Appendix I
Fire Behavior Fuel Models

Fire behavior fuel models describe fuel properties and are used as inputs to calculations of fire behavior potential. They are organized into 4 groups: grass, shrub, timber, and slash. The differences in fire behavior are related to the fuel load and its distribution among the fuel particle size classes, and its vertical distribution (Anderson, 1982).

- **Fuel model 1:** grass or grass/shrub combinations that have less than 1/3 of the area as timber. Fire spread is governed by the fine, very porous continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. This fuel model is applied to hay land, and grassland.

- **Fuel model 2:** open ponderosa pine, with grass and litter as the carrier of fire. Such stands may include clumps of fuel that generate high intensities and produce fire brands. This fuel type would have frequent, 5 to 25 year, low severity fires that were non lethal. This fuel model is applied to open ponderosa pine in areas of grassy understories.

- **Fuel model 3:** stands are tall grasses that fires display high rates of spread under the influence of wind. Wind may drive fire into the heights of the grass and across standing water. This fuel model is applied to the wet meadows along Little Slate Creek.

- **Fuel model 5:** typically brush with or without overstory. Regenerated stands after disturbance of fire or harvesting and burning. Stands normally have large green fuel component. Fires are generally not very intense because surface fuel loads are light. This fuel model is applied to seedling, sapling, shrub, and moist herbaceous vegetation.

- **Fuel model 8:** is closed canopy timber stands of conifers having a compact litter layer. Slow-burning ground fires with low flame lengths are generally the case, although fire may encounter an occasional "jackpot" or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidities, and high winds do the fuels pose fire hazards. This fuel model was applied to stands of medium trees of low to moderate canopy density.

- **Fuel model 10:** stands within this fuel model have greater fire intensity than other timber stands. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Stands of ponderosa pine that have been absent of disturbance allowing shade tolerant species to establish in the understory would fall within this fuel model. Dead-down fuels include greater quantities of 3-inch or larger limbwood resulting from overmaturity or natural events that create a large load of dead material on the forest floor. Fires in model 10 are at the upper limit of control by direct attack, wind and dry conditions can lead to a stand replacement fire. This model is applied to large trees where not in open stands with grassy understories, and to medium trees with high canopy cover, likely indicative of ladder fuels and accumulated dead and down material.