Southwest Region, Area 4
Integrated Roadside
Vegetation Management Plan
2017
Introduction

The Washington State Department of Transportation (WSDOT) Southwest Region Area 4 manages approximately 460 miles of roadside right-of-way throughout Klickitat and Skamania counties. This right-of-way is part of the state highway system including US97, US197, SR14, SR141, and SR142. SR14 is part of the Lewis and Clark Trail Scenic Byway and west of Goldendale this highway passes through the Columbia River Gorge National Scenic Area. A map of the area is included as Figure 1 on the following page.

The primary roadside vegetation management objectives are in relation to traffic safety and preservation of the highway infrastructure. Additionally, as a landowner WSDOT is required to control all listed noxious weeds that occur on the right-of-way by state law (RCW 17.10 and 15.15.010). It is important that WSDOT not only meet the legal requirements for weed control, but also consider the needs and concerns of adjacent landowners in this area.

In order to best manage roadsides with these priority objectives in mind, WSDOT practices an annually cycling process called Integrated Vegetation Management (IVM). Plans like this are maintained and updated annually for all areas of the state with an overall goal of establishing the most naturally self-sustaining roadside vegetation possible. Adjustments are made year to year in each area plan based on monitoring the previous years’ accomplishments and results, available budget, and prioritization of other highway maintenance activities.

This plan serves as the guidance document for vegetation maintenance in Southwest Region Area 4 for the 2017 growing season. It provides detailed treatment prescriptions and location data for accomplishing safety and weed control objectives through the use of a combination of control measures. Each year’s actions are designed as part of a coordinated multi-year strategy to efficiently maintain traffic safety and comply with weed control laws on all state roadsides, and working within budget, to invest in restoring a set of selected priority locations to a stable self-sustaining native condition. This plan also accounts for specific locations where maintenance tactics are adjusted due to environmental sensitivity, neighboring properties, local partnerships, or restoration work done through WSDOT design and construction.

The information contained in this plan document is referenced and utilized by crews in the field using iPads and the Highway Activity Tracking System (HATS). Accomplishments and results also tracked and referenced through this system, as part of the budget planning and maintenance accountability process. Carrying iPads in the field also gives maintenance crews the ability to reference a wide range of technical information and alerts for locations with environmental sensitivity or special agreements with neighbors.

WSDOT welcomes input from local public and private entities on its weed control and other vegetation management activities. Wherever appropriate the agency is looking for opportunities to plan and cooperate with others in managing the roadside. Please direct any questions, comments or suggestions to the Southwest Region Area 4 Superintendent – Jay Chambers, or the State’s Roadside Asset Manager – Ray Willard.

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Southwest Region, Area 4 Vicinity Map

Figure 1
Southwest Region, Area 4 IVM Work Plan – 2017

This is an outline the overall approach and geographic distribution of roadside vegetation management requirements throughout the area in 2017. Information is organized in relation to the three groups defined in the WSDOT Maintenance Accountability Program (MAP) for the performance of roadside vegetation maintenance activities: **Control of Vegetative Obstructions**, **Noxious Weed Control**, and **Nuisance Weed Control**. Specific locations as noted in this work plan are also mapped in WSDOT’s Highway Activity Tracking System (HATS) for reference by maintenance in the field.

**Control of Vegetative Obstructions – 3A4**
The work of this group of maintenance activities relates to the safety and operational requirements of the highway. These items are considered first priority in terms of the overall roadside maintenance needs. Vegetation management objectives and work activities in this category fall into four groups – **Pavement Edge Maintenance/Zone 1**, **One Pass Mowing/Zone 2**, **Tree and Brush Control/Zone 2 and 3**, and **Hazard Tree Removal/Zone 3**.

**Pavement Edge Maintenance/Zone 1**
**Work Operation:** 1615
**HATS Form:** Spray Zone 1
**HATS Map Layer:** Reference lines – Roadside Features/Spray Zone 1 Reference

This work involves the annual application of herbicides to road shoulders where necessary throughout the area. The objective of these applications in designated locations is preserving of a band of vegetation-free gravel shoulder adjacent to the pavement. This treatment is necessary in the mapped locations described below to provide visibility and maintainability of roadside hardware and guideposts, allow room for vehicles to safely pull off on shoulders, facilitate stormwater drainage, and/or provide added visibility of wildlife approaching the highway.

**Total Units of Planned Treatment**
- Apply approximately **65 acres** of herbicide treatment to road shoulders throughout the area.

**Locations of Planned Treatments**
- Planned treatment sites are mapped in HATS layer – **Zone 1 Treatments**.
- Locations where bare ground treatments will be applied to all gravel shoulder sections include:
  - SR14 MP 28-53, and along rock walls between MP 54-55
  - SR97 MP .5-13
  - SR14 MP 83.5-152
  - SR14 MP 92.3-92.8
  - SR142 MP 19-35
- Locations where no bare ground treatment will be applied include:
  - US97 – MP 13-33
- Select areas will be reestablished with bare shoulders in 2017. These areas will be mowed or graded and then treated with residual herbicides.
  - SR142 in the worst areas where there are drainage and erosion issues. The area will add to this each year after as needed.
- For all other road shoulders in the area, bare ground treatments will be applied only under guardrail and cable rail.

**Treatment Methods**
- All noted locations will be treated in mid to late spring with the following mixture of herbicides and adjuvants:
  - **Bingen Section**
    - Frequency @ 5 ozl/acre
Safety Mowing/Zone 2
Work Operation: 1625
HATS Form: Mowing Zone 2
HATS Map Layer: Reference lines – Roadside Features/Mowing Zone 2 Reference

This work includes routine mechanical cutting of all vegetation on the road shoulder in a band width immediately adjacent to pavement. Mowing is necessary in areas where taller growing grasses or other vegetation are present and must be annually or semi-annually cut back for visibility and maintenance of roadside hardware and delineators, to maintain traffic sight distance at curves and intersections, and for improved visibility of wildlife approaching the highway. Mowing height for these operations is typically 6 to 8 inches above the ground. In many cases this type of mowing is unnecessary if an adequate width of Zone 1 is present.

Total Units of Planned Treatment
- Less than 10 acres of spot mowing on shoulders is planned.

Locations of Planned Treatments
- This work is necessary at intersections, curves and some driveway approaches throughout the area where vegetation is encroaching on the roadway.
- SR142 in areas where Zone 1 will be reestablished.

Treatment Methods
- Mow with string trimmers once a year in mid to late spring once vegetation growth begins to impact sight distance.
- Borrow radial arm mower for a week or two each year to trim as needed.
- Arm mower will also be used to mow shoulders in areas along SR142 in locations where Zone 1 will be reestablished. These areas will be treated with a follow up of residual herbicides.

Tree and Brush Control/Zone 2 and 3
Work Operations: 1622, 1625, 1626
HATS Forms: Tree/Brush Control – Spray, Trimming Mechanical, Trimming Manual, and Mowing
HATS Map Layer: None

This includes safety and traffic operations related work in Zone 2, such as periodic side-trimming or removal of brush and trees or tree branches encroaching on or overhanging traffic operations, and impacting sign visibility. Also included is work in Zone 2 and 3 when selectively controlling emergent early succession tree species – to prevent them from growing into mature hazard trees within striking distance of the road. Removal of mature-sized dead, diseased, dying or structurally defective and hazardous trees is also included in this activity group.

Total Units of Planned Treatment
- Approximately 50 acres will be treated with a combination of herbicides, and manual or mechanical trimming throughout the area.
Locations of Planned Treatments

- Periodic trimming and control of tree seedlings is necessary along highways in forested areas throughout the area:
  - SR14 MP 28-65
  - SR141 and SR141 Spur
  - SR142
  - US97 MP 25-33

Treatment Methods

- The goal in controlling unwanted plant growth is to apply regular periodic maintenance activities in order to stay ahead of plant growth impacts on highway safety. Activities include a mixture of spraying, trimming with side arm mounted cutters, and hand tools. Typically, in forested roadside conditions, each location requires some form of trimming or seedling removal on a 3 to 4 year cycle. When herbicide application is used for larger scale trimming operations, applications are made in late summer or early fall to decrease visual impacts. Some incidental herbicide treatments of tree and brush may also be conducted in conjunction with noxious weed control operations throughout the growing season.
- Herbicide prescriptions include:
  - Alder and Blackberry Trimming
    - Krenite S @ up to 356 ozl/acre for alder and blackberry
  - Seedling Deciduous and Conifer Control
    - Garlon or Element 3A @ 64 ozl/acre
    - Syl-tac @ 8 ozl/acre

Hazard Tree Removal/Zone 3

Work Operation: 1628
HATS Forms: Hazard Tree Removal – Individual Tree Removal, Stand Removal, and Cleanup Fallen Trees
HATS Map Layer: None

Trees within and adjacent to the right of way are routinely monitored by maintenance staff for potential risk to the highway and/or neighboring structures. Individual and stands of mature trees identified as a potential imminent threat will be further evaluated and removed as soon as possible where needed.

Total Units of Planned Treatment

- Up to 300 mature hazard trees are typically removed.

Locations of Planned Treatments

- Priority areas are along US97, SR14, and SR141 where large trees have been killed by fires or effected by disease.

Treatment Methods

- Crews are continuously looking for trees that exhibit structural defects and could strike the road or neighboring property if they come down. Any hazard trees identified at any time are removed as soon as possible.
- If trees growing outside WSDOT right of way are hazards, crews work with the neighboring property owner to negotiate removal.
- Stump treat with herbicides to prevent re-growth
- Wherever possible trees will be dropped in place and left to naturally decompose.

Noxious Weed Control – 3A2

This group of activities is focused on control of weed species and infestation locations identified in this plan document. The focus is on species that are legally designated by state and county regulations for required control by all property owners, along with any other identified and agreed upon species/locations that pose a unique threat to the roadside or
surrounding environment if not controlled. Work under this group is considered second priority after safety related objectives have been addressed.

In some counties noxious weed laws may be enforced with fines and/or control work by the counties and billing of property owners – if adequate control is not accomplished. WSDOT communicates annually and throughout the season with each County Noxious Weed Board, to identify and prioritize treatment sites on state highways.

WSDOT employs three distinct strategies in planning and executing noxious weed control efforts. Any and all Class A species that occur on the right of way are treated as **Priority Noxious Weed Control**, and all maintenance actions are planned and tracked as individual, multi-year treatment sites. **General Noxious Weed Control** is planned and executed in one of two ways: 1.) Area-wide patrol and control operations are made in the early summer with a goal of spraying or pulling all visible target species prior to seed-set, and 2.) Early and late season treatments are planned for a set of prioritized and mapped infestation points where the goal is early detection/rapid response/eradication.

**Priority Noxious Weed Control**

**Work Operations:** 1616, 1618, 1641, 1699  
**HATS Point Feature-based Forms:** Priority Infestation  
**HATS Map Layer:** Feature points – Roadside Features/Noxious Weed Control Priority

These operations are directed at locations where Class A noxious weed species are present on the right of way and state law requires complete eradication. Site specific integrated treatment plans are developed for each identified location/species, and all control activities are recorded as point feature data in HATS. Ongoing operations will combine field monitoring and a mixture of seasonally timed treatment methods over a series of years. Sites must also be monitored for 3 to 5 years after control to check for grow back.

**Species and Locations**
- No Class A noxious weed species are known to exist on state right of way in Southwest Region Area 4 at this time or in the recent past.

**Locations of Planned Treatments**
- If infestations are discovered, they will be recorded as features in HATS layer – **Noxious Weed Control Priority** for species location and distribution.

**General Noxious Weed Control**

**Work Operations:** 1616, 1618, 1699, 1641  
**HATS Form:** Noxious Weed Control General – Noxious Weed Control-Spray, Noxious Weed Control-Mechanical, Noxious Weed Control-Manual, and Noxious Weed Control-Biological  
**HATS Map Layer:** Reference points – Roadside Features/Noxious Weed Control General (Under Development)

These operations are timed and carried out throughout the season to prevent the spread of designated noxious weed species, and to reduce or eliminate populations wherever possible. Integrated treatments as described in the table below, are planned to address infestations through 1.) seasonally timed treatments of identified priority sites, or 2.) during late spring/early summer section patrols to treat all visible target weed species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations. Care is taken in all cases to avoid damage to surrounding desirable/native vegetation.
<table>
<thead>
<tr>
<th>Common Name/Botanical Name</th>
<th>Treatment Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common tansy</td>
<td>Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Dalmatian toadflax (<em>Linaria dalmatica</em>)</td>
<td>Target sites mapped and treated in the spring and fall</td>
</tr>
<tr>
<td>Hairy willow-herb (<em>Epilobium hirsutum</em>)</td>
<td>Only present within Bingen City limits and controlled by city</td>
</tr>
<tr>
<td>Hoary cress (<em>Cardaria draba</em>)</td>
<td>Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Knapweed sp. (<em>Centaurea sp.</em>)</td>
<td>Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Kochia (<em>Kochia scoparia</em>)</td>
<td>Mainly present on the east end of the section. Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Loosestrife, purple (<em>Lythrum salicaria</em>)</td>
<td>All known have been controlled, any new occurrences will be controlled and sites mapped for monitoring.</td>
</tr>
<tr>
<td>Poison hemlock (<em>Conium maculatum</em>)</td>
<td>Target sites mapped and treated at early flower stage in spring.</td>
</tr>
<tr>
<td>Puncturevine (<em>Tribulus terrestris</em>)</td>
<td>Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Rush skeletonweed (<em>Chondrilla juncea</em>)</td>
<td>Still a designate in Skamania County so any infestations or individual plants found west of Bingen will be treated and mapped for early spring treatment in 2018.</td>
</tr>
<tr>
<td>Scotch broom (<em>Cytisus scoparius</em>)</td>
<td>Present mainly on the west end of the area, control where visible in conjunction with summer seasonal weed patrols. Priority treatment sites will be mapped in areas where pioneer infestations exist.</td>
</tr>
<tr>
<td>Tansy ragwort (<em>Senecio jacobaea</em>)</td>
<td>Mainly present west of Stevenson. All visible plants are sprayed in the spring prior to bud/seed set, any remaining plants visible in flower are hand pulled with seed heads removed, bagged, and disposed of</td>
</tr>
<tr>
<td>Thistle, Canada (<em>Cirsium arvense</em>)</td>
<td>Control where visible in conjunction with summer seasonal weed patrols.</td>
</tr>
<tr>
<td>Thistle, Scotch (<em>Onopordum acanthium</em>)</td>
<td>Target sites mapped and treated at early flower stage in spring.</td>
</tr>
<tr>
<td>Yellow starthistle (<em>Centaurea solstitialis</em>)</td>
<td>Present on the east side of the area, control prioritized for any occurring plant west of MP69</td>
</tr>
</tbody>
</table>

**Total Units of Planned Treatment**

- Approximately **75 acres** will be treated with herbicides.
- Minor amounts of hand pulling will be conducted incidental to other activities.
- No mowing will be used for noxious weed control operations.

**Locations of Planned Treatments**

- Reference – HATS map layer **Noxious Weed/General** for species location and distribution.

**Treatment Methods and Timing**

- In many cases noxious weed control is accomplished with broad-spectrum herbicide treatments carried out when weeds are flowering and most visible in the late spring/early summer. In these cases, incidental treatments may be made targeting encroaching trees and brush, and to nuisance weed species.
• Whenever possible seasonally timed applications are planned and carried out for locations where eradication is possible. In the 2017 season area IVM technicians will create a map of priority infestations where seasonally timed applications will be made for the following species in the following year:

**Early Season Targets**
- Rush skeletonweed, Kochia, Yellow starthistle
  
  **Herbicide Mix:**
  - Milestone @ 5 ozl/acre
  - Element 3A @ 64 ozl/acre
  - Syl-tac
  - In place

**Mid-Season Targets**
- Yellow starthistle, Rush skeletonweed, Knapweed sp., Puncturevine, Dalmation toadflax
  
  **Herbicide Mix 1:**
  - Milestone @ 5 ozl/acre
  - Element 3A @ 64 ozl/acre
  - Syl-tac
  - In place

  **Herbicide Mix 2:**
  - Milestone@ 6 oz./Acre
  - Vanquish@ 32 oz./Acre
  - Syl-Tac@ 4 oz./Acre
  - No-Foam@ 9 oz./Acre
  - In-Place@ 3 oz./Acre

**Late Season Targets**
- Puncturevine, Dalmation toadflax
  
  **Herbicide Mix:**
  - Milestone @ 5 ozl/acre
  - Element 3A @ 64 ozl/acre
  - Syl-tac
  - In place

**Nuisance Vegetation Control – 3A3**
Nuisance vegetation control takes place only in a select set of carefully prioritized locations throughout the state, primarily along wider rights of way and interchanges on limited access highways. These locations are delineated on maps in HATS as polygon outlines in Zone 3. Locations are prioritized to take place where there is heightened local interest in the visual appearance and condition of the roadside vegetation. Typical locations include: wider areas along limited access freeways in urban and suburban areas, freeway interchanges for local urban centers, environmentally sensitive areas, and areas where neighbors are willing to partner with WSDOT on management efforts. Because nuisance weed control activities are not related to safety or legal requirements, and are primarily undertaken to improve the visual appearance of the roadside, they are considered the last priority vegetation management needs.

For all areas designated to receive Nuisance Vegetation Control, multi-year treatment plans have been developed. The actions contained in these plans will be executed and tracked in relation to specific Zone 3 polygons for **Nuisance Vegetation Control Zone 3**, referenced on HATS maps and described below.
Nuisance Vegetation Control
Work Operations: 1611, 1612, 1641, 1699
HATS Feature-based Forms: Herbicide Application, Manual/Mechanical, Biological, and Seed/Fertilize/Mulch
HATS Map Layer: Feature polygons – Roadside Features/Nuisance Vegetation Control
Zone 3

Maintenance activities in each identified location are planned and tracked as multi-year treatment strategies, utilizing monitoring and the most effective combination of control methods – with a goal of establishing desirable vegetation that requires only minimal maintenance. Care must be taken in all cases to avoid damage to surrounding desirable/native vegetation. In some cases, soil enhancements may be used as well as seeding or planting of beneficial competition species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations.

Total Units of Planned Treatment
• No nuisance vegetation control is planned for 2017 in this maintenance area.