NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FOREST STAND IMPROVEMENT

(Acre)

CODE 666

DEFINITION

The manipulation of species composition, stand structure, and stocking by cutting or killing selected trees and understory vegetation.

PURPOSES

- To increase the quantity and quality of forest products, e.g., sawtimber, veneer, wood fiber, poles, pilings, maple syrup, naval stores, nuts and fruits.
- To harvest forest products.
- To initiate forest stand regeneration.
- To reduce the potential of damage from wildfire, pests, and moisture stress.
- To restore natural plant communities.
- To achieve a desired understory plant community.
- To improve aesthetic, recreation, and open space values.
- To improve wildlife habitat.
- To improve water conservation and yield.
- To achieve a desired level of crop tree stocking and density.
- To increase carbon storage in selected crop trees.

CONDITIONS WHERE PRACTICE APPLIES

All forest land where improvement of forest resources is needed.

CRITERIA

General Criteria Applicable To All Purposes

The harvest-regeneration strategy will be identified for all planned forest improvement harvesting:

- Uneven-aged management systems (single-tree selection, group selection, coppice selection)
- Even-aged management (clear-cut, seed-tree, shelterwood, coppice)

The extent or size of treatment area shall achieve the intended purpose.

Preferred tree and understory species are identified and retained to achieve all planned purposes.

Spacing, density, size class, number, and amounts of trees and understory species to be retained will follow established guidelines for the intended purposes.

Stocking 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 sensitive areas such as vernal pools, riparian zones, cultural resources, and structures.

Forest stand improvement activities shall be performed to minimize soil erosion, compaction, rutting, damage to remaining vegetation and hydrologic conditions.

Minimize hydrologic alterations and damage to remaining vegetation.

Slash and debris left on the site after treatment will not present an unacceptable fire, safety,

environmental, or pest hazard. Such remaining material will not interfere with the intended purpose or other management activities.

Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.

Massachusetts laws and regulations related to forestry activities include:

- M.G.L. c. 132, §§40-46 (Massachusetts' Forest Cutting Practices Act);
- 304 CMR 11.00 et. seq. (DEM, Division of Forest and Parks Forest Cutting Practices Regulations);
- M.G.L. c. 48, §§16-20 (An Act Relative to the Handling of Slash);
- 310 CMR 10.00 et. seq. (DEP Wetlands Protection Regulations for forestry activities);
- M.G.L. c. 131A (The Massachusetts Endangered Species Act) and regulations at 321 CMR 10.00 et. seq. (State-Listed Rare Plant and Animal Species).

CONSIDERATIONS

Silvicultural objectives and harvest-regeneration strategies may change over time and may be limited by prior management.

Successful regeneration of desirable species is usually dependent upon timely application of forest stand improvement and other practices, e.g., prescribed burning, site preparation, tree and shrub establishment, prescribed grazing and use exclusion.

The extent, timing, size of treatment area, or the intensity of the practice should be adjusted to minimize cumulative effects (onsite and offsite), e.g., hydrologic and stream alteration, habitat fragmentation, nutrient cycling, biodiversity and visual resources.

Where visual qualities are important, retain trees of unusual form, brilliant autumn color or attractive bark, flowers or fruit.

Potential landowner and operator liability should be assessed before forest stand improvement activities begin.

The practice should be timed to minimize disturbance of seasonal wildlife activities.

Consider wildlife food and cover needs when making modifications to forest composition and tree spacing.

Consider retention of selected dead and dying trees, including down material, to enhance wildlife habitat values.

Where possible, retain a minimum of 3 actively used den trees or 3 large hardwood cull trees, and a minimum of 5 mast-producing trees such as oak, hickory, and beech on each acre treated. Cull trees are not counted as part of the basal area (Table 1) left after thinning. Mast trees and den trees with timber value are counted as residual basal area after thinning. Also consider releasing apple trees for wildlife.

Landowners should secure a written contract with any service provider that specifically describes the extent of activity, duration of activity, responsibilities of each party and amount and timing of payments for services provided

Consider environmental concerns such as threatened and endangered species and natural areas.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation. (See Forest Stand Improvement (666) Specifications Guide.)

OPERATION AND MAINTENANCE

Periodic inspections during treatment activities are necessary to ensure that objectives are achieved and resource damage is minimized. Follow-up and ongoing management activities will be needed to obtain desired results.

REFERENCES

Division of Forests and Parks, Bureau of Forestry. 1995. Chapter 132 Guidance

Document. Massachusetts Department of Environmental Management: Boston, MA.

Hartung, Robert E., and James M. Kress.1977. Woodlands of the Northeast: Erosion & Sediment Control Guides. USDA-Soil Conservation Service and Forest Service. Broomall, PA.

Kittredge, David B., Jr., and Michael Parker. 1995. Massachusetts Forestry Best Management Practices Manual. Massachusetts Department of Environmental Protection and US Environmental Protection Agency: Boston, MA.

Leek, William B., Dale S. Solomon, and Stanley M. Filip. 1969. A Silvicultural Guide for Northern Hardwoods in the Northeast. (USDA Forest Service Resource Paper NE-143). NE. Forest Experiment Station: Broomall, PA.

Middlesex Conservation District. Woodland Management Guide for Woodlot Owners in Massachusetts. Revised 1998. Franklin, Hampden and Hampshire Conservation Districts: Northampton, MA.