Washington State Department of Transportation

WSDOT NORTHWEST REGION

ARBORIST SERVICES
HABITAT CREATION, PRESERVATION, RESTORATION

FUTURES IN APPLIED ARBORICULTURE CONFERENCE
CENTER FOR URBAN HORTICULTURE
SEPTEMBER 17, 2025

AGENDA

Where We Work

Our Team

What We Do

- Habitat Creation
- “Preservation”
- Restoration

WHERE WE WORK

VISUALIZING ROADSIDES AS TRANSPORTATION ASSETS

WSDOT owns and maintains approximately 100,000 acres of unpaved land.
As part of the agency's overall Transportation Asset Management Plan, WSDOT has classified and mapped roadside land use areas as shown on this poster.
This geographic inventory of six specific roadside land use types provides the basis for budgeting, planning, tracking, monitoring, and evaluating maintenance actions, and for measuring agency performance.

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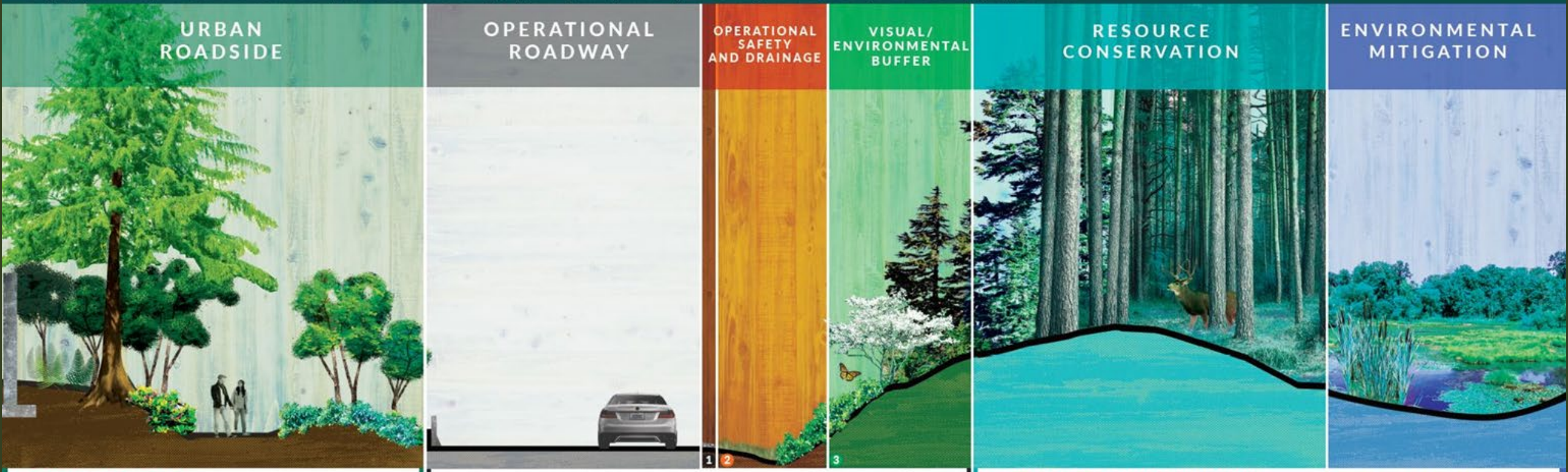


FORMAL LANDSCAPE

Only maintained along some urban freeway corridors and around Safety Rest Area facilities. Plantings are designed as public amenities, and constructed to be routinely maintained in a set condition which provides for both safe highway operation and safety for controlled public access.

AVERAGE COST/ACRE/YEAR $7,759

TOTAL ACRES 1,100

ZONE 1

Vegetation-free edge, maintained as required where shoulders are designed for stormwater sheet flow.

AVERAGE COST/ACRE/YEAR $200

TOTAL ACRES 6,500

ZONE 2

Low-growing vegetation, maintained throughout the system, width is determined by highway design and local site constraints.

AVERAGE COST/ACRE/YEAR $239

TOTAL ACRES 33,500

ZONE 3

Present where there is extra right of way beyond the outside edge of Zone 2, between divided highway alignments, and at freeway interchanges.

AVERAGE COST/ACRE/YEAR $18

TOTAL ACRES 55,000

RESOURCE CONSERVATION AREAS

Relatively undisturbed natural areas adjacent to the right of way, purchased for preservation during construction of the interstate system. These areas require little to no maintenance.

AVERAGE COST/ACRE/YEAR $0

TOTAL ACRES 820

ENVIRONMENTAL MITIGATION

Sites maintained for 10+ years, in response to highway construction environmental permit requirements (Once permit requirements are fully met, sites are classified and maintained as part of Zone 3).

AVERAGE COST/ACRE/YEAR $4,600

TOTAL ACRES 2,000


OUR TEAM
LANDSCAPE ARCHITECTURE OFFICE
WSDOT

ARBORIST SERVICES

HAILEY MAK MACKAY, PLA
ISA CERTIFIED ARBORIST PN-8777A
QUALIFIED TREE RISK ASSESSOR

JOSEPH SUTTON-HOLCOMB
ISA BOARD CERTIFIED MASTER ARBORIST PN-8397BM
QUALIFIED TREE RISK ASSESSOR
CERTIFIED URBAN FOREST PROFESSIONAL

TAYLOR MCNEILL, PLA
ISA CERTIFIED ARBORIST PN-9009A
QUALIFIED TREE RISK ASSESSOR

SHANNON VOTAW
ISA CERTIFIED ARBORIST PN-10314A

JACK O'HEA, PLA


WHAT WE DO

MAINTENANCE | DESIGN | CONSTRUCTION

How do we create habitat in the roadside?

Preserving existing canopy, retaining wood on site.

Roadway Maintenance and State Parks

- On tree removal contracts and brush management work to preserve wood on site as appropriate.
- This creates less work for them and provides benefit for habitat.

Design Staff and Project Engineering Offices

- To assess clearing and grading limits and existing tree Critical Root Zones (CRZ) prior to project impacts to help identify candidates for snagging or leaving stumps for slope stabilization and habitat enhancement.

Construction Offices and Contractors

- To identify CRZs throughout construction to confirm removals and potential snags.

HABITAT CREATION

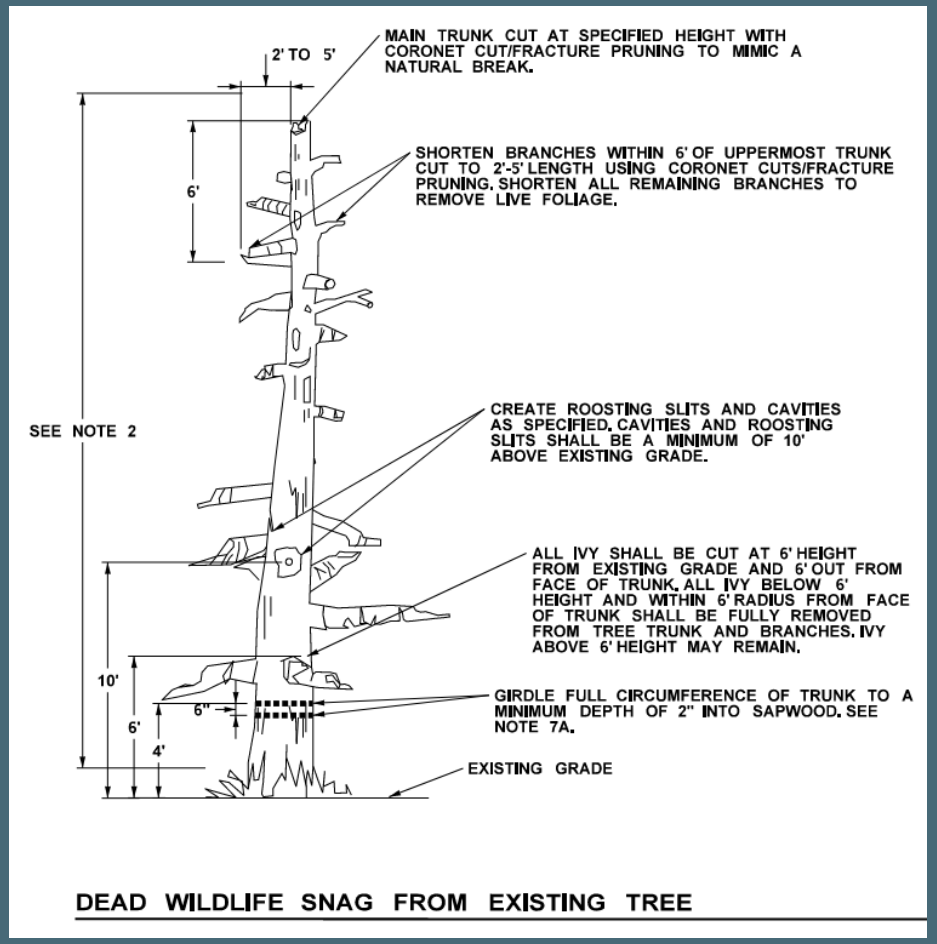
What we have been doing…

- Habitat poles, I-5 Padden Creek (wildlife cameras)
- Raptor perches, habitat boxes
- Large woody debris (LWD)

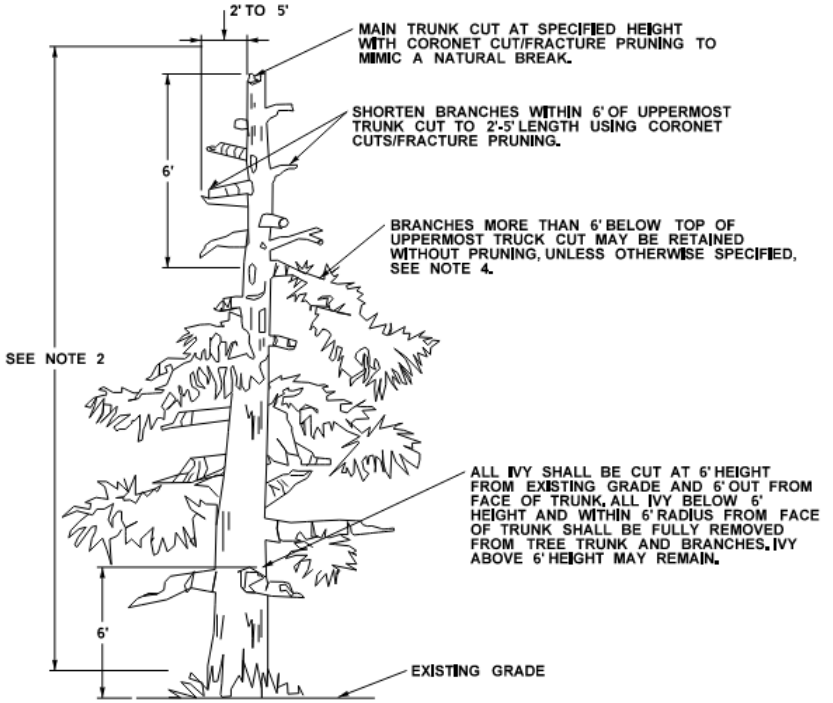
Where we are headed…

- Creating complexity by leaving wood on site
- Slash piles
- Compost-choked brush piles (planted with native conifers)
- Snagging where possible, when targets are not present
- Leave high stumps when snagging is not possible
- “Lop and scatter” – create nurse logs, coarse mulch
- Chipping and spreading if pests or disease are present or steep slope concerns

HABITAT CREATION



DEAD WILDLIFE SNAG FROM EXISTING TREE



LIVE WILDLIFE SNAG FROM EXISTING TREE

Live and Dead Snags

- No targets
- 20” DBH or greater
- ~5 snags per acre
- Coronet cut main trunk
- Minimum 25’ height
- Design contracts may reduce replacement requirements if a tree is snagged instead of removed

Contract language, field oversight, and education play an essential role in this effort.

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HABITAT CREATION

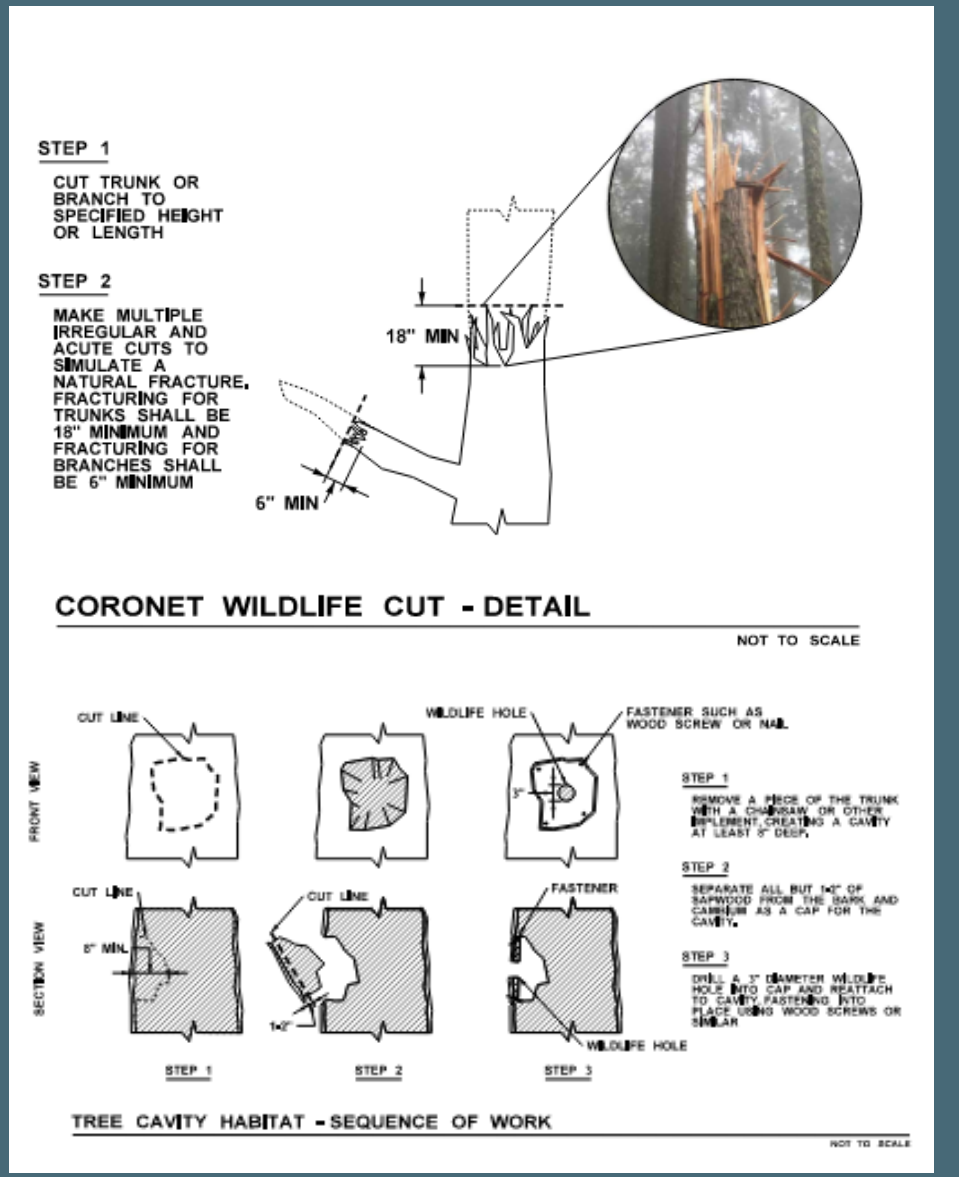


Photo: naturallynorthidaho.com


Photo: treefirst.org/what-is-a-snag

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Implementation

- SR 18 Deep Creek: 35’ dead snag with cavity
- These kinds of details are challenging to achieve on large-scale projects

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HABITAT CREATION

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Implementation

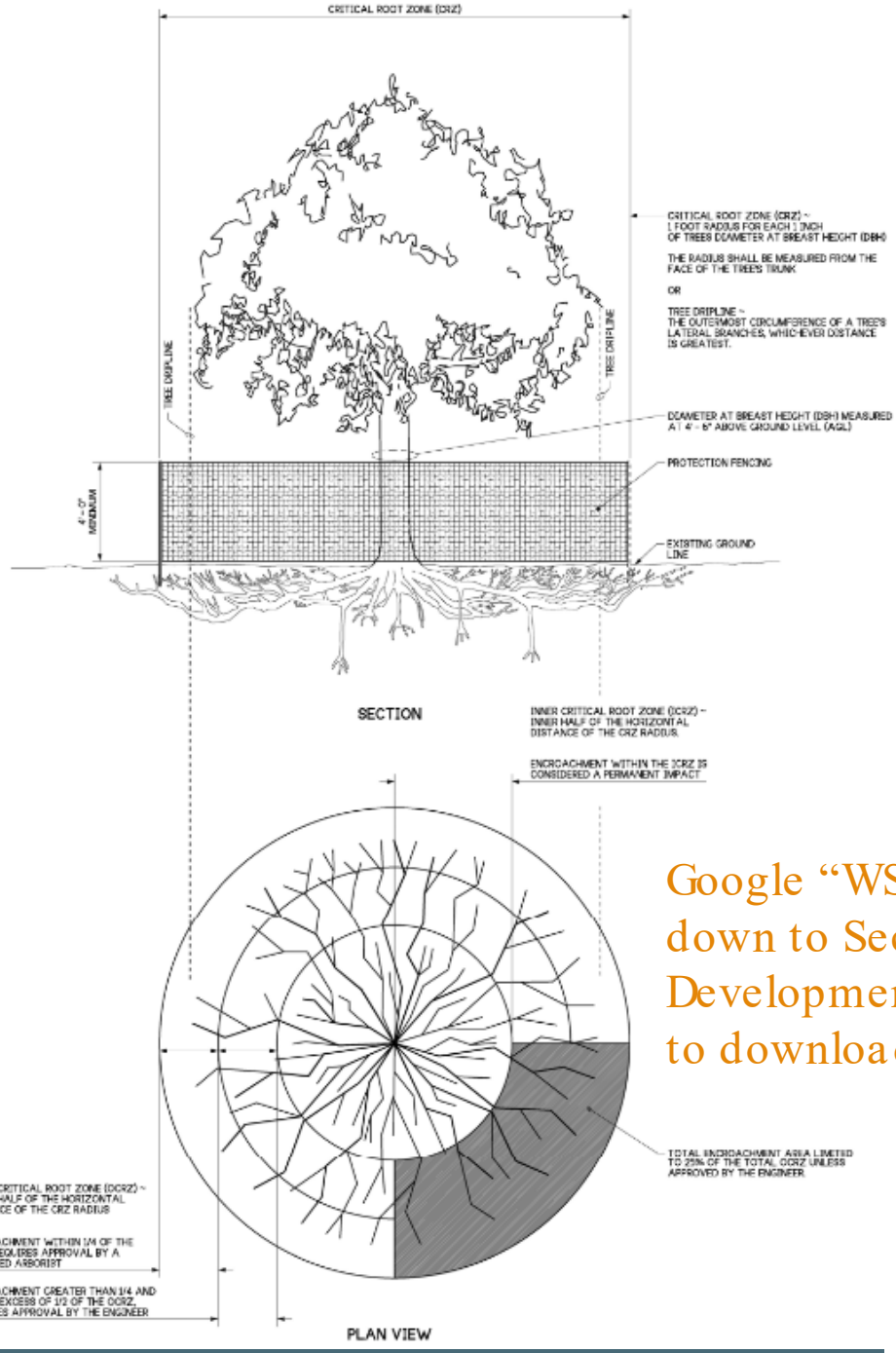
- SR 529 Steamboat Slough: dead and live snags, LWD
- SR 516 Barnes Creek: 60” cottonwood dead snag, LWD
- SR 169 Ravensdale Creek: compost-choked brush piles, LWD

Contract language, field oversight, and education play an essential role in this effort.

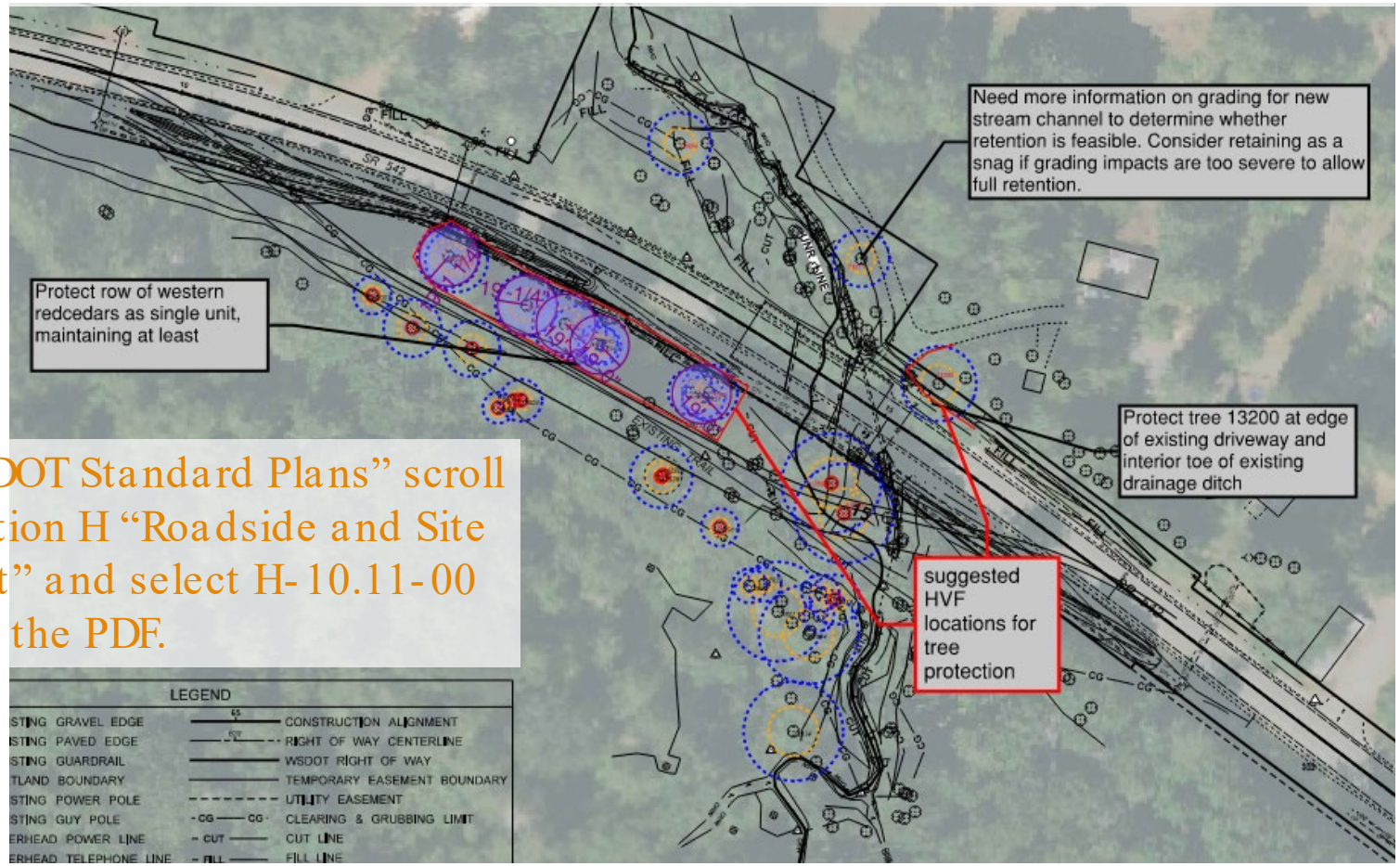
PRESERVATION

SR 542 TRIBUTARY TO TOAD CREEK

Preserve existing trees by adding Critical Root Zone (CRZ) to CAD base and evaluating impacts in the field during design phase to identify high priorities for protection.



Google "WSDOT Standard Plans" scroll down to Section H "Roadside and Site Development" and select H-10.11-00 to download the PDF.



RESEARCH

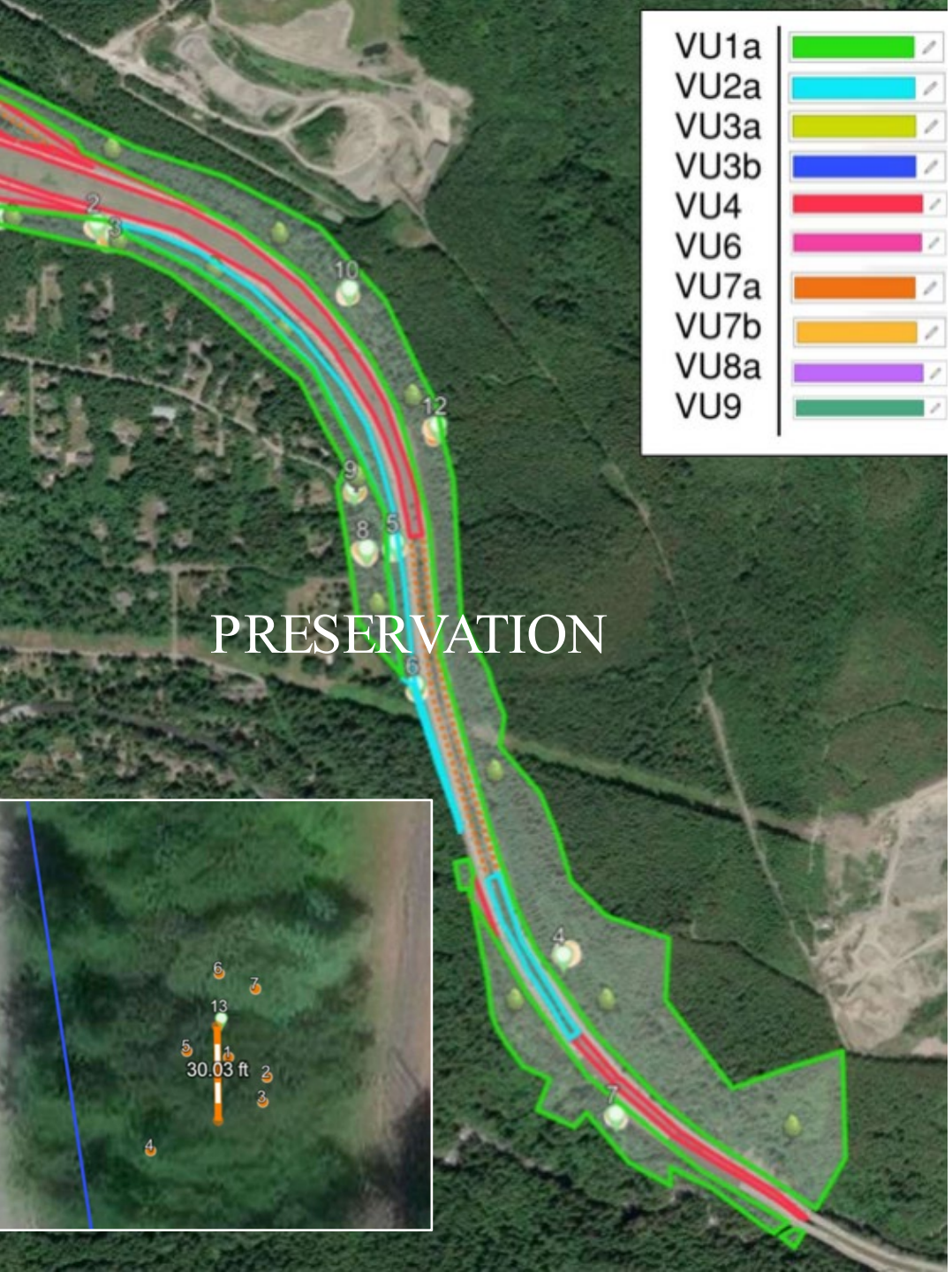
I-90 ROADSIDE FOREST TREE INVENTORY

In this context “Preservation” means:

- Protecting existing canopy
- Expanding our understanding of how to best manage our roadside assets
- And keeping wood and other existing forest resources (soil, duff, etc.) in place.
- Part of this effort is knowing what we have…

In 2024-2025 Arborist Services won an internal grant to do an inventory study of the I-90 corridor tree canopy:

- Taylor and Joe pursued this grant and developed the entire pilot project; planning, budgeting, methodology, implementation and reporting.
- Land management perspective: establishing methods for extrapolating tree data from a plot to understand acres of forested roadside.
- Tree plot method adapted from DNR and Forest Service



RESEARCH: TREE PLOT METHOD AND PURPOSE

Goal to capture information on roadside forest composition in a continuous band of Right-of-Way on I-90 from Seattle to Snoqualmie Pass (limited to Northwest Region).

- 50 miles of roadside, broken into 9 “vegetation units” with sub-units based on canopy cover and growing conditions
  - Constrained by grant budget and personnel time
- Fixed-Radius Plots to extrapolate the roadside composition
  - Method adapted from King County DNR and US Forest Service
  - 30’ fixed-radius tree plots, 65 plots in total
  - Surveyed 1,023 individual trees
  - Species, diameter, age, health/structure rating
- We also collected a range of other data related to roadside composition including – native understory species, invasive weed pressure, soil class, and woody debris.
- We have used the plot method to evaluate the scale of potential impacts to forested roadsides when miles of roadside will be impacted by a project.

THANK YOU

Hailey Mak Mackay

haileymakmackay@wsdot.wa.com

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RESTORATION

TREE REPLACEMENT - Roadside Policy Manual

- Minimum of 3 years of care is required for all newly planted trees
- Maintenance: goal to replace lost canopy SF
- Design and Construction: goal to replace per DBH inches removed
  - Tree Replacement Calculator allows for replacement reduction if irrigation is installed, longer period of maintenance (>3 years), or larger trees are planted
  - Trees 4”-30”: Replace 1 tree per DBH” removed
  - Trees >30”: Replace 6 trees per DBH” removed
    - Or 3 trees per DBH” removed if replacements are 2-gallon

RESTORATION

SPECIES DIVERSITY

- Roadside species shift:
  - Experimenting with mixes of climate adapted introductions and natives in urban settings and maintenance canopy replacement projects
  - Species selection also considers creating a consistent corridor visual screen.
- Creating Climate Resilient Roadsides group
  - BMPs for planting native conifers; brush piles, native edges, creating microclimates
  - Sourcing trees from dryer areas of PNW
  - Climate Smart plant list w/ King Co

SR 9/204 INTERCHANGE IMPROVEMENTS

RESTORE lost canopy by DBH".

- 828 2-gal trees planted on Stage 2
- 600 2-gal trees planted on Stage 3
- ----------
- 1,428 2-gallon trees planted total
- (+ irrigation, 7 years maintenance)
- Species selection, mix of native and ornamental
  - 45%Western redcedar 'Excelsa', 30%vine maple, 20%Persian ironwood, 4%strawberry tree, 1%Sitka spruce
  - Potential for adaptive management: add conifers, increase species diversity

Maintenance: weeding, watering, adaptive management, replacement