SILVICULTURE PRESCRIPTION FOR SHADY REST - FOREST HEALTH 2026

Written September 2025
Elisabeth McElwee and Melissa Boyd

FOREST TYPES AND STAND CONDITIONS:

There are three forest types present in the Shady 2026 Forest Health Project: Jeffrey pine, Dry Mixed Conifer (DMC), and Lodgepole pine. Many aspects of this prescription are similar across forest types (e.g., goals, tree DBH cap) but also vary in some respects.

The Project area varies in stand density and size class with some areas that have dense understory growth while others only have overstory trees where previous thinning has been completed. Dead trees and downed wood are also prevalent in some locations but are scattered in the project area. Jeffrey pine beetle and mountain pine beetle are active in denser parts of the stand. The Project area is in an Infrastructure Buffer/Wildland Urban Interface.

GOALS:

- Improve community wildfire resilience.
- Enhance forest health, resistance, and resilience.
- Prepare the forest for the reintroduction of beneficial fire (i.e., low severity).

DESIRED FUTURE CONDITIONS:

- Healthy forest where residual trees are vigorous and resilient to current and future stressors, such as pests, pathogens, drought, and wildfire.
- Forest is uneven-aged and has both vertical and horizontal heterogeneity.
- Stand is composed of an Individual, Clump, and Opening pattern (ICO). E.g., some areas will be left thinner and some heavier depending on current structure, species distribution, tree health. Each component of the ICO pattern is irregularly spaced (e.g., clumps are not all in the same location).
- Old-growth trees (e.g., those that have thick, segmented, or plate-like bark, large diameter branches, flattened top, irregularly shaped crown, are large in DBH) are prevalent and have little to no ladder fuels.
- The density of snags and surface fuel loads is low to nonexistent.
- Stand structure supports and promotes low-severity wildfire (e.g., high canopy base height, low canopy density), and low-severity prescribed fire is regularly implemented to maintain forest health and structure.

SILVICULTURAL PRESCRIPTION:

Density will be reduced via variable density thinning to achieve Desired Future Conditions Above. See *Table 1* for details.

Table 1. Stand Targets in the ICO Pattern

ICO Component	Description	Basal area (BA) & Trees per acre (TPA)	Other Targets
Forest Matrix and Individuals	- Matrix areas are characterized by scattered individuals and irregularly spaced trees that provide continuity between clumps and openings. - Individual trees are large, healthy, and vigorous; oftentimes these are old-growth trees. - ***Will cover 70-80% of the Project area.***	- Thin live trees > 9.9" DBH to a residual BA in Jeffrey pine and DMC of 60-120 ft^2/acre, averaging 80-100 ft^2/acre*; in Lodgepole pine to 70-130 ft^2/acre, averaging 90-110 ft^2/acre*. - Instead of the target BA, thin small-diameter trees (< 10" DBH) in Jeffrey pine and DMC to 40-65 TPA; 70-95 TPA for Lodgepole pine. These targets are the total residual TPA of all trees, including trees > 10 inches DBH.	- Individuals: Remove all trees within 15 feet of the dripline of healthy trees > 30 inches DBH. Trees 20 – 30 inches can be retained and treated as individuals if vigorous, tall, in a productive location, not part of a healthy clump, and/or if trees > 30 inches DBH are not present. - In the Jeffrey pine forest type, only Jeffrey pine will be treated as an individual. - Trees will be spaced irregularly, avoiding a uniform pattern.
Clumps	- Trees with interlocking crowns - Largest and healthiest trees in the same 5-inch diameter class. - Generally, trees > 15 inches DBH will be used to create clumps. - Not the same as a leave area: standing dead and ladder fuels will be removed. - ***Will cover 10-20% of the Project area***	- Can have higher BA/TPA than other ICO components. *	- Generally composed of 2-3 trees; some larger clumps can be retained (up to 5 trees in Jeffrey pine and DMC/up to 9 trees in Lodgepole pine). - Larger clumps (> 3 trees) will be limited. - Limit clumps within 100 feet of infrastructure.
Openings	- Areas with little to no trees. - Range in size from 0.1 – 0.5 acres but can be up to 1.5 acres. - Incorporate a variety of shapes. ***- Will cover 10% of the Project area.***	- BA/TPA can be as low as 0.	- Location: Landings, expansion of existing openings, areas with dense tree mortality, areas where suppressed trees are prevalent, areas where trees do not appear to be growing vigorously, near dense areas (e.g., tree clumps), areas with healthy tree regeneration.
* Lodgepole pine adjacent to active mountain pine beetle would be thinned to a maximum of 100 ft^2/acre BA and Jeffrey pine adjacent to Jeffrey pine beetle to a maximum of 80 ft^2/acre BA.			
• **Snags:** Remove all snags regardless of DBH. • **Surface Fuel Loads:** Reduce surface fuel loads to <20 tons per acre by removing all woody debris up to 25 inches in diameter.			

Selecting Trees for Thinning

- No live trees greater than 29.9 inches DBH will be removed.
- Focus on retaining and protecting healthy, old-growth trees.
- Remove small trees beneath healthy, larger trees that could act as ladder fuels.
- Next to declining old trees, focus on retaining healthy intermediate trees even if they are in the dripline of the larger, declining tree.
- Select "desirable trees" and those that are healthy and more vigorous than surrounding trees for retainment. This includes selecting trees for removal or retainment based on crown ratio, crown class, and additional metrics of tree health including tree color, needle length (i.e., longer needles = healthier), needle retention, and dead branch abundance. See Table 2 for details.
- Selectively remove intermediate and suppressed trees and retain codominants and dominants that are healthy and vigorous. However, smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity.
- Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection.
- Unless necessary to meet basal area targets, retain healthy and vigorous trees larger than 20 inches DBH with existing cavities, dead tops, lightning scars, or structures beneficial to wildlife and any trees with raptor nests.

Species preference for removal in Jeffrey pine:

1. White fir
2. Jeffrey pine

Species preference for removal in DMC:

1. Lodgepole pine
2. Red fir
3. White fir
4. Jeffrey pine

Species preference for removal in Lodgepole pine:

1. White fir
2. Red fir
3. Lodgepole pine
4. Jeffrey pine

Table 2. Evaluation criteria for designation of desirable, acceptable, and non-desirable trees.

Characteristic	Desirable	Acceptable	Non-desirable
Live crown ratio	>40% for Jeffrey pine; >50% for other species	25 – 40% for Jeffrey pine 35 – 50% for other species	<25% for Jeffrey pine <35% for other species
Crown class	Dominant or co-dominant	Intermediate	Suppressed
Form defects	Only if healthy, vigorous, and potential wildlife trees. See 'Selecting Trees for Thinning'	Minor (no significant weakening or toppling of the tree anticipated resulting from crooks, sweeps, or tight forks, etc.)	Major (significant weakening or toppling of tree anticipated; severe sweeps, crooks, or forks in lower 2/3 of tree)
Damaging agents	None	Bark missing from <50% of tree bole Some evidence of beetle activity along tree bole	Bark missing from >50% of tree bole Beetle activity along >1/3 of the bole