

Appendix 4

Effect of fire severity and management actions on forest structure and fuel models.

Table A4.1. Effect of fire severity and management on average tree size, canopy cover, layering, and fuels in state-transition vegetation classes. QMD = quadratic mean diameter.

Fire severity / management activity	Effect of disturbance / management activity			
	Size (QMD)	Canopy cover	Number of canopy layers	Fuels
Surface fire (includes prescribed fire)	No change	No change	Reduces multi-layered states to single layer for some vegetation states	Reduces surface fuels; transitions to fuel model 181 or 182 (low load compact litter)
Mixed-severity fire	No change	Decreases cover by one or two classes (e.g., high to moderate, moderate to low, moderate to open)	Reduces multi-layered states to single layer	Reduces surface fuels; post-fire fuel model depends on pre-fire state
Stand-replacing fire	Trees are killed; transition to grass-forb or shrub vegetation state	Decreases tree cover to none or low	No canopy layers remain	Reduces surface fuels; transition to fuel model 181 (low load compact conifer litter)
Mowing and grinding	No change	No change	No change	Eliminates shrub layers and increases surface fuel; transition to custom model for masticated fuel beds
Pre-commercial thinning	No change	Decreases high cover states to low or moderate cover	Generally no change	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)
Thin from below	No change	Decreases high cover states to moderate cover	Generally reduces multi-layered states to single layer	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)

Partial harvest	Primarily no change	Generally decreases cover by one class in high and moderate cover states	Generally reduces multi-layered states to single layer	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)
Partial harvest – heavy	Reduces size by one class (e.g., large to medium)	Decreases cover by one or two classes (e.g., high to moderate, moderate to low, moderate to open)	Reduces multi-layered states to single layer	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)
Regeneration harvest	Trees are removed; transitions to grass-forb or shrub state	Decreases tree cover to none or low	No canopy layers remain	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)
Post-fire salvage of dead trees	No effect	No effect	No Effect	Increases surface fuels; transitions to fuel model 185 (high load conifer litter)
