NATURAL RESOURCES CONSERVATION SERVICE
NEVADA CONSERVATION PRACTICE STANDARD

FOREST STAND IMPROVEMENT

(Acre)

CODE 666

DEFINITION

To manipulate species composition and stocking by cutting or killing selected trees and understory vegetation.

PURPOSES

- To improve or sustain timber production.
- Improve understory forage production, aesthetics, wildlife habitat, recreation, hydrologic conditions.
- To harvest forest products.
- To initiate forest stand regeneration.
- To achieve a combination of purposes.

CONDITIONS WHERE PRACTICE APPLIES

On forest land where competing vegetation hinders development and stocking of preferred tree and understory species or where some or the entire stand will be cut or killed for intended purposes.

CRITERIA

Preferred tree and understory species are identified and retained to achieve the intended purpose.

Spacing, density and amounts of preferred trees and understory species to be retained will follow established guidelines for the intended purposes. Such guidelines shall contain stocking in terms of basal area, spacing, or trees per acre by species and size class distribution.

The method, felling direction and timing of tree cutting for harvesting shall facilitate efficient and safe tree removal and protect riparian zones, unique areas, and structures.

Soil erosion, displacement and compaction, hydrologic impact and damage to remaining vegetation will not exceed acceptable levels.

Slash, debris and vegetative material left on the site after treatment will not present an unacceptable fire or pest hazard or interfere with the intended purpose.

The extent, size of treatment area or intensity of the practice shall not exceed acceptable levels for the intended purpose and cumulative ecosystem effects.

Comply with applicable laws and regulations, including the state's Best Management Practices (BMPs).

Criteria for improving or sustaining timber production

Highest site indices shall be thinned first.

Crooked, dead or dying, diseased and injured shall be removed.

Thinning activities shall be timed to avoid harmful interactions with tree pathogens.

Criteria for improving understory forage production, aesthetics, wildlife habitat, recreation and hydrologic conditions

Stand density shall be suitable for the intended recreational values.

Leave tree selection shall be based upon the 'character' and aesthetics of the tree as well as its health and form. The utility of the leave trees to wildlife species is important.

Select trees that are potentially hazardous to recreational users for removal.

NRCS NV, NHCP

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Stand composition shall be manipulated to meet the objective.

Criteria for harvesting forest products

Desired species composition and age class distribution of the forest stand will help the planner formulate the silvicultural treatment for stand.

Selection of the most desirable harvest system shall be based upon the physical condition of the timber and land resources, the economic condition of the market and the landowner, and the interpretation of the forest practice rules by the individual preparing the timber harvest plan.

A systematic schedule of harvesting shall be designed so that it is in accordance with the productive capacity of the site.

Design of an appropriate silvicultural prescription is dependent upon existing site conditions, stand composition and age class distribution and must consider:

- Objectives of ownership
- Reproduction
- Efficient use of growing space and site productivity
- Control of damaging agents
- Sustained yield
- Optimum use of forest capital

Silvicultural methods.

Uneven-aged Stands:

Selection method periodically removes small volumes of timber covering a variety of age classes at relatively short intervals of 5 to 20 years. Natural regeneration is continuous and assured with this method.

Even-aged Stands:

Shelterwood method removes mature timber in a series of cutting extending over a period of years usually equal to not more than 1/4 and often not more than 1/10 the harvest rotation of the tree crop. Natural regeneration is encouraged under the favorable conditions created and maintained under the residual stand.

Seed tree method removes most of the timber on site except for seed trees distributed around the site left for restocking.

Clearcutting method removes all timber on a site in one cut and depends upon natural seeding from adjacent stands or from trees cut during the harvesting operation.

Coppice method removes all timber on a site at the end of the rotation. Regeneration is accomplished from stump sprouts and/or root suckers. Quaking (Populus tremula tremuloides) and bigtooth (Populus grandidentata) aspen are the only important American species that must, in practice, be reproduced by coppice.

CONSIDERATIONS

Timing of treatment and retaining dead or dying trees will minimize impacts on nesting wildlife.

Wildlife food and cover can be retained by minimal modifications to composition and spacing regardless of the purpose for treatment. Forested wildlife corridors can minimize fragmentation effects.

Planning Considerations

It is the NRCS policy to complement and not duplicate the work of State forestry agencies. If a State-employed forester has prepared a forest management plan, the NRCS will coordinate its technical assistance with the State.

The Nevada Forest Practice Act must be observed through a timber harvest plan approved by the Nevada Division of Forestry.

- Nevada Revised Statue 548.042 establishes the requirement for a logging permit prior to any logging or cutting operation.
- Logging or cutting operations include the cutting and/or removal of time or other solid wood forest products, including Christmas trees and firewood from timberlands for commercial purposes. This includes all incidental practices like construction and maintenance of roads, fuelbreaks, landings, stream crossings and so on.

- Administrative regulation 548.043 establishes the requirement of a logging plan as part of the prerequisites for the issuance of a logging permit.

NRCS personnel will evaluate the need for a logging permit while assisting landowners with planning NRCS forest practices. NRCS forest practices will not be applied if a logging permit is required but not obtained.

Depending upon the silvicultural method, a comprehensive treatment of a forest stand will consider the following practices:

- FOREST HARVEST TRAILS & LANDINGS (Code 655)
- FOREST STAND IMPROVEMENT (Code 666)
- FOREST STAND PREPARATION (Code 490)
- TREE/SHRUB ESTABLISHMENT (Code 612)

Include additional practices that will help minimize soil erosion and give maximum watershed protection, such as FIREBREAK (Code 394) and BRUSH MANAGEMENT (Code 314).

Provisions must be made for enhancing seedling survival. These provisions may include any or all of the following: rabbit and gopher protections, shading, protection from grazing by cattle and wildlife, and brush control TREE/SHRUB ESTABLISHMENT (Code 612) shall be applied to ensure seedling establishment.

Discuss alternative silviculture methods with the landowner.

Discuss alternative logging practices based on erosion hazard rating for soils.

Discuss the establishment of buffer zones along streams and other bodies of water. The width of water body protection zones is specified in Nevada Laws on Forestry and Fire as 200 feet from the high water mark.

Develop an adequate, but permanent road system keeping in mind the erosion hazard of the soils.

Discuss proper slash disposal, either by lopping and scattering, chipping, piling and burning, or by controlled burns.

Use light tractors, cable systems, or horses in logging. Keep from scarring and damaging residual or leave trees. Remove blade from crawler tractor when used for skidding logs.

Adequate provisions should be given for the retention of possible nesting trees.

Where a forest must be artificially regenerated, consult Section II of the Technical Guide for planting recommendations.

Existing soils information should be utilized for the forestry interpretations pertaining to the soils in the forest.

Leave healthy, full crowned, well-formed trees.

In mixed stands, favor the best adapted and highest quality species growing on the site. These species are Jeffry Pine (Pinus jeffryi), Ponderosa Pine (Pinus ponderosa) on the east slope Sierra Nevada.

The best time for thinning to avoid Ips beetle damage is August 15 to April 1.

The first merchantable product of ponderosa pine in most areas is a saw log. The minimum sized tree for a saw log is 10 inch D.B.H.

Lodgepole pine, Douglas fir, Red fir, and White fir can sometimes be marketed for stud logs, poles, and pulp when they reach a size that will cut out pieces 8 feet long with a 5 inch top.

Hardwoods serve as nurse trees for more desirable conifers. This should be taken into consideration in any weeding operation.

On areas with recreational value, only overmature and high-risk trees should be harvested, and cutting should be done on a selection basis. Stumps should be cut as close to the ground as possible and slash should be piled and burned or chipped.

Where there are recreational values, girdling or poisoning will not be desirable because of the creation of unsightly snag areas.

Water Quantity

This practice may cause a temporary increase in water quantity resulting from a decrease in transpiration of groundwater due to timber harvesting. Water tables may rise significantly depending upon existing conditions and the degree of tree harvesting.

Water Quality

This practice may cause a temporary increase in erosion rates and sediment yield due to timbering operations. If chemicals are used to control unwanted trees, vines and shrubs, the potential for surface and/or ground water contamination exists. The degree of hazard depends upon the type and amounts of chemical applied, timing of application, and the distance to the receiving waters. Sixty percent of the tree's nitrogen content is contained in the slash.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

Specifications Guide

Specifications shall be based on soil interpretations for an area and shall include species to be favored for better growth; spacing after thinning or weeding; methods of removal; best season for cutting or treating chemically; disposing of slash; and special treatments, if needed, to forestall the spread of disease, fungi, or insects. If beauty or wildlife habitats are considerations, specify the species to be favored, how many of each is wanted, and where to leave them shall be indicated.

Specify:

- objective
- location and size of treatment area
- pre-treatment inventory
- species and/or age classes to be treated
- tree marking method
- treatment method(s)
- treatment schedule
- post-treatment stocking
- logging practice(s)
- utilization (if any) of wood products
- references to supporting practices

OPERATION AND MAINTENANCE

Operation and maintenance requirements are not applicable for this practice.

REFERENCES

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