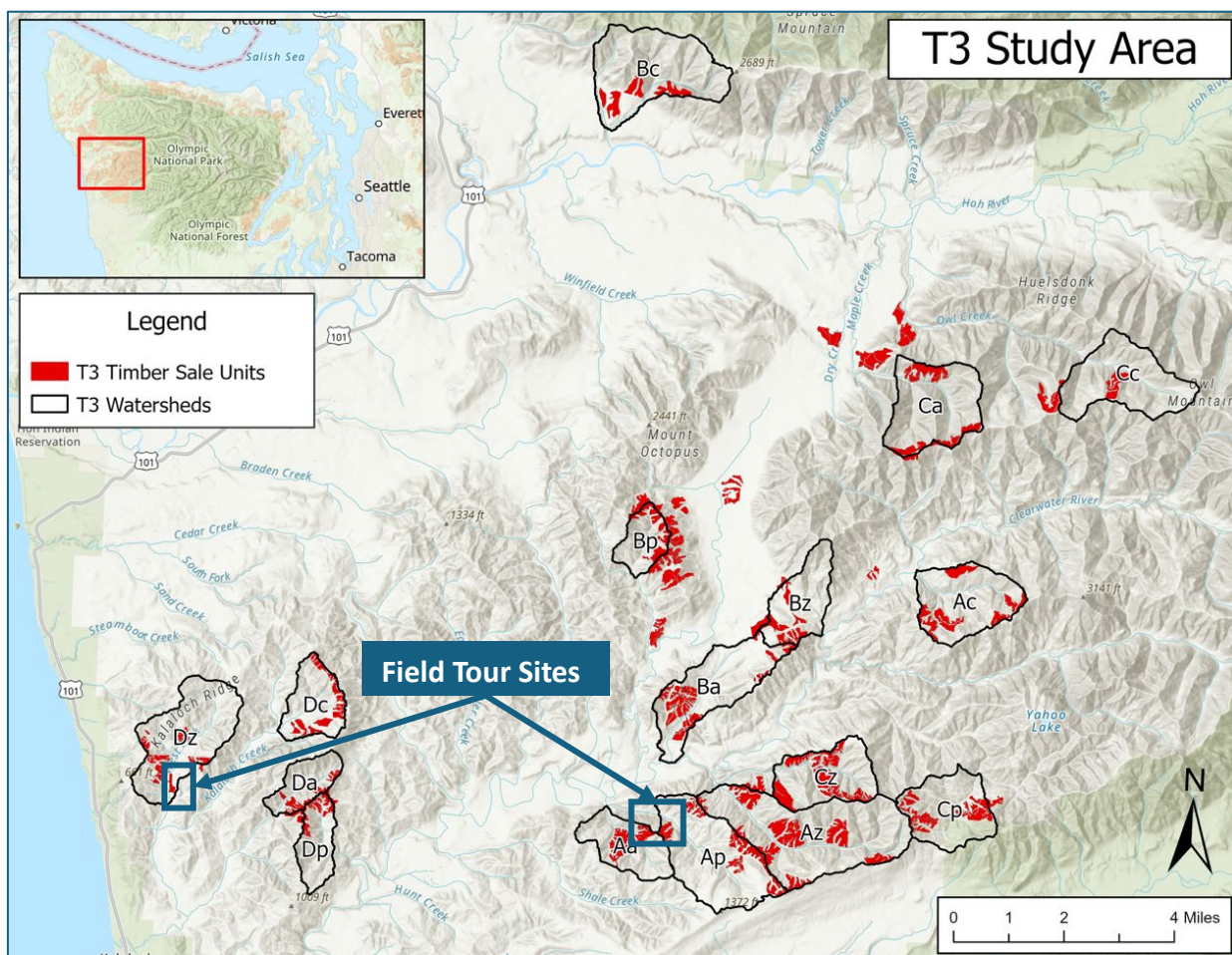




2026 Silviculture Instructors Field Tour

T3 Watershed Experiment in Olympic Experimental State Forest, Washington, USA

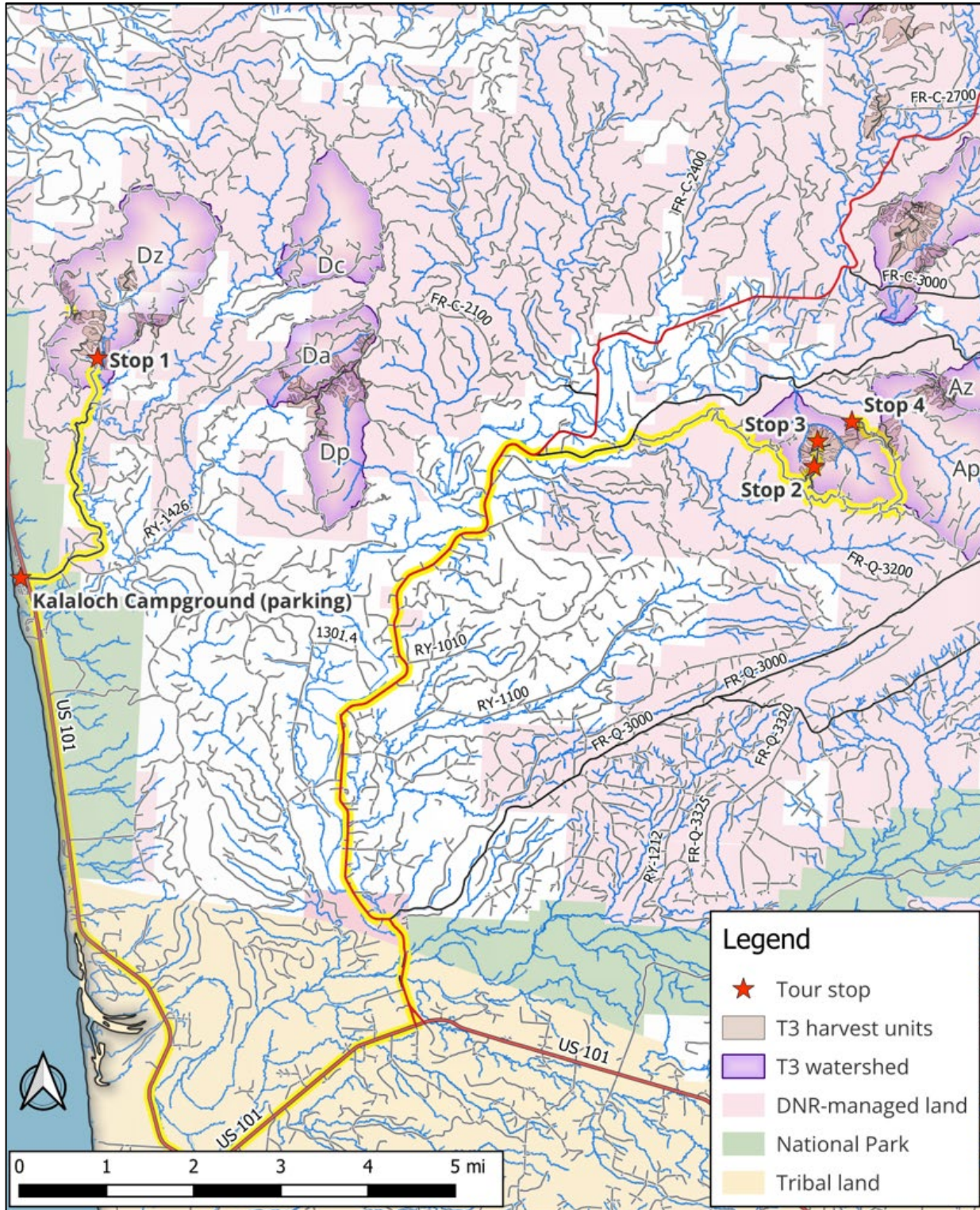
October 5, 2026



Agenda

12:45	Meet at the parking area of the Kalaloch campground
12:45 – 13:00	Introduction, safety orientation, and boarding vehicles
13:00 – 13:15	Travel to riparian habitat restoration site (Stop 1)
13:15 – 14:00	Viewing and discussion at the riparian habitat restoration site
14:00 – 14:30	Travel to tree planting sites (Stops 2 and 3)
14:30 – 15:10	Viewing and discussion at the variable ratio polyculture site
15:10 – 15:40	Viewing and discussion at the variable density planting site
15:40 – 16:00	Travel to cedar regeneration site (Stop 4)
16:00 – 16:40	Viewing and discussion at the cedar regeneration site, concluding remarks
16:40 – 17:30	Socializing on site
17:30 – 18:30	Travel to Quinault Lodge

Map of Field Tour



Prescription Information

Riparian Active Habitat Restoration

Rationale

The Active Habitat Restoration prescription was developed to address current concerns for aquatic species, primarily low abundance of salmon, the low levels of instream wood and the uniformly high level of stream shading. These conditions are unlikely to improve until riparian trees mature, fall into streams, and forest canopies diversify—features that can take over 200 years to develop naturally. Given this lengthy timeline, incorporating active restoration in riparian areas could accelerate the development of these habitat conditions and generate revenue, or at least offset restoration costs.

Goal

Accelerate the development of mid-successional riparian forests and the recovery of stream habitat through active restoration.

The expected short-term effects are increase of light, primary productivity, biomass of aquatic biota and habitat complexity. The expected long-term effects are tree diameter growth and input of key wood pieces to stream

Design

This prescription is implemented downslope from upland harvest units. It includes creation of 30 x 30 m (0.22-acre) canopy gaps extending from the stream to the adjacent upland harvest area at 100-meter intervals along the stream. Within each gap, three wood jams are placed directly into the stream to enhance aquatic habitat. Outside of these gaps, light thinning is implemented to improve forest structure and support long-term habitat development.

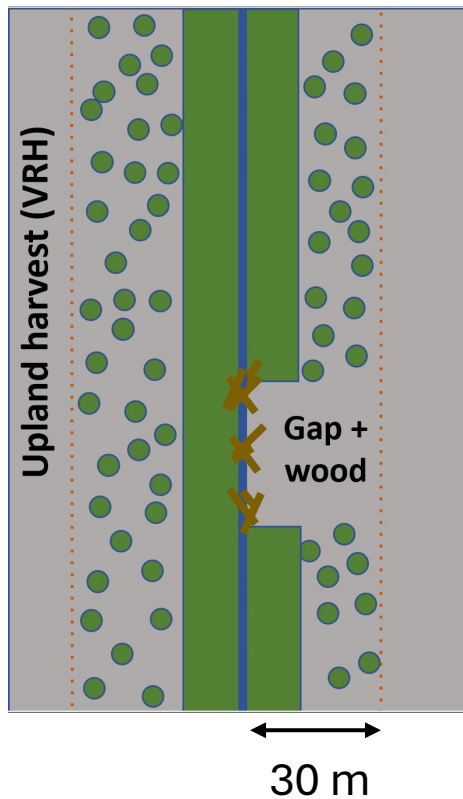
Monitoring

The responses of the stream and riparian habitat and the aquatic biota are monitored at 100-m stream reach. Depending on the monitoring indicator, the field sampling is annual or seasonal.

Implementation Status

Logging at the 4 replicates was completed between the fall 2023 and the summer of 2025. No site preparation and tree planting took place in the experimental units. Pre-treatment sampling began in 2020. Post-treatment sampling began immediately following forest harvest and is planned to continue for at least four years.

Prescription Design



Monitoring Indicators

Environmental monitoring for the Riparian Active Habitat Restoration prescription

<i>Monitoring Indicator</i>	<i>Sampling Frequency</i>
Fish populations	Summer
Fish diets	Summer
Stream habitat (channel morphology, substrate, instream wood)	Summer
Stream temperature	Year-round
Stream temperature in canopy gaps	Summer
Macroinvertebrates	Summer
Light	Summer
Riparian vegetation	Summer
Leaf litter	Spring, late spring, summer, fall
Leaf decomposition	Summer
Periphyton	Spring, late spring, summer, fall
Water chemistry	Summer
Stream discharge	Spring, late spring, summer, fall

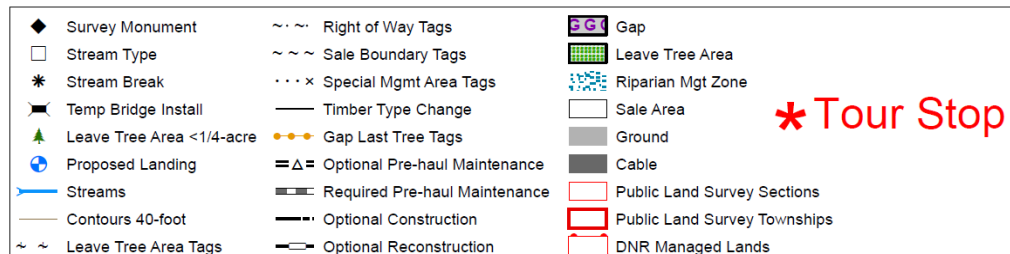
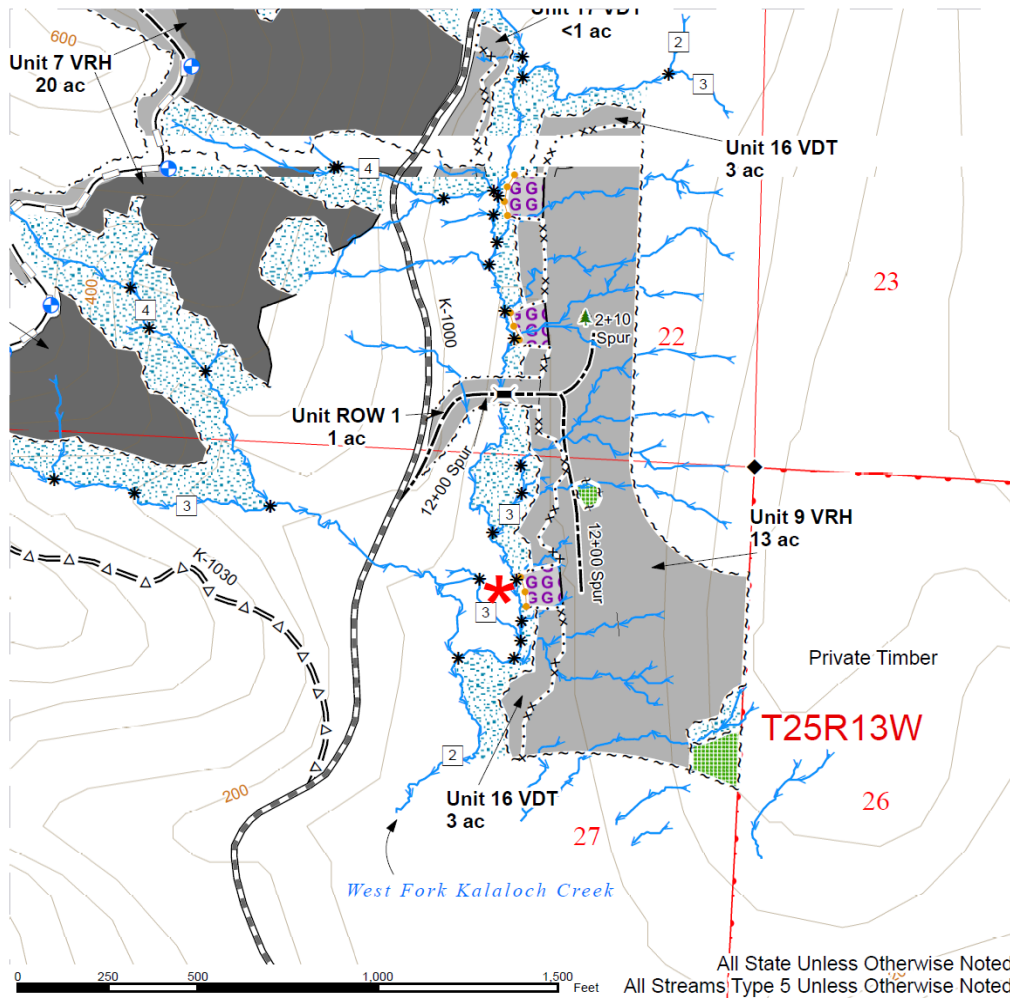
Map

The logging map below shows one of the four replications of the Riparian Active Habitat Restoration prescription, located in the Kalaloch West Timber Sale, Unit 16 with an adjacent upland Variable Retention Harvest in Unit 9.

LOGGING PLAN MAP

SALE NAME: T3 KALALOCH WEST
AGREEMENT#: 30-102259
TOWNSHIP(S): T25R13W, T26R12W, T27R11W, T27R12W
TRUST(S): Common School and Indemnity (3)

REGION: Olympic Region
COUNTY(S): Jefferson
ELEVATION RGE: 180'-920'



Prepared By: mcas490

Modification Date: mcas490 4/11/2023

Western Redcedar-Red Alder Variable Ratio Polyculture

Rationale

This prescription aims to produce net revenue from rotations of high-value western redcedar and red alder. For those ratios with alder present, two alder rotations will occur for every one cedar rotation with rotation lengths of 30 to 35 years for alder and 60 to 70 years for cedar to maximize their timber values. At year 60 to 70, a new option becomes available to switch to a late-seral trajectory focused on large cedars.

Goals

To determine how varying proportions of cedar and alder influence survival and growth of each tree species and the overall productivity of the stand.

To determine how the increasing proportions of alder influence total ecosystem nitrogen, primarily in soils, but also in aboveground biomass.

Design

The five tested treatments are ratios of western redcedar (WRC) to red alder (RA) planted at a density of 600 trees per acre. The treatments are 1) 100% WRC, 2) 75% WRC to 25% RA, 3) 50% WRC to 50% RA, 4) 25% WRC to 75% RA, and 5) 100% RA. The area of each treatment is about 6 acres and all treatments are replicated 4 times across 4 different watersheds.

Monitoring

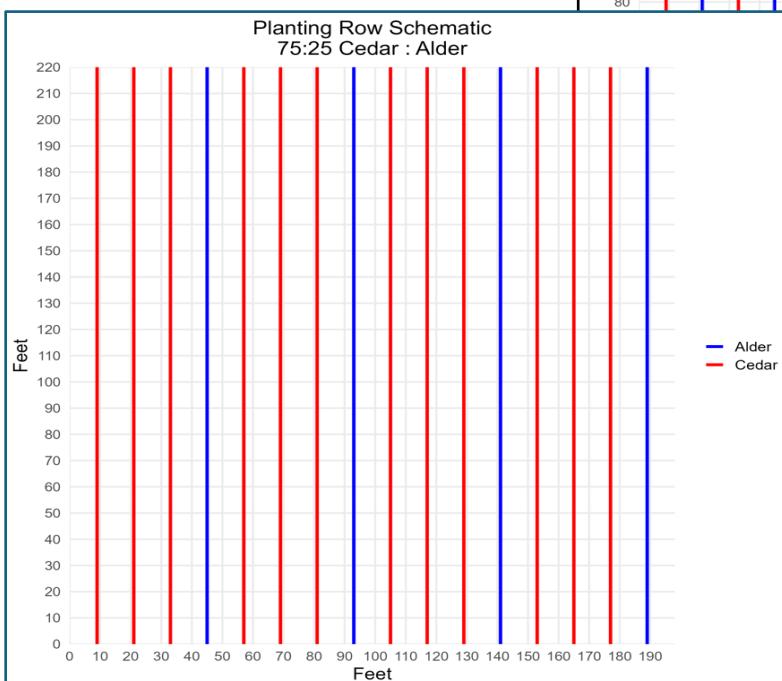
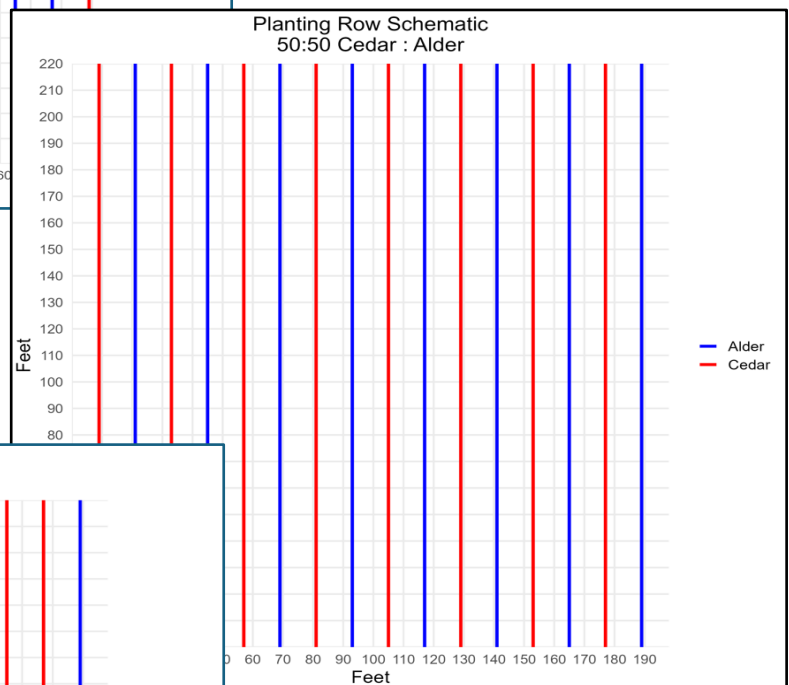
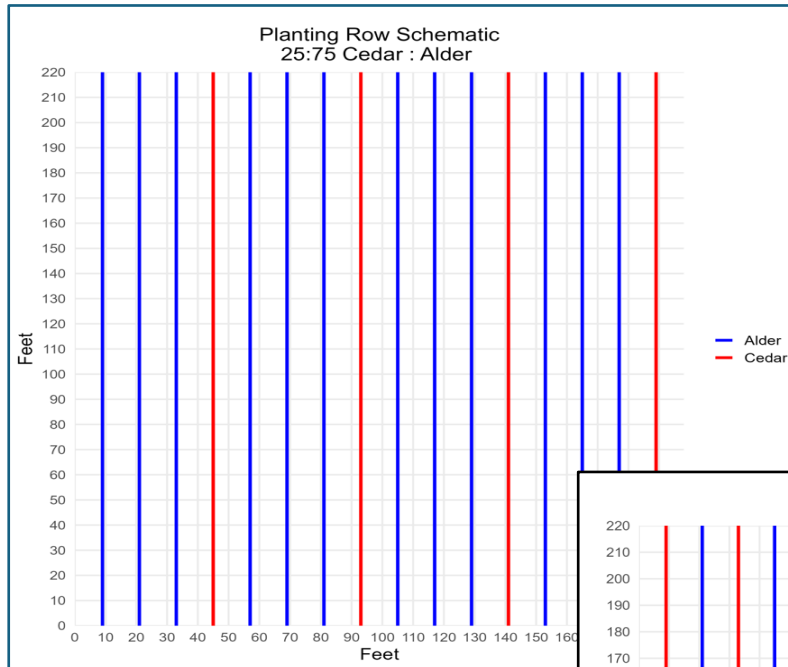
All trees within a 1/2-acre measurement plot in each replication will be initially tagged and their survival and growth measured for the duration of the study. Tree ingrowth will be tracked. Mineral soil sampling will measure the nitrogen content hypothesized to increase with planted alder.

Implementation Status

After the logging and site preparation were completed in the experimental sites in 2025, all cedar and alder seedlings were planted in the spring of 2026. The first round of monitoring to obtain baseline measurements on the cedar and alder is scheduled for October of 2026. Preharvest soil sampling took place in 2022. The mineral soil will be sampled every 5 years post planting.

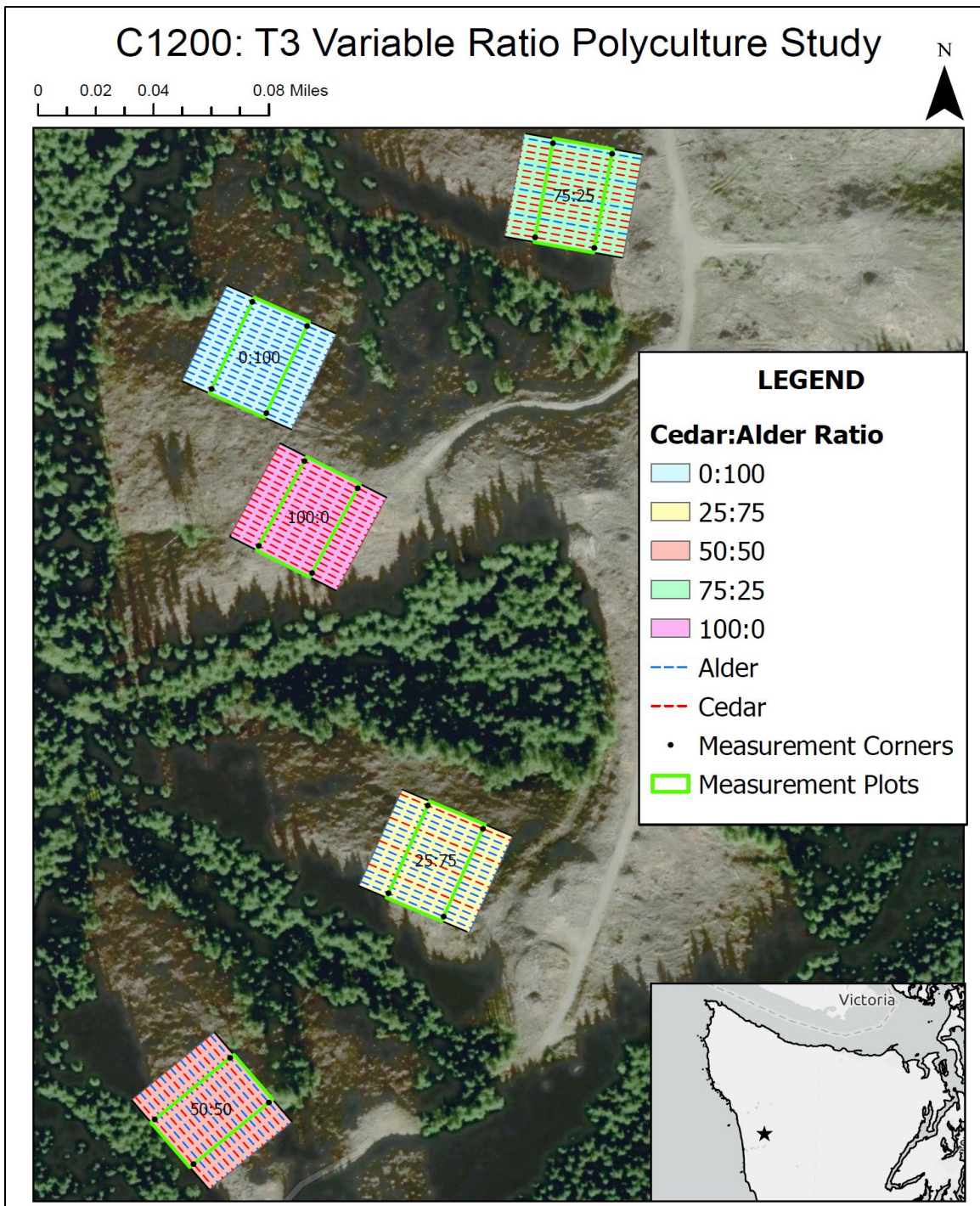
Planting Schematics

Below is the spatial arrangement of planted cedar and alder for three of the five polyculture treatments. Treatments with 100% alder and 100% cedar are not shown.



Map

The map below shows one of the four replications of the Variable Ratio Polyculture prescription, located in the C-1200 Timber Sale, Unit 1. The squares indicate the 1-acre monitoring plots for each treatment. The nested rectangles indicate measurement plots where all tree seedlings are tagged.



Ethnoforestry Variable Density Planting

Rationale

This prescription was generated through stakeholder and tribal engagement and reflects growing concerns about elk and deer populations and a lack of available forage. To address this, the prescription is attempting to extend the early-seral stage, typically characterized by a diverse understory of grasses, forbs, and flowering shrubs, for a longer period and manage for plants that are beneficial to wildlife, from pollinators to ungulates. Douglas-fir is planted in various clump sizes and the gaps between the clumps are managed to promote understory diversity and limit natural seedling regeneration.

Goal

To evaluate the survival and growth of trees in the various clumping patterns; determine how tree spatial arrangement influences various growth attributes including crown length, tree height, and diameter; and evaluate the development of the understory vegetation and determine how it differs between the various interstitial sizes and over time.

Design

There are five different Douglas-fir clumping arrangements: 1) 4 trees per clump at 4 ft. spacing, 2) 4 trees per clump at 6 ft. spacing, 3) 16 trees per clump at 8 ft. spacing, 4) 36 trees per clump at 8 ft. spacing, and 5) 36 trees per clump at 10 ft. spacing. These various clumping arrangements result in gap sizes ranging from 26 ft. to 80 ft. between clumps. The area of each treatment is about 8 acres and all treatments are replicated 4 times across 4 watersheds.

Monitoring

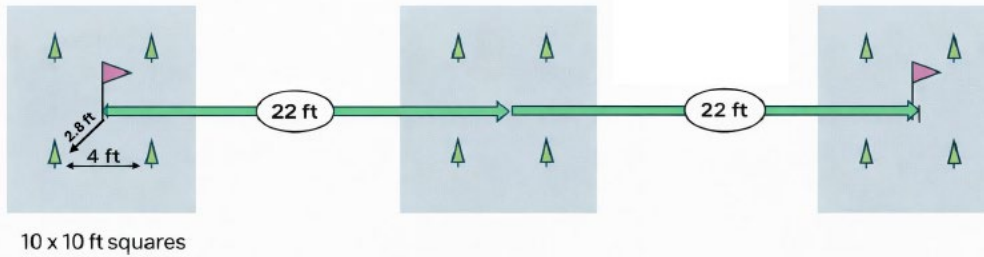
To determine where each clump is located, remote sensing data, including drone LiDAR and multispectral imagery, were acquired in the spring of 2026 followed by the first round of monitoring by ground crews in the summer. Tree measurement plots representing all clump sizes and vegetation plots along each transect were sampled.

Implementation Status

After logging was completed in the experimental sites in 2025, all Douglas-fir seedlings were planted in January-February of 2026. The first round of monitoring to get baseline measurements on the seedlings took place in the summer of 2026.

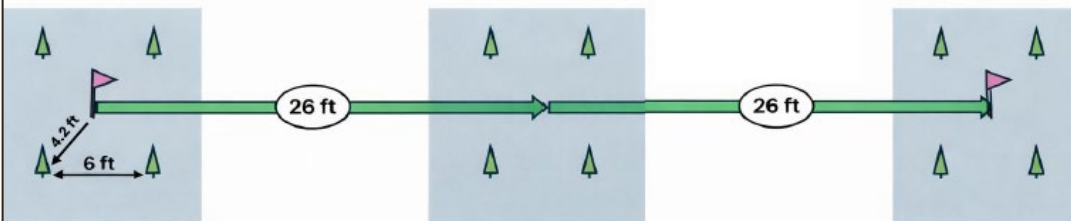
Planting Schematics

4 trees @ 4 ft

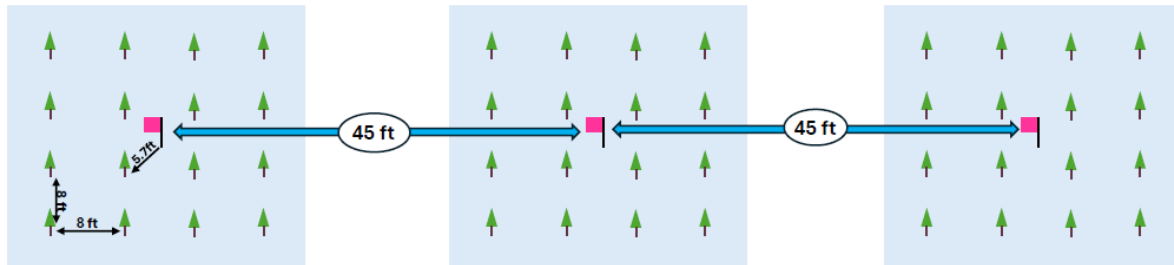


4 trees per clump
 Planted at 4 ft apart = 350 TPA
 Clumps at 22 ft apart (88 clumps/acre)

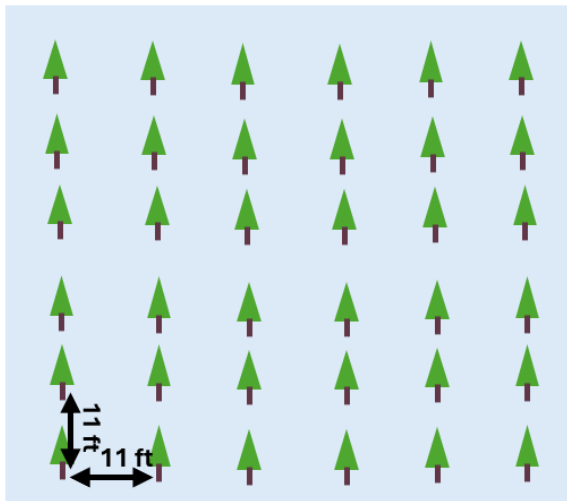
4 trees @ 6 ft



4 trees per clump
 Planted at 6 ft apart = 255 TPA
 Clumps at 26 ft apart (64 clumps/acre)

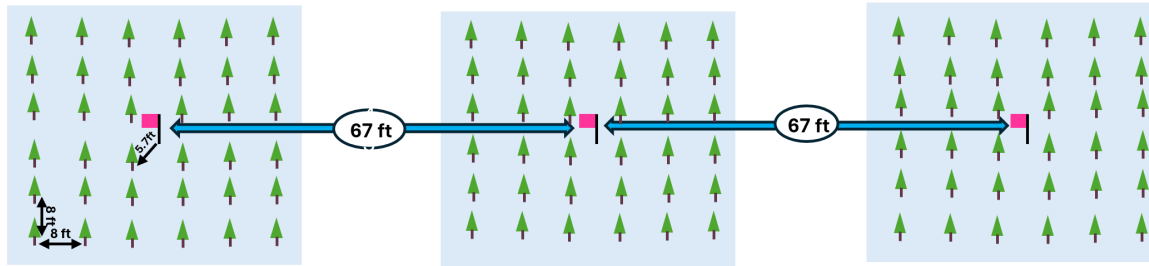
16 Trees @ 8ft Spacing

16 trees per clump
Planted at 8 ft apart - (340 TPA)
Clumps are 45 ft apart -(22 clumps/ acre)

Control

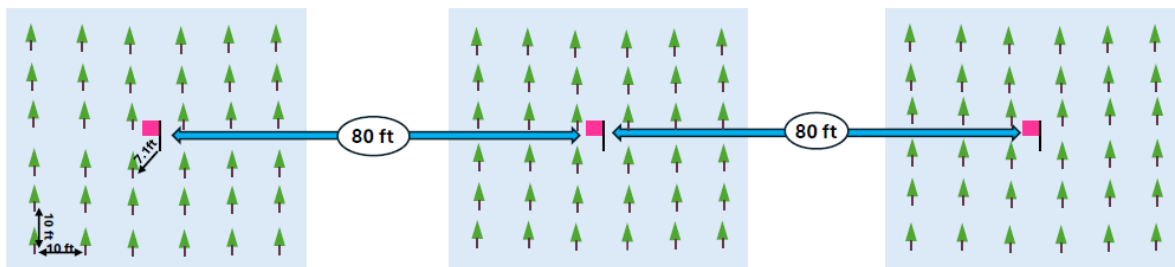
350 trees per acre
Planted at 11 ft spacing

36 Trees @ 8ft Spacing



36 trees per clump
Planted at 8 ft apart - (350 TPA)
Clumps are 67 ft apart - (10 clumps/ acre)

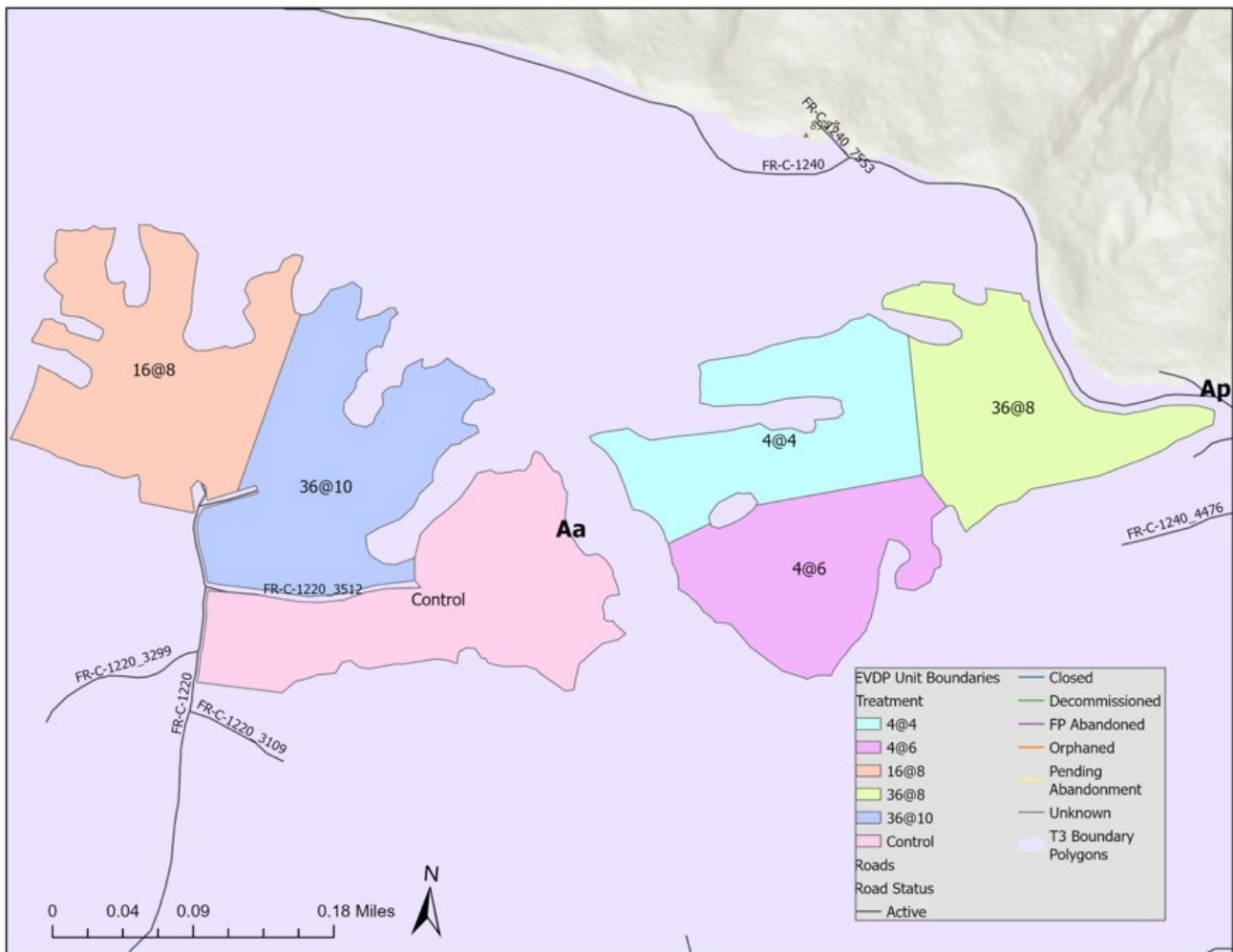
36 Trees @ 10ft Spacing



36 trees per clump
Planted at 10 ft apart - (350 TPA)
Clumps are 80 ft apart - (7 clumps/ acre)

Map

The map below shows one of the four replications of the Ethnoforestry Variable Density Planting prescription, located in the C-1200 Timber Sale, units 1 and 4.



Western Redcedar Regeneration

Rationale

The Redcedar Regeneration sub-study was not part of the original T3 Watershed Experiment upland study plan. However, significant interest from stakeholders on learning how to grow western redcedar under the pressure of ungulate browsing resulted in the formation of the Cedar Learning Group. A University of Washington master's student took the lead on developing this project, and with the guidance of many experts in the group, finalized a study plan.

Goal

To test different silvicultural treatments designed to minimize ungulate browsing and produce replicable, economically feasible results for regeneration of Western Redcedar at an operational scale.

Design

This sub-study compares four methods of deterring ungulate browsing and control. All treatments and the control are planted with 484 cedar seedlings per acre. The treatments consist of 1) 8 ft. wildlife fencing, 2) application of the wildlife repellent TRICO Pro, 3) planting Sitka spruce and cedar in the same hole, and 4) using plant protection tubes. The area of each treatment is about 1.5 acres, and all treatments are replicated 4 times across 4 watersheds.

Monitoring

Monitoring will occur annually in the spring through year 7 post-planting. Data will be collected on seedling height, diameter (on a subset of seedlings), browsing, and site conditions. As funding allows, a summer sampling of competing vegetation will occur. Free-to-grow status will be assessed during years 5 and 6 following planting. Seedlings and silviculture activities costs are recorded.

Implementation Status

After the logging and site preparation were completed in the experimental sites in 2025, all cedar and spruce seedlings were planted in March of 2026. Fences were built in advance, and the repellent protection was applied at, or shortly after, planting. The first round of monitoring was completed at the time of planting to obtain baseline measurements on the cedar and spruce.

Map

Below is a map of one of the 4 replications of the Cedar Regeneration sub-study, located in the C-1200 Timber Sale, Unit 4. The dots indicate 0.02 ha (0.05 ac) measurement plots for monitoring each treatment, where all trees are tagged within 8 m (26.3 ft) radius.

