Exhibit-S Designation by description

Palmer Marking Guide

Palmer Fire and Disease Salvage

Guideline Objectives: *These guidelines will provide a means to identify and remove trees that were killed or severely injured as a result of fire and/or disease within the Palmer Fire footprint on BLM lands designated for salvage.*

The Palmer Fire burned in August 2020. Trees were primarily ponderosa pine, Douglas-fir and western larch.

These guidelines are based on the fire injured tree marking guidelines developed for Region 6.

The guideline criteria. Trees with a 60% or lower probability of survival (40% probability of mortality) would be removed. For Douglas fir this would translate to a crown scorch of 60% or greater (pre-fire crown volume), for Ponderosa pine, crown scorch would be 80% or greater. Western larch trees would not be removed when the only evaluation criteria is crown scorch. This threshold was selected for this project to meet the management objectives of: 1) removing trees that were killed or that have a high probability of mortality to recover their economic value; and 2) retaining those trees that have a high probability of survival to provide forest cover as a seed source for natural regeneration and wildlife habitat.

Note: There is an example for marking guidelines. Table 1 consists of marking guidelines using percent volume crown scorch from "Assessment and Marking Guidelines for fire-injured trees in Washington and Oregon" (Schaupp et.al. 2020).

Mark for removal any tree that meets the following criteria (with the exception that all trees with evidence of wildlife cavities would be retained for wildlife purposes).

1. Any tree with no green needles (does not include those designated for snag retention).
2. For all species, trees should be marked for removal if any combination of boring dust or frass (in bark crevices, webbing along the bole, or that accumulates at the base of the trees), pitch tubes with pink or reddish boring dust associated with them, pouch fungus conks is present over at least 1/3 of the bole circumference. This specifically excludes basal attacks by the red turpentine beetle on yellow pines (large pitch tubes associated with coarse boring dust generally restricted to the lower 2 to 4 feet of the bole or woodpecker activity restricted to this area) and when the above indicators are only associated with wounds, old fire scars, etc. The presence or absence of red turpentine beetle pitch tubes will be accounted for in criteria #3.
3. Any tree that meets or exceeds the following fire-injured conifer mortality guidelines (Table 1) at the Pm = 0.4 level. This assessment will be made by visually estimating the percent of the original pre-fire crown length that was killed (ponderosa pine and white fir), the presence or absence of red turpentine beetle pitch tubes (ponderosa pine) and tree diameter (ponderosa pine and white fir).

4. Green Trees, unburned**:** Removal of mistletoe infected Douglas fir and western larch trees.

Table 1: Criteria for marking fire-injured tree at the Pm=0.4 level using only PCVS as a factor.

Ponderosa Pine	
DBH	**Minimum Percent Crown Volume Scorched (PCVS)**
2” – 70”	**80**
Douglas-fir	
DBH	**Minimum PCVS**
4” – 41”	**60**