VERMONT FAMILY FORESTS
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FOREST MANAGEMENT CHECKLIST:

Practices to conserve water quality, site productivity, and native biological diversity in forests managed for timber.

Updated 2/8/05

Introduction

Vermont Family Forests, Inc. is a not-for-profit organization that works to conserve the health of the forest community and, when appropriate, promotes the careful cultivation of local family forests for community benefits.

Vermont Family Forests (VFF) has adopted a set of principles to guide forest management activities. One of these principles states that "ECOLOGICAL FORESTRY should conserve native biodiversity, water quality, site productivity and scenic beauty; use only biological pest control; and mimic natural processes."

The following voluntary forestry practices have been designed for forest friends and stewards who are interested in practicing ecological forestry. They are most applicable to the following natural community types: Northern Hardwood Forest; Rich Northern Hardwood Forest; Mesic Red Oak-Northern Hardwood Forest; Red Spruce – Northern Hardwood Forest; Hemlock-Northern Hardwood Forest; Mesic Maple-Ash-Hickory-Oak Forest; and the Valley Clayplain Forest.

Accessing the Family Forest

Skid Trails, Truck Roads, and Log Landings

- ✓ Avoid spring harvests and/or rutting that extends beyond the A soil horizon.
- ✓ All skid trails, truck roads, and log landings should be flagged or otherwise marked prior to the inception of harvesting.
- ✓ Properly buffer and protect special habitats such as cliffs, caves, talus slopes, beaver meadows, vernal pools, spring seeps, and remnant patches of old growth forest.
- ✓ Use logging equipment that minimizes residual stand damage and soil compaction.
- ✓ The timber harvesting access network -- including truck roads, skid trails and log landings -- should be carefully designed and constructed and should not expose mineral soil on more than 10% of the treated area.
- ✓ Truck roads should be built at grades from 3% to 10% and skid trails should be built at grades from 3% to 15%.
- ✓ Skid trails, truck roads, and log landings -- located on easily compacted soils -- should only be used when adequately dry or frozen.
- ✓ Minimize the number and extent of truck roads and skid trails -- particularly in or near sensitive areas such as stream crossings, protective strips, and steep slopes.

- ✓ Truck roads and skid trails should be properly drained during and after use according to Table 1 in the Vermont Acceptable Management Practices (AMPs). The drainage structures should remain fully functional with post-harvest use.

- ✓ Log landings should: be located on nearly-level, stable ground; be kept away from protective strips; have water diversions installed; and be graded to prevent erosion and sedimentation.

Protective Strips and Buffer Strips

- ✓ Protective strips -- characterized by minimal soil disturbance, nearly-complete canopy closure, and many large, mature trees -- should be maintained between the access network and surface waters according to Table 4 in the Vermont AMPs at a minimum.

- ✓ Areas of exposed soil that occur within the protective strip should be seeded using native species and sources to the maximum extent possible and mulched according to Table 3 in the AMPs.

- ✓ Stream buffer strips should: be kept free of logging vehicles; have only little or no tree cutting; and be at least 25 feet in width.

Stream Crossings

- ✓ Stream crossings should be restored and non-permanent structures should be removed as soon as possible.

- ✓ Streams should be crossed with bridges or culverts which are properly sized according to Table 2 in the Vermont AMPs and installed at right angles.

- ✓ Sediment should be prevented from reaching streams by using turn-ups or broad-based dips on truck roads and skid trails prior to all stream crossings.

- ✓ Drainage ditches should not feed directly into streams or other surface waters.

Closeout

- ✓ Post-harvest use of the access network should be restricted in order to prevent erosion, compaction, and site disruption.

Vegetation Management in the Family Forest

- ✓ The single tree and small group (canopy openings of 0.25 acres or less preferred but up to 1.25 acres accepted) selection methods should be used for communities with gap-phase replacement (e.g. northern hardwoods) and the irregular shelterwood method should be used for communities with stand-replacing disturbance regimes (e.g. spruce-fir). Clear-cutting should be avoided.

- ✓ Retain at least of 6 cavity, snag, and/or decadent, living trees per acre on average, with one exceeding 18 inches diameter breast height (DBH) and 3 exceeding 16 inches DBH. To address safety issues, this may be accomplished by clustering cavity and snag trees in areas such as riparian zones and wetlands and away from access roads and trails.

- ✓ Retain at least 2 down trees or logs per acre exceeding 14 inches in diameter on average.

- ✓ Grow the largest trees and use the longest rotations possible within site and log quality limitations. Use uneven-aged management by area regulation whenever possible. Timber harvesting should generally raise the average (mean) diameter of the residual dominant and co-dominant trees of the forest.

- ✓ Any forest management in natural communities that are ranked as “very rare”(S1) and “rare” (S2) or in natural communities ranked as “uncommon” (S3), “common” (S4), and “very common”(S5) but with little or no evidence of past human disturbance should be reviewed and approved by the VT F&W Natural Heritage Biologists.

- ✓ When planting, use only local sources of native species, plant three or more species, and include deciduous species.

- ✓ When thinning or regenerating stands, favor native species over non-native species.

- ✓ Use natural regeneration to the maximum practical extent.

- ✓ Biological legacies of the forest community -- including coarse dead wood, logs, and snags; trees that are large, living, and old; buried seeds; soil organic matter; invertebrates; sprouting plants; and mycorrhizal fungi -- should be protected to aid in post-harvest recovery and to keep the forest from becoming "oversimplified".

- ✓ Promote the seed bearing capacities of poorly represented members of the forest.

- ✓ Tree felling should be avoided on slopes exceeding 60%.

- ✓ Leave all materials that are less than 3 inches in diameter on the site.

- ✓ Promote a vertical stand structure that includes over-story, mid-story, shrub, and herbaceous vegetation layers.

- ✓ The use of pesticides -- including insecticides, fungicides, and herbicides -- should be extremely limited and only those pesticides accepted by the Northeast Organic Farming Association should be used.

- ✓ The use of non-petroleum bar and chain oil and hydraulic fluid is strongly encouraged.

- ✓ The use of genetically modified organisms or “GMOs” should be avoided.

- ✓ Residual stand damage -- including basal wounds, broken and/or scraped tops, and exposed roots -- should be confined to 10% or fewer of the dominant or co-dominant trees.

- ✓ All trees to be removed should be marked prior to the inception of harvest.

- ✓ Average annual harvest volumes should not exceed 70% of the average annual growth.

- ✓ Avoid grazing by domestic animals.

Sensitive and Special Habitat Areas

- ✓ Areas including wetlands, raptor nests, upturned tree roots, seeps, vernal pools, hard/soft mast species, and other unique or fragile, natural or cultural sites including areas of historical or community significance sites require identification and protection.

- ✓ Harvesting and road building in wetlands, including the construction of new roads or expansion of the width of existing roads by more than 20%, will require a permit or review by the Wetlands Office of the Water Quality Division (802) 241-3770. The UVM publication "Wetlands Rules and Regulations: What they mean to your logging operation in Vermont" should be referred to when building or upgrading access and managing vegetation around wetlands.

Table 1: Recommended Distances Between Drainage Structures on Logging Roads

Feet

Road Grade (Percent)	Distance Between Waterbars	Distance Between Culverts	Distances Between Turnups, Dips & Pole Culverts
1	400	450	500
2	250	300	300
5	135	200	180
10	80	140	140
15	60	130	130
20	45	120	120
25	40	65	----
30	35	60	----
40	30	50	----

Table 2: Guide for Determining Culvert Size When Permanent and Temporary Truck Roads Cross Streams.
***DRAINAGE AREA* - The number of acres sloping toward the stream**

Well Drained Soils	Shallow Soils with Frequent Rock Outcrops Or Impermeable Soil Conditions	Recommended Pipe Diameter (Inches)
16	4	15
25	7	18
40	12	21
55	16	24
84	27	30
130	47	36
190	64	42
260	90	48
335	120	54
400	166	60
550	205	66
650	250	72

Table 3: Methods of Seeding and Mulching Logging Roads, Log Landings and Skid Trails.

Temporary Cover

Material	Rate of Application	Recommended Time of Application
(A) Hay Mulch Only	60 Bales/acre	Any Time
(B) Domestic Ryegrass	20 lbs./acre	Fall (for spring Growth)

OR

Permanent Cover

Material	Rate of Application	Recommended Time of Application
(A) Soil Conservation Mix* *Creeping Red Fescue 35%* *Redtop 6%* *Kentucky Bluegrass 24%* *Perennial Ryegrass 18%* *Annual Ryegrass 20%* *White Clover 5%*	42 lbs./acre	April 15-June 15 Or Aug. 1-Sept 15

*Premixed and available at most seed distributors.

Table 4: Protective Strip Width Guide

Slope of Land Between Roads or Landings and Streambanks or Lake Shores (percent)**	Width of Strip Between Roads or Landings and Stream (Feet Along Surface of Ground)
0-10	50
11-20	70
21-30	90
31-40*	110

*Add 20 ft. for each additional 10% side slope.