Woodland Stewardship Plan

Landowner: Donna Andersen
1300 County Road E E
Saint Paul, MN 55110-4775

Telephone: (651) 230-0785 cell
(651) 484-0150 home

Legal Description: T139N, R35W, Sec. 31, SW ¼ of SW ¼ & SE ¼ of SW ¼
Hubbard County, Straight River Township

Total Acres: 77.9 acres
Acres qualify for Woodland Stewardship Plan: 77 acres
Estimated acres qualifying for Managed 2c property tax status: 68 acres
Estimated acres qualifying for Sustained Forest Incentive Act (SFIA): 75 acres

This woodland stewardship plan was designed to help guide the management activities of the natural resources on your property. The plan is based on your goals in harmony with the environment. Project recommendations are for your consideration.

THE GOALS YOU IDENTIFIED FOR MANAGING THE PROPERTY ARE:
Manage land to be forested and provide recreation setting (walking trails). Okay to thin stands or harvest with small clear-cuts with reserve trees, but do not wish to clear-cut the land. Do desire habitat for wildlife, although they do not hunt. A pond touches the property on the north boundary where beaver have cut some trees. Interested in establishing prairie grasses on the twenty acre field and perhaps some pollinator habitat.

Prepared by: Steven L. Ludwig
37384 Nighthawk Road
Lake George, MN 56458
Telephone: (218) 699-3823
Email: stludwig@paulbunyan.net

August 18, 2017

For More Cost-Share Information Contact:

Kent Wolf	Daniel Pazdernik	Melissa Koebernick
DNR Forestry	Natural Res. Cons. Serv.	Hub. Cty. Soil&Water Cons. Dst.
14583 County Rd 19	212 ½ 2nd Str. W.	212 ½ 2nd Str. W.
Detroit Lakes, MN 56501	Park Rapids, MN 56470	Park Rapids, MN 56470
218 846-8281	218 732-9723	218 732-0121

History

The Green Valley Fire burned a small area along the north boundary of the property in 2013. Except for a small area (less than one acre) the fire was a low intensity event that did not kill many trees. More intense burn area is shown on the Stand Map.

Tree planting (few hundred tress) has been tried recently in the old field (east end of property) with very poor success.

Ecosystem Information

The text: "Field Guide to the Native Plant Communities of Minnesota – The Laurentian Mixed Forest Province" identifies this land is within the Pine Moraines and Outwash Plains Subsection of the Northern Minnesota Drift and Lake Plains Section. The following descriptions are for **natural communities without human influence (no fire control) and under historical conditions (few deer and different seed sources)**.

The property appears to be FDc24 on the uplands. The canopy usually is dominated by jack pine with minor amounts of paper birch, red pine, quaking aspen, bur oak, and northern red oak.

Surface fires were common with intervals of 30 years. Catastrophic fires occurred at intervals of 130 years and windthrow at 1000 years. These disturbances resulted in the following growth stages.

0-55 years. Young forests recovering from fire, strongly dominated by jack pine with red pine and quaking aspen present as minor components.
55-75 years. This is a transition period marked by a partial decline in jack pine, mirrored by an increase in red pine. Northern red oak and bur oak peak during this period.
75-155 years. Mature woodlands dominated by jack pine mixed with red pine. Cohorts of younger red pine and jack pine are characteristic in the understory, becoming established following mild surface fires.
155-195 years. A transition period marked by a sharp decline in red pine and a modest decline in jack pine, mirrored by increases in white pine.
>195 years. Very old forests dominated by jack pine of several age classes. White pine and some old red pines are present as supercanopy trees.

Soils

Soils information is from the Soil Survey of Hubbard County, Minnesota, as obtained from the NRCS website at https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. A soils map and soil descriptions are included in the 3 ring binder provided.

Soil map symbols include 540, 867B, 1113, 1127A, 1136 and 1444. These symbols identify the upland soils as loamy sand over sand or sandy loam over sand. The "A" symbol indicates slopes of 0-2% and the "B" symbol slopes of 1-8%.

The lowlands are muck over either muck, sand or sandy loam.

The landform is outwash plains.

Threatened, Rare or Sensitive Species

A check with the DNR St. Paul Office has identified there are no known locations of threatened, rare or sensitive species on this parcel of land.

Cultural Information

No cultural sites were found during the field visit on your property. The DNR Office in Grand Rapids identified no known locations of cultural sites exist in there data base.

Property Lines and Survey Corners

No property corner markers were found during the field work. The north property line has the corners marked with signs identifying the State Wildlife Management Area that lies to the north. 99th Avenue is the west boundary and Hubbard Line Road the south boundary. Abalone Drive is located on the east boundary.

Adjacent Properties

The adjacent property to the north is the mentioned State Wildlife Management Area which is dominated by small lakes and wetlands. The property to the west is forested similar to this property. A residence and swampy area exist to the south. Also to the south and east is open agricultural land.

Landscape Committee (MN Forest Resource Council)

Minnesota provided a setting whereby a citizen group could learn about the ecosystems in this area and make recommendations for future conditions of forests in this area. The desired future forest condition for the entire Northern Minnesota Drift and Lake Plains Section includes: increase red, white and jack pine, cedar, tamarack, spruce and fir; create a range of species, patch sizes, and age classes that more closely resemble natural patterns and functions; the amount of forestland and timberland will not decrease...large blocks of contiguous forest land that have minimal inclusion of conflicting land uses will be created...

Their report is available at
http://www.frc.state.mn.us/documents/council/landscape/NC%20Landscape/MFRC_ForestResourceManagement_LandscapePlan_NC_MN_2003-03-01_Plan.pdf.

Stand Map

Scale: ½ mile

Inventory Summary Table

Stand Number	Description	Acres	Age	Stocking in Basal Area per acre or trees per acre (range)	Range of Diameters at breast height {dbh}	Site Index	Volume* (range)
1	Buildings	0.5	NA	NA	NA	NA	NA
2	Aspen-Oak-Pine	53.4	4/22/36/ 46/52/70+	98 (20-170)	<1-15	JP62 QA70	17 (1-43)
3	Upland Openings	20.1	2/15	50 tpa	2-4	NA	NA
4	Wetlands	3.9	NA	NA	NA	NA	NA

* not for timber sale use; includes all species & products.

Stand Descriptions and Potential Activities

Stand 1 0.5 acres Buildings

This stand is not part of the forest plan. It is included to account for all the acres.

Stand 2 53.4 acres Aspen-Oak-Pine

This is the forested area of the property. This stand is a mix of aspen, northern red oak, bur oak, jack pine, Norway pine, balsam fir and paper birch. The aspen, oak and pine were more prevalent. Elm, black cherry, red maple, ash and ironwood are also present in minor amounts. Tree stocking varies a lot from 20 to 170 sq. ft. per acre of basal area. This indicates some areas are poorly stocked and others well stocked with trees (the average is good stocking at 98 sq. ft. of basal area). The tree size also varies with diameters ranging from <1 inch to 15 inches in dbh. This variation also represents some age differences (4-70+). The fire killed spot has young aspen less than an inch in dbh. Pockets of aspen around 20 years of age were also found.

Trees regenerating on the plots include aspen, northern red oak, bur oak, ash, balsam fir, red maple and ironwood.

Understory plants include cherry, Juneberry, beaked hazel, American hazel, raspberry, snowberry, blueberry, bracken fern, poison ivy, big leaf aster, wild sarsaparilla, bellwort, woodbine, bedstraw, meadow rue and grass.

Desired Future Condition: Allow natural processes to function.

If left undisturbed for many years the shorter-lived tree species will die (aspen, paper birch, jack pine) allowing the more shade tolerant and longer lived trees to dominate the stand. These will

likely include Norway pine, balsam fir, northern red oak, bur oak, elm, red maple, ash and ironwood. The mixed age and multi-sized character of the stand will continue.

Desired Future Condition: Harvest trees and regenerate stand.

Harvest using clear-cutting with reserve trees is the most common method of harvesting and regenerating aspen in Minnesota. Typically, aspen is harvested when it reaches 40 years of age. Maximizing revenues would suggest all the aspen should be cut as soon as it reaches this rotation age. Some aspen can be retained until 60 years of age with some loss of volume. Thus the harvest age is usually between 40 and 60 years of age.

Harvesting in blocks of 3 to 10 acres; that is set up to occur every 15-20 years creating 3 different age classes of aspen in close proximity to each other is **ideal for grouse habitat** and also creates good deer habitat. Young grouse are protected from hawks and owls when feeding in young aspen less than 15 years old (dense stands of young stems). The older aspen stands are used as nesting areas in the spring (stand over 30 years of age). The transition age stands (15-30 years of age) are not as heavily used, but are necessary to achieve the older stands.

Roughly, two-thirds of the plots have aspen present. This approach should work in the areas with existing aspen present to supply the root sprouts.

Desired Future Condition: Harvest and regenerate trees in small openings.

A new version of the shelterwood silvicultural system has been developed that allows frequent harvest entries and creates open conditions that allow tree species requiring more sunlight to regenerate and grow. It has been called "Expanding-Gap Shelterwood". It is meant to be a flexible harvest approach for regenerating mid-tolerants, but depending on the size of the opening, should work for most tree species.

The first entry should harvest small openings that are 1-2 tree heights wide. Larger would favor more light demanding species (Norway pine, jack pine, aspen, paper birch and oak). It is suggested that harvest entries occur every 5-15 years, treating 20% of the stand with each entry. Thus, the entire stand is treated within 25 to 75 years. The subsequent entries enlarge the previous harvest area by another 1-2 tree heights.

Caution is needed to make sure the desirable trees are regenerating. If species like ironwood or hazel shrubs are present, they may occupy the site and out-compete the desired regeneration. Some site preparation may be needed to prepare seedbeds or remove competing vegetation. Simply mowing the competing vegetation may work in some instances. Rather than remove undesirable trees prior to regeneration occurring, it may also work to release the desirable trees from competition after they have become established.

Desired Future Condition: Harvest and plant conifers.

Areas that are harvested or cleared of the existing trees could be planted to conifers. The following two approaches to tree planting are current practices used by the timber industry in northern Minnesota.

Potlatch Corporation uses the following set of treatments to regenerate cutover lands with great success:

July to mid August – spray with herbicide (Accord SP at 2 ½ qts. per acre);
October – site prep using power disc trencher;
May – plant red pine;
Fall (Sept.-Oct.) – bud cap to prevent deer browse;
May of year following planting – herbicide with Velpar L to kill grass competing with red pine seedlings (only labeled for red pine).

Not all of these treatments are used on every site. However, on sites with shrub and grass competition the herbicide and mechanical treatments would likely be used. It is possible to regenerate the area with just the power disc trencher treatment, tree planting and protection from deer browsing.

Herbicides would increase the number of surviving seedlings and increase the growth of the trees. It usually results in a fairly homogenous stand of planted trees with little or no under-story vegetation and few other species of trees present.

Blandin (a forest product company in Grand Rapids, MN) is routinely planting white spruce and white pine the first year after clearcutting aspen stands. Roughly 300-400 trees per acre are planted in the slash without further site preparation. Within a couple of years the seedlings are almost impossible to find in the dense foliage and aspen regeneration. Five years after planting, the conifers are released from competition by using brush saws to cut the vegetation within a small distance of the trees (4-5 feet). Tree survival has been good. Their goal is to grow mixed stands of aspen and conifers. Their efforts have demonstrated that we can grow conifers under aspen and achieve survival. Evidently, the young aspen and other plants protect the planted trees from deer browsing. They have experienced some failures with the white pine due to deer browsing (deer seem to favor northern white cedar, white pine, jack pine, balsam fir, tamarack, Norway pine and spruce in that order with cedar the most heavily browsed). This approach only works for tree seedlings like spruce and white pine that are moderately tolerant of shade. Usually, jack pine and Norway pine would die from lack of sunlight if planted under these conditions.

Desired Future Condition: Enhance wildlife habitat by increasing acorns.
Oak produce acorns which are a very important food source for a variety of wildlife, including deer and turkeys. Bur oak produce flowers in the spring and mature acorns the same fall. Northern red oak require two growing seasons for the flowers to produce acorns. Usually the literature suggests acorns from the white oak family, which includes bur oak, are more favored by deer. The minimum age to produce bur oak acorns is around 35 years (25 for northern red oak). Bur oak have to be 75+ years of age or older to produce large acorn crops, according to the literature (50 for northern red oak). Oak crowns exposed to full sunlight produce the most acorns. Releasing individual trees by cutting competing vegetation should help with acorn production.

Desired Future Condition: Manage as old growth.

Managing some portion of your property for old growth will provide habitat for wildlife that utilize large diameter trees, snags and down woody material on the ground. The presence of dead trees, downed trees and older trees with heart rot (hollow) are part of the characteristics desired in old growth stands. These stands usually have a nearly closed canopy with a multi-aged aged, multi-sized appearance. This would provide habitat for a wider variety of wildlife species on your property.

Stand 3 20.1 acres Upland Openings

Two areas are identified as upland openings. The smaller strip is estimated at 1.5 acres and the larger field at the east end of the property at 18.6 acres. These open areas are dominated by grasses and forbs. Mullien and milkweed are commonly present. Also present are minor amounts of raspberry, hazel, strawberry, thistle and feather moss. Big blue stem was observed in the northwest of the larger opening. This is a native prairie grass species.

Scattered jack pine are present in the larger opening. These trees are 2-4 inches in dbh and 12-25 feet in height (estimated at 10-20 years of age). A stringer of immature jack pine, aspen and hazel shrubs occur around the perimeter of the opening adjacent to the roads that follow the property boundary. Some small trees have regenerated from these edge and scattered trees. The small seedlings are less than 2 years old and less than 1 foot in height.

Fourteen plots were used to measure the tree stocking in the open areas. Jack pine seedlings were present on two of the plots – along the north boundary of the larger opening. Oak were found on one plot along the south edge of this opening. The smaller opening had oak seedlings present on two of four plots. Some aspen seedlings, jack pine seedlings and hazel shrubs are invading the open areas from the forest edges.

Pocket gophers are prevalent in the larger opening, especially in the north half of the area. These rodents frequently cause significant mortality in young trees by eating on the roots.

Desired Future Condition: Allow natural processes to function.

If left undisturbed for many years the open areas will slowly become stocked with trees and shrubs. Some will invade from the nearby forest edges. The 2-4 inch jack pine scattered in the larger opening will seed in additional jack pine. Jack pine has the ability to produce seed at a very young age (5 years or so). Normally jack pine older than 30 years of age produce serotinus cones (closed cones that retain seeds – fire will open the cones). Younger jack pine produce cones that open and shed seeds. This adaption allows scattered jack pine to become established in old fields and slowly stock the open area. It may take 30-50 years for the entire area to become stocked with trees.

Desired Future Condition: Plant fruit bearing trees & shrubs for wildlife.

Almost every year the local Soil & Water Conservation District has small bundles of bare root plants available that are identified as wildlife packets. These are bundles of 50 or so plants that include fruit bearing trees and shrubs like cherry, dogwood, etc. These are meant to improve the habitat for wildlife that feed on these plants. They would need protection from deer browsing until they become established (>3 years old). Plastic tubes, chicken wire fencing and repellant sprays are some methods that have worked to protect plants from deer.

Desired Future Condition: Plant conifers.

Conifer seedlings could be planted to stock the open areas with trees. Norway pine or jack pine would be most suited to the site. White pine and white spruce should also grow here. The site could be machine planted with seedlings in the spring. Protection from deer browsing would be necessary. Bud capping (stapling ¼ sheet of folded paper around the terminal bud) has worked well. All nursery seedlings have lots of nutrients from being fertilized and deer seem to feed on

these seedlings more than natural seedlings. Norway pine and white spruce should be protected at least the first year. White pine and jack pine will need repeated bud capping until they are >4 feet tall as the deer seem to favor these trees when browsing.

Desired Future Condition: Plant Deer Food Plots.

Russell Johnsrud, a retired NRCS professional, is an excellent source of information on food plots. He has presented seminars on this topic for the Minnesota Deer Hunters Association. Areas where you wish to create food plots could be tilled, fertilized and planted.

Basic Food Plot Mixture and fertilizer for sandy soils common in Hubbard County:
Red clover @ 4 lbs/acre
Alsike clover @ 2 lbs/acre
White clover @ 3 lb/acre
Perennial rye grass @ 3 lbs/acre
Kentucky blue grass @ 1.5 lbs/acre
Creeping fed fescue @ 3 lbs/acre.

Basic fertilizer recommendations include:
2 bags (66 lb. bags) of 0/0/60 per acre
2 bags (66 lb. bags) of lake friendly fertilizer (no phosphorus) per acre; contains N and K.

Option for better soils (these would require lots of fertilizer on your sandy soils)
A mixture of the following should benefit a variety of wildlife:
Alfalfa @ 2 lbs/acre
Creeping red fescue @ 3 lbs/acre
Perenial rye grass @ 3 lbs/acre
Red clover @ 3 lbs/acre
White clover @ 2 lbs/acre
Alsike clover @3 lbs/acre.

Fertilizer recommendation for above:
100 to 150 lbs/acre of potash
40 lbs/acre Nitrogen

Alternating corn, soy beans and alfalfa on the same site should work well, with the alfalfa occupying the site for 3-4 years. The alfalfa will benefit deer and other wildlife more if it is mowed at least once. Rape, turnips, sunflowers and rutabagas make attractive additions.

The Summer 2015 edition of *Whitetales* published by the Minnesota Deer Hunters Association has an article titled "Candy Crops for Hunting Plots". This article really promoted brassicas for food plots to feed deer in late fall, early winter. Brassicas include rape, canola, turnips and radishes. Sugar beets are also good, but cannot be truly called a brassica. Some of the commercial food plot mixtures include brassicas, examples: Maximum, Winter Bulbs & Sugar Beets, Deer-RADISH, Perfect Plot, Premium Perennial, Full Draw, Green Patch Plus and Last Bite.

The University Extension Office or your local NRCS Office can assist with soil analysis and give specific recommendations on the kinds and amounts of fertilizer for the desired plantings. Normally, soil samples should be taken from a depth of six inches. Several samples may be mixed together if the soils appear similar.

Desired Future Condition: Improve bluebird habitat.

Bluebirds use upland openings, but require hollow trees or nest boxes to successfully nest. People often place bluebird houses along the edge of openings to improve the habitat for these beautiful birds. The MN DNR recommends removing the nest materials after the nesting season is over

Desired Future Condition: Plant flowering native plants to create pollinator habitat.

The NRCS has a program where they assist landowners with planting native plants to improve the habitat for pollinating insects. These are typically butterflies and bees. A small area is cultivated and seeds planted, much like a garden or field crop. Areas treated are usually an acre or so in size. Plants are selected to have blossoms present through most of the summer months.

Desired Future Condition: Plant native prairie grasses to assist with prairie restoration.

NRCS also has a program to assist with prairie restoration. Old fields are especially good sites to plant native grasses. This is essentially farming, where the soil is worked up and planted. Soil analyses would be needed to determine the necessary fertilizers or soil acidity correction (liming).

Stand 4 3.9 acres Wetlands

Two wetland areas occur on the property. One is adjacent to the Hubbard Line Road. This area is dominated by alder, willow, sedge and cattails. Black ash trees are present in the east end of this roadside wetland. The wetland exists across the road on the adjacent property to the south also.

The second wetland area is along the north boundary. Essentially, this one is the wetland border along one of the small lakes in the State Wildlife Management Area. Willow and sedge grasses dominate this wetland.

Desired Future Condition: Allow natural processes to function.

These wetlands are expected to remain unchanged for many years. If the water level rises more cattails and open water will exist. If the water level lowers it would favor the establishment of more woody vegetation (shrubs and ash trees).

Desired Future Condition: Provide nest boxes for cavity nesting waterfowl.

Wood duck nest boxes could be built or purchased and erected along the lakeshore to provide nesting sites for wood ducks, mergansers or other wildlife. The DNR recommends placing wood shavings in the nest boxes and replacing it each year. They also state nest boxes can be up to ½ mile from water.

Table of Recommendations

Stand Number	Description	Acres	Activity	NRCS Code	Year
1	Buildings	0.5	NA	NA	NA
2	Aspen-Oak-Pine	53.4	Harvest to create small opening 3-5 acres in size to create 3 age classes of aspen 12 acres per harvest	645 Upland Wildlife Habitat Mgt 647 Early Successional Hab. Dev.	2027/2037/ 2047
			Manage as old growth 17 acres	645 Upland Wildlife Habitat Mgt	ongoing
3	Upland Openings	20.1	Plant pollinator habitat 1 acre	146 Pollinator Habitat Enhancement	2018
			Plant native prairie grasses 15 acres	643 Restoration of rare or declining communities	2018
			Mow to maintain open area 1-2 acres	647 Early Successional Hab. Dev.	2022
			Allow natural jack pine to develop 3 acres along north boundary	NA	ongoing
			Place bluebird houses along edge of open areas	645 Upland Wildlife Habitat Mgt	2018
4	Wetlands	3.9	Place nest box for wood ducks & maintain	644 Wetland Wildlife Habitat Mgt.	2018
NA	Maintain Trails	NA	Trails	Mow trails to keep open	ongoing

The activities shown in the above table are recommendations. Other activities identified in the plan may be implemented rather than those shown in the table. NRCS, MN DNR or the Hubbard County Soil & Water Conservation Office may have funds available to cost share with implementing activities for natural resource management – see contacts identified on the first page.

Following Minnesota's best management practices as found in the publication: Sustaining Minnesota Forest Resources, Voluntary Site-level Forest Management Guidelines will go a long way toward providing wildlife habitat, timber resources and visual quality while protecting water and soil resources. This is a publication provided free of charge by contacting the DNR at 1-888-MINNDNR.