



Figure 1. Residual material is distributed over the area after excess slash is piled or removed from the site. Compaction is a concern depending on the use and type of ground equipment.

Forest Slash Treatment

Treating woody plant residues created during forestry, agroforestry and horticultural activities to achieve management objectives. For a complete version of the conservation practice standard, go to the eFOTG (<http://www.nrcs.usda.gov/technical/efotg/>).

Purposes

- Reduce hazardous fuels
- Reduce the risk of harmful insects and disease
- Protect/maintain air quality by reducing the risk of wildfire
- Improve access to forage for grazing and browsing animals
- Enhance aesthetics
- Reduce the risk of harm to humans and livestock
- Improve the soil organic matter and maintain or improve soil health and soil quality
- Improve the site for natural or artificial regeneration.

Where Used

This practice applies on areas with quantities of woody slash and debris requiring treatment.

Conservation Management System

Forest slash treatment and the condition and extent of residual slash is planned and the method selected based on identified purposes. This practice is part of a conservation management system for a land unit having undesired woody material that, if left alone, creates hazardous or other undesired conditions. Timing of treatment coincides with achieving intended purposes and minimizing impact on other resources. Residual slash and debris left on the site after treatment is in a condition and amount that will not present an unacceptable fire, safety, environmental, or pest hazard nor interfere with other on-going or planned management activities.



Figure 2. A chopper-roller reduces height of slash and puts residual material in contact with the soil surface.



FOREST SLASH TREATMENT - 384

Conservation Practice Specifications/Job Sheet

WY-ECS-32

JANUARY 2007

Client/Operating Unit:	<input type="text"/>	Tract:	<input type="text"/>	Farm No.:	<input type="text"/>
Farm/Ranch Location:	<input type="text"/>	Field No.:	<input type="text"/>	Program:	<input type="text"/>
Specifications Date:	<input type="text"/>	Planned Installation Date:	<input type="text"/>		
Other Identifying Data	<input type="text"/>				

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.
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 all that apply and record other on-site requirements.)

<input type="checkbox"/>	<p><u>Reduce hazardous fuels and/or Protect/maintain air quality by reducing the risk of wildfire.</u> 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 (or that specified for the particular site: _____ inches) 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. If feasible, a non-burning method of slash disposal will be used to avoid risk of accidental wildfire and production of air pollutants. 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:</p>
<input type="checkbox"/>	<p><u>Reduce the risk of harmful insects and disease.</u> Based on the characteristics and life cycles of existing and anticipated pest species (http://www.fs.fed.us/r6/nr/fid/wid.shtml), treat and/or dispose of slash in a way to minimize harm and infestation to the residual trees and adjacent stands/areas. Other requirements:</p>
<input type="checkbox"/>	<p><u>Improve the soil organic matter and maintain or improve soil health and soil quality.</u> Slash will be treated to minimize its size and maximize its contact with the forest floor to accelerate decomposition. 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 burned or removed from the site. Other requirements:</p>

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

Slash Treatment Methods and Requirements

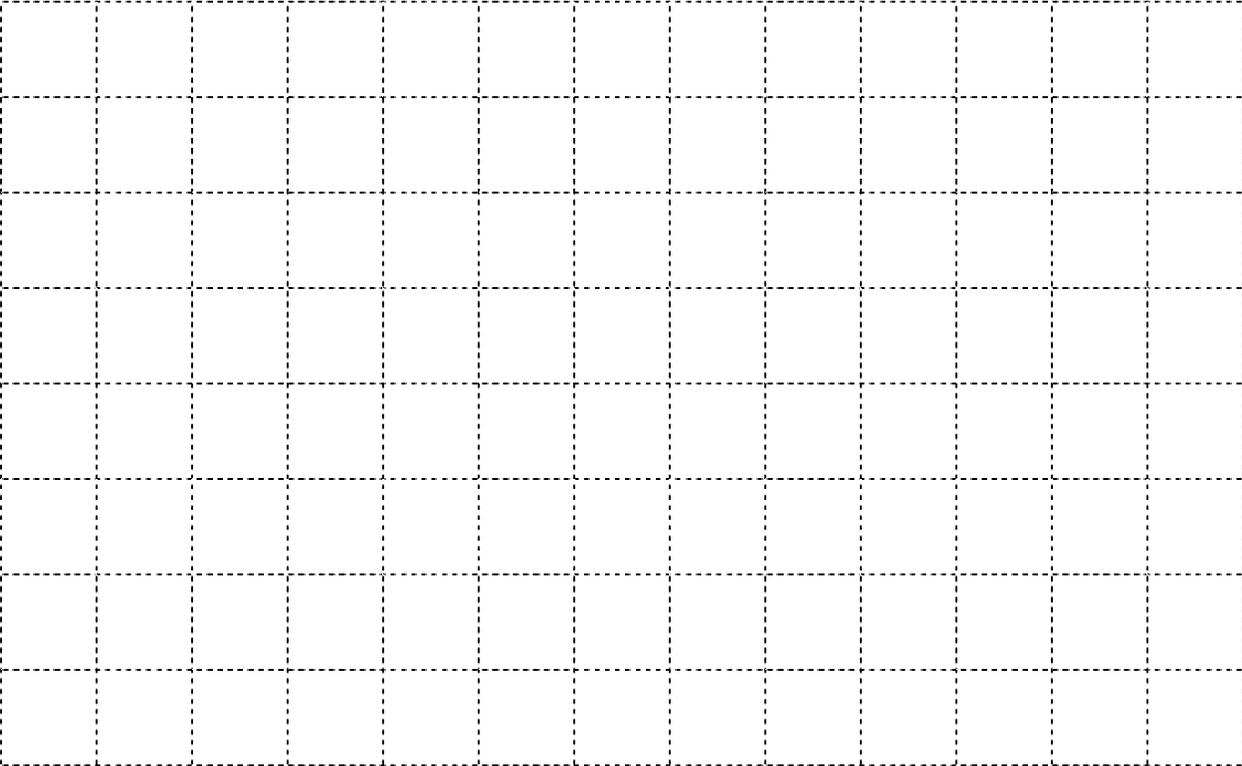
(Check all that apply and describe pertinent precautions during application. For additional detail on methods and equipment, refer to the *Understory biomass reduction methods and equipment catalog*, <http://www.fs.fed.us/forestmanagement/WoodyBiomassUtilization/tools/mtdc-catalog/index.shtml>).

<input type="checkbox"/>	<p><u>Lopping and scattering.</u> 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. 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. Safety equipment (e.g., goggles, gloves, chaps, ear plugs) must be worn when using chainsaws or other lopping equipment and comply with the federal, state and/or local safety authority. Other requirements:</p>
<input type="checkbox"/>	<p><u>Piling</u> and <u>Piling and Burning.</u> Piling is placing, laying, heaping 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. Piles that will be burned later may be “teepeed” to shed water or, if small in size, temporarily covered with water-resistant paper or plastic to allow material beneath to dry. Unburned piles or windrows can serve as nesting and escape cover for wildlife. When machine piling or windrowing, a “brush rake” (blade with tines) 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:</p>
<input type="checkbox"/>	<p><u>Crushing.</u> Crushing breaks and presses slash on or into the ground surface. This occurs when harvest or thinning equipment drives over slash created during the operation. This method involves the use of heavy ground-based equipment that crush slash to a depth not exceeding 2 feet. 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:</p>

<input type="checkbox"/>	<p><u>Chipping.</u> Chipping is the processing of slash through a mechanical chipper to produce chipped or shredded material that is distributed on site or utilized offsite as landscape mulch. This chipped material can be used as woody biomass fuel or pulp for paper products. This method includes the mechanical conversion or mastication of slash to chips and chunks 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; also operate such machinery to minimize bark damage to the residual trees. Other requirements:</p>
<input type="checkbox"/>	<p><u>Broadcast Burning.</u> This method consumes and alters slash by prescribed fire to a point minimizing the risk of wildfire and 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 and their roots and underlying soil. Other requirements:</p>
<input type="checkbox"/>	<p><u>Removal.</u> 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:</p>
<input type="checkbox"/>	<p>Other clarifying notes:</p>

Layout Sketch and Drawing (optional)
(Provide sketch and/or drawings as necessary or refer to conservation plan or other map.)

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



Additional Clarifying Notes (technical, programmatic, etc.):

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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. I have received a copy of the specifications and understand the contents including the scope and location of the practice.
- b. I 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 1-year life of the practice.

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:

Units (_____)	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:		

References

(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 2-foot height criteria.

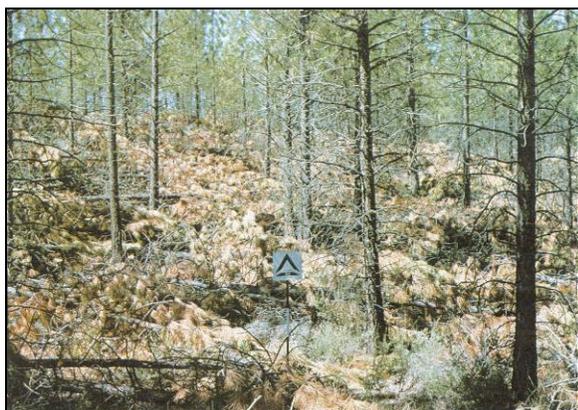


Figure 4. Total slash accumulation after a precommercial thinning is 23.0 tons/acre (6.7 tons/acre for size class 1.1-3.0 inches in diameter; 12.8 tons/acre for 3.1-9.0 inches; and 3.5 tons/acre for 20.1+ inches). Slash treatment could involve piling and burning, and/or chipping followed by removal,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

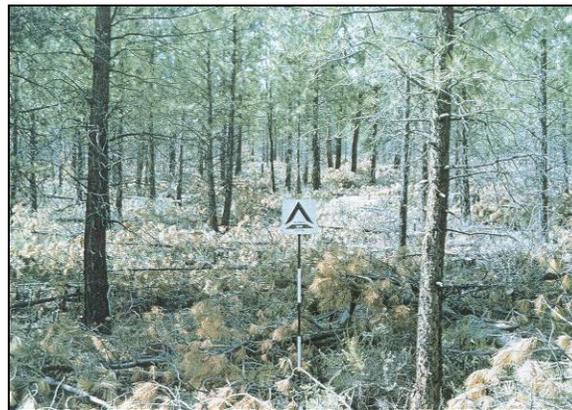


Figure 6. Total slash accumulation after a precommercial thinning is 7.8 tons/acre (5.5 tons/acre for size class 1.1-3.0 inches in diameter; 2.3 tons/acre for 3.1-9.0 inches). Because slash is less than the 9 tons/acre criteria, slash treatment could consist of lopping and scattering to meet the less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