NRCS
Natural Resources Conservation Service Colorado

Forest Slash Treatment

Conservation Practice Job Sheet 384

Client/Operating Unit:		Tract:		Farm No.:	
Farm/Ranch Location:		Field No.:		Program:	
Specifications Date:			Planned Installation Date:		
Proposed Treatment Acres:					

Installation shall be in accordance with the following specifications, drawings, and other requirements. NO CHANGES ARE TO BE MADE IN THE SPECIFICATIONS WITHOUT PRIOR APPROVAL BY AN AGENCY REPRESENTATIVE.

General Specifications

Slash treatment and the condition and extent of residual slash shall comply with the following items, any additional specifications based on purpose(s), and requirements listed for applicable slash treatment techniques.

1. All activities associated with applying this practice shall comply with federal, state, tribal and local forestry and related laws and regulations. It is the landowner's responsibility to obtain appropriate permits and/or applications prior to commencing an activity.

2. Soils, site factors, and timing of application must be suitable for any ground-based equipment utilized for slash treatment to avoid excessive compaction, rutting, or damage to the soil surface layer. For safety purposes and to protect site resources including residual trees, treatment methods involving ground-based heavy equipment are generally not applied on slopes exceeding 35 percent. Equipment will be used on the contour where feasible.

3. For areas with residual trees, the slash treatment method may consist of lopping and scattering, piling, piling and burning (provided burning will minimize heat-damage to residual trees and underlying soil), crushing, chipping, and/or removal. For areas with few or no residual trees (e.g., slash left after block harvest cutting), the slash treatment method may consist of lopping and scattering, piling, piling and burning, crushing, chipping, broadcast burning and/or removal. Any burning will comply with Prescribed Burning-338 specifications and be conducted to minimize heat damage to residual trees and their roots and underlying soil.

Additional Specifications by Practice Purpose (Check only those that apply and record other on-site requirements.)	
☐	**Reduce hazardous fuels and/or Protect/maintain air quality by reducing the risk of wildfire.** If feasible, a non-burning method of slash disposal will be used to avoid risk of accidental wildfire and production of air pollutants. The area will be treated in such a way as to minimize wildfire risk on and potential air pollutants from surrounding lands. Slash is treated so concentrations of 1" size materials and larger do not exceed 9 tons/acre (computations based on oven-dry weights and air-dry volume), do not exceed 18 inches in height (with exceptions for piling and windrowing of up to 10 feet heights and 20 feet widths), and additionally treated to prevent spread of fire within 100 feet of public roads and railroads and 200 feet of areas with frequent concentrated public use. A wildfire risk analysis using methodology adopted by a federal, state or local wildfire control authority may be used to modify the thresholds listed above on a site-by-site basis. Refer to figures 3-6 on page 9 for estimating slash tonnage (or use other calibrated photo series) or use physical transect measurements. Slash treatment must be coordinated with and complement Fuel Break-383, Firebreak-394 and, if residual trees pose a ladder-fuel risk, Tree/Shrub Pruning-660 specifications. Other requirements:
☐	**Reduce the risk of harmful insects and disease.** Treat and/or dispose of slash in a way to minimize harm and infestation to the residual trees and adjacent stands/areas based on the characteristics and life cycles of existing and anticipated pest species (re. Western Forest Insects and Diseases, http://www.fs.fed.us/r6/nr/fid/wid.shtml). Other requirements:
☐	**Improve the soil organic matter.** Burning or removal of slash will remove organic matter from the site. To accelerate decomposition, slash will be treated to minimize its size and maximize its contact with the forest floor. Where chips are produced in sufficient quantities to uniformly cover the ground surface, depth shall not exceed 3 inches. To provide a source of organic matter, to sustain nutrient cycling and maintain microbial activity, leave 5-9 tons/acre of evenly distributed residual slash with all slash size classes, as available, represented (< 1" diameters, 1-5" diameters, and > 5" diameters). To promote nutrient retention, let fine debris (needles and twigs) weather and/or fall from slash before it is treated. Other requirements:

☐	**Enhance aesthetics.** Slash will be treated sufficiently to comply with client objectives for aesthetics. Other requirements:
☐	**Reduce the risk of harm to humans and livestock and/or Improve access to forage for grazing and browsing animals:** Slash will be treated to facilitate safe access by humans and grazing and browsing animals. Other requirements:
☐	**Improve the site for natural or artificial regeneration:** Slash treatment and intensity will be coordinated with Tree/Shrub Site Preparation-490 and Tree/Shrub Establishment-612 specifications. Other requirements:
☐	Other clarifying notes:

Slash Treatment Methods and Requirements

(Check only those that apply and describe pertinent precautions during application. For additional detail on methods and equipment, refer to the Understory biomass reduction methods and equipment catalog, http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/tools/mtdc-catalog/index.shtml).

☐	**Lopping and scattering.** Lopping is the cutting of limbs, branches, treetops, small diameter trees, or other woody plant residue into lengths so that the remaining slash will lie close to the ground (within 18 inches). Scattering is the spreading of lopped slash evenly over the ground so that the remaining slash will lie close to the ground. This method is suited to areas with lower slash accumulations and is effective for such accumulations in meeting height requirements, facilitating use of the treated area by humans and animals, improving aesthetics, and distributing material more uniformly and closer to the forest floor for faster decomposition. Other requirements:
☐	**Piling** and **Piling and Burning.** Piling is placing or stacking of slash into piles which may or may not be burned. Burning is igniting piled slash under prescribed conditions to reduce the amount and continuity of fuels. These methods are suited to areas with adequate spacing between residual trees or areas with few or no residual trees. Unburned piles or windrows can serve as nesting and escape cover for wildlife. When machine piling or windrowing, a “brush rake” (blade with tines) or “grapple” will minimize pushing surface soil into slash accumulations. Synthetic materials (e.g., old tires, petroleum products) will not be incorporated in piles. Any burning will comply with Prescribed Burning-338 specifications and be conducted to minimize heat damage to residual trees and their roots and underlying soil. Other requirements:
☐	**Crushing.** Crushing breaks and presses slash into, on, or closer to the ground surface. This occurs to some degree when harvest or thinning equipment drives over slash created during the operation. This method involves the use of heavy equipment that crushes slash to a depth not exceeding 18 inches. The closer crushed material is to the forest floor, the quicker decomposition occurs and the less chance of fire reaching into the above canopy layers. Other requirements:

☐	**Chipping/Mastication.** Chipping is the processing of slash through a mechanical chipper to produce chipped or shredded material that is distributed on site or utilized offsite. This method includes the mechanical conversion of slash to chips of varying sizes. Mastication equipment produces chunks of wood (larger than chips) of varying sizes. For safety purposes, humans and animals must be excluded from areas being treated by equipment that flails and throws chips and chunks. Equipment must be operated to minimize damage to the residual trees. Other requirements:
☐	**Broadcast Burning.** This method consumes and alters slash by prescribed fire to a point that minimizes the risk of wildfire. It is suited primarily to areas with few to no residual trees. Smoke management and production of air pollutants are a concern with this method. Any burning will comply with Prescribed Burning-338 specifications and be conducted to minimize heat damage to residual trees, their roots, and soil. Other requirements:
☐	**Removal.** Slash is removed from the site. This method is suited to areas with higher slash accumulations where other methods may not sufficiently reduce undesired materials. Other requirements:
☐	Other clarifying notes:

Layout Sketch and Drawing

(Provide sketch and/or drawings or refer to conservation plan or other map.)

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")

References:

- eFOTG, http://www.nrcs.usda.gov/technical/efotg/
- Western Forest Insects and Diseases, http://www.fs.fed.us/r6/nr/fid/wid.shtml
- Understory biomass reduction methods and equipment catalog, http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/tools/mtdc-catalog/index.shtml

Practice Specifications Approval and Completion Certification

DESIGN AND INSTALLATION/LAYOUT APPROVAL:

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:

LANDOWNER/OPERATOR ACKNOWLEDGES:

a. They have received a copy of the specifications and understand the contents including the scope and location of the practice.
b. They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
c. No changes will be made in the installation of the job without prior concurrence of the NRCS.
d. Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):		
Landowner/operator Signature:		Date:

RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Acres:	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:
Notes:		

Reference Photos

(Reference: Photo Series for Quantifying Forest Residues, USDA-Forest Service General Technical Report PNW-52 1976, W. Maxwell and F. Ward. Tonnage computations are based on oven-dry weights and air-dry volume.)

Figure 3. Total slash accumulation after a block harvest is 38.2 tons/acre (8.1 tons/acre for size class 1.1-3.0 inches in diameter; 6.3 tons/acre for 3.1-9.0 inches; 17.2 tons/acre for 9.1-20.0 inches and 6.6 tons/acre for 20.1+ inches). Slash treatment could involve piling and burning, broadcast burning, and/or chipping followed by removal, or removal. To achieve a 9 ton/acre criteria, approximately 30 tons/acre of slash is considered excess.

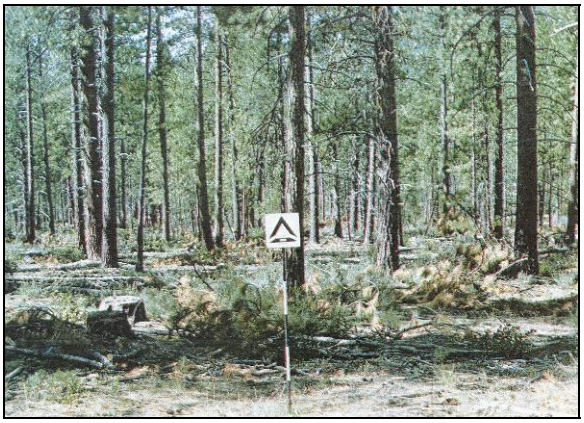

Figure 5. Total slash accumulation after a partial harvest is 6.3 tons/acre (3.4 tons/acre for size class 1.1-3.0 inches in diameter; 2.9 tons/acre for 3.1-9.0 inches). Because slash is less than the 9 tons/acre criteria, slash treatment could consist of lopping and scattering to meet the less than 18-inch height criteria.

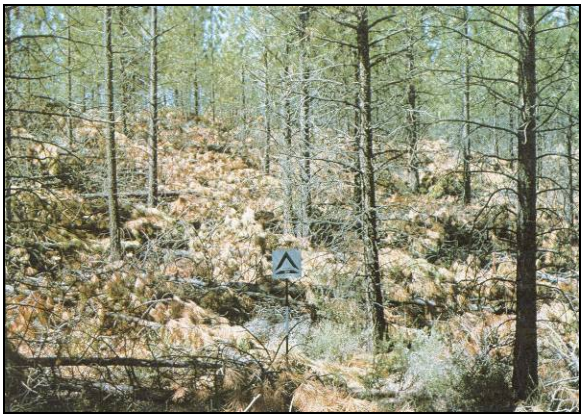

Figure 4. Total slash accumulation after a precommercial thinning is 23.0 tons/acre (6.7 tons/acre for size class 1.1-3.0 inches in diameter; 12.8 tons/acre for 3.1-9.0 inches; and 3.5 tons/acre for 20.1+ inches). Slash treatment could involve piling and burning, and/or chipping followed by removal, or removal. To achieve a 9 ton/acre criteria, approximately 14 tons/acre of slash is considered excess.

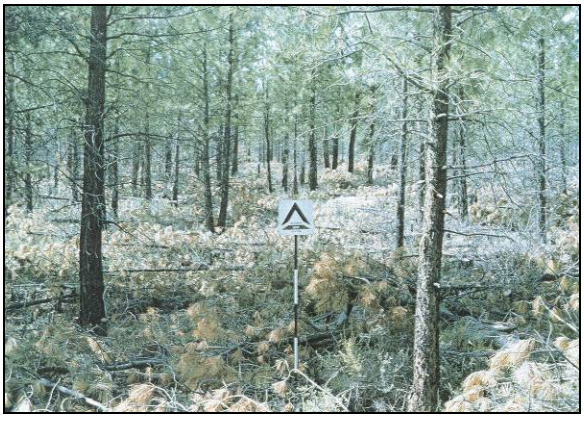

Figure 6. Total slash accumulation after a precommercial thinning is 7.8 tons/acre (5.5 tons/acre for size class 1.1-3.0 inches in diameter; 2.3 tons/acre for 3.1-9.0 inches). Because slash is less than the 9 tons/acre criteria, slash treatment could consist of lopping and scattering to meet the less than 2-feet height criteria.