

# **Fort Vegetation Management Project**

## **Fort II Pre Ad Draft Marking guides**

The Fort Project is located within the range of the Northern Spotted Owl and forest management recommendations from the Final Recovery Plan for the Northern Spotted Owl (USFWS, 2008) are incorporated into the prescriptions. Spotted owl habitat will be maintained and enhanced by applying uneven treatments within and among stands, favoring large fire resistant conifer trees, and retaining all levels of the canopy.

Designation by prescription (DXP) will be used by the purchaser to determine trees to retain and trees to remove.

Use the following guidelines for tree thinning in all units of Fort Timber Sale. Units will be harvested down to 4" DBH and most will be whip felled to remove the majority of the 0-4" trees post timber sale. The overall treatment being applied is a variable density thinning from below to retain the largest and best quality trees of desired species.

The desired residual basal area is an average and will fluctuate throughout the thinning of the units due to stand variability. Do not force in undesirable species or tree characteristics to obtain desired basal area or over compensate leave basal area with quality leave trees.

### Objectives:

1. Maintain and increase numbers of large trees.
2. Reduce risk of high intensity stand replacing wildfire.
3. Reduce stand density to improve forest health.
4. Maintain and improve long-term scenic quality.
5. Maintain and improve habitat conditions for wildlife.
6. Remove lodgepole encroachment in stands that were historically dominated by large ponderosa pine.
7. Increase heterogeneity by leaving single trees, clumps of trees, untreated areas, and small openings.
8. Retain, enhance, and protect all old growth trees.
9. Enhance meadows and hardwood stands by removing lodgepole encroachment.

### General Silviculture Prescription

Thin from below to variable densities retaining the largest, most vigorous fire resistant conifers of preferred species. Clumping leave trees as well as retaining some patches of the less than 4" DBH trees will provide vertical and horizontal structure for wildlife habitat.

## **Thinning Guidelines for Fort Vegetation Management Project Designation by Prescription (DXP)**

### **Thinning Guides Common to all Fort Units**

#### **Tree Selection**

1. The overall treatment to be applied is a variable density thinning from below to retain the largest and best quality trees of desired species.
2. Leave all trees greater than or equal to 30" DBH regardless of stocking levels, damage, insects, or disease. Residual stocking may exceed the target basal area per acre range with trees larger than the maximum allowable cut tree DBH.
3. After leaving all trees greater than or equal to the maximum cut DBH, make up the remainder of the desired residual stocking by retaining the best available leave trees.
4. Leave the largest, healthiest, most vigorous, least defective trees available from mainly the dominant and co-dominant crown classes. Retain all old growth trees. Leave intermediate and suppressed trees if they cannot be removed without damaging the leave trees.
5. Species preference takes priority over preferred tree characteristics. Ponderosa pine, Douglas-fir, sugar pine and incense cedar are preferred species for retention. White fir and lodgepole pine are targeted for removal.
6. Favor DF, SP, and IC for retention over PP when these species are a minor component. Leave WF and LP where needed for stocking.

#### **Spatial Arrangement of Leave Trees**

1. Leave trees will be retained in a variable and irregular spatial arrangement by favoring the largest, most vigorous trees, by leaving clumps of desirable trees, and by removing undesirable conifers around large ponderosa pine and other desired species.
2. Leave single trees, clumps of 2 or more trees and create small openings to introduce heterogeneity into the stand. Leave WF and LP in clumps when desirable species are not available.
3. Look for natural arrangements of trees from which to build clumps similar to what you might find in historic old growth clumps. Use the largest trees in any particular location as the focal point for building clumps of trees. Create separation between clumps by deliberately removing less desirable conifers between clumps to create small openings.

4. Approximately 10 percent of the stand should be left in small openings that are pre-existing or created by removing undesirable conifers.
5. Leave two or more trees together when their crowns complement each other rather than leaving trees with one sided crowns. When two or more trees are growing too close together to remove one without damaging the other, either cut or retain the whole clump.
6. Culture around large old PP, SP, IC, and DF by removing competing WF and LP within a diameter plus 10 foot radius (diameter of leave tree in inches converted to feet plus 10 feet). The exception to this would be when the large old tree is in poor condition and does not appear that it will last very long.

**Density of Leave Trees**

1. Basal area in square feet per acre will be used to determine residual stocking for trees greater than 10 inches DBH. The desired residual basal area is on a sliding scale and will fluctuate throughout the thinning of the units due to stand variability with more basal area left when leave trees are large and less when leave trees are small. See table below for ponderosa pine dominated stands.

Average Residual DBH	Desired Residual BA/Acre
10" – 12"	50-60
14" – 16"	70-80
18" - 20"	90-100
22" – 24"	110-120
26" - 28"	130-140

2. For smaller trees (less than 10" DBH), use average variable spacing while still leaving the best quality trees. Average variable spacing can range from 20 to 30 feet depending on the size of the leave trees.
3. Occasional good form small trees less than 4" DBH can be left as singles or in clumps to meet irregular spatial arrangement objectives of clumps and variable densities and to retain both vertical and horizontal structure.

**Aspen Patches**

1. An aspen patch is defined as 10 or more aspen stems at least 5 feet tall within a 10 foot spacing distance. Leave no conifer stocking within 40 feet of aspen patches unless the conifers are larger than 30" DBH or high quality trees of desirable species.
2. However an opening created around an aspen patch should not exceed 1/2 acre (83' radius). Leave 20-40 BA/Acre in desirable conifers when areas of aspen exceed 1/2 acre.

**Snags/Replacement Snags**

1. Green cull trees should be retained when needed for snag replacement trees. Green tree replacements expected to die within 10 years do not count toward leave basal area.
2. All snags 10.0" DBH and larger will be retained unless determined to be a hazard during the logging operation. Extra trees may be left next to high quality snags.



## Thinning Guides for Specific Stand Types

**Ponderosa Pine Stands:** These are stands where the desired leave stocking can be met with ponderosa pine.

1. Follow the general thinning guidelines to determine average leave basal area.
2. Where stands are homogeneous, introduce heterogeneity into the stand by leaving individuals, clumps, and creating small openings.
3. Remove most of the lodgepole and white fir component.

**Ponderosa/ Lodgepole Eco tone Stands:** These stands are a mixture of ponderosa and lodgepole pine. The objective is to reduce lodgepole and increase the percentage of ponderosa pine.

1. Favor ponderosa pine for leave over lodgepole pine.
2. Where ponderosa pine is available for residual stocking, follow the general thinning guidelines.
3. Where there is little or no ponderosa pine available, leave the largest/best quality lodgepole at an average leave basal area of 40 square feet per acre as individuals and clumps.
4. Leave smaller good quality ponderosa and cut larger mature lodgepole.

**Lodgepole Pine Stands:** Historically, these stands were a mosaic of various sizes, ages, and densities of lodgepole pine created by a periodic fire regime. The exclusion of fire has allowed the stands to grow older, denser, homogenous, and overstocked with larger lodgepole trees. The objective is to retain a legacy of large diameter structure and introduce heterogeneity as the next stand develops from natural regeneration.

1. Leave 30-40 square feet of basal area of the best available lodgepole as individual trees, clumps, and patches. Openings up to ½ acre may be created to remove low quality lodgepole.
2. There usually are not many high quality trees per acre in a lodgepole stand, so leave the best available, relative to the trees in the immediate area.

**Pine Associated Stands:** These stands are a mixture of ponderosa pine, Douglas-fir, sugar pine, white fir, and incense cedar.

1. Follow the general thinning guidelines to determine average leave basal area.
2. Favor ponderosa pine, Douglas-fir, incense cedar, and sugar pine over white fir and lodgepole pine.
3. Favor the least represented desired species of acceptable quality to help maintain diversity in the stand.

**Plantations (Unit 12R):** This plantation was planted with LP approximately 25 years ago. Natural regeneration has occurred adding to the density of trees.

1. Leave approximately 70 trees per acre (average 25 foot variable spacing) of the best available trees.
2. Leave individual trees, clumps, and create small openings to introduce heterogeneity to the stand.
3. Remove lodgepole pine from around ponderosa pine for a diameter plus 10 feet radial thin.
4. Remove all lodgepole within the natural meadow and around aspen patches.

**Hardwood stands and meadows (Units 15R and 17R):**

1. Remove lodgepole encroachment from around hardwood patches and meadows.
2. Remove all lodgepole pine from meadows and approximately 100 feet beyond the natural meadow edge.
3. Follow the general thinning guides for other species and for lodgepole beyond 100 feet.