



**CONSERVATION ENHANCEMENT ACTIVITY  
E666F**

**CONSERVATION  
STEWARDSHIP  
PROGRAM**

**Reduce forest stand density to create  
open stand structure**

**Conservation Practice 666: Forest Stand Improvement**

**APPLICABLE LAND USE: Forest**

**RESOURCE CONCERN: Plant, Animal**

**ENHANCEMENT LIFE SPAN: 10 Years**

**Enhancement Description:**

Reducing forest stand density creates open forest conditions with a low basal area which promotes the health and vigor of the residual trees. The open stand structure allows a significant amount of sunlight to reach the forest floor and stimulates the growth of understory vegetation. Understory vegetation management, along with the wide spacing between trees or clumps of trees, provides visual appeal, lowers the risk of wildfire, and provides food, cover, and shelter for many at-risk and listed wildlife species. The enhancement creates conditions that facilitate a follow-up treatment with prescribed burning.

**Criteria:**

States will apply general criteria from the NRCS National Conservation Practice Standard Forest Stand Improvement (Code 666) as listed below, and additional criteria as required by the NRCS State Office.

- Develop or update a forest management plan in consultation with NRCS personnel and a professional forester to direct the management of the property.
- Thin the stand to a target basal area of 50 to 60 square feet/acre. This creates an open stand and stimulates the growth of herbaceous vegetation on the forest floor. Preferentially remove unhealthy individual trees, undesirable species, and trees with visible defects including forked or broken tops, thin crowns or damaged trunks. Retain desired species and individual trees with large healthy crowns and undamaged trunks.



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- The stand may have been previously thinned or may be in need of thinning. Merchantable trees may be sold. Reduce stand density sufficiently to get light to the forest floor. The overstory thinning must be completed prior to the understory treatment.
- Trees that cannot be sold may be cut or killed to reduce the canopy and allow sunlight to reach the forest floor. Use NRCS Conservation Practice Standard Woody Residue Treatment (Code 384) as needed to treat felled wood.
- Minimize damage to residual trees during the thinning process.
- Time tree felling to avoid buildup of insect or disease populations.
- Understory vegetation in fire-adapted forest types will receive the greatest benefit from treatment with prescribed burning. Use NRCS Conservation Practice Standard Prescribed Burning (Code 338), and follow all applicable federal, state and local laws. If prescribed burning is not feasible or not appropriate for the site, understory vegetation may be treated with mechanical methods like mulching, mowing, chainsaws, or small dozers.
- Control measures should be used on undesirable competing vegetation, to favor the development of desirable vegetative communities on the site. Vegetation may be treated by chemical methods such as spraying or single stem treatments, or mechanical methods like a heavy-duty brush cutter or similar equipment. Refer to criteria in NRCS Conservation Practice Standard Integrated Pest Management (Code 595) Brush Management (Code 314), or Herbaceous Weed Control (Code 315).
- Implement forest stand improvement activities in ways that avoid or minimize soil erosion, compaction, rutting, and damage to remaining vegetation, and that maintain hydrologic conditions. Protect site resources by selecting the method, felling direction and timing of tree felling, and heavy equipment operation. For temporary access use NRCS Conservation Practice Standard Forest Trails and Landings (Code 655), to protect soil and site resources from vehicle impacts.
- Where slash and debris will be generated, use NRCS Conservation Practice Standard Woody Residue Treatment (Code 384) to appropriately treat slash and debris, as necessary, to assure that it will not present an unacceptable fire, safety, environmental, or pest hazard. Remaining woody material will be placed so that it does not interfere with the intended purpose or other management activities. Do not burn vegetative residues except where fire hazard or threats from diseases and insects are of concern or when other management objectives are best achieved through burning. When slash and other debris will be burned onsite use NRCS Conservation Practice Standard Prescribed Burning (Code 338).



- Where machinery is being used, operate under dry conditions when the machinery will not cause rutting and/or soil compaction.
- Do not conduct activities during the nesting season for ground nesting birds.
- The enhancement will comply with all applicable federal, state, and local laws and regulations, and with States' Forestry Best Management Practices for Water Quality.

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### Documentation and Implementation Requirements:

#### Participant will:

- Prior to implementation, use the NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) conservation practice standard or appropriate state approved NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) Job Sheet to meet the criteria of this enhancement.
- Prior to implementation, provide to NRCS a current or updated Forest Management Plan that includes activities addressing this enhancement.
- Prior to implementation, set guidelines to maintain the stand in a fully stocked condition along the B line on the site appropriate stocking chart. Reduce the overstory tree density to create open stand of trees allowing sunlight to the forest floor.
- Prior to implementation, develop a strategy to manage the understory vegetation to favor wildlife food producing plants using prescribed burning, chemical methods or mechanical methods. (If prescribed burning is used - have a prescribed burn plan in place, for chemical treatments – have recommendations from an approved source, and for mechanical methods follow state BMP guidelines).
- During implementation, thin the stand to the B line on the stocking chart to open the canopy while maintaining a fully stocked stand of trees. If thinning is not an option, reduce the canopy by chemically treating selected trees to open the canopy while maintaining a fully stocked stand of trees.
- During implementation, avoid making large areas of woody debris.
- During implementation, strive to minimize volatile vegetation and reduce ladder fuels if present.
- During implementation, control undesirable vegetation using prescribed burning, chemical treatments or mechanical methods. Follow the appropriate guidelines (prescribed burn plan, chemical recommendations or state BMP guidelines).
- After implementation, the participant will provide the date completed, acres treated, methods used and a map delineating treated acres.

#### NRCS will:

- Prior to Implementation, assist with interpretation and updates to the Forest Management Plan and activities recommended in the acres targeted for management.



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- Prior to implementation, provide and explain guidance in the NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) and how it relates to the use of this enhancement.
- Prior to implementation, provide assistance with the development of appropriate state approved NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) Job Sheets and discuss the details with the participant.
- Prior to implementation, discuss the need for managing the understory vegetation along with the overstory. The understory should be managed using prescribed burning, chemical or mechanical treatments. Be sure that there is a prescribed burn plan, chemical recommendations or mechanical treatments following state BMP guidelines in implementing this enhancement.
- Prior to implementation, provide and explain the following NRCS Conservation Practice Standards (CPSs) as they relate to implementing this enhancement.
  - Brush Management (Code 314)
  - Forest Stand Improvement (Code 666)
  - Forest Trails and Landings (Code 655)
  - Herbaceous Weed Control (Code 315)
  - Integrated Pest Management (Code 595)
  - Woody Residue Treatment (Code 384)
  - Prescribed Burning (Code 338) *NRCS WA does not offer this practice.*
- During implementation, provide technical assistance as requested by the participant.
- After Implementation, verify the enhancement was completed according to the enhancement criteria and NRCS Conservation Practice Standard Forest Stand Improvement (Code 666) practice specifications.

### NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name \_\_\_\_\_ Contract Number \_\_\_\_\_

Total Amount Applied \_\_\_\_\_ Fiscal Year Completed \_\_\_\_\_

\_\_\_\_\_

NRCS Technical Adequacy Signature \_\_\_\_\_ Date \_\_\_\_\_



# WASHINGTON SUPPLEMENT TO CONSERVATION ENHANCEMENT ACTIVITY E666F

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## Additional Criteria for Washington

- In addition to the criteria specified in the National job sheet E666F the following additional criteria apply in Washington:
  - Work with a forester or natural resources professional to update your forest management plan. In addition, the participant should consult with a forester or natural resources professional for guidance on how to: mark trees to achieve the objective, controlling undesirable species and lay out and mark treatment areas.
  - **Prescribed burning is allowed but not required for this enhancement.** **NRCS WA does not provide technical or financial assistance for prescribed burning. Go to WA Department of National Resources for all assistance associated with prescribed burning, including burn plans and burn permits.**
  - For plantations whose average diameter is 8" or less then use Forestry Technical Note 10, Table 2 for appropriate spacing guidelines. Forestry Technical Note 10, Table 2, will provide flexibility in achieving the basal area goals for a diverse stand structure. For stands with commercial sized trees then use the target basal area of 50-60 square feet. Below are examples of approximately how many trees per acre (tpa), 50-60 square feet of basal area represents for different average stand diameters at 4.5' up the bole (DBH):

### **All commercial harvest requires a WA DNR Forest Practices Permit.**

- 🌲 92-110 tpa for average stand DBH of 10"
- 🌲 63-75 tpa for average stand DBH of 12"
- 🌲 47-56 tpa for average stand DBH of 14"
- 🌲 36-43 tpa for average stand DBH of 16"
- 🌲 28-34 tpa for average stand DBH of 18"
- 🌲 23-28 tpa for average stand DBH of 20"



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- Site suitability's for plants can be found in Web Soil Survey in a couple of soils reports. Ecological Site Descriptions (ESD), Forest Productivity and Rangeland and Forest Vegetation Classification.

Natural Heritage Program ecosystems or USFS Plant associations may be substituted for ESDs , if ESDs are unavailable. In conjunction with these sources of site specific native plant species, use Wildlife publications and/or WDFW's Living with Wildlife fact sheet for guidance on selecting plants that support wildlife forage for target wildlife species, suite of species or in forest habitat for general wildlife needs. For use of other sources, contact NRCS biologist.

- Pruning overstory tree branches is helpful in disrupting continuity of ladder fuels, allowing increase sunlight to roads for general daylighting benefits, and allowing increased light to the understory. Use Conservation Practice Standard for 660 Tree & Shrub Pruning (FOTG, Section IV) for guidance in successfully pruning trees.
- To protect ground nesting birds, stand improvement activities will occur between August 1st and March 1st. If it is a Pine plantation, stand improvement activities will occur between August 1st and January 1st. This time period can help reduce risk of Ips beetle infestation in pine plantations.
- Whenever chemicals are being used, determine the risk rating of the proposed chemical by running the on-line version of WINPST. For help with WINPST consult your local NRCS Field Office.
- Use the Conservation Practice 384 Woody Residue Treatment Specification Guide (FOTG, Section IV), USFS forest residue photo series, or use some other professionally accepted protocol for estimating the amount of down wood on site and/or created from silviculture activities. In fire prone areas (dry forests) keep down woody debris ( forest slash) to 9 tons/ acre or less. The 9 tons will be lopped and scattered and < 2' in height. The woody debris should be distributed across the site and break continuity in order to disrupt the spread of a fire. Woody debris amounts greater than 9 tons/acre will need to treated through piling, chipping, crushing or removal (See WAC 332-24-652).
- Based on WebSoil Survey soil suitabilities and limitations, protect soils sensitive to rutting, compaction and erosion, by using machinery only when the soil is dry or frozen, managing water runoff on the road surface, and/or vegetating the roads, trails and landing. All work done on Forest roads will be in compliance with WA Forest



Practices Regulations (See WAC 222-24 and guidelines in Board Manual Section III).

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### **Additional Documentation Requirements for Washington**

- In addition to the documentation requirements specific to the National Job sheet E666F, the following additional documentation requirements apply in Washington:
  - Document current and post treatment forest residue/fuel loading. Also document which method was used for estimating the amount of forest residue.
  - Along with overstory tree data, document the pre- and post- treatment understory species composition, condition and cover of the main understory species.
  - WINPST risk rating for any chemicals used and their labels.
  - Document WA Forest Practice Application class and required compliance.