kittitas and Chelan County Weed Boards
- **Noxious Weed Control 3A2**
- **Nuisance Weed Control 3A3**
  1. Nuisance weeds will only be controlled incidental to noxious weed control
- **Obstructions 3A4-**
  1. Maintain hardware, intersections and low site distance locations to be free of vegetation obstructions.

### **Short-Term Goals (2009)**

Short-term goals are planned for implementation during the 2009 season. Short-term goals should be specific goals with clear objectives that can be measured and reported.

- **Noxious Weed Control 3A2-**
  1. Treat an estimated 1500 acres of roadside with selective herbicides for noxious weed control **(1770)**
  2. Continue investment in biological control to target Spotted and Diffuse Knapweed and Dalmatian Toadflax infestations.
- **Nuisance Weed Control 3A3-**
  1. Nuisance weeds will only be controlled incidentally to noxious weed control
  2. Mow approximately **50** acres in support of gateway areas and nuisance weed control.
- **Obstructions 3A4-**
  1. Apply approximately **150** acres of Bare-ground **(179)**
  2. Mow approximately **50** acres to control obstructions?
  3. Hand trim approximately **4** acres
  4. Remove approximately **50** danger trees

- **Noxious Weed Control 3A2-**
  1. Treat an estimated **1,000** acres of roadside with selective herbicides for County Designated noxious weed control
  2. Mow approximately **50** acres of noxious weeds on roadsides and gore areas.
  3. Evaluate area for bio-control needs, particularly Spotted, Diffuse Knapweed and Dalmatian Toadflax infestations.
  4. Eradicate European Hawkweed on US-2 ROW
  5. Apply **50** acres fall herbicide treatment annually to control Canada Thistle, Knapweeds and Dalmatian Toadflax and other difficult to kill perennial weeds.
- **Nuisance Weed Control 3A3-**
  1. Nuisance weeds will only be controlled incidentally to noxious weed control
  2. Mow approximately **25** acres in support of gateway areas and nuisance weed control.
- **Obstructions 3A4-**
  1. Apply approximately **150** acres of Bare-ground
    - Pit sites
    - Guardrail Sections
    - US 97
    - SR 28
    - US 2
  2. Mow approximately **100** acres to control obstructions
  3. Treat or cut with brush cutter approximately **15-20** acres of brush
  4. Remove approximately **50** trees from the right-of-way

## **2012 Annual Work Plan**

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The work plan is updated on an annual basis and should reflect the priorities in the long-range work plan.

- **Noxious Weed Control 3A2-**
  6. Treat an estimated **1,000** acres of roadside with selective herbicides for County Designated noxious weed control Accomplished 1133 acres
  7. Mow approximately **50** acres of noxious weeds on roadsides and gore areas. Accomplished 31 acres
  8. Evaluate area for bio-control needs, particularly Spotted, Diffuse Knapweed and Dalmatian Toadflax infestations. Accomplished, none placed this year, Mecinus janthinus and Larinus minutus populations appear to be increasing rapidly on their own.
  9. Eradicate European Hawkweed on US-2 ROW did not accomplish- Crew had difficulty locating plants, propose meeting with King Co. next summer to do a survey of existing sites.
  10. Apply **50** acres fall herbicide treatment annually to control Canada thistle, Knapweeds and Dalmatian Toadflax and other difficult to kill perennial weeds. Did not accomplish due to conflicting priorities
- **Nuisance Weed Control 3A3-**
  3. Nuisance weeds will only be controlled incidentally to noxious weed control
  4. Mow approximately **25** acres in support of gateway areas and nuisance weed control. Accomplished 9 acres, lack of mower based in this area makes reaching this goal difficult.
- **Obstructions 3A4-**
  5. Apply approximately **150** acres of Bare-ground. Accomplished 108 acres
    - Pit sites
    - Guardrail Sections
    - US 97
    - SR 28
    - US 2
  6. Mow approximately **100** acres to control obstructions. Accomplished 180 acres
  7. Treat or cut with brush cutter approximately **15-20** acres of brush. Accomplished, area is continuing to fall behind in tree and brush control, more resources need to be focused on this issue. The farther behind the area gets the more this will cost per acre. Recommend increasing this goal to 50-60 acres annually to start to catch up.
  8. Remove approximately **50** trees from the right-of-way. Accomplished 90 trees, continuing to fall behind on this category due in part to pine beetle and spruce bud worm infestations in this area. Recommend increasing this goal to 200 trees over the next 3-5 years then re-evaluating.

## **2013 Annual Work Plan**

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- **Noxious Weed Control 3A2-**
  1. Treat an estimated **1200** acres of roadside with selective herbicides for County Designated noxious weed control Accomplished 1275 acres
  2. Mow approximately **50** acres of noxious weeds on roadsides and gore areas. Accomplished 161 acres
  3. Evaluate area for bio-control needs, particularly Spotted, Diffuse Knapweed and Dalmatian Toadflax infestations. Accomplished
  4. Eradicate European Hawkweed on US-2 ROW Partially Accomplished
  5. Apply **50** acres fall herbicide treatment annually to control Canada thistle, Knapweeds and Dalmatian Toadflax and other difficult to kill perennial weeds. Accomplished
- **Nuisance Weed Control 3A3-**
  1. Nuisance weeds will only be controlled incidentally to noxious weed control
  2. Mow approximately **25** acres in support of Wenatchee urban gateway areas and nuisance weed control. Accomplished 60 acres
  3. Chem-fallow north end interchange/gore area in preparation for 2013 fall seeding
- **Obstructions 3A4-**
  1. Apply approximately **200** acres of Bare-ground Accomplished 260 acres
    - Pit sites
    - Guardrail Sections
    - US 97
    - SR 28
    - US 2
  2. Mow approximately **200** acres to control obstructions Accomplished 98 acres
  3. Treat or cut with brush cutter approximately **50-60** acres
  4. Remove approximately **150-200** trees from the right-of- way Accomplished 817 trees- this was a result of several detailed evaluations that identified a large number of damaged and diseased trees on the US-2 and 97 corridors

## ***2014 Annual Work Plan***

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- **Noxious Weed Control 3A2-**
  1. Treat an estimated **1200** acres of roadside with selective herbicides for County Designated noxious weed control
  2. Mow approximately **150** acres of noxious weeds on roadsides and gore areas.
  3. Evaluate area for bio-control needs, particularly Spotted, Diffuse Knapweed and Dalmatian Toadflax infestations.
  4. Eradicate European Hawkweed on US-2 ROW
  5. Apply **50** acres fall herbicide treatment annually to control Canada thistle, Knapweeds and Dalmatian Toadflax and other difficult to kill perennial weeds.
- **Nuisance Weed Control 3A3-**
  1. Nuisance weeds will only be controlled incidentally to noxious weed control
  2. Mow approximately **25** acres in support of gateway areas and nuisance weed control.
- **Obstructions 3A4-**
  1. Apply approximately **200** acres of Bare-ground
    - Pit sites
    - Guardrail Sections
    - US 97
    - SR 28
    - US 2
  2. Mow approximately **200** acres to control obstructions
  3. Treat or cut with brush cutter approximately **50-60** acres
  4. Remove approximately **150-200** trees from the right-of- way as needed

## ***Roadside Maintenance Considerations***

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The primary objectives for maintenance of roadside vegetation are:

- Provide safe highway operation
- Comply with legal regulations for control of noxious weeds
- Protection of the environment

### **Visual Quality**

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>

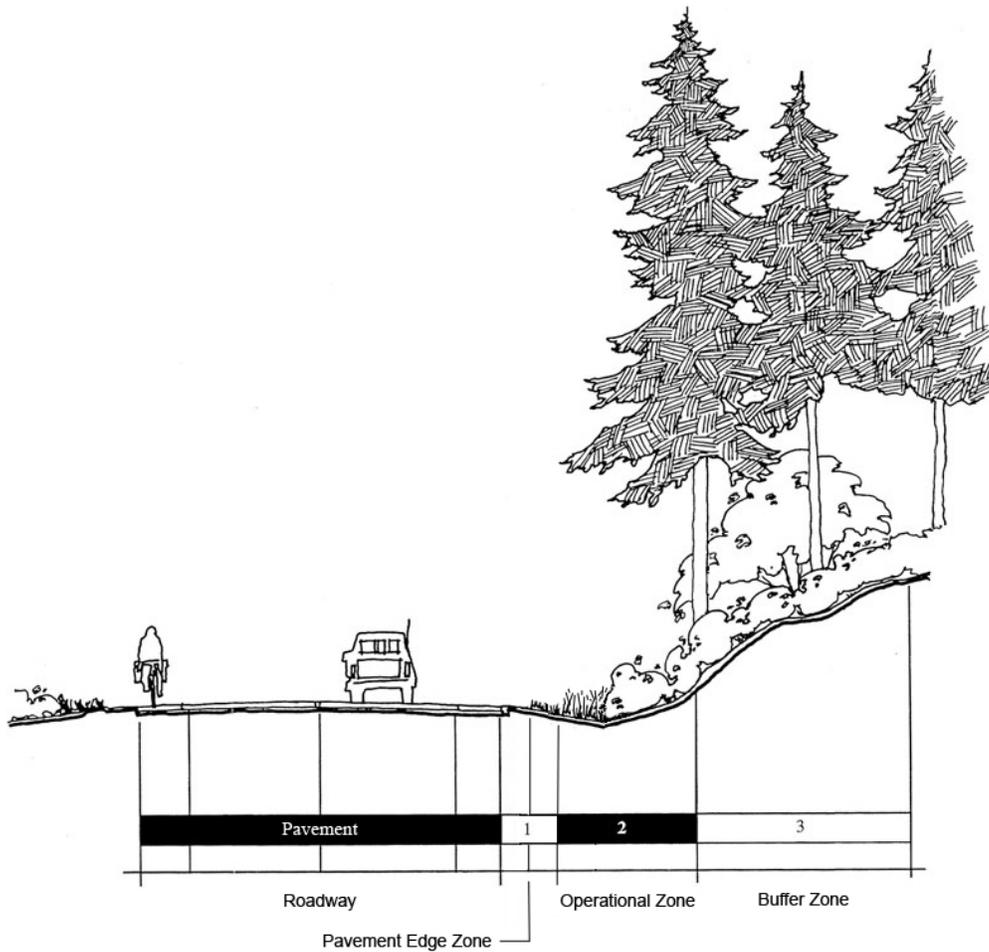
### **Operational Zones**

WSDOT roadsides are divided into several zones for the purposes of assigning management objectives, maintenance intensities, 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 maintenance zones will occur along state highway in NC Region, Area 1. In many cases the narrow width of the right-of-way or adjoining land-use, limits the operational zones to Zone 1 and a narrow Zone 2 only. Roadside vegetation management zones are as follows:

**Zone 1** – The pavement edge zone is maintained in a manner and width necessary to address highway operations 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. A vegetation-free Zone 1 is maintained using non-selective soil residual herbicides. Routine annual mowing may be necessary in some cases where vegetation is established up to the edge of pavement.

**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, trimming and/or herbicide treatment as necessary to selectively remove undesirable trees, brush and weeds and encourage desirable vegetation. Any plant with an existing or potential trunk diameter of 4” or greater is considered undesirable in Zone 2.

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



**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 1**

## ***Special Considerations***

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### **Herbicide Sensitive Areas**

An Herbicide Sensitive Areas consist of all locations within 60' of jurisdictional water bodies. WSDOT limits the use of herbicides in these areas to reduce the potential risk of environmental impact to these sensitive resources. Only products that have successfully undergone an internal risk assessment process will be used in these areas (See Herbicide Safety below).

### **Special Maintenance Areas**

This plan also defines and identifies areas with unique roadside maintenance requirements or where arrangements exist due to the surrounding land use, neighbor concerns or specific highway related functions. Special maintenance areas in highway roadsides sections with agreements for maintenance by neighbors are further defined in **Special Maintenance Areas, Section 3.**

### **Public Notification of Herbicide Applications**

WSDOT is required by law to notify chemically sensitive individuals on file with Washington State Department of Agriculture, where the residing property abuts the highway right-of-way and the residence is within ½ mile of the property line. Notification to chemically sensitive individuals is accomplished by letter and/or phone conversation prior to each application. For specific herbicide application schedules, the roadside vegetation maintenance personnel can be reached at 509.667.2800.

### **Herbicide Safety**

When applying herbicides WSDOT takes precaution to avoid any impact on human and environmental health, and to ensure herbicides do not move off target. Applications are made only by trained and licensed employees following all state and federal regulations as well as all recommendations and restrictions given on the individual product labels as approved by the US Environmental Protection Agency.

WSDOT has also conducted a risk assessment for the herbicide products and application methods used on state highways. Toxicological impacts of WSDOT practices were evaluated for human health (both operators and the general public), for aquatic ecosystems, and terrestrial wildlife. The findings of this assessment are summarized in a series of fact sheets for the individual herbicides used by WSDOT. These fact sheets can be viewed and downloaded through the Internet at: [http://www.wsdot.wa.gov/Maintenance/Roadside/herbicide\\_use.htm](http://www.wsdot.wa.gov/Maintenance/Roadside/herbicide_use.htm) or copies may be obtained by calling the WSDOT Headquarters Maintenance Office at 360.705.7850.

## ***Roadside Design and Construction Considerations***

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Highway and utility construction in many cases has a significant impact on drainage, soils and vegetation adjacent to the paved roadway. WSDOT policy and practice for restoring the operational, environmental and visual functions disturbed by construction is based on the guidelines found in the [Roadside Classification Plan](#) (WSDOT 2011), and the [Roadside Manual](#) (WSDOT M25-30, June 2014).

Internal agency coordination between the Design, Construction, and Maintenance programs is imperative to a comprehensive roadside vegetation management plan. A commitment to increasing communication in these areas is an important component in an ongoing effort to reduce lifecycle costs and improve roadside vegetation. This commitment has been recognized and agreed to by the regional management team.

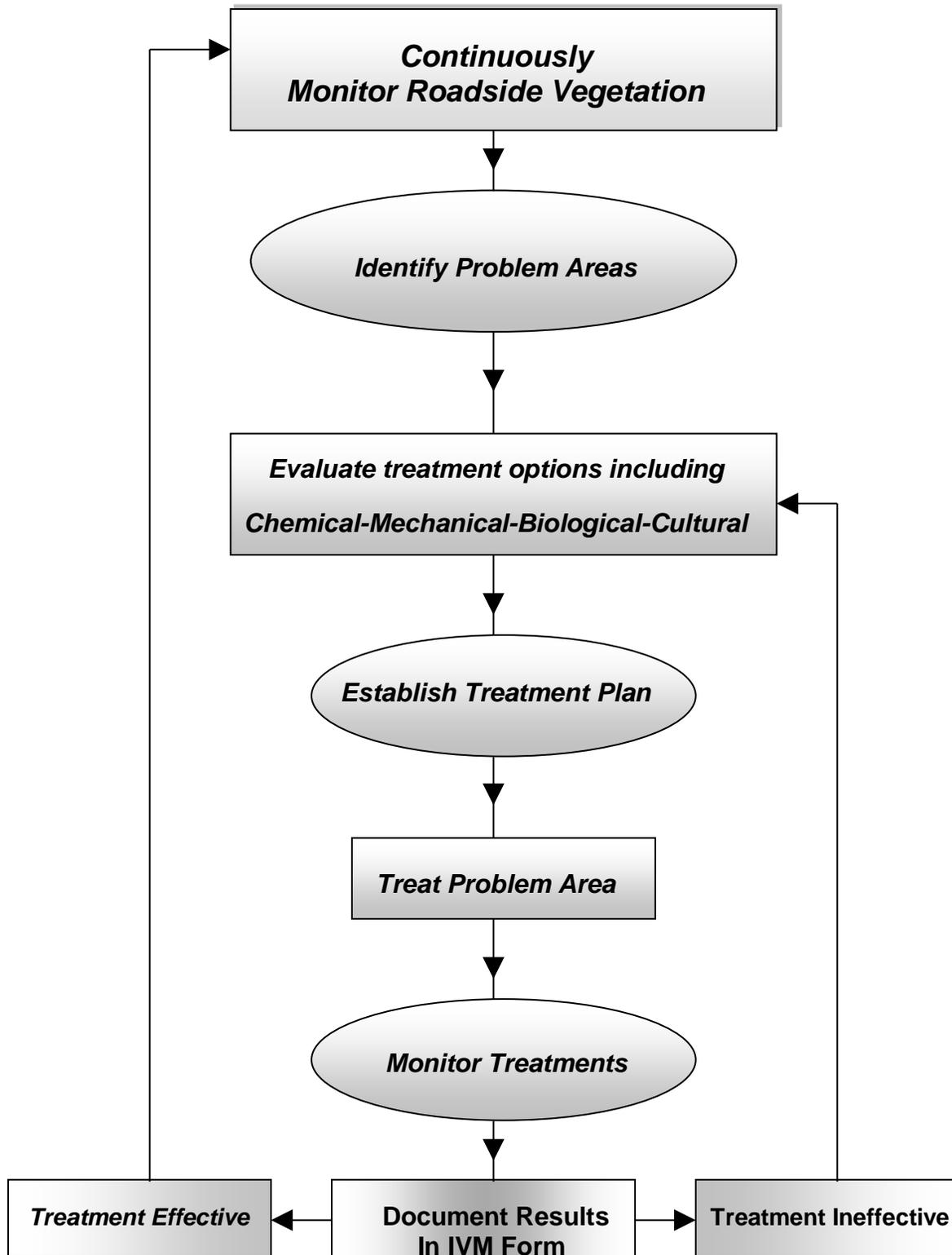
Below is a list of design/construction projects that may have roadside impacts in the next 2-4 years:

- SR 28 - End of the George Sellar Bridge- Complete Spring 2013
- SR 28 - Junction US-2/97 to 9th St - Stage 2- Currently at 30% design- unfunded construction
- SR 28 - Junction US-2/97 to 9th Street - Stage 1-currently under construction, completion scheduled for fall 2013
- US-97 - N of Daroga State Park -Turn Lanes- Currently in design, construction expected spring of 2013

WSDOT North Central Region Projects Link:  
<http://www.wsdot.wa.gov/regions/northcentral/projects/>

***Below is a list of permitted utility projects in the North Central Region, Area 1 that are scheduled for construction within the next 2-4 years.***

- *There are no utility construction contracts planned in this area at this time.*



The IVM Decision-Making Process  
Figure 3

## ***Roadside Vegetation Management Plan***

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### **1. INTEGRATED VEGETATION MANAGEMENT**

Vegetation management activities are planned and carried out using the principles of Integrated Vegetation Management (IVM) and the decision making process described in Figure 3 (page 15). The goals of the IVM program are to:

- Provide effective control of noxious weeds
- Reduce maintenance life cycle costs
- Establish stable roadsides with desirable vegetation
- Preserve and enhance environmental quality

#### **1.1. Integrated Vegetation Management Planning and Tracking Database**

##### **1.1.1. Description**

One of the keys to the successful use of IVM is carrying out activities in accordance with a long-range plan and to follow up with monitoring and evaluation of treatment results. To facilitate this, IVM forms and a database have been created for statewide use by WSDOT maintenance. This system is being tested as part of the initial development of Roadside Vegetation Management Plans and will be modified and refined as technology in this area continues to develop over the coming years.

##### **1.1.2. Sample forms**

A copy of the Integrated Vegetation Management Form and Application Record are included in **Appendix E, Forms and Records**.

##### **1.1.3. Instructions for use**

Maintenance supervisors and technicians can access the IVM Record through the existing pesticide application record keeping system available from the area office. The IVM form should be used whenever evaluation of a method or product is desired. Entries should include future evaluation dates as well as a description of the site and current conditions.

#### **1.2. Shoulder Maintenance (Zone 1 Bare-ground)**

##### **1.2.1. Policy and objectives**

Prior to 2005 the edge of pavement was routinely treated with a zone 1 bare-ground application. In many areas, remnants of this practice is still visible in the form of continued bare ground as a result of lingering chemicals and lack of organic matter in the soil. At this time, zone 1 bare-ground treatments are used on guardrail sections as well as specific roadway sections to meet specific operational goals such as sight distance, shoulder build-up and safety needs. For locations of bare-ground by mile post, see **Appendix C**.

##### **1.2.2. Action Thresholds (Zone 1 Bare-ground)**

An action threshold refers to the point at which action must be taken to control an infestation of weeds. The action thresholds for treatment of zone 1 are listed below and must be approved by the Region Superintendent or their designee prior to treatment:

- Sight distance limited by vegetation at the edge of pavement
- Persistent shoulder build-up that causes standing water on the roadway.
- Special safety considerations

### 1.2.3. Methods (timing and procedures)

Zone 1 bare-ground herbicide applications, where required, will occur in the fall and early spring. Herbicide Sensitive Areas will be maintained with a chemical that has been approved for use within this 60-foot buffer or by alternative mechanical applications.

### 1.2.4. Prescriptions

See **Appendix A**, Zone 1 Bare-ground Maintenance Prescriptions

## 1.3. Mowing Operations

### 1.3.1. Policy and Objectives

Mowing will be accomplished throughout the North Central Region, Area 1 on an as needed basis. Mowing needs and prescriptions will vary by location. Mowing can be an effective form of weed control, but done incorrectly can cause damage to desirable vegetation and enhance the growing environment for unwanted weeds. It's important when conducting a mowing operation to consider a number of factors including goals, timing, target species, deck height and frequency.

### 1.3.2. Methods (timing and procedures)

Prior to conducting a mowing operation consider the following elements. Review items 1-7 below, then review and follow the appropriate prescriptions in Appendix A. There will be no mowing of desirable vegetation including grass, forbs, shrubs or woody species without prior authorization of the Maintenance Area Superintendent or their designee.

- 1. Identify Goals Of Mowing Operation:** Before prescribing mowing as a preferred alternative it is important to clearly understand what the goals of the operation are. These goals should not only be understood by the manager or decision maker, but also must be clearly communicated and understood by the operator as well. Goals may include; control of seed production, maintenance of sight distance, control of vegetation around hardware features, control of noxious or nuisance weeds in an environmental or crop sensitive area or the removal of weed skeletons for the control of newly emerging weeds.
- 2. Identify Appropriate Timing:** When mowing in a stand of established dry land perennial grass, particularly native varieties, it is important to consider timing. Mowing shall not occur until after desirable grasses have reached dormancy or set seed, typically in July-August. If the goal is control of weed seed production in an area where no desirable vegetation is present, mowing should take place as late as possible but prior to seed development. This will increase the likelihood that the target plant will not produce seed.
- 3. Identify Target:** Identify target plant or plants to be controlled and ensure that the mowing operation will not spread these weed or exacerbate the existing problem. Some weeds, such as Japanese knotweed, can be easily spread through mowing. Ensure that the operator understands the target species and any desirable species in the area.

4. **Deck Height:** The mower deck height must be maintained at least 6-8 inches from the ground to reduce the likelihood of exposing bare soil. It is also important to maintain this deck height if the mowing operation will include desirable grasses. Close mowing may be allowed in special cases where no desirable species occurs and restoration work will immediately follow.
5. **Clean Mower:** Mowing can easily spread weed seed from infested areas to un-infested areas. It is important to clean the mower after each operation to ensure that mowing operation is not contributing to the spread of noxious and nuisance weeds.
6. **Consider Alternatives:** As with all IVM operations it is important to consider alternative methods. Mowing in North Central Region, Area 1 is not a routine maintenance activity. It is a secondary form of weed control to be used on an as needed basis.
7. **Communicate:** Communication with the mower operator is critical to a successful mowing operation. The operator must understand the goals, timing, target species and desirable species before the mowing operation begins.

### 1.3.3. Prescriptions

See **Appendix A, IVM Mowing Prescriptions**

## 1.4. Noxious Weed Control

### 1.4.1. Policy and objectives

WSDOT is required to control and prevent the spread of all noxious weeds on lands owned or managed by the agency. Noxious weed control is a high priority for WSDOT as a result of this legal mandate as well as the fact that if they are left unchecked, levels of infestation can begin to spread at exponential rates from year to year. Noxious weeds are invasive, non-native plant species that can quickly dominate native plant communities and spread to other areas or regions. New infestations of noxious weeds often appear first in highway corridors after being transported from other areas by vehicles or transportation of agricultural products. Without timely control, new infestations can further spread along transportation corridors and to adjacent property. The overall cost and economic impact to the agricultural community and the health of native ecosystems can be significant.

WSDOT prioritizes weed control based on three legally defined weed species classification categories. Chapter 16-750 of the Washington Administrative Code lists weed species in classes A through C. Noxious weeds include all plants listed as class A, and those in classes B and C that are designated for control within each individual county.

#### **Class A**

Class A noxious weeds are non-native species with a limited distribution in the state. Immediate treatment of these new infestations is required by State law and is the top weed control priority to prevent spread into adjacent areas. A list of identified class A weeds can be obtained from the state weed board or local county weed board at:

- **Kittitas County-** <http://www.co.kittitas.wa.us/noxious-weeds/default.aspx>
- **Chelan County-** [http://www.co.chelan.wa.us/nw/nw\\_main.htm](http://www.co.chelan.wa.us/nw/nw_main.htm)
- **King County-** <http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds.aspx>
- **Washington State Weed Board-** <http://www.nwcb.wa.gov/>

Chelan, Douglas, Kittitas and King Counties:

- Hawkweed, European (*Hieracium sabaudum*)

### ***Class B and C Designate Weeds***

Class B and C weeds are more widespread than Class A weeds, 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. Containment, gradual reduction, and prevention of further spread are the chief management concerns of Designate species. Class B and C noxious weeds designated for control within Chelan, Kittitas, Douglas and King Counties and currently present or likely to be within WSDOT right-of-way include:

King County:

- Absinth wormwood (*Artemisia absinthium*)
- Blueweed (*Echium vulgare*)
- Buffalobur (*Solanum rostratum*)
- Bugloss, common (*Anchusa officinalis*)
- Common reed (*Phragmites australis*)
- Dalmatian toadflax (*Linaria dalmatica* spp *dalmatica*)
- Gorse (*Ulex Europaeus*)
- Hairy willowherb (*Epilobium hirsutum*)
- Hawkweed, mouseear (*Hieracium pilosella*)
- Hawkweed, orange (*Hieracium aurantiacum*)
- Hawkweed, yellow (*Hieracium caespitosum*)
- Hoary alyssum (*Berteroa incana*)
- Houndstongue (*Cynoglossum officinale*)
- Indigobush (*Amorpha fruticosa*)
- Knapweed, diffuse (*centaurea diffusa*)
- Knapweed, meadow (*Centaurea jacea* x *nigra*)
- Knapweed, Russian (*Acroptilon repens*)
- Knapweed, spotted (*Centaurea biebersteinii*)
- Loosestrife, garden (*Lysimachia vulgaris*)
- Loosestrife, purple (*Lythrum salicaria*)
- Perennial pepperweed (*Lepidium latifolium*)
- Poison hemlock (*Conium maculatum*)
- Policeman's helmet (*Impatiens glandulifera*)
- Rush skeletonweed (*Chondrilla juncea*)
- Spurge, leafy (*Euphorbia esula*)
- Sulfur cinquefoil (*Potentilla recta*)
- Tansy ragwort (*Senecio jacobaea*)
- Thistle, musk (*Carduus nutans*)
- Thistle, plumeless (*Carduus acanthoides*)
- Thistle, Scotch (*Onopordum acanthium*)

- Velvetleaf (*Abutilon theophrasti*)
- White bryony (*Bryonia alba*)
- Wild chervil (*Anthriscus sylvestris*)
- Yellow nutsedge (*Cyperus esculentus*)
- Yellow starthistle (*Centaurea solstitialis*)

#### Chelan County

- Blueweed (*Echium vulgare*)
- Bugloss, common (*Anchusa officinalis*)
- Camelthorn (*Alhagi maurorum*)
- Canada Thistle (*Cirsium arvense*)
- Common reed (*Phragmites australis*)
- Dalmatian toadflax (*Linaria dalmatica* spp *dalmatica*)
- Gorse (*Ulex europaeus*)
- Hawkweed, mouseear (*Hieracium pilosella*)
- Hawkweed, orange (*Hieracium aurantiacum*)
- Hawkweed, smooth (*Hieracium laevigatum*)
- Hawkweed, yellow (*Hieracium caespitosum*)
- Hawkweed, tall (*Hieracium piloselloides*)
- Herb Robert (*Geranium robertianum*)
- Hoary alyssum (*Berteroa incana*)
- Hoary cress (*Cardaria draba*)
- Houndstongue (*Cynoglossum officinale*)
- Indigobush (*Amorpha fruticosa*)
- Knapweed, meadow (*Centaurea jacea* x *nigra*)
- Knapweed, Russian (*Acroptilon repens*)
- Knapweed, spotted (*Centaurea biebersteinii*)
- Knotweed, bohemian (*Polygonum x bohemicum*)
- Knotweed, giant (*Polygonum sachalinesense*)
- Knotweed, Himalayan (*Polygonum polystachyum*)
- Knotweed, Japanese (*Polygonum cucpidatum*)
- Kochia (*Kochia scoparia*)
- Loosestrife, garden (*Lysimachia vulgaris*)
- Loosestrife, purple (*Lythrum salicaria*)
- Oxeye daisy (*Leucanthemum vulgare*)
- Perennial pepperweed (*Sonchus arvensis* ssp. *Arvensis*)
- Poison hemlock (*Conium maculatum*)
- Policeman's helmet (*Impatiens glandulifera*)
- Puncturevine (*Tribulus terrestris*)
- Rush skeletonweed (*Chondrilla juncea*)
- Saltcedar (*Tamarix ramosissima*)
- Scotch broom (*Cytisus scoparius*)
- Spurge, laurel (*Daphne laureola*)
- Spurge, leafy (*Euphorbia esula* L.)
- Spurge, myrtle (*Euphorbia myrsinites*)
- St. Johnswort (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Tansy ragwort (*Senecio jacobaea*)
- Thistle, musk (*Carduus nutans*)
- Thistle, plumeless (*Carduus acanthoides*)
- Thistle, Scotch (*Onopordum acanthium*)
- Velvetleaf (*Abutilon theophrasti*)
- Water primrose (*Ludwigia hexapetala*)

- White bryony (*Bryonia alba*)
- Wild chervil (*Anthriscus sylvestris*)
- Willow-herb, hairy (*Epilobium hirsutum*)
- Yellow archangel (*Lamiaestrum galeobdolon*)
- Yellow nutsedge (*Cyperus esculentus*)
- Yellow starthistle (*Centaurea solstitialis*)

#### Douglas County

- Blueweed (*Artemisia absinthium*)
- Bugloss, annual (*Anchusa arvensis*)
- Bugloss, common (*Anchusa officinalis*)
- Butterfly bush (*Buddleia davidii*)
- Camelthorn (*Alhagi maurorum*)
- Common reed (*Phragmites australis*)
- Hawkweed, mouseear (*Hieracium pilosella*)
- Hawkweed, orange (*Hieracium aurantiacum*)
- Hawkweed, smooth (*Hieracium laevigatum*)
- Hawkweed, yellow (*Hieracium caespitosum*)
- Hawkweed, tall (*Hieracium piloselloides*)
- Herb-Robert (*Geranium robertianum*)
- Hoary alyssum (*Berteroa incana*)
- Houndstongue (*Cynoglossum officinale*)
- Indigobush (*Amorpha fruticosa*)
- Knapweed, meadow (*Centaurea jacea x nigra*)
- Knapweed, Russian (*Acroptilon repens*)
- Knapweed, spotted (*Centaurea biebersteinii*)
- Knotweed, Bohemian (*Polygonum x bohemicum*)
- Knotweed, giant (*Polygonum sachalinesense*)
- Knotweed, Himalayan (*Polygonum polystachyum*)
- Knotweed, Japanese (*Polygonum cucpidatum*)
- Kochia (*Kochia scoparia*)
- Loosestrife, garden (*Lysimachia vulgaris*)
- Perennial pepperweed (*Sonchus arvensis ssp. Arvensis*)
- Poison hemlock (*Conium maculatum*)
- Policeman's helmet (*Impatiens glandulifera*)
- Rush skeletonweed (*Chondrilla juncea*)
- Saltcedar (*Tamarix ramosissima*)
- Scotch broom (*Cytisus scoparius*)
- Spurge, leafy (*Euphorbia esula L.*)
- Spurge, myrtle (*Euphorbia myrsinites*)
- Sulfur cinquefoil (*Potentilla recta*)
- Tansy ragwort (*Senecio jacobaea*)
- Thistle, musk (*Carduus nutans*)
- Thistle, plumeless (*Carduus acanthoides*)
- Thistle, Scotch (*Onopordum acanthium*)
- Velvetleaf (*Abutilon theophrasti*)
- Water primrose (*Ludwigia hexapetala*)
- White bryony (*Bryonia alba*)
- Wild chervil (*Anthriscus sylvestris*)
- Willow-herb, hairy (*Epilobium hirsutum*)
- Yellow archangel (*Lamiaestrum galeobdolon*)
- Yellow nutsedge (*Cyperus esculentus*)
- Yellow starthistle (*Centaurea solstitialis*)

### Kittitas County

- Absinth wormwood (*Artemisia absinthium*)
- Babysbreath (*Gypsophila paniculata*)
- Black henbane (*Hyoscyamus niger* L.)
- Blueweed (*Echium vulgare*)
- Buffalobur (*Solanum rostratum*)
- Bugloss, annual (*Anchusa arvensis*)
- Bugloss, common (*Anchusa officinalis*)
- Bull Thistle (*Cirsium vulgare*)
- Butterfly bush (*Buddleia davidii*)
- Camelthorn (*Alhagi maurorum*)
- Canada thistle (*Cirsium arvense*)
- Common groundsel (*Senecio vulgaris*)
- Common reed (*Phragmites australis*)
- Common tansy (*Tanacetum vulgare*)
- Common teasel (*Dipsacus sylvestris*)
- Cornflower (*Centaurea cyanus*)
- Dalmatian toadflax (*Linaria dalmatica* spp *dalmatica*)
- Field bindweed (*Convolvulus arvensis*)
- Gorse (*Ulex europaeus*)
- Hawkweed, mouseear (*Hieracium pilosella*)
- Hawkweed, orange (*Hieracium aurantiacum*)
- Hawkweed, smooth (*Hieracium laevigatum*)
- Hawkweed, yellow (*Hieracium caespitosum*)
- Hawkweed, tall (*Hieracium piloselloides*)
- Herb-Robert (*Geranium robertianum*)
- Hoary alyssum (*Berteroa incana*)
- Hoary cress (*Cardaria draba*)
- Houndstongue (*Cynoglossum officinale*)
- Indigobush (*Amorpha fruticosa*)
- Jointed goatgrass (*Aegilops cylindrica*)
- Knapweed, diffuse (*centaurea diffusa*)
- Knapweed, meadow (*Centaurea jacea* x *nigra*)
- Knapweed, Russian (*Acroptilon repens*)
- Knapweed, spotted (*Centaurea biebersteinii*)
- Knotweed, Bohemian (*Polygonum x bohemicum*)
- Knotweed, giant (*Polygonum sachalinesnse*)
- Knotweed, Himalayan (*Polygonum polystachyim*)
- Knotweed, Japanese (*Polygonum cucpidatum*)
- Kochia (*Kochia scoparia*)
- Longspine sandbur (*Cenchrus longispinus*)
- Loosestrife, garden (*Lysimachia vulgaris*)
- Loosestrife, purple (*Lythrum salicaria*)
- Maretail (*Conyza Canadensis*)
- Oxeye daisy (*Leucanthemum vulgare*)
- Perennial pepperweed (*Lepidium latifolium*)
- Perennial sowthistle (*Sonchus arvensis* ssp. *Arvensis*)
- Poison hemlock (*conium maculatum*)
- Policeman's helmet (*Impatiens glandulifera*)
- Puncturevine (*Tribulus terrestris*)
- Rush skeletonweed (*Chondrilla juncea*)
- Russian thistle (*Salsola iberica*)
- Saltcedar (*Tamarix ramosissima*)
- Scentless mayweed (*Matricaria perforate*)

- Scotch broom (*Cytisus scoparius*)
- Smoothseed Alfalfa dodder (*Cuscuta approximate*)
- Spikeweed (*Hemizonia pungens*)
- Spiny cocklebur (*Xanthium spinosum*)
- Spurge laurel (*Daphne laureola*)
- Spurge, leafy (*Euphorbia esula L.*)
- St. Johnswort (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Tansy ragwort (*Senecio jacobaea*)
- Thistle, musk (*Carduus nutans*)
- Thistle, plumeless (*Carduus acanthoides*)
- Thistle, Scotch (*Onopordum acanthium*)
- Velvetleaf (*Abutilon theophrasti*)
- Water primrose (*Ludwigia hexapetala*)
- White bryony (*Bryonia alba*)
- White cockle (*Silene latifolia ssp. Alba*)
- Wild chervil (*Anthriscus sylvestris*)
- Willow-herb, hairy (*Epilobium hirsutum*)
- Yellow archangel (*Lamiastrum galeobdolon*)
- Yellow flag Iris (*Iris pseudacorus*)
- Yellow nutsedge (*Cyperus esculentus*)
- Yellow starthistle (*Centaurea solstitialis*)
- Yellow toadflax (*Linaria vulgaris*)

#### 1.4.2. Methods

Control of noxious weed species can be very difficult; therefore it is important to incorporate the concepts of IVM. Regardless of the specific method used to control noxious weeds, it is important to fully understand the life cycle of the weeds that are being controlled.

- **Chemical:** In many cases herbicides are used as a means of early control due to levels of infestations and area requiring control. Timing of herbicide treatments within the growth stage of the weed species is critical to achieving complete control of perennial species.
- **Mechanical:** Mowing, blading, disking and hand pulling are often used in conjunction with other control methods. Mowing considerations are covered in section 2.2 of this document.
- **Biological:** Biological controls are being used widely throughout WSDOT within the operating right-of-way. It is important to consider climate, level of infestation and available control species when selecting an appropriate biological control. It is also imperative that bio-controls be placed in an area that won't be adversely affected by mechanical or chemical control methods.
- **Revegetation/Enhancement:** A variety of other measures may be taken to promote natural vegetative competition through seeding, planting, and soil enhancement. Documentation of these methods and related success is essential to the success of long-term control measures. IVM forms will be completed for each of these sites and are located in **Appendix F**.

#### 1.4.3. Action Thresholds

The action threshold for noxious weed control is met whenever seed production of a noxious weed is imminent. WSDOT is required by state law to control and prevent the spread of all noxious weeds on WSDOT right-of-

way (RCW 17.10.040). Control efforts will be initiated prior to the noxious weed producing seed.

#### 1.4.4. Prescriptions

See **Appendix A, IVM Prescriptions, Noxious Weed Control**

### 1.5. Nuisance Weed Control

#### 1.5.1. Policy and objectives

Nuisance weed control, while not required by state law, provides many positive benefits to the overall condition of the roadside including:

- Stabilization of shoulders and banks
- Improved storm water treatment
- Protection and enhancement of native plant communities
- Reduces spread of weeds
- Enhances visual quality

Depending on crew availability and budget, nuisance weeds will be controlled throughout the roadsides of North Central Region, Area 1 as part of the overall Integrated Vegetation Management process. Priority control measures will be given to new infestations or those infestations that threaten desirable roadside vegetation. In some cases, where practical, nuisance weed infestations may be treated in conjunction with noxious weed.

For established infestations currently identified in this plan, weed populations will be contained and gradually reduced by applying appropriate vegetation management prescriptions as funds and resources are available. Control options range from manual cutting, mechanical removal, revegetation and biological control, to targeted selective herbicide application, or combinations thereof.

#### 1.5.2. List of species Currently present

Numerous nuisance weeds occur throughout North Central Region, Area 1 within WSDOT right-of-way that are not targeted for control. In some cases they are controlled incidentally or for site-specific reasons.

Common nuisance weed species that occur on WSDOT right-of-way within North Central Region, Area 1 include:

- Babys Breath (*Gypsophila paniculata*)
- Cereal Rye (*Secale cereale*)
- Common Mullen (*Verbascum thapus*)
- China Lettuce (*Lactuca serriola*)
- Maretail (*Conyza canadensis*)
- Mustard Species
- Russian Thistle (*Salsola iberica sennen*)
- Teasel (*Dipsacus sylvestris*)

#### 1.5.3. Methods

Control measures for nuisance weeds are very similar to those of noxious weeds and are dependent on available resources. Species that are wide spread are treated routinely throughout the season, often controlled incidental to noxious weeds.

#### **1.5.4. Action Threshold For Nuisance Weed Control**

Action will be taken at the discretion of the area superintendent. WSDOT is not required to control nuisance weeds, however, action is advised where funding is available and one or more of the following instances occur as a result of a nuisance weed infestation.

- Impact to adjacent land owners
- Impact to desirable vegetation
- Nuisance weed presence reduces effectiveness of noxious weed control due to height or density
- New infestation where local control is achievable

#### **1.5.5. Prescriptions**

See **Appendix A, IVM Prescriptions, Nuisance Weed Control**

### **1.6. Tree and Brush Control**

#### **1.6.1. Policy and Practice**

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 large shrub and small tree species should be allowed to grow and mature in Zone 2 and 3 and side trimmed if they encroach on site distance or other traffic operational requirements.
- Large coniferous or deciduous tree species such as Douglas fir, bigleaf maple, alder, or cottonwood left to grow in Zone 2, can reach substantial size over a relatively short period of time and should be removed when young.

#### **1.6.2. Methods**

Removal of undesirable tree and brush species is accomplished in a variety of manners including hand cutting, herbicide applications, hand pulling, mowing or combinations thereof. A thorough understanding of the species to be controlled and consideration of proper timing is important with any of these control methods to reduce damage, minimize visual impact and be cost effective. Below are specific considerations for the various control methods:

- **Mowing:** In many cases it is effective to mow back the majority of the existing vegetation to the outside edge of zone 2, then follow with spot mowing or herbicide treatments of undesirable species as needed, leaving desirable species to form a competitive cover.
- **Hand Cutting:** When possible, hand cuttings can be chipped in place and applied to the roadside as mulch where needed. In many cases this can be used to improve soils, reduce erosion and improve vegetation.
- **Timing:** Consideration should be given to the visual impact of trimming as well as effectiveness of the operation. Chemical control will not be used on deciduous trees and shrubs until after the first of September, except for cut stump treatments.
- **Chemical Control:** Chemical control will not be used on conifers greater than 2' in height.

- Transplanting: Whenever possible, safe and practical, seedling trees will be dug or pulled by hand and transplanted to areas where there growth will be beneficial and appropriate. Agreements may be signed to allow private citizens or groups to collect seedlings for use as transplants.
- Prescriptions: See **Appendix A**, IVM Prescriptions, Tree and Brush Control.

## **1.7. Hazard Trees**

### **1.7.1. Policy and Practices**

Trees within the right-of-way are routinely monitored by maintenance staff.

Hazard trees may be:

- Dead
- Diseased
- Leaning or
- Structurally damaged or unsound
- Shading, in some cases trees cause shading and create excessive frost problems on the roadway. In these cases canopy thinning or removal may take place to mitigate the risk.

Trees that are identified as an imminent threat to the highway or traffic will be evaluated using best horticultural judgment and removed as soon as possible.

## **2. SPECIAL MAINTENANCE AREAS**

Special Maintenance Areas include any sections of roadside where there are unique maintenance requirements or existing arrangements with any external organizations. Special Maintenance Areas include highways passing through the Wenatchee National Forest, community entrances or enhancement areas, areas maintained by cities, bicycle paths, storm water retention ponds, state parks, wellheads, environmentally sensitive areas, school zones, roadsides adjacent to individual properties with current or annual no-spray agreements and new technologies.

### **2.1. Herbicide Sensitive Areas**

#### **2.1.1. Policy and Objectives**

There are a number of herbicide sensitive areas located within the area where herbicide use will be limited or restricted in order to reduce the potential of environmental impact. In these locations vegetation will be managed using limited herbicides use or non-chemical alternatives.

The Washington State Department of Agriculture maintains a list of individuals who have been diagnosed with Multiple Chemical Sensitivity (MCS). WSDOT is required by law to notify these individuals when making herbicide applications to roadside locations if the highway right-of-way is adjacent to their property and their principle residence is within one-half mile of the application. Concerned individuals can obtain further information by contacting the area maintenance office in Wenatchee at 509.667.2811.

### **2.2. U.S. Forest Service Easement**

In some locations, Interstates and State Routs are operated by WSDOT under easement from the U. S. Forest Service. This arrangement is governed by a Memorandum of Understanding between the two agencies. Road sections operated or partially operated under easement from the USFS include:

- US 2, Stevens Pass
- US 97, Blewett Pass

In accordance with this agreement WSDOT provides annual notification to the U.S. Forest Service, Wenatchee Ranger District of proposed weed control operations. This notification is typically provided in the spring of each year and followed up every two years to discuss the overall weed control program.

### **2.3. Adopt-a-Highway and Owner Will Maintain Agreements**

#### **2.3.1. Policy and objectives**

The Adopt-a-Highway program allows private citizens, volunteer groups, and businesses an opportunity to contribute to an enhanced roadside appearance through direct partnership with WSDOT. The program improves the overall appearance of the roadside primarily through litter control, although other activities that improve the visual and environmental condition of the roadside are permitted as well including limited planting and maintenance of specific areas. Other partnership opportunities are possible through general permits and agreements. Volunteer groups that do enhancement planting on WSDOT roadsides are typically required to establish and maintain the plantings. Communities may partner with

WSDOT to develop and maintain selected Community Enhancement Areas as described in the Roadside Classification Plan.

Neighboring property owners may enter into an agreement with WSDOT where they take responsibility for the vegetation management activities along the area where their property abuts state right-of-way. These “owner will maintain” agreements are established through a general permit and are required to be renewed on an annual basis. These agreements are typically implemented in cases where a neighboring property owner desires a higher level of care in front of their business or residence, or prefers maintaining the area to avoid WSDOT herbicide applications near their home or business.

### **2.3.2. Locations by Milepost**

Locations where partnership agreements exist for accomplishment of roadside maintenance are listed in **Appendix E, Special Maintenance Areas, Table 3.0.**

## **2.4. Environmentally Sensitive Areas**

### **2.4.1. Policy and Objectives**

As a state agency, WSDOT is committed to conducting its activities in accordance with the dictates of sound environmental protection practices. This includes pollution prevention, work to avoid, minimize and appropriately mitigate adverse environmental impacts, and to comply with all environmental laws and regulations applicable to our business and activities.

Numerous environmentally sensitive areas occur within North Central Region, Area 1, such as lakes, streams and wetlands. Special care will be taken to avoid and minimize impacts to these resources. Herbicide applications in these areas will follow normal label requirements. Other IVM treatments that take place in these areas, such as mowing or revegetation efforts will be subject to the Regional Road Maintenance Endangered Species Act Program Guidelines.

In compliance with the Regional Road Maintenance Endangered Species Act Program Guidelines, as agreed upon with the National Marine Fisheries Service, WSDOT has identified, mapped and located in the field, all highway sections within 300 feet of rivers, wetlands and water bodies.

### **2.4.2. Locations**

Environmentally sensitive areas are identified in the field with green guideposts and identified in an area atlas. For more information on the Regional Road Maintenance ESA Program Guidelines refer to: <http://www.wsdot.wa.gov/maintenance/roadside/esa.htm> or contact Gregor Myhr at 360.705.7853.

## **2.5. Storm Water Management Facilities**

### **2.5.1. Policy and Objectives**

Storm water management facilities include bio-filtration swales, retention ponds and infiltration ponds.

Storm water management facilities will be managed for noxious and nuisance weeds following the same guidelines mentioned in previous sections. The primary objectives, with regard to vegetation management within these facilities, are to maintain retention and detention functions to improve water quality.

### **2.5.2. Methods**

Noxious weed control will be conducted at all storm water management facilities as necessary. Control of nuisance weeds will be coordinated with nuisance weed control along the adjacent roadside. 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 unwanted vegetation and debris as well.

Refer to vegetation management prescriptions for specific weed, tree and brush species in Sections 1 and 2 of this document for timing and control methods.

## **2.6. Wetland Mitigation Sites**

### **2.6.1. Policy and Objectives**

Wetland mitigation results from unavoidable impacts to naturally occurring wetlands from highway construction. In these cases new wetlands are created on WSDOT right-of-way and vegetation is managed to provide environmental functions similar to those eliminated in other areas by the highway's presence.

Wetland mitigation sites are carefully monitored 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. However, it is important that maintenance be aware of the locations of wetland mitigation sites to avoid impacting the required environmental functions of the sites.

### **2.6.2. Locations table by MP**

See **Appendix E, Special Maintenance Areas**, Table 3.0

# Appendix A

# Routine Vegetation Management Prescriptions

## Bare-Ground Applications

### Bareground Maintenance (Residual) - Option A

Location Type	Management Goal	Method	Equipment	Materials		IVM Follow-up
Gravel shoulder and under guardrail <b>Do Not Use Adjacent to Orchards</b>	4' area free of vegetation	Annual herbicide application	Spray truck w/ fixed nozzle mounted 12" - 36' from ground	Payload @ 8 oz./acre Oust XP @ 4 oz./acre  <u>No Buffer Limitation</u>	April - September as needed.	Monitor treatment area and evaluate results

### Bareground Maintenance (Residual) - Option B

Location Type	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Where needed on site specific areas or guardrail sections <b>Beware of Tree Damage</b>	4' area free of vegetation under guardrail and gravel shoulders	Annual residual herbicide application	Spray truck w/ fixed nozzle mounted 12"-36" from ground Pickup with slip-in sprayer	Perspective @ 10 ozd Oust XP @ 3 oz.  <u>No Buffer Limitation</u>	February start	Monitor treatment area and evaluate results

### Bareground Maintenance (Residual) - Option C

Location Type	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Where needed on site specific areas or guardrail sections <b>Beware of Tree Damage</b>	4' area free of vegetation under guardrail and gravel shoulders	Annual residual herbicide application	Spray truck w/ fixed nozzle mounted 12"-36" from ground Pickup with slip-in sprayer	Perspective @ 10 ozd Esplinate @ 5 oz.  <u>No Buffer Limitation</u>	February start	Monitor treatment area and evaluate results

### Bareground Maintenance (Residual) - Option D

Location Type	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Gravel shoulder and/or guardrail sections	2' or 3' area free of vegetation	Annual herbicide application	Spray truck w/ fixed nozzle mounted 18" from ground	Krovar DF @ 8 lb. Oust @ 3 ozl. Fighter F @ 2.6 ozl.  <u>No Spray Within 60' of Water</u>	Fall	None required

NC Region Area 1- IVM Prescriptions

Noxious Weed Control

Chemical Control

Noxious Weed Control - General Broadleaf Control

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zones 2-3	As soon as plants appear	Selective eradication and control of listed noxious weeds.	Spot treatment w/ herbicide most effective	Tank sprayer equipped with Injection system, tank mix or back pack sprayer	Veteran 720 @ 64 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

Noxious Weed Control - General Broadleaf Control

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	Before seed	Reduce seed production listed noxious weeds.	Spot/Band	Truck mounted, backpack pickup, etc.	E-2 @ 48 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Repeat as necessary

Noxious Weed Control - General Broadleaf Control

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zones 2-3	As soon as plants appear	Selective eradication and control of listed noxious weeds.	Spot treatment w/ herbicide most effective	Tank sprayer equipped with Injection system, tank mix or back pack sprayer	Buctril @ 64 ozl Vista @ 22 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

Noxious Weed Control -General Broadleaf Control In Sensitive/Buffer Areas

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones <b>Beware of Tree Damage</b>	Before seed	Reduce seed production listed noxious weeds.	Spot/Band	Truck mounted, backpack pickup, etc.	Perspective @ 5 ozd Super Spreader 90 @ 32 oz/100 gallons <b>No Buffer Limitations</b>	Early growing season	Repeat as necessary reduce weed competition.

Noxious Weed Control - Thistles/Knapweeds/Rush Skeletonweed

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	As soon as plants appear	Eradication and control of listed noxious weeds.	Spot treatment w/ herbicide	Truck mounted, backpack pickup, etc.	Milestone @ 7 ozl Syl-Tac @ 20 oz/100 gal <b>No Buffer Limitations</b>	Spring or Fall	Reapply as necessary. Seed and fertilize to reduce weed competition.

NC Region Area 1- IVM Prescriptions

**Noxious Weed Control**

**Noxious Weed Control - Dalmatian Toadflax**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	As soon as plants appear	Eradication and control of listed noxious weeds.	Spot treatment w/ herbicide	Truck mounted, backpack pickup, etc.	Tordon 22k @ 32 ozl Telar XP @ 1.0 Ozd Syl-Tac @ 20 oz/100 gal  <b>No Spray Within 60 of Water</b>	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition

**Noxious Weed Control - Japanese Knotweed (Option A)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones new or limited infestations	As soon as plants appear	Eradication and control of listed noxious weeds.	Spot foliar treatment w/ herbicide	Portable tank mix trailer	Roundup @ 64 ozl or Aqua Master	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Noxious Weed Control - Japanese Knotweed (Option B)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones new or limited infestations	As soon as plants appear	Eradication and control of listed noxious weeds.	Hand removal with cut stem treatment	Treat cut stems	Roundup or Aqua Master	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Noxious Weed Control - Japanese Knotweed (Option C)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones new or limited infestations	As soon as plants appear	Eradication and control of listed noxious weeds.	Injection	Treat stems	Roundup Aqua Master	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

NC Region Area 1- IVM Prescriptions

**Noxious Weed Control**

NC Region Area 1- IVM Prescriptions

**Biological Control**

**Noxious Weed Control - Knapweeds (Biocontrol)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	As soon as plants appear	Eradication and control of listed noxious weeds.	Biological Place 2 biocontrol agents (bugs) per plant	Hand placement	<i>larinus minutus</i>	Mid-late summer	Monitor population and reapply as needed document in IVM form

**Noxious Weed Control - Dalmatian toadflax (Biological)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	As soon as plants appear	Eradication and control of listed noxious weeds.	Biological Place 2 biocontrol agents (bugs) per plant	Hand placement	<i>mecinus janthinus</i>  <u>No Buffer Limitations</u>	Mid-late summer	Monitor population and reapply as needed document in IVM form

**Tree and Brush Control**

**Tree and Brush Control - Elms (trees under 6' ht.)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zone 2	As soon as seedlings become visible w/in 30' of fog line (no guardrail present)	Control of seedling trees that may impact roadside function if allowed to grow.	Selective foliar treatment w/ herbicide	Tank sprayer equipped with Injection system, tank mix or back pack sprayer	Garlon 4 at label rate for cut-stump treatment	Anytime avoid brown out	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Tree and Brush Control - Alder, Maple, Cottonwood, (Sumac trees over 6' ht.)**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zone 2	Whenever trees are likely or have potential to grow and fall on the highway	Control of young trees that may impact roadside function if allowed to grow.	Foliar treatment w/ herbicide	Tank sprayer equipped with Injection system, tank mix or back pack sprayer	Krenite @ 2 Gal Liquid	Fall anytime after August	No follow-up

**Tree and Brush Control**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zone 2 or 3	As soon as seedlings become visible w/in 30' of fog line (no guardrail present)	Control of seedling trees that may impact roadside function if allowed to grow.	Hand pulling or hand cut	Loppers / Pruning saw Treat stump	Mechanical Garlon	Anytime	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Tree and Brush Control**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zone 2 or 3	Whenever tree has been identified as defective or likely to fall on the highway	Control of trees that may impact roadside function if allowed to grow.	Hand cutting chip debris in zone 2 if necessary	Chain saw or pruners	Mechanical	Anytime	

**Nuisance Weed Control**

**Nuisance Weed Control - General Broadleaf Control**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zones 2-3	as soon as plants appear	Selective eradication and control of listed noxious weeds.	spot treatment w/ herbicide most effective	tank sprayer equipped with Injection system, tank mix or back pack sprayer	Veteran 720 @ 64 ozl Sta-put @ 32 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition  See Appendix B

**Nuisance Weed Control - General Broadleaf Control**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
all zones	Before seed	Reduce seed production listed noxious weeds.	Spot/Band	Truck mounted injection sprayer	Escalade @ 48 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Repeat as necessary

**Nuisance Weed Control - General Broadleaf Control**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
Zones 2-3	as soon as plants appear	Selective eradication and control of listed noxious weeds.	spot treatment w/ herbicide most effective	tank sprayer equipped with Injection system, tank mix or back pack sprayer	Buctril @ 64 ozl Vista @ 22 ozl Super Spreader 90 @ 32 oz/100 gallons <b>No Spray Within 60 of Water</b>	Early growing season	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Nuisance Weed Control -General Broadleaf Control In Sensitive/Buffer Areas**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
All zones	Before seed	Reduce seed production listed noxious weeds.	Spot/Band	tank sprayer equipped with Injection system, tank mix or back pack sprayer	Perspective @ 4.75 ozd Sup Spread 90 @ 32 ozl/100 gallons  <b>No Buffer Limitations</b>	Early growing season	Repeat as necessary reduce weed competition.

**Nuisance Weed Control - Zone 1 Grasses that encroach residual zone**

Location Type	Action Threshold	Management Goal	Method	Equipment	Materials	Timing	IVM Follow-up
all zones new or limited infestations	wherever new infestations occur (dependent on available resources)	minimize populations and prevent further spread of nuisance weeds	foliar treatment w/ herbicide	truck mounted sprayer where possible, backpack sprayer where necessary	Roundup-Pro @ 64 ozd Super Spreader 90 @ 32 oz/100 gallons <b>No Buffer Limitations</b>	prior to seed	Reapply as necessary. Seed and fertilize to reduce weed competition See Appendix B

**Routine Mowing**

*Note: Mowing should be accomplished to meet specific goals and objectives specified in the "Management Goal" section below.*

**Zone 2 Maintenance - Annual Mowing**

Location Type	Management Goals	Method	Equipment	Materials	Timing	IVM Follow-up
Operational zone adjacent to shoulder	Maintain site distance Aesthetics in specified locations Reduce weed seed production	Annual mowing, 6' - 8' wide single pass adjacent to Zone 1 <b>as necessary</b>	Mower, attenuator	None required	June on <b>as needed</b> basis only	Seed and fertilize to reduce weed competition if necessary (See Appendix B)

**Zone 2 Maintenance - Selective Trimming**

Location Type	Management Goals	Method	Equipment	Materials	Timing	IVM Follow-up
Operational zone adjacent to shoulder	Annual brush or tree limb control adjacent to shoulder to maintain sight distance and other operational needs.	Annual mechanical trimming where needed. Follow up trimming with pole saw as needed.	Mower with side-arm unit, pole saw, attenuator as needed.	None required	Late in season to minimize visual impacts.	Seed and fertilize if alder/scotch broom are present to reduce competition.

**Planting Area - Chelan Vicinity**

**Planting Prescriptions**

**Seed Mix 1 (Rocky Soil)**

Species and Variety of Seed in Mixture by Common Name and (Botanical name)	Pounds Pure Live Seed (PLS) Per Acre
Bluebunch Wheatgrass "Duffy Creek" ( <i>Pseudoroegneria spicata</i> )	9.00
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.00
Sandberg Bluegrass "Duffy Creek" ( <i>Poa sandbergii</i> )	3.00
Basin Wildrye "Yakima" ( <i>Elymus cinereus</i> )	4.00
<b>Total Lbs PLS/Acre</b>	<b>17</b>

**Planting Area - Chelan Vicinity**

**Planting Prescriptions**

**Seed Mix 2 (Sandy Soil)**

Species and Variety of Seed in Mixture by Common Name and (Botanical name)	Pounds Pure Live Seed (PLS) Per Acre
Thickspike Wheatgrass "Schwindemar" ( <i>Agropyron trachycaulum</i> )	4.25
Bluebunch Wheatgrass "Duffy Creek" ( <i>Pseudoroegneria spicata</i> )	3.66
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	0.15
Sandberg Bluegrass "Duffy Creek" ( <i>Poa sandbergii</i> )	0.62
Indian Ricegrass ( <i>Oryzopsis hymenoides</i> )	4.75
<b>Total Lbs PLS/Acre</b>	<b>13.43</b>

**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**

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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	Westside - Restricted use Eastside - 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:**

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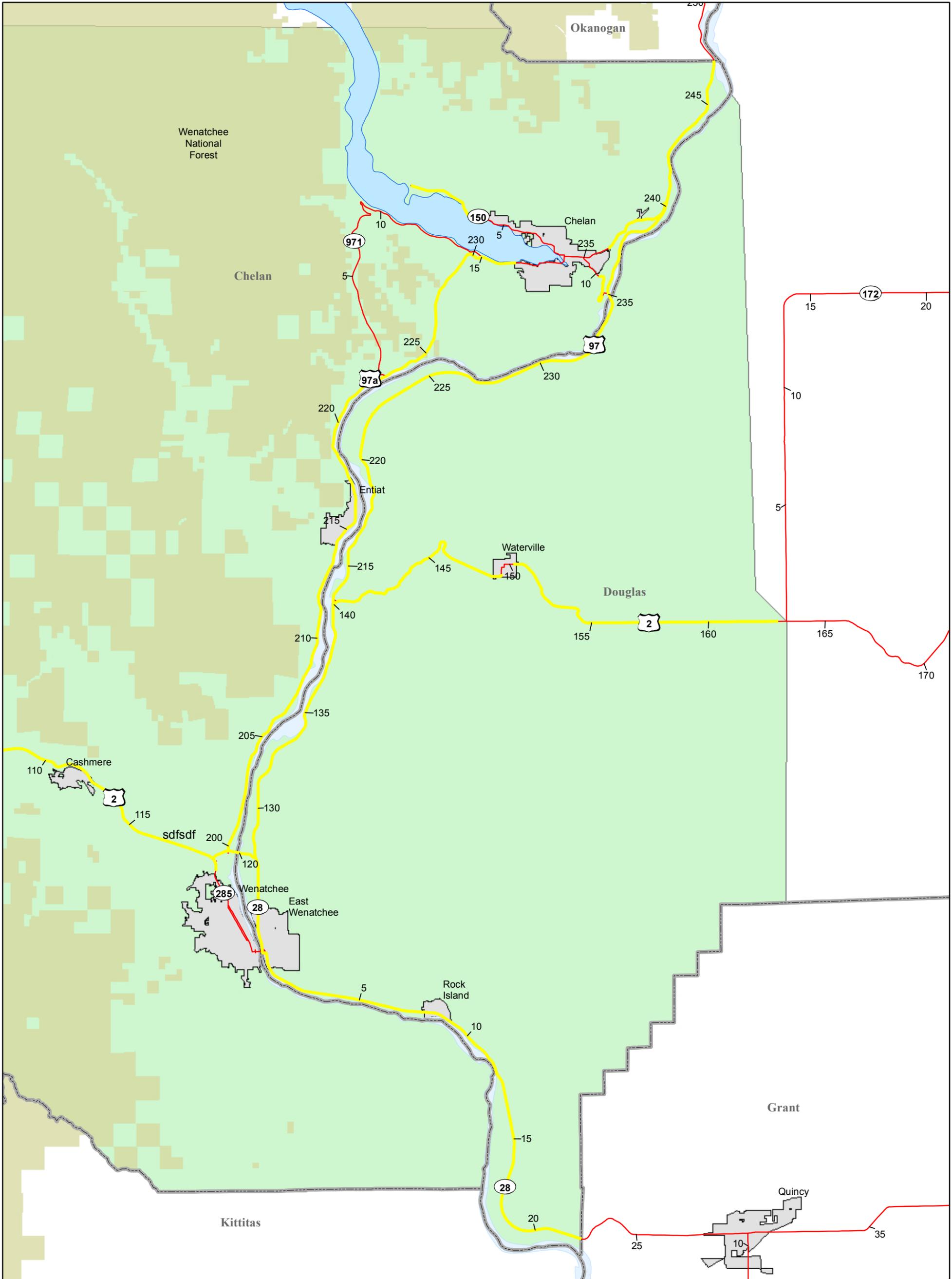
Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Imazapic	Plateau	Amino acid synthesis inhibitors - ALS inhibitor (2)	All zones	Pre-emergent control of undesirable grasses	WSDOT tests plots show a significant impact on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

**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

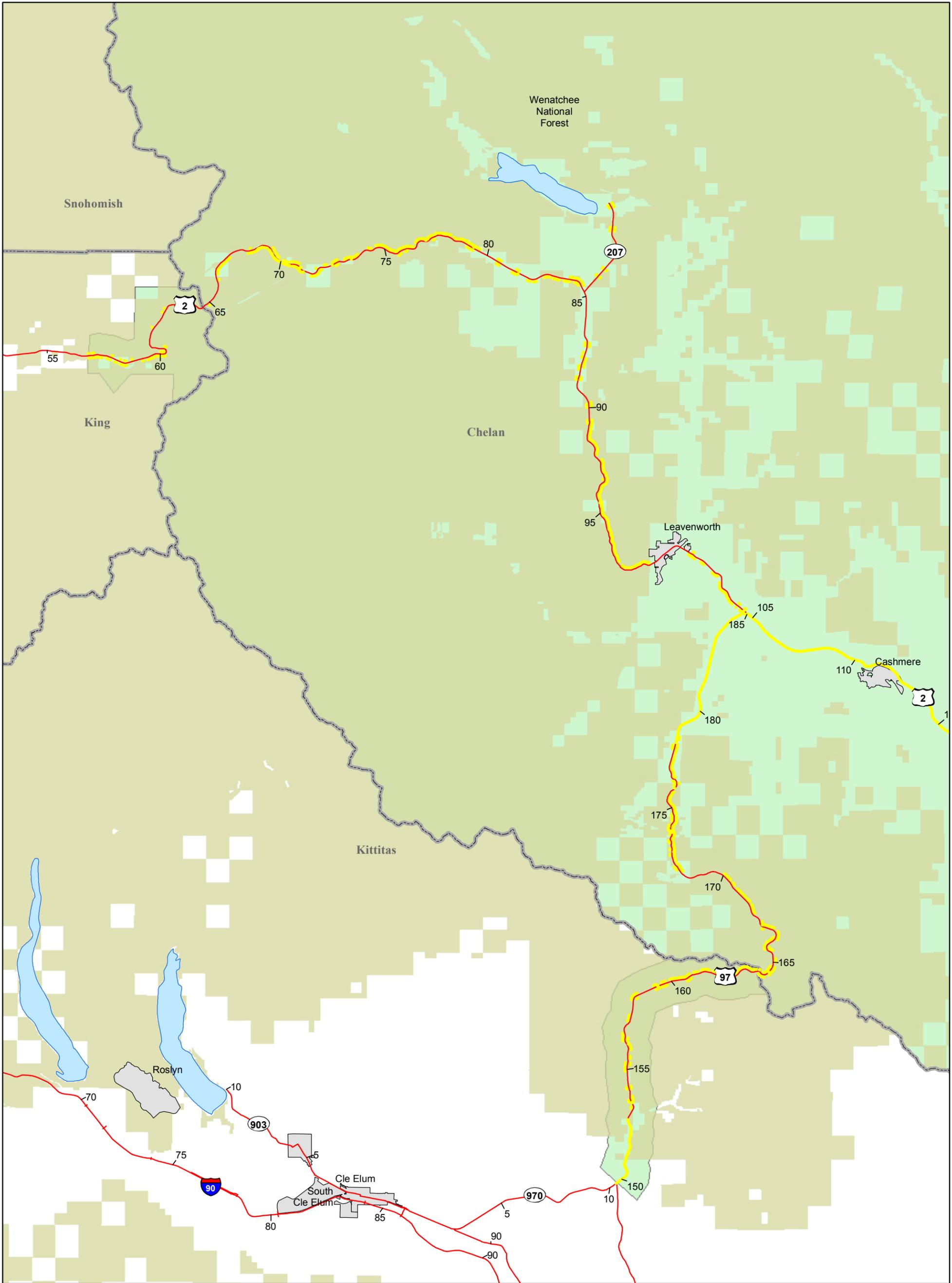
Chemical Name	Product Names	Mode of Action (WSSA Class)	Where Used	How/Why Used	Notes/ Recommendations	WSDOT Restrictions	Cautions
Sulfentrazone	Portfolio Throttle XP	Cell membrane disrupter - PPO inhibitor (14)	Zone 1 bare-ground	Nonselective pre-emergent grass and weed control	Use caution in sandy soils	Westside - Restricted use Eastside - 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		Westside - Restricted use Eastside - 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



**Legend**

- 25- Mile Post
- Zone 1
- State Route
- NC area 1
- City Limits
- County Boundaries
- Major Lake
- National Forest

**Appendix C:**  
 North Central Region Area 2  
 Zone 1 Maintenance  
 Map 1 of 2



### Legend

- 25- Mile Post
- Zone 1
- State Route
- City Limits
- Major Lake
- County Boundaries
- National Forest
- NC area 1

**Appendix C:**  
 North Central Region Area 2  
 Zone 1 Maintenance  
 Map 2 of 2



# Appendix E

# Special Maintenance Area

**Table 3.0**

**Definitions:** Locations area distinguishes between opposing sides of the highway by right shoulder (RS) and median shoulder (LS) in relation to direction of travel, indicated by increasing (INC) or decreasing (DEC) mile markers

**Description:** Brief explanation of special treatment required

SR	Direction	Shoulder	BEG MP	END MP	Type	Description
002	Both	RS	56.78	57.65	National Forest	
002	Both	RS	58.83	66.25	National Forest	
002			64.76	85.35	Dispersion Areas	Natural Dispersion
002			64.76	85.35	Dispersion Areas	Natural Dispersion
002			65.45	65.98	Dispersion Areas	Natural Dispersion
002	Both	RS	66.77	67.90	National Forest	
002	Both	RS	68.59	71.09	National Forest	
002	Both	RS	72.41	78.01	National Forest	
002			81.72		Little Eva Stockpile Site	
002	Both	RS	82.53	83.54	US Forest Services	
002	Both	RS	83.80	84.42	US Forest Services	
002	Both	RS	90.61	89.35	National Forest	
002	Both	RS	90.93	94.41	National Forest	
002	Both	RS	93.22	94.30	Endangered Plant Species	No Spray
002	Both	RS	94.93	98.83	US Forest Services	
002	Both	RS	99.20	100.39	City of Leavenworth	City maintained
002			100.30		North of Leavenworth Pit Site	
002			100.44	100.54	Stormwater Ponds	Sediment Pond
002	DEC	RS	101.98	102.14	No Spray Area	Neighbor Maint./General Permit
002	INC	RS	102.56	103.17	No Spray Area	Neighbor Maint./General Permit
002			103.98	104.36	Media Filter Drain	Media Filter Drain
002			103.98	104.36	Media Filter Drain	Media Filter Drain
002	DEC	RS	104.65	104.69	No Spray Area	Neighbor Maint./General Permit
002	Both	RS	107.89	108.02	US Bureau of Land Management	
002	INC	RS	108.80	109.00	No Spray Area	Neighbor Maint./General Permit
002	INC	RS	108.93	109.05	No Spray Area	Neighbor Maint./General Permit
002	Both	RS	114.50	114.80	US Bureau of Land Management	
002			117.33	117.43	Stormwater Ponds	Infiltration Pond
002	DEC	RS	119.13	118.92	Ramps towards Ellensburg	Mow out quadrants
002	INC	RS	119.24	119.77B	Ramps toward Entiat Chelan	Mow out quadrants
002	DEC	RS	119.77	119.41	Ramps towards Entiat Chelan	Mow out quadrants
002	DEC	RS	128.05	128.01	No Spray Area	Neighbor Maint./General Permit
002			132.70		Rocky Reach Pit Site	
002			134.36	134.46	Stormwater Ponds	Sediment Pond
002	Both	RS	141.04	141.55	US Bureau of Land Management	
002	Both	RS	142.68	143.55	US Bureau of Land Management	
002			146.25		Horseshoe Corner Pit Site	
002	Both	RS	148.81	150.26	City of Waterville	City maintained
002			152.73		Case Corner Quarry Site	
002			159.60		Brandts Pit Site	
008			89.95		Chiwaukum Ck. Quarry Site	

# Appendix E

# Special Maintenance Area

**Table 3.0**

**Definitions:** Locations area distinguishes between opposing sides of the highway by right shoulder (RS) and median shoulder (LS) in relation to direction of travel, indicated by increasing (INC) or decreasing (DEC) mile markers

**Description:** Brief explanation of special treatment required

SR	Direction	Shoulder	BEG MP	END MP	Type	Description
028			1.32	1.42	Stormwater Ponds	Infiltration Pond
028	Both	RS	7.80	9.05	City of Rock Island	City maintained
028			8.40		Rock Island Stockpile Site	
028	Both	RS	11.12	12.01	Skagit Wildlife Area	
028	Both	RS	11.12	12.01	US Bureau of Land Management	
028			19.70		Vulcan Pit Site	
028			21.10		Trinidad Stockpile Site	
028	INC	RS	3.74 B	4.25 B	Off ramp toward Quincy	Mow out quadrant
028	Both	RS	2.29 B	0.51	City of E. Wenatchee	City maintained
097			105.16		Dryden Stockpile Site	
097			150.10		First Creek Stockpile Site	
097	Both	RS	151.12	151.23	US Forest Services	
097	Both	RS	151.47	151.65	US Forest Services	
097	Both	RS	151.92	152.01	US Forest Services	
097	Both	RS	152.52	153.21	US Forest Services	
097	Both	RS	153.43	171.39	US Forest Services	
097			155.00		Liberty Quarry Site	
097	Both	RS	172.00	176.25	US Forest Services	
097			177.30		Ingall's Ck Pit Site	
097	Both	RS	178.70	178.93	US Forest Services	
097	DEC	RS	183.14	183.26	No Spray Area	Neighbor Maint./General Permit
097			201.20		Olds Station Vic. Stockpile Site	
097			213.57		Pine Canyon Pit Site	
097	Both	RS	226.99	227.81	US Bureau of Land Management	
097			230.40		Green Canyon Pit Site	
097	Both	RS	237.11	237.95	US Bureau of Land Management	
097	Both	RS	241.21	242.18	US Bureau of Land Management	
097	Both	RS	246.68	246.97	US Bureau of Land Management	
150			1.55		Ivan Morse Pit Site	
150	DEC	RS	2.80	2.90	No Spray Area	Neighbor Maint./General Permit
150	Both	RS	4.94	8.25	City of Chelan	City maintained
150	DEC	RS	5.62	5.58	No Spray Area	Neighbor Maint./General Permit
150	Both	RS	9.08	12.06	City of Chelan	City maintained
207	Both	RS	0.25	0.94	US Forest Services	
207	Both	RS	1.12	1.22	US Forest Services	
207	Both	RS	2.02	4.01	National Forest	
285	Both	RS	0.28	4.36	City of Wenatchee	City maintained
285	INC	RS	4.57	4.89	Off ramp to Easy St.	Mow out quadrant

# Appendix E

# Special Maintenance Area

**Table 3.0**

**Definitions:** Locations area distinguishes between opposing sides of the highway by right shoulder (RS) and median shoulder (LS) in relation to direction of travel, indicated by increasing (INC) or decreasing (DEC) mile markers

**Description:** Brief explanation of special treatment required

SR	Direction	Shoulder	BEG MP	END MP	Type	Description
285	DEC	RS	5.04	4.55	Off ramp to Easy St.	Mow out quadrant
971	DEC	RS	1.63	1.77	No Spray Area	Neighbor Maint./General Permit
971	Both	RS	1.78	2.36	National Forest	
971	Both	RS	4.00	4.31	National Forest	
971	DEC	RS	4.82	4.88	No Spray Area	Neighbor Maint./General Permit
971	Both	RS	7.80	7.90	No Spray Area	Neighbor Maint./General Permit
971	Both	RS	9.19	10.26	State Park	
097AR			200.54	200.64	Stormwater Ponds	Infiltration Pond
097AR	Both	RS	211.83	212.00	US Bureau of Land Management	
097AR	Both	RS	214.28	217.14	City of Entiat	City maintained
097AR	DEC	RS	219.50	218.98	No Spray Area	Neighbor Maint./General Permit
097AR	DEC	RS	222.50	222.14	No Spray Area	Neighbor Maint./General Permit
097AR	Both	RS	224.75	225.12	US Forest Services	
097AR			225.66	225.76	BioSwale	
097AR	Both	RS	228.04	228.52	US Bureau of Land Management	
097AR	Both	RS	231.85	235.58	City of Chelan	City maintained
097AR			235.02	235.12	Stormwater Ponds	Infiltration Pond
097AR			235.77	235.87	Stormwater Ponds	Infiltration Pond
097AR	Both	RS	237.43	237.38	US Bureau of Land Management	
28 Spur	Both	RS	4.25	4.58	City of E. Wenatchee	City maintained
97A			200.40		Stemilt Remainder Pit Site	
97A			201.25		Friday Pak Stockpile Site	
97A			204.00		Lincoln Rock Viewpoint	
97A			239.60		Hugo Pit Site	



**Integrated Vegetation Management Record**

Org. Code 425110	County Douglas	Date 8/18/2005	Vegetation Management Zone(s) <input checked="" type="checkbox"/> Zone 1 <input type="checkbox"/> Zone 2 <input type="checkbox"/> Zone 3	
Area SR 28   MP 10   to MP 20		Location Rock Island - Trinidad pit		
Check Appropriate Boxes:				
<input type="checkbox"/> NE	<input checked="" type="checkbox"/> EB	<input type="checkbox"/> Roadside	<input type="checkbox"/> Landscaped Area	<input type="checkbox"/> Interchange
<input type="checkbox"/> SB	<input checked="" type="checkbox"/> WB	<input checked="" type="checkbox"/> Shoulder	<input type="checkbox"/> Rest Area	<input type="checkbox"/> Bridge
		<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 checked="" 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: Kochia - Knapweed - Russian Thistle				
Reason for Action:				
<input checked="" type="checkbox"/> Noxious Weeds		<input type="checkbox"/> Nuisance Weeds		<input type="checkbox"/> Fire Prevention
<input type="checkbox"/> Site Distance		<input type="checkbox"/> Hazard Vegetation		<input type="checkbox"/> Customer Request
		<input type="checkbox"/> Restore Native Veg.		<input type="checkbox"/> Zone 1 Pilot
		<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)				
We tried Buctril 2EC for the first time. East Bound was 32ozl and W/B was 24ozl. Both had Vista@16ozl, MSO@32ozl, Chemtrol@32ozl and we were using water@40gls. We found that at 32ozl the Buctril had immediate effect and burn out after 3-4 days. We also tank mixed all these areas and from MP 10-16 we mixed and shot it; from MP 16-20 it sat in the tank for 6 days before we shot it and it seemed weaker but had good knockdown. What we found was that at 24ozl the knockdown took 10+ days to knock it down but had the same effect as as 32ozl. My thought is it may reach the roots without the immediate knockdown of the top plant (we'll see). This				
Approximate Acres to Accomplish   20-25				
Activities				
		Planned date of Treatment		Actual date of Treatment
Manual				
<input type="checkbox"/> Digging		<input type="checkbox"/> Pulling		<input type="checkbox"/> Planting
<input type="checkbox"/> Logging		<input type="checkbox"/> Staking		<input type="checkbox"/> Other
Mechanical				
<input type="checkbox"/> Aerial Saw Work		<input type="checkbox"/> Tractor Brush Cutting		<input type="checkbox"/> Motor Chem
<input type="checkbox"/> Manual Brush Cutting		<input type="checkbox"/> Tractor Motor		<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				
We used Amine 4 @64ozl, Vista@16ozl, Chemtrol@32ozl, and MSO@32ozl. in other areas on SR28 and didn't have the same results. I checked the prices and it is within \$'s of each other. In the past years we used just the Amine 4 and didn't have much success and had to reapply throughout the year. The cost was around \$9 but by the time you put it on 2-3 times it has been more				
#2 Evaluation and Date				
#3 Evaluation and Date				



Washington State  
Department of Transportation

Pesticide Application

Org. Code 425110	County Chelan	Date of Application 7/27/2006	Start 9:30 <input checked="" type="radio"/> AM <input type="radio"/> PM Finish 2:30 <input checked="" type="radio"/> AM <input type="radio"/> PM	ICP 021A	Stores Issue Ticket Number(s) A 13545			
Area SR 97 MP 164 to MP 172 and MP to MP and MP to MP and MP to MP								
Check Appropriate Boxes: <input checked="" 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 type="checkbox"/> Blanket Spray <input type="checkbox"/> Wetlands <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"/> Banded Width								
<input checked="" 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 Pest(s): Knapp/toadflax/mullen / russian thistle /grasses								
Start Weather Conditions Temperature 70 °F Wind (Direction From) 0 Wind (Range) 0 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								
Finish Weather Conditions Temperature 86 °F Wind (Direction From) N Wind (Range) 2-4 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 For Acres (hectares)	Unit	Total Daily Usage	Unit
1	Water		-----			35 Gal	989	Gal
2	Redi-vert III	Adjuvant	-----	F 60205		256 Ozl	4949	Ozl
4	Veteran 720	Pesticide	228-295	IL ED-03		96 Ozl	2206	Ozl
4	Escort XP	Pesticide	352-439	073321-OR-001		1 Ozd	34	Ozd
							0	
							0	
							0	
							0	
<b>Total 34.5 Acres(hectares) Treated at 27 gallons(liters) of spray per acre(hectare).</b>								
Equipment Number 8B29-1	Tank Size 1 1400 3 30 5 20	Calibration Date 6-27-2006	Vehicle Speed 8 mph(kmh)	Nozzle Pressure 30 PSI(lPa)	Width of Spray Pattern 5 Feet(meter)			
<input type="checkbox"/> Handpumped <input checked="" type="checkbox"/> Handgun <input type="checkbox"/> Boom		<input type="checkbox"/> Fixed Nozzle <input type="checkbox"/> Other (Specify) Invert		<input type="checkbox"/> Tank Mix (Conv.) <input checked="" type="checkbox"/> Injection		<input checked="" type="checkbox"/> Invert		
Operator Name EUGENE F. AVEY		Operator Pesticide License No. 8171		Operator Signature		Driver Name Tim		
Remark						Buffer Invol. Driver's Name Simmons		
						Pesticide Sensitivity Registration Applies: <input type="checkbox"/> Yes <input type="checkbox"/> No		
						Contact _____ _____ _____		
Division of Emergency Management (1-800-258-5990)				Additional Notes				

DOT Form 540-506 EF  
Revised 9/2001

Distribution: OSC Maint. Operator Region File  
Send OSC Copy Within 5 Days

Oz=Ounces Dry L= Pounds g= gram l=lb gram  
Oz=Ounces Liquid G= Gallon ml=Milliliters L= Liter  
P= Pint Q= Quart

# Appendix G

## STAKEHOLDERS LIST

Chelan County Noxious Weed Board.....	412 Washington St. Wenatchee, WA 98801 (509) 667-6550
Douglas County Noxious Weed Board.....	P.O. Box 747 Waterville, WA 98858 (509) 745-8537
King County Noxious Weed Board.....	201 St. Jackson St. Suite 700 Seattle, WA 98104 (206) 477-9333
Kittitas County Noxious Weed Board .....	507 N. Nanum St. Suite 26 Ellensburg, WA 98926 (509) 962-7007
USFS Wenatchee National Forest.....	215 Melody Lane, Wenatchee, WA 98801 (509) 664-9200
City of Wenatchee.....	1350 McKittrick St. Suite A, Wenatchee, WA 98801 (509) 888-3200
City of East Wenatchee.....	271 9 <sup>th</sup> St. East Wenatchee WA 98802 (509) 884-9515
City of Entiat.....	P.O. Box 228 Entiat, WA 98822 (509) 784-1500
City of Chelan .....	P.O. Box 1669 Chelan, WA 98816 (509) 682-4037
City of Manson .....	312 Questiloquasoon Manson, WA 98831 (509) 687-9635
City of Waterville .....	P.O.Box 580 Waterville, WA 98858 (509) 745-8871
City of Rock Island .....	P.O. Box 99 Rock Island, WA 98850 (509) 884-1261
City of Cashmere .....	101 Woodring St. Cashmere, WA 98815 (509) 782-3513
City of Leavenworth.....	P.O. Box 287 Leavenworth, WA 98826 (509) 548-5275
New Stevens LLC.....	P.O Box Skykomish, WA 98288 (206) 812-4510

# Appendix G

## STAKEHOLDERS LIST

WDFW Region 2 .....	1550 Alder St. NW Ephrata WA 98823 (509) 456-6245
DNR Ellensburg .....	713 E. Bowers Rd. Ellensburg, WA 98926 (509) 925-8522
Cascade & Columbia Rail.....	901 Omak Ave. Omak, WA 98926 (509) 826-3752
USBR.....	1917 Marsh Rd. Yakima, WA 98907 (509) 575-5848
Confederated Tribes of the Colville Reservation .....	P.O. Box 150 Nespelem, WA 99155 (509) 634-2843