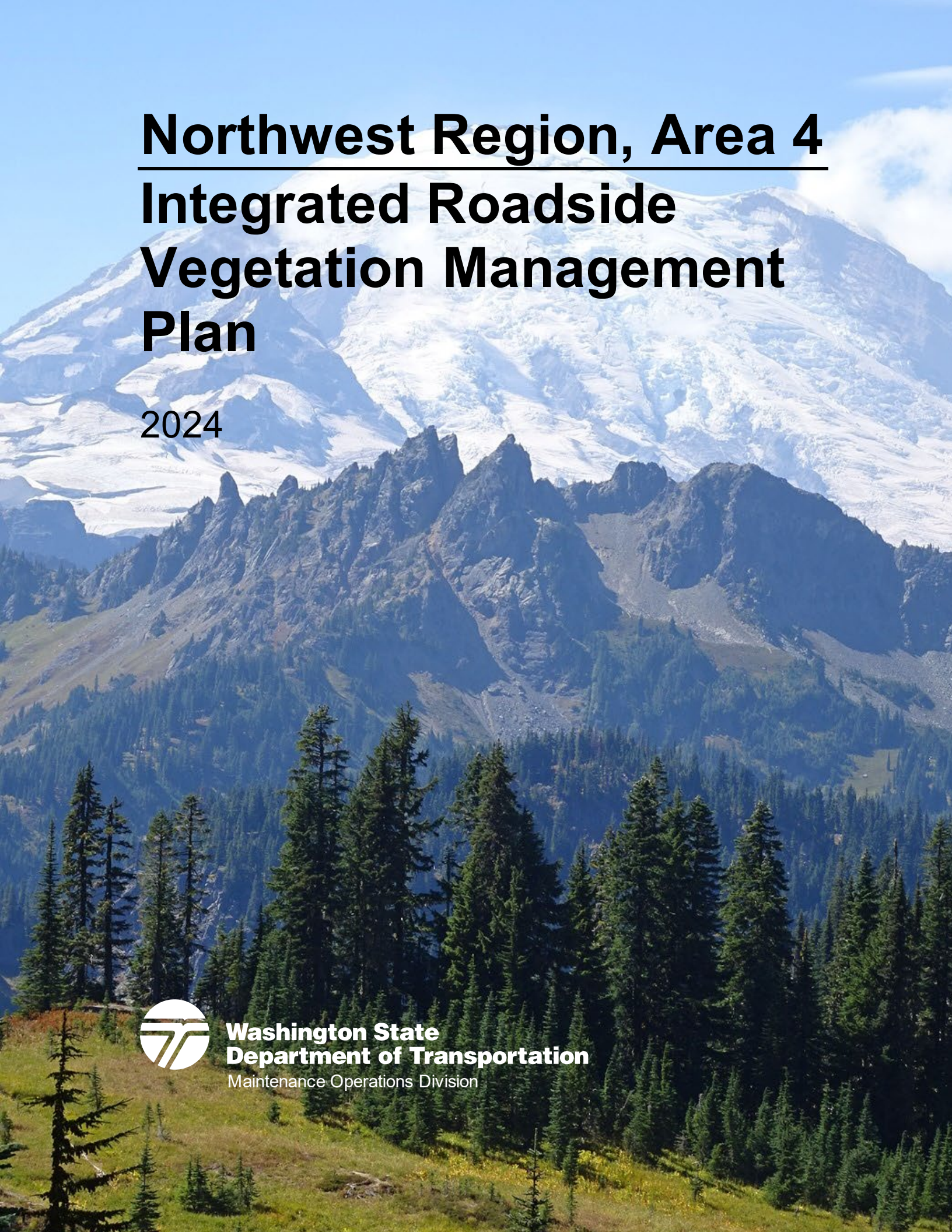

Northwest Region, Area 4

Integrated Roadside Vegetation Management Plan

2024

Washington State Department of Transportation
Maintenance Operations Division

Introduction

The Washington State Department of Transportation (WSDOT) Northwest Region, Area 4 manages approximately 235 miles of state highway corridor in south King and eastern Pierce Counties. Highways in this area carry some of the highest traffic volumes in the state. Major corridors include portions of Interstates 5 and 405. Other limited access corridors include State Routes 18, 167, 518, and a portion of 509. SR 410 east of Enumclaw is referred to as the Mather Memorial Parkway and has been designated as an All American Road. A map of the area is included as **Figure 1** on the following page.

The primary roadside vegetation management objectives are in relation to traffic safety, employee 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.

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 refining the most efficient maintenance procedures and establishing naturally self-sustaining roadside vegetation. 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 required highway maintenance activities.

This plan serves as the guidance document for vegetation maintenance in Northwest Region Area 4 for the 2024 growing season. It identifies priority locations and prescribes treatments for accomplishing safety and weed control objectives through a combination of integrated, seasonally timed control measures. Each year's actions are designed as part of a coordinated multi-year strategy to minimize roadside maintenance requirements wherever possible. This plan also accounts for specific locations where maintenance tactics are adjusted due to environmental issues, neighboring properties, local partnerships, or restoration work done through WSDOT design and construction.

The information contained in this plan document can be geographically referenced by crews in the field using iPads and the agency's Highway Activity Tracking System (HATS). Accomplishments and results are also tracked geographically through this system, providing site specific reference of historic actions and results. This development in WSDOT maintenance management will greatly improve the agency's success in properly executing planned actions, monitoring and documenting results of treatments, and in measuring cost and results over time.

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 Northwest Region Area 4 Superintendent Joe Munoz, Assistant Superintendents Kevin Hall or BJ Cunningham, or the State's roadside asset manager Ray Willard.

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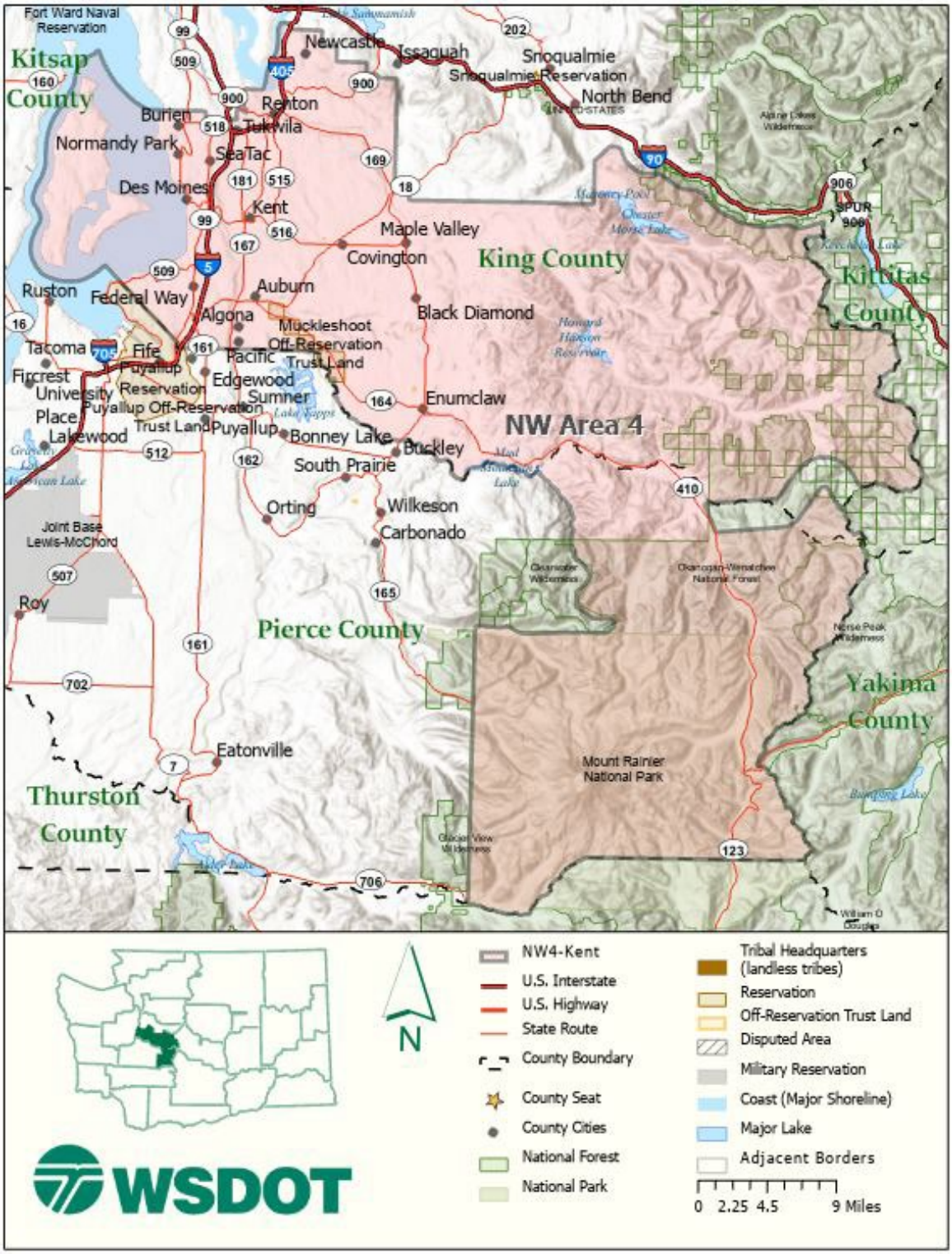

Northwest Region, Area 4 Map
Figure 1

This is an outline of the overall approach and geographic distribution of roadside vegetation management requirements throughout the maintenance area in 2024. Information is organized in relation to four groups of activities 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**. **Safety Rest Area** Landscape Maintenance and **Stormwater** Facilities vegetation maintenance activities are also covered. Specific locations as noted in this work plan are also mapped in the Highway Activity Tracking System (HATS) for reference by maintenance in the field.

Safety First

Safety of our employees, the traveling public, and the environment are WSDOT's highest priorities and key to our success. Pre-Activity Safety Plans (PSAP) are developed for all activities and crews review, discuss, and sign these plans at tailgate meetings, prior to each day's work. When applying herbicides, our licensed pesticide applicators read the entire label before using products and use the products strictly in accordance with label precautionary statements and directions. WSDOT has implemented additional agency specific environmental restrictions on some products, to minimize any risk to aquatic or terrestrial ecosystems. Applicators wear protective equipment applicable to the products being used and discuss any potential environmental and/or human health risks as part of the daily PASP meeting. Technicians inspect their calibrated equipment daily to ensure it is in proper working order. Herbicides are stored in locked facilities and kept in an organized condition.

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 top 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 includes the 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 gravel shoulder adjacent to the pavement that is free of vegetation. 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

- Approximately **250 acres** of bare ground road shoulders are maintained throughout the area.

Locations of Planned Treatments

- Planned treatment sites are mapped in HATS layer – **Zone 1 Treatments**.
- All road shoulders in the area receive annual bare ground treatments in the spring, with the following exceptions:
  - SR 410 MP 48.75 to 69.2 (within National Forest and Park)
  - SR 123 MP 2.0 to 16.3 (with National Park)

Treatment Methods

- Herbicides are applied using a truck mounted power spray system calibrated to deliver a 4-foot band of spray mixture adjacent to the paved shoulder, or a 6-foot

band where hardware is present The resulting width of treated shoulder may be wider than 4-6 feet in areas with steeper shoulder slope.

- Some noxious weed species emerging on the edge will be treated selectively in spring and summer as needed in combination with other targeted weed control activities.
- In locations with cable rail – If the rail is less than 8 ft. from the edge of pavement, the bare ground treatment will extend from the pavement edge to the back side of the cable rail. In locations where the rail is greater than 8 ft. from the edge of pavement, treatment will be applied in 4 ft. band directly under the rail.
- All locations will be treated in the April-May timeframe with Blend R6 plus a drift control agent:
    - Roundup Pro Concentrate (32oz/ac),
    - Lockdown SC (8 oz/ac),
    - Milestone 240 (7 oz/ac),
    - Telar XP (2 oz/ac)
    - MSO Conc. w/ Leci-Tech (16 oz/ac)

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 maintenance 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.

Total Units of Planned Treatment

- Approximately **100 acres** is planned for 2024

Locations of Planned Treatments

- One 6-8 ft. pass on all roads where guardrail is not present.
- Area will be reevaluating mowing needs based on application of a 4 ft. Zone 1

Treatment Methods

- Mowing width is typically dictated by the shoulder configuration and varies between 5 and 25 feet as specified on the HATS maps.
- Mowing will be done with multiple types of tractor mounted mowers including a 3-deck, 25 ft. total width mower, side arm mounted flail and rotary mowers, and orchard mowers.
- Mowing widths may be wider if necessary, for traffic visibility at intersections and curves.

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.

Total Units of Planned Treatment

- Approximately **15 acres** will be mechanically trimmed throughout the area.

- Approximately **5 acres** will be treated with herbicides throughout the area.
- Approximately **5 acres** will be trimmed with hand tools throughout the area.

Locations of Planned Treatments

- SR 516 throughout as needed
- SR 509 Limited Access sections
- SR 900 MP 14-17
- SR 164 MP 4-14
- SR 518 at S.146 St. (firebreak)
- SR 516 at Military Rd. (firebreak)
- SR 167 MP 22.4 (firebreak)

Treatment Methods

- Mowing and side trimming with tractor mounted side arm flail mower
- Some control of seedling trees and encroaching brush in Zone 2 will be treated with herbicides incidental to noxious weed control operations.
- Target seedlings and encroaching brush in the fall with Vastlan 96 oz/acre plus Milestone @ 10 oz/acre
- Cut stump treatment with Garlon 4 whenever possible when cutting unwanted trees.

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 **200 trees** in prioritized areas.

Locations of Prioritized Areas

- I-5 SB by the weigh station stand of dead trees
- SB 167 MP 18, 21-25
- SB 405 MP 2 along the ramp
- SR 410 MP 22-57 (ESA restrictions are followed for timing)

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.
- For trees in areas with Endangered Species concerns, the Regional Maintenance Environmental Coordinator will be consulted prior to action
- Cut and drop in place wherever possible
- Stump treat with herbicides to prevent re-growth

Noxious Weed Control – 3A2

This group of activities includes control of non-native invasive weed species as defined by state law and individual county designation. This group of activities is second priority vegetation management work after safety related objectives have been addressed. While all Class A, B, and C noxious weed species as listed in RCW 17.10 are considered potential targets for WSDOT noxious weed control, the agency is currently not funded to achieve 100% control of all noxious weeds. Therefore, the top priorities for weed control are focused on locations and species that are more limited in distribution on the right of way – where there is a chance of successful eradication. To prioritize control of species that are already widespread in the area, WSDOT

works with the local county noxious weed boards and coordinators, to annually review and determine which species and locations will be specifically targeted.

To prioritize, plan, and track noxious weed control, WSDOT maps and monitors weed infestations in three categories: **Priority**, **Planned Treatment**, and **General Reference**. **Priority** locations are where Class A noxious weed species exist on the right of way, and complete eradication is required by state law. **Planned Treatment** sites are locations where there are new, and/or limited distribution infestations of Class B and C noxious weed exist, and eradication is possible. **General Reference** sites are recorded for reference only to document the presence of noxious weed species which are more commonly occurring in the local area.

Noxious Weed Control
Work Operations: 1616, 1618, 1641, 1699
HATS Forms: Pesticide Application (for spray applications,) and three sub-forms under Noxious Weed Control General– Manual/Mechanical, Seed/Fertilize/Mulch, and Biological
HATS Map Layer: Reference Points – Roadside Features/Noxious Weed Control Priority (red dots), Noxious Weed Control Planned Treatment (orange dots), and Noxious Weed Control General Reference (pink dots)

Operations are prescribed throughout the season to prevent the spread of any legally designated noxious weed species, and to reduce or eliminate populations wherever possible. Integrated treatment plans combine field monitoring and an integral mixture of seasonally timed control methods with proven effectiveness on designated species. Successful plans are consistently implemented over a series of years and annually adjusted as necessary based on field observations. Care must be taken in all cases to avoid damage to surrounding desirable/native vegetation.

Class A noxious weed species known to exist in Northwest Region Area 4:

Common Name/Botanical Name	Treatment Notes
Milk thistle/*Silybum marianum*	Monitor for periodic emergence SR164 MP 9.89 EB shoulder. Plants have been dug and removed on two previous occasions.

Noxious Weed Targets on WSDOT Right of Way in Northwest Region Area 4:

Common Name/Botanical Name	Treatment Notes
Butterfly bush/Budlia davidii	Target EDRR infestations mapped and treated spring and fall, all other plants controlled incidental to seasonal weed patrols
Common teasel/*Dipsacus fullonum*	Target EDRR infestations mapped and treated spring
Common reed/*Phragmites australius*	EDRR for all mapped sites
Dalmatian toadflax/*Linaria dalmatica*	Target sites mapped and treated in the spring and fall
Hawkweed sp./*Hieracium sp.*	Control where visible in conjunction with seasonal patrols
Knapweed sp./*Centauri sp.*	Control where visible in conjunction with seasonal patrols
Knotweed sp./*Polygonum sp.*	Target sites mapped and treated after flower stage in late summer
Kochia/	SR 18 and 167 where it is coming from EW
Pampas grass/*Cortaderia selloana*	Target EDRR infestations mapped and treated spring and fall, all other plants controlled incidental to seasonal weed patrols
Poison hemlock/*Conium maculatum*	Control where visible in conjunction with seasonal patrols, priority target sites are mapped and treated in the spring

Common Name/Botanical Name	Treatment Notes
Policeman's helmet/*Impatiens glandulifera*	All known infestations have been controlled. Target sites have mapped and annually monitored for reoccurring plants.
Purple loosestrife/*Lythrum salicaria*	Target sites mapped and treated at early flower stage in summer
Common St. Johnswort/*Hypericum peroratum*	Control where visible in conjunction with seasonal patrols
Tansy ragwort/*Senecio jacobaea*	Occurs sporadically throughout the area. 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
Rush skeletonweed/*Chondrilla juncea*	Target EDRR infestations mapped and treated spring
Shiny geranium/*Geranium lucidum*	Target EDRR mapped infestations and treat in early spring, monitor for re-emergence throughout the season.
Scotch broom/*Cytisus scoparius*	Controlled in conjunction with seasonal weed patrols when present in small isolated patches, control of all emerging plants is a priority along SR410 east of Enumclaw
Sulfur cinquefoil/*Potentilla recta*	Target EDRR infestations mapped and treated spring
Wild chervil/*Anthriscus sylvestris*	Target sites mapped and treated in the spring

Total Units of Planned Treatment

- Approximately **50 acres** will be treated with herbicides.
- Up to **10 acres** may be pulled by hand if needed.

Locations of Planned Treatments

- Treatment locations are described in the table above
- All pit sites and shop yards

Treatment Methods and Timing

- Treatments are carried out as described in the table above
- Herbicide mixtures used include:
    - Vastlan @ 48 oz/acre
    - Milestone @ 5 oz/acre
    - MSO @ 16 ozl/acre

Nuisance Vegetation Control – 3A3

Nuisance vegetation control takes place only in a select set of carefully prioritized locations along the wider areas of right of way throughout the state. These locations are delineated on maps in HATS as polygon outlines where right of way is wide enough for Zone 3 to exist. Locations are prioritized to receive treatments where there is heightened local interest in a more controlled visual appearance and highly maintained condition. 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 lowest 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 Zone 3

Work Operations: 1611, 1612, 1641, 1699
HATS Forms: Pesticide Application (for all spray applications), and 3 sub-forms under Nuisance Veg. Control General – Manual/Mechanical, Biological, and Seed/Fertilize/Mulch
HATS Map Layer: Reference polygons – Zone 3 Nuisance Reference

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. Undesirable species are identified and specifically targeted while care is be taken 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

- Approximately **10 acres** will be treated with herbicides for nuisance weed control.
- Approximately **20 acres** will be mowed for nuisance weed control.

Locations of Planned Treatments

- Areas prioritized for nuisance weed management in Zone 3 will be mapped in the 2024 plan for this area in reference HATS layer – **Nuisance Vegetation Management**. The following areas will receive annual mowing for vegetation management. Mowing will be conducted in late spring/early summer once seasonal growth has stopped. Locations include:
  - SeaTac main entrance SR509
  - 509 at 160 and 518
  - 516 and 167 in Kent
- Areas cleared out for encampments maintained for regrowth of nuisance weeds:
  - I-5 at 200th NB offramp and areas north of the interchange
  - I-5 320th SB onramp quadrant
  - SR 18 at Auburn Way
  - SR 18 WB at 516 offramp
- There are a series of wetland mitigation sites within the area that have satisfied their permit requirements and are now considered part of the overall Zone 3 inventory in the area. Sites are mapped in HATS and require annual monitoring to document state of repair and plan for any required repairs.
  - SR 509 vicinity of 192nd St.
  -

Treatment Methods and Timing

- Rotational Zone 3 mowing where possible on a 3-5 year schedule
- Spot and broadcast treatment as necessary as a follow up to mowing operations depending on regrowth of undesirable plants.

Safety Rest Area Site Maintenance – 7B1

Landscape maintenance work at safety rest areas throughout the state includes all vegetation management activities that take place in relation to the design and layout of individual rest areas. For these highly developed landscape assets, the goal is to maintain healthy, attractive plantings throughout the site as well as along the rest area frontage along the highway. Planted vegetation is intended to be preserved and enhanced over time, through pruning, hedging, trimming, with irrigation and periodic fertilization used where necessary.

Safety Rest Area Site Maintenance
Work Operations:
HATS Forms:
HATS Map Layer: Reference polygons – SRA Landscape Reference

Rest area landscape maintenance operations are carried out by the Rest Area Attendants in many cases, with the local area maintenance crews or regional specialty crews helping out when needed for irrigation and specialized weed control operations.

Locations of Planned Treatments

- Rest area facilities maintained by NW Region Area 4 include:
  - SeaTac SRA NB I-5 @ MP 140.7

Total Units of Planned Treatment

  - High maintenance landscape – les than **1 acre**
  - Low maintenance landscape – approximately **2 acres**

Treatment Methods and Timing

- Routine pickup of vegetative debris as needed
- Annual start up and winterization of irrigation system
- Routine lawn mowing throughout the growing season
- Weed control operations

Stormwater Facilities Maintenance – 2A4

Stormwater facilities maintenance operations that include vegetation management considerations are discussed in this section of the plan. This work is regulated by the agreement WSDOT has established under the statewide National Pollution Discharge Elimination System (NPDES) permit granted to the agency by the USEPA.

NPDES Maintenance

Work Operations: 1368, 1399

HATS Forms: Pesticide Application (for all spray applications)

HATS Map Layer: All biofiltration feature types listed under Stormwater Features Layer

There are several vegetation management activities necessary to maintain function and operation of certain constructed stormwater management facilities such as vegetated filter strips and swales along the edge of pavement and throughout the roadside, and stormwater retention/detention ponds in the more urbanized areas. Each of these features includes a manual which details the requirements in relation to control of vegetation and sediment buildup over time. Any vegetation control work required within designed treatment features is charged to the stormwater program.

Locations of Planned Treatments

- All stormwater management facilities with biofiltration components are mapped within the Stormwater Features Layer in HATS.
- Vegetation management activities in stormwater management features are specified in the Owner's Manual for each constructed feature.
- Required work in stormwater features within the area for 2024 include:
  - None required

Treatment Methods and Timing

- Weed control within stormwater management features is carried out in concert with other weed control activities throughout the area.