

FOREST STEWARDSHIP PLAN

DATE: 3/2/01

LANDOWNER:

Joe Landowner
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Anywhere, Iowa 55555

Preparer:

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LOCATION: Sec. 36 E. Washington Twsp., T91N-R17W, Some County

TOTAL ACRES: 30

LANDOWNER'S OBJECTIVES: A Goals Worksheet was completed listing enhancement of natural beauty, wildlife habitat, biological diversity, personal recreation, soil and water quality, and forest preservation as high priorities. A statement of objectives was to provide habitat for deer and turkey, protect the soil, maintain a natural forest, and improve the value of the property for the children. Deer and turkey hunting are the highest priorities.

DESCRIPTION OF AREA

Your property is outlined on the attached aerial photo. You have a diverse area along the Cedar River. The land was purchased 2 years ago. From the stages of tree growth, the area must have been grazed heavily until 25-30 years ago. Grazing was halted for enough years for the young trees to become established. The area was then grazed again until the property was purchased two years ago. The property borders the Boy Scout camp, so there is good deer and turkey habitat adjoining your area.

The 30 acres addressed in this plan are comprised of 28 acres of woodland, 1.5 acres of open ground that could be direct seeded, and 0.5 acres that could be planted with conifers. The woodland is divided into three stands, labeled 1-3 on the photo. I'll describe each area and suggest practices that would improve your property.

Soils -

The soils on the bottomland are Spillville loam and Nodaway silt loam. These are poorly drained soils that are subject to flooding. The majority of the bottomland is best suited for river bottom species such as green ash, silver maple, cottonwood, and hackberry. There are small ridges with better drainage that are growing walnut and bur oak. The steep slope that is mapped as Stand 1 has Sogn soils. Sogn soils are shallow to rock and very droughty. These soils are also prone to erosion. The upland area in the

southeast corner of the property has Backbone loamy sand and Sattre loam. Both soils are excessively drained and droughty. These soils will grow oak and conifers. There is a small area of Seaton loam along your south property line. Seaton loams are productive soils for all species of trees.

TIMBER MANAGEMENT

DESCRIPTION AND RECOMMENDATIONS FOR INDIVIDUAL STANDS

Stand 1: 8 acres

Stand 1 is a west facing slope with sawtimber sized (14" and larger in diameter) mixed hardwoods. The major species are hard maple, red oak, bur oak, white oak, basswood, and elm. The understory consists of ironwood, bitternut hickory, elm, hard maple, ash, and hackberry. Stand 1 can be managed on an uneven age system of management by selective harvesting and removing the undesirable species. This will encourage shade tolerant species such as hard maple and basswood. Selective harvesting will protect the slope from erosion and open up the ground to sunlight which will result in more understory development.

Selective Harvest -

The mature and defective trees could be harvested. This will be a light harvest of roughly 1,000 board feet per acre.

Timber Stand Improvement (Weed Tree Removal) -

Following the harvest, chemically kill undesirable species with the cut and frill method, using Tordon RTU herbicide. The cuts must be in a circle around the trunk and overlapping. Species to kill are elm, ironwood, boxelder, and bitternut hickory. The trees can also be cut off and the stumps treated with Tordon RTU to prevent sprouting. Good quality red elm 12" dbh and larger should be left. Undesirable species 1 inch and larger in diameter should be treated.

Desirable species that are poor formed or damaged should be cut or girdled at ground level.

All young oak and walnut should be released. Remove trees with crowns that are touching or overtopping the crowns of the oak and walnut.

Stand 2: 4 acres

There are two sites labeled "2" on the map. The 2.5 acres in the northwest corner is an opening on the bottom. This area is slightly higher than the surrounding bottomland. The 1.5 acres on the east side of the property is a ridgetop in the timber that is pole sized (4-10" dia.) elm, boxelder, and bitternut hickory.

Both areas could be planted with oak. Bur oak and swamp white oak are recommended for the bottomland site, and bur oak, white oak, and red oak are suggested for the upland site.

Site Preparation -

Remove the undesirable species on the area. Cut the trees and treat the stumps with Tordon RTU to prevent resprouting. Wet the outer rim of fresh cut stumps. This can be done anytime except spring during heavy sap flow. Species to remove are elm, ironwood, boxelder, bitternut hickory, and honey locust.

Tree Planting -

Plant the areas with large oak seedlings. Planting large stock is essential for the trees to compete with the competition and grow above deer browsing height. The trees should be a minimum of 18-24" in height and 3/8" in caliper. Plant the trees 15 ft. apart, or 200 trees per acre. Plant the trees in the tops of the trees you cut to help protect them from the deer.

Competing vegetation around each tree can be controlled with a mixture of Roundup and Princep 4L herbicides. In early May, place a stovepipe over the tree to protect it, and spray an area 4 ft. in diameter around each tree. Roundup will kill the existing vegetation and Princep is a pre-emergent that will inhibit regrowth for up to 2 months. Apply 2 quarts of Roundup and 3 quarts of Princep 4L per acre treated.

Stand 3: 16 acres

Stand 3 is bottomland with pole sized (4-10" dia.) elm, green ash, bitternut hickory, honey locust, and walnut. There are scattered, large bur oak, ash, and silver maple. There is a nice ridge of bur oak that is providing mast for many species of wildlife. Most of the bur oak should be maintained, however a few of the bur oak and scattered ash and maple could be harvested. This will open up the canopy for the younger trees.

Improvement Harvest -

Maintain the large, healthy bur oak. Harvest scattered, mature ash, silver maple, bur oak, and elm. Harvest the trees along with Stand 1.

Timber Stand Improvement (Crop Tree Release) -

Following the harvest, select a crop tree every 20-30 ft. apart. Crop trees are the trees you want to make up your final stand of large trees in the future. Crop trees should be a desirable species, straight, and free of major defects. Species to favor in your woods are walnut, green ash, silver maple, and hackberry. You could select a few bitternut hickories for diversity. Remove trees with crowns that are touching or overtopping the crowns of the crop trees.

The walnut trees could be pruned to promote veneer quality trees. Refer to the "Walnut Pruning" section in the appendix.

CONIFER PLANTING

Three rows of conifers could be planted along the north side of your food plot in the bottom. The best tree to plant in this area is red cedar. Plant the trees 10-12 ft. apart. There are other sites that could be planted with clumps of red cedar for winter cover.

Competing vegetation around each tree can be controlled with a mixture of Roundup and Princep 4L herbicides. In early May, place a stovepipe over the tree to protect it, and spray an area 4 ft. in diameter around each tree. Roundup will kill the existing vegetation and Princep is a pre-emergent that will inhibit regrowth for up to 2 months. Apply 2 quarts of Roundup and 3 quarts of Princep 4L per acre treated.

DIRECT SEEDING - 1.5 ACRES

The area colored red can be established with trees using seed. Seed has several advantages. The seed can be broadcasted, so the area will have a more natural appearance. More trees per acre can be established with seed, so the site will be captured by tree growth sooner. This minimizes the amount of mowing and herbicide that is needed for maintenance.

Seed Collection and Handling

Species like black walnut, white oak, northern red oak, ash and hard maple drop their seed in the fall and should be collected immediately after seed drop.

Walnuts can be sewn with husks on. If they are husked, keep the nuts moist or they will lose their viability. Large piles of green walnuts will heat up. Therefore, keep the piles relatively small to help dissipate any heat.

Here are some considerations for the proper collection of acorns:

- Acorns lose their viability if they become dehydrated. Therefore, collect the acorns soon after they fall off the trees.
- Put the newly collected acorns in bags. One standard feed bag will hold approximately two bushels. Feed bags will allow the seed to breathe and permit excess moisture to drain out.
- Immediately after collection, immerse the acorns in water for 24 hours, then place the soaked acorns in a cool dark place until planting. Soaking the seeds in water rehydrates the seed for better germination.

Ash and maple seed should be air dried (no heat) and stored in a cool place until sewn.

Site Preparation

The area is presently in a food plot. Plant beans on the area the year you are going to seed the area to trees. Prior to seeding, disk the area once to destroy the weeds.

Seeding Rates

The following amounts are recommended of green, unclean seed. In other words as the seeds can be collected from the ground, or directly off the tree.

<u>Species</u>	<u>Bushels Per Acre</u>
Green Ash, White Ash, Hard Maple	1
Red Oak, White Oak, Bur Oak, Shagbark Hickory	3-4
Black Walnut	10-15

These rates are minimums. The more seed the better.

Seeding Steps

The following steps are suggested:

1. Broadcast the walnut, oak, and hickory seed over the entire area. Disk the seed into the ground so that the majority of the seed is buried 1 inch deep.
2. Broadcast the ash and maple seed and lightly harrow the area. Ash and maple seed should be buried approximately 1/4 inch deep.
3. Roll the entire field with a cultipacker so that all seed is firmly packed in.

Weed Control -

It is important to have good control of the competition for the first 2-3 years of the seeding. The first two growing season are critical as the seed germinates and the seedlings begin to grow. The herbicides to use will depend on what weeds and/or grasses cause you problems.

Pre-emergent Herbicides -

In the spring before any vegetation begins to grow, broadcast spray the field with Pendulum herbicide. Apply 2 quarts of Pendulum per acre. Pendulum is a pre-emergent that will inhibit the germination of grasses and some broadleaves. If you have weeds and grasses already growing in the spring, add Roundup to the Pendulum to kill the existing plants. Apply 1 1/2 to 2 quarts of Roundup per acre. Be sure that no seedlings are up when you apply the Roundup, because Roundup will kill the seedlings.

An alternative to Pendulum is Goal. Goal controls both grasses and broadleaves, but is best for broadleaf control. Apply Goal at a rate of 2 quarts per acre in the fall after the seeding is completed, or early in the spring before germination of weeds and grasses.

You will need to scout your direct seeding in early June to determine what weed and grass problems are beginning to develop. You will almost always have a grass problem or weed problem, or both.

During early to mid-June, broadcast spray the following -

Grass Control -

Apply 1 pint of Fusilade per acre. Add 1/2 pint of a nonionic surfactant per 25 gallons solution.

Broadleaf Control -

Apply 1/2 pint per acre of Transline or Stinger.

****** If broadleaf weeds become a problem during the first year, mow the area high, so that you are mowing above seedling height.***

Seedling Planting -

Oak acorns are not available every year. There is often a 3-4 year gap between good acorn crops. When there is a light crop of acorns, most of the seed will have acorn weevils which destroy the seed. Also wildlife will tend to eat more of your seed when there is little seed in the woods.

During poor acorn crops, you should plan to plant oak seedlings the following spring to get oak in your planting. Plant approximately 200 seedlings per acre which is 15 ft. spacing between trees. You can use a tree planting machine or plant the seedlings by hand. Plant good seedling stock which is a minimum of 18-24" tall and 3/8" in caliper.

GENERAL COMMENTS

Tree planting and timber stand improvement will qualify for cost-sharing under the REAP program. The program is administered by the NRCS office. The REAP program will reimburse you for up to 75% of the costs not to exceed \$365 per acre for tree planting, and \$75 per acre for timber stand improvement. A minimum of 3 acres of tree planting and 5 acres of timber stand improvement must be completed in one year to qualify. You must apply at the NRCS office and receive approval before beginning any of the work to be eligible. You will be asked to sign a 20 year maintenance agreement if you participate in the REAP program. The maintenance agreement simply means you will maintain the practice for 20 years.

PRIORITY OF WORK SUGGESTED

1. Site Preparation & Tree Planting - Stand 2, 4 acres
Remove existing trees and replant with oak seedlings.
2. Harvest - Stands 1 and 3, 24 acres
Harvest mature and defective trees.
3. Timber Stand Improvement - Stands 1 and 3, 24 acres
Following the harvest, kill the undesirable species in Stand 1, 8 acres, and release the crop trees in Stand 3, 16 acres.
4. Direct seed 1.5 acres.

Plan submitted by

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ADDITIONAL MANAGEMENT CONSIDERATIONS

Historical/Cultural -

Historical and cultural sites such as old home sites or old cemeteries are a look into the past and can give insight to past management of your land. These areas should be identified so that you can protect them with management activities.

Recreation & Aesthetics -

Woodland management can decrease the short term recreational and aesthetic values of your property. Harvesting large trees will leave tops on the area and remove large trees that may have more value to you to look at. Timber stand improvement work that removes undesirable trees will allow more sunlight to reach the ground. Increased sunlight to the ground results in more weeds and brushy species for 5-10 years until young trees grow up and shade out the brush. Identify areas on your property that you value highly for recreation and natural beauty. You can manage these areas specifically for these values. Buffers of woodland can be left around critical areas and you can plant seedlings to create buffers and screens to reduce the visual impact of areas you are managing intensively.

Water Quality/Wetlands -

Woodlands and tree plantings greatly improve water quality. Trees reduce erosion and filter silt and chemicals from the water entering the streams. It is wise to maintain a good tree buffer along your streams and plant trees in areas that will help reduce soil erosion and improve water quality. Trees can be harvested in buffers along rivers and streams, but it should be a selective harvest that maintains good tree cover.

Wetlands are excellent filtering systems that are important to maintaining good water quality. Wetlands also provide good habitat for a variety of wildlife species. If possible, do not route roads through wetlands and maintain a good buffer of trees and grasses around the wetland area.

You have the wetland on the south end of your property with a spring running into the wetland, and the Cedar River on the west side of the area. Avoid running equipment in these areas and limit logging activity.

Native Prairies/Savannas -

Native prairies are a mixture of native grasses and forbs (wild flowers). The major grasses are big bluestem, little bluestem, Indian grass, and sideoats grama. Common forbs are bee balm, black-eyed Susan, gray headed coneflower, hoary vervain, New England aster, partridge pea, and purple cone flower. Native prairies provide excellent wildlife habitat for game and non game species. The tall grasses will stand up throughout the winter and provide winter protection. Native prairies are also very attractive and will give you different colors throughout the year as the different species of flowers bloom.

Consider establishing native prairie on your property to add diversity. There also may be small prairie remnants in undisturbed areas. These can often be improved by removing the woody species and burning periodically.

The 5 acre hayfield in the southeast corner of your property would be an ideal area for native prairie. Native prairie grasses also provide good forage for horses.

APPENDIX

EXPLANATION OF TIMBER MANAGEMENT PRACTICES:

Protection:

The most important step in managing your timber is to prevent grazing by livestock. Livestock trample and eat the young seedlings and damage the older trees. The result is a gradual deterioration and clearing of the timber. Soil compaction and removal of the duff layer stresses the trees and makes them more susceptible to insect and disease attack. Areas not grazed will qualify for the Forest Reserve Law. The law exempts your land from annual property taxes. You can apply at the county assessor's office before April 15th.

Timber Stand Improvement:

Timber stand improvement (TSI) is the removal of undesirable or low value trees. Removing these unwanted trees will provide more space and sunlight for desirable trees to grow. Timber stand improvement is a "weeding" to increase the growth of your forest.

Weed Tree Removal-

In older timber, the undesirable species can be killed to encourage the natural reseeding of desirable species. The removal of the "weed" trees allows sunlight to reach the ground so that seedlings can become established. The undesirable species can be killed standing by cutting flaps in the trunk and applying Tordon RTU or Pathway into the cuts. The cuts must be in a circle around the trunk and overlapping. The trees can also be cut off and the stumps treated with Tordon RTU or Pathway to prevent resprouting. Wet the outer rim of freshly cut stumps. The work can be done anytime except spring during heavy sap flow.

Desirable trees that are poor formed or damaged should also be removed. These trees should not be treated with herbicide. The stumps will resprout and produce another tree. Cut the stumps close to the ground so that the sprout will originate near the ground.

Crop-Tree Release-

In pole-sized stands (4-10" dia.), potential crop trees can be selected and released. At maturity, there is room for 50-75 trees per acre. Now you can select the trees you want to comprise your future stand of mature trees and thin around them to give them more growing space. Select a crop tree every 25-30 ft. apart. Remove trees with crowns that are touching the crowns of your crop trees. Crop trees can be selected based on criteria that meet your objectives. Normally, the crop trees will be a desirable species, show good form without large side limbs, and be free of major defects. Species normally favored are black walnut, red oak, white oak, white ash, basswood, cherry, and hard maple.

Walnut Pruning-

Walnut trees that are 2-12" in diameter can be pruned to promote veneer quality trees. You should prune during the dormant season. Limbs less than 1 inch in diameter are providing foliage which produces food for the tree and should be left. When the limbs approach 1 1/2 to 2" in diameter, they should be removed. Do not remove over 1/3 of the live crown in any one year. At least 50% of the total height of the tree should be maintained in live crown.

Harvest:

Uneven-Age Management:

Uneven-age management can be implemented to manage shade tolerant species. The timber is selectively harvested to remove mature, damaged, and defective trees. Because large trees are always present in the timber, only species that can grow in the shade can reproduce. Hard maple and basswood can be managed on an uneven-age system of management. Uneven-age management involves maintaining a good distribution of all tree sizes in your timber. It is critical that following a selective harvest, the smaller trees are thinned to remove the trees damaged by logging, poor formed trees, and low value species. The thinning following the harvest insures that you have high quality trees ready to replace the older trees as they are harvested.

Even-Age Management:

Even-age management involves a clearcut at some point in the stands rotation. Clearcutting creates full sunlight to the ground. All trees 2" and larger in diameter are felled. Oak, ash, hickory, and walnut require full sunlight to grow. Even-age management must be applied to successively manage these species. Clearcutting creates stands of trees all the same age. The trees compete equally for sunlight and are forced to grow straight and tall, resulting in high quality timber. Clearcutting also provides excellent browse and cover for wildlife.

Shelterwood:

Shelterwood is a form of even-age management. The final cut is a clearcut, but several thinnings are done prior to the final cut. The large, healthy trees are left to provide seed for naturally reseeding the stand, and to create partial shade to inhibit the growth of weeds and brush until the desirable seedlings are well established. The final cut or clearcut is normally done when there are a sufficient number of desirable trees that are 3-5 ft. tall.

The first thinning can be a killing of the undesirable species such as ironwood, elm, bitternut hickory, and boxelder. This removes the seed source for the undesirable species and opens up the ground to sunlight.

The mature and defective trees can be harvested if additional sunlight is needed for the development of desirable seedlings. The harvest should be light, removing the trees that are deteriorating and leaving the high quality trees for seed.

The shelterwood system can take many years to develop a good stocking of desirable young trees. You may have to kill the undesirable species several times to favor the species you want. The final clearcut should not be made until you are satisfied with the stocking of desirable young trees.

Marketing Your Timber Properly

There is no known value for trees. The trees are worth what you can get a timber buyer to put on a check. You can follow proper steps to insure that this price is reasonable and fair market value.

The first step is to mark each tree with paint that you wish to sell. This gives control over what is harvested from your woods. It also allows you to solicit bids on the same trees. It's helpful to have the trees scaled to estimate board feet volume so that you and the loggers have an estimate of what is for sale. This may entice more timber buyers to look at your trees.

The trees should be advertised to many timber buyers on a lump sum, sealed bid sale. You should receive a minimum of 3 bids to insure a fair price, but the more the better. The successful bidder should make full payment before the trees are cut and enter into a timber contract. The contract is your protection for how the logging operation is to take place.

The enclosed brochure, "Marketing Iowa Timber", explains the best procedure for selling your trees.