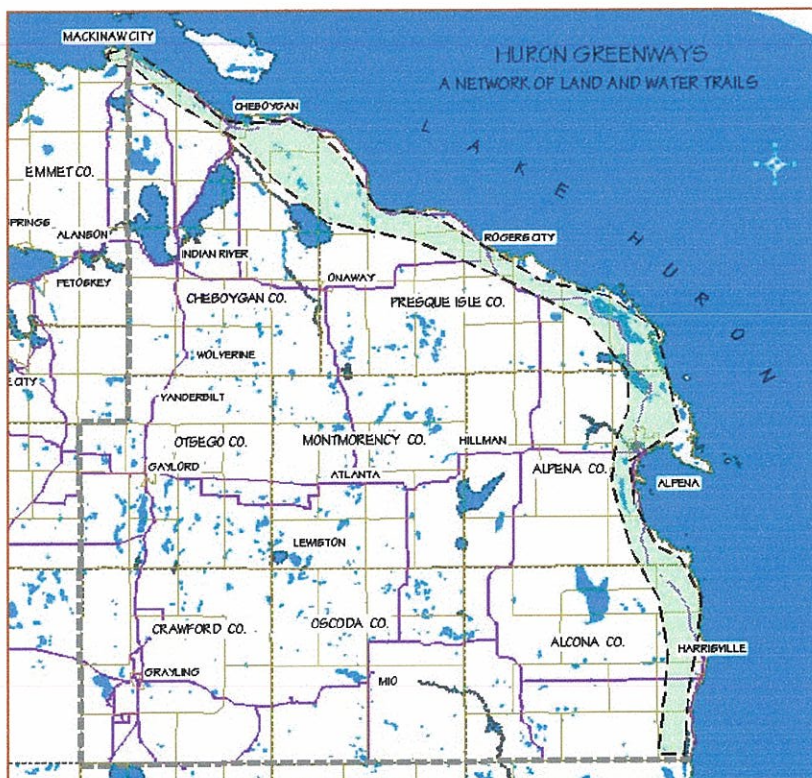


# HURON GREENWAYS RESOURCE STEWARDSHIP PLAN



Date: February 20, 2001

Prepared for:  
Steve Gonyea  
14200 Behning Road  
Spruce, Michigan 48762

Prepared by:  
Northeast Michigan Council of Governments  
121 East Mitchell  
Gaylord, Michigan 49735

Richard Deuell, AICP  
Community and Natural Resource Planner  
rdeuell@nemcog.org





# RESOURCE STEWARDSHIP PLAN

**Property Owner:** Steve Gonyea

**Address:** 14200 Behning Road  
Spruce, Michigan 48762

**Parcel Size:** 240 Acres

**Parcel Location:** NW 1/4 and W 1/2 of SW 1/4, Section 33, Sanborn Township, Alpena County, Michigan

**Prepared By:** Northeast Michigan Council of Governments  
121 E. Mitchell, Gaylord, Michigan 49735

## SUMMARY OF PROPERTY CONDITIONS AND RECOMMENDATIONS

### NATURAL FEATURES:

With the exception of narrow drainages, a majority of the property is being farmed. The property is located in the Devil's River watershed, a smaller coastal watershed of northern Lake Huron. Prior to logging and land clearing during the late 1800's, this area was covered with old growth hardwood and pine forests. The presettlement forests were rich ecosystems that stretched across the northern Lower Peninsula of Michigan. The backbones of these ecological corridors were the many rivers, creeks and intermittent drainages, along with their associated riparian forests.

Within the watershed, a wide band of forests and wetlands bordering the Lake Huron Shoreline still remain relatively intact. Further inland, forestlands associated with the Devil's River, its tributaries and intermittent drainages were cleared decades ago for farming. As a result, the rich presettlement ecological

corridors that centered on the Devil's River waterways have been fragmented.



Devils River - South Property Line

As farmland is taken out of production, opportunities arise to reconnect the scattered woodlands and reestablish these once ecologically significant corridors. The challenge for accomplishing this large task is that fragmented sections of the corridors often span several ownerships. This resource plan is one of three plans developed in Sections 31, 32 and 33 of Sanborn Township.







Combined, the three plans present a scenario that will reconnect several forested areas to the Devil's River. The benefits of implementing these three plans extend far beyond the properties themselves.

#### **WILDLIFE FEATURES:**

Since the property is being actively farmed, the area is used by wildlife such as the red-tailed hawk, eastern bluebird, eastern meadowlark, red fox, woodchuck, milk snake, and hognose snake that prefer upland openings. The narrow band of shrubs and young trees growing in the ditch along Spruce Road functions as a narrow wildlife corridor. As well, the small grove of trees in the southwest part of the property provides limited wildlife habitat. Recommended management activities in this plan will improve and diversify the wildlife habitat on the property, by planting woody cover, creating travel corridors, providing a variety of food types and creating nesting cover.

#### **RECREATIONAL & AESTHETIC FEATURES:**

The farm fields provide long open views of the landscape with a backdrop of distant forests. The property currently provides limited opportunities for outdoor recreation such as hiking, cross-country skiing, hunting and camping. Developing a network of trails in conjunction with the recommended plantings will create a variety of views and improve recreational uses of the property.



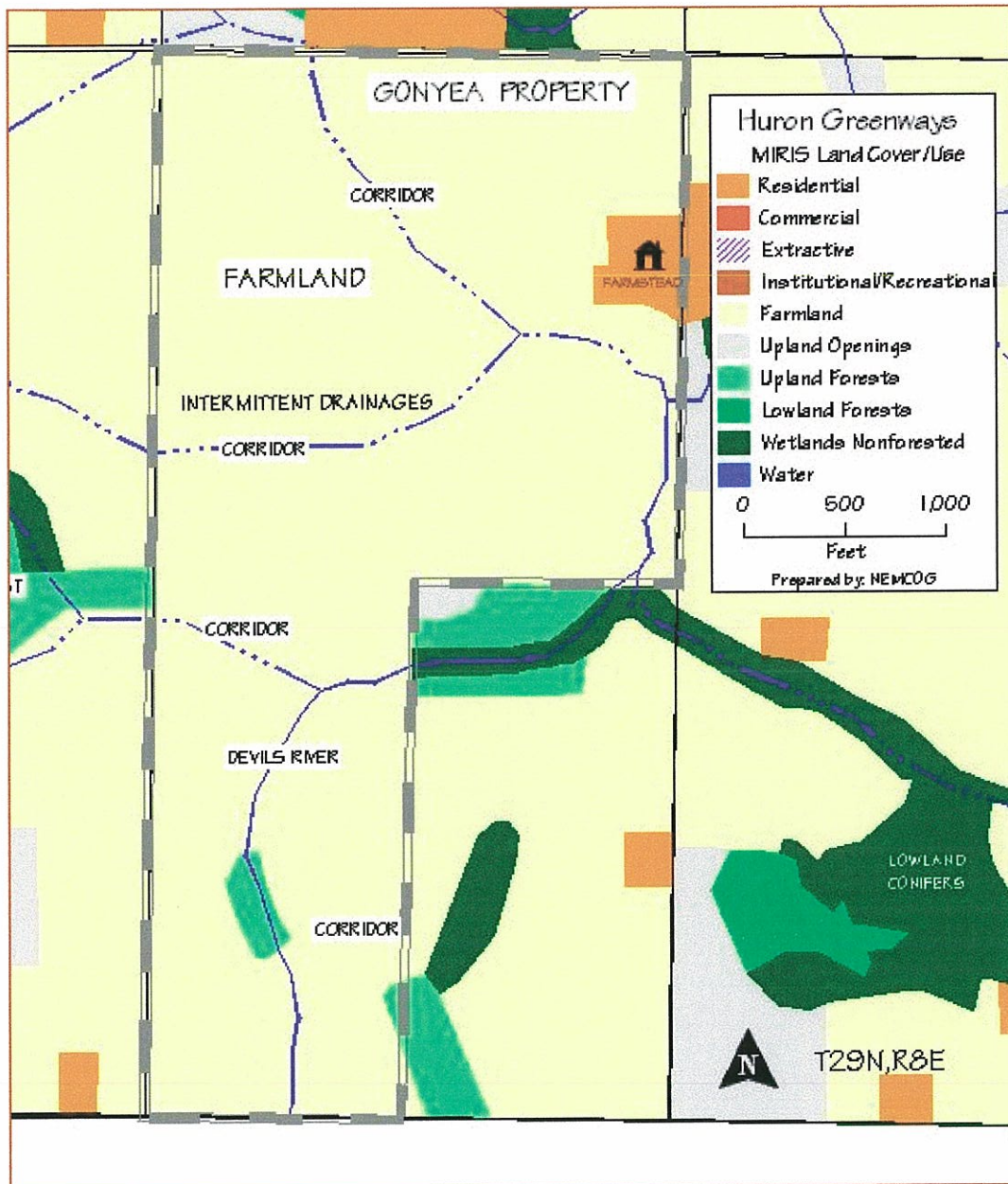
#### **RECOMMENDATIONS:**

Based on landowner's objectives, field visit, and subsequent analysis of field data the following recommendations have been developed:

1. Plant white spruce for cover and fruit & nut bearing plants for wildlife food along the Devil's River and intermittent drainages.
2. Improve quality of remaining fallow open areas by planting DNR wildlife mix.



# Cover Type Map







## RECOMMENDED MANAGEMENT ACTIVITIES

### RESOURCE PROTECTION

#### Devil's River and Intermittent Drainage

The intermittent drainages are hydrologically connected to the Devil's River. Decades ago, to prepare the land for farming, forested buffers along these drainages and the river were cleared. These riparian forests, that bordered the rivers, creeks and drainages, formed the backbone of much larger ecological corridors that reached inland from the coast of Lake Huron. Today, there is an interest in reestablishing the green network. Coordinating plantings with adjacent landowners could result in



*Conifer planting along field edge adjacent to woodland*

reconnecting several forested areas to the Devil's River. The benefits of implementing these plans extend far beyond the properties themselves.

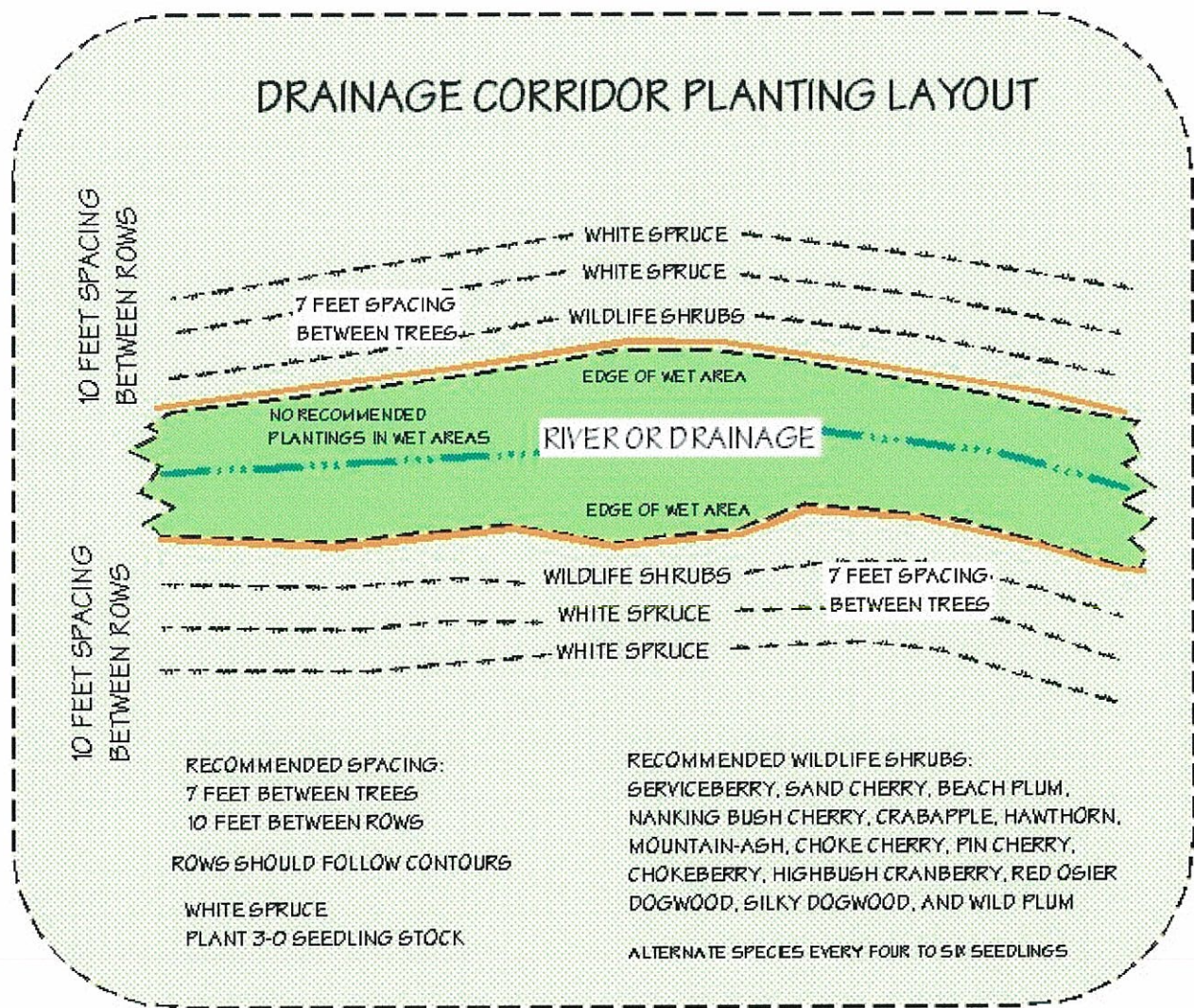
To reestablish corridors, the plan recommends planting conifers and wildlife shrubs. Three rows would be planted either side of the drainage and river, for a total of six rows for each corridor. See figure on following page. Plant the trees

on the side slopes and upland areas, not in the bottom of the drainage valley. The below figure shows the recommended planting layout for the drainage corridor plantings. The recommended activities map shows the locations of the plantings on the property. Plant two rows of white spruce and one row of wildlife on each side of the intermittent drainages. The wildlife seedlings should be planted 7 feet apart in the rows. Recommended wildlife shrubs and trees are serviceberry, chokeberry, sand cherry, beach plum, Nanking bush cherry, crabapple, hawthorn, mountain-ash, chokeberry, choke cherry, pin cherry, highbush cranberry, red osier dogwood, silky dogwood, and wild plum. American bittersweet, Virginia creeper, and wild grape are vines that produce fruit cherished by wildlife along with adding to the visual quality of the plantings.

Nut shrubs and trees such as American hazelnut, beaked hazelnut, black walnut, heartnut, American chestnut, and butternut are beneficial for both humans and animals alike. Mast bearing trees such as white oak, red oak, burr oak, American beech and black locust will enhance the habitat for wildlife.

- Plant a total of 9800 seedlings to improve the drainage corridors. The planting layout calls for 6500 white spruce and 3300 wildlife shrubs and trees. Contact the Alpena County Conservation District for information on cost sharing and ordering seedlings.





## WILDLIFE HABITAT MANAGEMENT

### Farm Fields

Animals use openings for food sources and nesting sites. Forest openings serve an important function in the spring; because they are in the sun most of the day, openings are the first areas to lose snow and to green up. After a winter of eating twigs and seeds, browsing animals, big and small, seek out these spring green zones for a succulent nourishing fresh meal. Of course, predators like the red tailed hawk and fox understand this fact and search these areas for a spring meal. Flowering

plants throughout the growing season attract insects, which in turn are devoured by birds. The loose soil, free of tree roots, is used by burrowing animals such as the woodchuck, fox, eastern hognose snake and meadow voles.

The red-tailed hawk, eastern kingbird, loggerhead shrike nest in the canopy of surrounding trees, but feed extensively in open areas. Other species such as the American kestrel, eastern bluebird, and eastern screech owl nest in the trunks of trees and snags in and around openings. Short-eared owl, common nighthawk, killdeer, upland sandpiper, horned lark,





vesper sparrow, Savannah sparrow, grasshopper sparrow, bobolink, eastern meadowlark and eastern cottontail nest on the ground. Shrews, woodchucks, ground squirrel, field mice, red fox, voles, and badgers along with the eastern hognose snake, smooth green snake and milk snake nest beneath the ground or in debris. These field dwellers also hunt for food in openings.

A mixture of three habitat types is best for wildlife cover. These general types include: all-year woody loafing cover (tree and shrub planting); the winter roost cover (tall grass and native grasses); and summer nesting and brood cover (grass/legume mix). The combination of types can best be achieved by planting hedgerows and clumps of trees and shrubs in and around fields of grasses and forbs.



The drainage corridor plantings will break-up the single large open area into smaller openings, provide nesting areas, escape zones, and travel corridors. As detailed in the previous Resource Protection section,



the recommended drainage corridor plantings incorporate fruit and nut bearing plants into the row design.

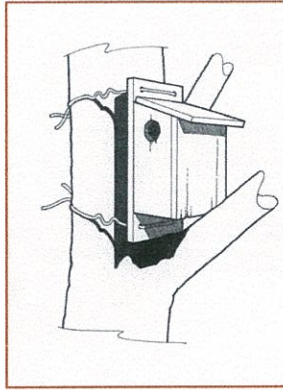
If acreage is available, plant a fifteen feet wide buffer strip of grasses and clovers along the outer edge of the drainage corridor planting. This strip will provide additional filtering of surface water run-off, along with providing wildlife food and habitat. To establish permanent cover, plant a mixture of timothy, tall fescue, orchardgrass, alfalfa, trefoil, alsike clover, medium red clover, ladino clover, mammoth red clover, and white tail clover. This mixture is sold by some seed companies and often called the Michigan deer and turkey habitat mixture.

- Improve food and cover availability by planting a mixture of grasses, clovers and legumes, called the Michigan deer and turkey habitat mixture.



### Nesting Boxes

Sometimes, it may be necessary to emulate snags or den trees by placing nesting boxes around the forested areas. The mixture of open grasslands and mixed hardwood forests in the area provides excellent bluebird habitat. The limiting factor is nesting sites. Bluebirds are cavity nesting birds, requiring hollowed out cavities in snags or dead standing trees. Build bluebird houses according to the design supplied in this plan. Houses should be placed 5 to 6 feet above the ground, 100 yards apart. To minimize competition from tree swallows, erect bird houses in pairs. The paired houses should be 25 feet apart. Then place the



pairs 100 yards from adjacent pairs of bird houses. Tree sparrows arrive up north first, occupying one of the nesting boxes. The sparrow's territorial instincts keep tree sparrows out of the other nesting box, since 25 feet is too close for another tree sparrow to nest. Tree sparrows do not exhibit these same territorial responses with other species of birds like the bluebird. When the bluebirds return to the area at the end of their northern migration, the other nesting box will be vacant and available to set up house keeping.

- Erect 8 bluebird nesting boxes in the open areas around the property.

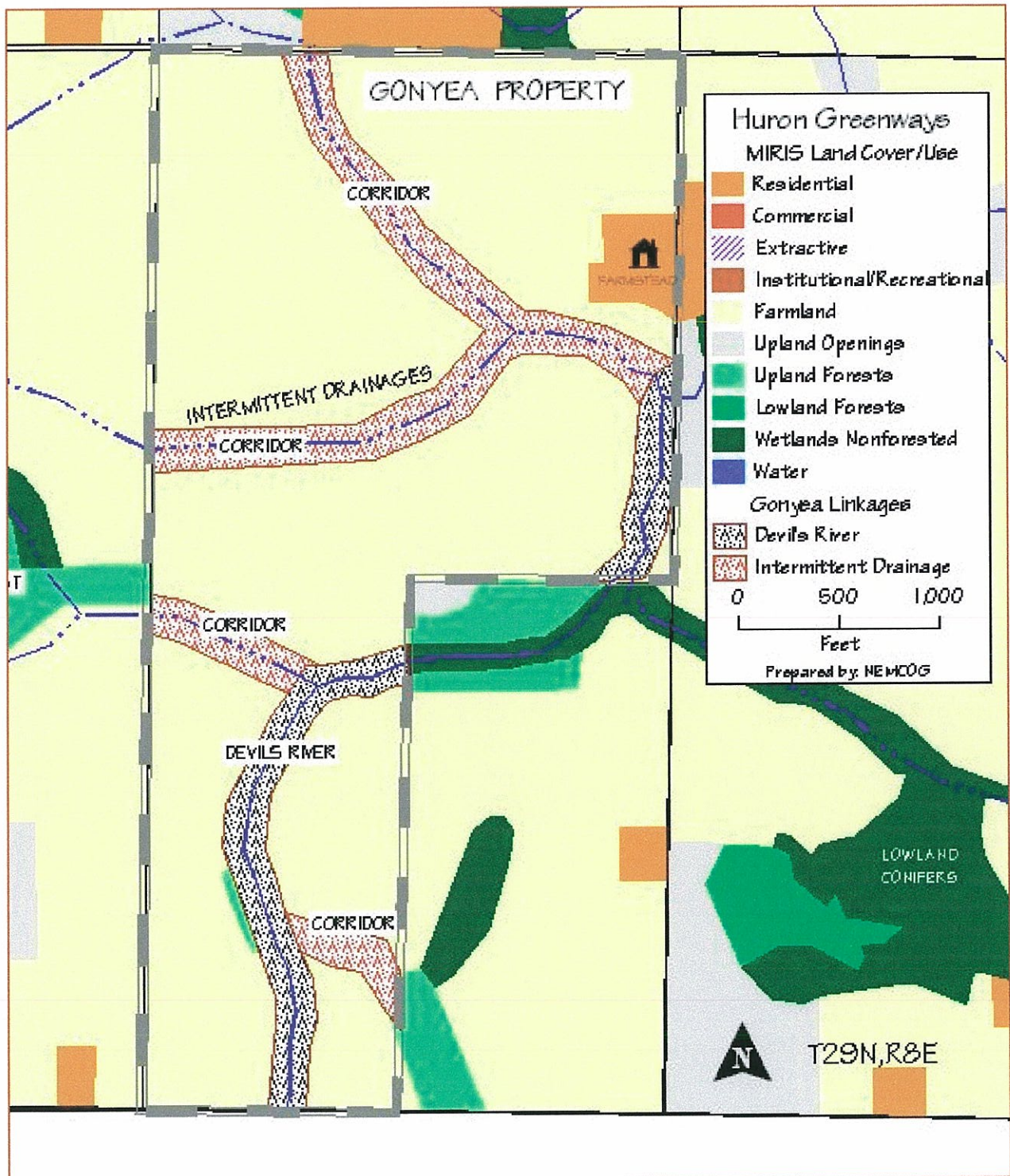
### RECREATION & AESTHETICS MANAGEMENT

Presently, there are no trails on the property. Prior to planting the seedlings, trails should be layout and flagged. The trails should run through the plantings, allowing access for future resource management activities and for recreational use.





# Recommended Activities





7 km SW of Ossineke, Michigan, United States 04 Jan 1996



0 200M

0 200yd

Image courtesy of the US Geological Survey.





# HURON GREENWAYS RESOURCE STEWARDSHIP PLAN



Date: February 20, 2001

Prepared for:  
Mike Mancuso  
1439 Vanstone Drive  
Commerce Township, MI 48382

Prepared by:  
Northeast Michigan Council of Governments  
121 East Mitchell  
Gaylord, Michigan 49735

Richard Deuell, AICP  
Community and Natural Resource Planner  
[rdeuell@nemcog.org](mailto:rdeuell@nemcog.org)







# RESOURCE STEWARDSHIP PLAN

Property Owner: Mike Mancuso

Address: 1439 Vanstone Drive  
Commerce Township, MI 48382

Parcel Size: 40 Acres

Parcel Location: SE ¼ of NW ¼, Section 15, Alcona Township, Alcona County, Michigan

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## SUMMARY OF PROPERTY CONDITIONS AND RECOMMENDATIONS

### FOREST HEALTH and MANAGEMENT:

The forests are in good growing condition, no significant forest insect or disease problems were noted during the field visit. The upland area is dominated by aspen, most of which was regenerated by a timber harvest approximately ten years ago. Residual mature aspen and white birch trees are declining and dying. The floodplain forest of black ash is in good growing condition, subsequent to removal of the beaver dam. No forest management activities are recommended for the lowland brush and floodplain forest areas.

### SIGNIFICANT WILDLIFE FEATURES:

Black River and the associated wetlands provide critical wildlife habitat. The creek fulfills one of the three key components in wildlife habitat, water. Cover and food are also available on the property. The river and marshes are important spring breeding sites for frogs like the spring peeper, Copes gray tree-frog and the wood frog, and salamanders. The wetlands are associated with the much larger Black River Swamp, an important waterfowl habitat area.

Aspen forests provide habitat for songbirds, ruffed grouse and other woodland creatures. The least flycatcher, red-eyed Vireo, rose-breasted grosbeak, black-billed cuckoo and American redstart nest in the tree canopy of aspen forests. Ruffed grouse require different aged aspen forests ranging from young thickets for raising broods to mature trees for winter food. The grouse eat buds of mature aspen trees during the winter when other food sources are scarce. Pileated woodpeckers chip out large square holes in the dead standing trees, which in turn are used as homes for cavity nesting birds such as black-capped chickadees and northern flying squirrels. The lowland forest area, with a mix of hardwoods and conifers provides both food and much needed cover. Several threatened and endangered species such as osprey, bald eagle and red shouldered hawk inhabit the floodplain forests.



### RESOURCE PROTECTION AREAS:

This property is located along the Black River below the expansive Black River Swamp. The Black River and associated wetlands should be protected. The riparian zone (wetlands and uplands bordering water bodies) should be protected and maintained. A minimum fifty feet natural buffer should be left in the upland area bordering the wetland types of floodplain forest, lowland brush and marsh. Equipment usage and tree removal is not advised in this area.





The property alone provides a variety of habitats, ranging from upland forests to flowing cold water bordered by marshes lowland brush and floodplain forests. The significance of these resources extends beyond the property lines. The property is one link in a long green chain or ecological corridor that centers on a branch of the Black River. This corridor is part of a larger network of ecological corridors consisting of the creeks, streams, wetlands and upland forests within the Black River Watershed. (see area map) This network, in turn, is connected to larger networks in the Lake Huron Watershed.



Ecological corridors or "green infrastructure," can be likened to a highway system. All segments of the highway must be connected and in working order for the highway system to properly function. If segments are degraded or missing than the highway will not function to its fullest potential. The same holds true for ecological corridors, when segments are degraded or fragmented, the system will not function properly. In other words, activities on a given piece of property can have implications that reach far beyond the ownership boundaries.

Sand Hill Road runs along a linear sandy deposit that parallels the Lake Huron Shoreline. This feature is an old coastal sand dune created by the receding glacial lakes that covered this area around 10,000 years ago. Further to the north, in Negwegon State Park, there are a series of parallel, closely spaced low ridges and swales. These mark a series of shorelines of the receding glacial Lake Huron. (see area map)

#### IMPORTANT RECREATIONAL & AESTHETIC FEATURES:

There is a good network of hiking trails on the property. These trails should be maintained for the landowners use and enjoyment. There are ample opportunities for upland game and waterfowl hunting on the property.

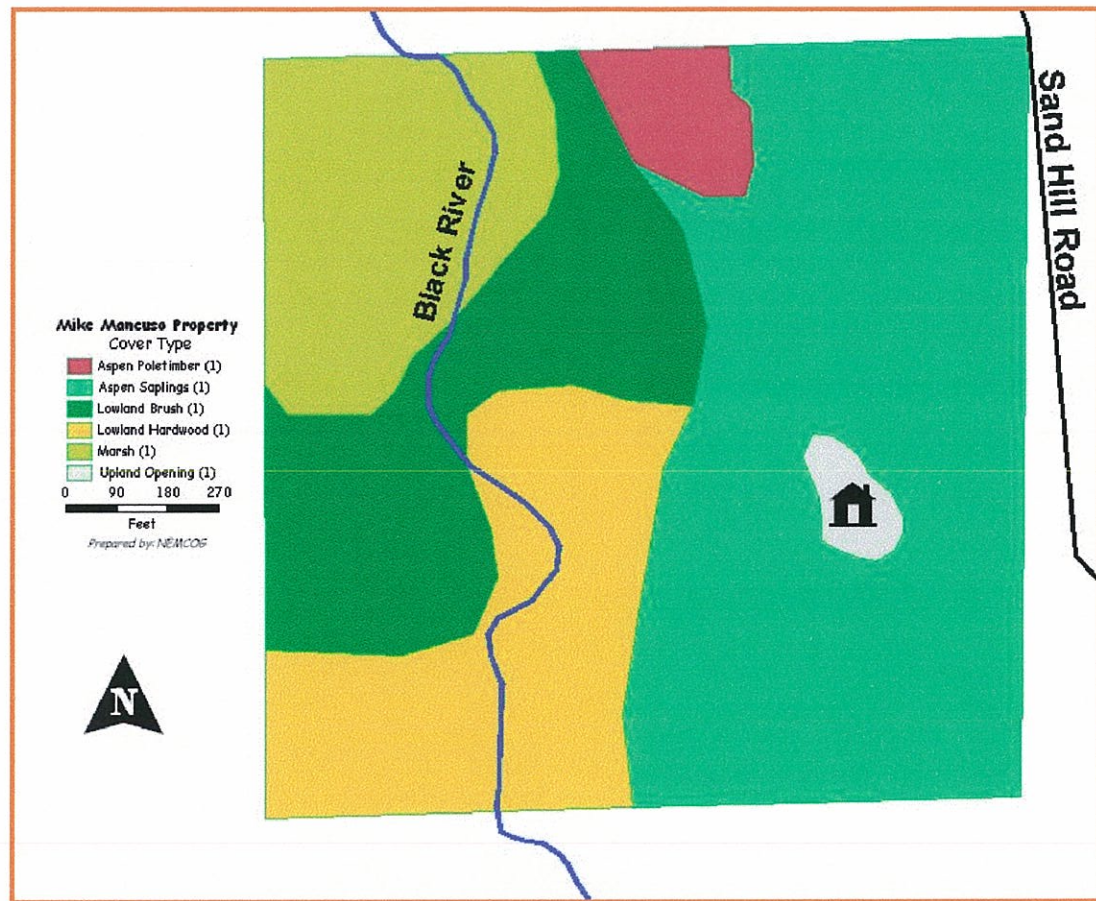
#### RECOMMENDATIONS:

Based on landowner's objectives, field visit, and subsequent analysis of field data the following recommendations have been developed:

1. Protect wetlands. Do not harvest trees or use heavy equipment in these areas.
2. Under plant white pine in the mature aspen forest.
3. Leave dead standing trees, erect wood duck nesting boxes and construct brush piles to improve wildlife habitat.
4. Plant fruit bearing shrubs for wildlife food.
5. Work up a small area along the forest edge and plant DNR wildlife mix.
6. Consider enrolling the property into a conservation easement.



# Cover Type Map



## COVER TYPE MAP KEY

### Management Unit 1 – Aspen sapling stand

Species Present – Quaking aspen, large-tooth aspen, red oak, white pine, and white birch.

Average tree diameter – 3" dbh

Stand Quality – Aspen is in good growing condition.

Acres - 19

### Management Unit 2 – Aspen poletimber and small sawtimber

Species Present – Quaking aspen, large-tooth aspen, red ample, white pine, red oak and white birch.

Average tree diameter – 10" - 12" dbh

Stand Density - Basal area of 140 sq. ft./ac.

Stand Quality – Aspen and white birch is mature and declining.

Acres - 1

Size Class: seedling - less than 1" dbh | sapling - trees 1" to 4.9" dbh

poletimber - trees 5" to 9.9" dbh | sawtimber - 10" and larger dbh

DBH - diameter of tree at 4.5' above ground, (dbh-diameter at breast height)





**Management Unit 3 – Lowland hardwood poletimber and small sawtimber**

Species Present – Black ash, Red maple, white cedar, quaking aspen, and white birch.

Average tree diameter - 9" dbh

Stand Density - Basal area of 70 sq. ft./ac.

Stand Quality - good

Acres - 7

**Management Unit 4 – Lowland brush**

Species present – Willow shrubs and tag alder; aspen and black ash trees; and grasses, sedges as ground cover.

Acres - 7

**Management Unit 5 – Open Marsh**

Cattails, bulrushes, sedges, and willow shrubs.

Acres - 6



## RECOMMENDED MANAGEMENT ACTIVITIES

### TIMBER MANAGEMENT

#### Management Units 1 & 2

Manage for pulpwood production by maintaining the aspen type. Aspen should be managed under the "even-aged" system, where all trees represent the same age class. Aspen is very shade intolerant and requires full, open sunlight to naturally regenerate. Unlike the other species groups, aspen regenerates new crop trees by growing root sprouts or root suckers from the root systems of harvested trees. Mature trees are not needed as a seed source and, in fact, shade from large trees actually inhibits aspen seedling growth. Aspen stands are harvested and naturally regenerated under the clearcutting method. When mature (40 to 60 years old), all trees 2" and larger in diameter are harvested. This will encourage natural aspen regeneration by root suckering which occurs during the year following the harvest. Scattered white pine and oak trees can be left for seed sources and mast production.

Management Unit 1 was harvested approximately 10 years ago. All of the aspen was removed, and the white birch and red oak trees were left uncut. In areas with higher density of white birch, aspen regeneration is spotty. The white birch trees are mature and starting to decline. As these trees die, small forest openings will be created. Under plant two of these white birch areas with white pine seedlings.

In Management Unit 2, the aspen trees are reaching maturity and starting to decline in health and vigor. Trees in a mature aspen forest are more prone to insect and disease problems and combined with just old age, tree mortality can be expected to increase. The small size of this stand does not warrant a timber sale. Since young aspen seedlings will not survive in the understory of older aspen trees, a transition from aspen to other species such as red maple, and white pine will eventually occur. Under plant white pine seedlings to encourage the transition to a white pine forest, the likely pre-settlement forest type on this sandy hill.



- Plant 100 white pine seedlings in Management Unit 1 and 200 white pine seedlings in Management Unit 2. Plant 3-0 seedling stock. Contact your local Conservation District for information on ordering seedlings.

#### Management Units 3, 4, & 5

No recommended timber management

### WILDLIFE HABITAT MANAGEMENT

#### Management Unit 1

It is important to maintain an aspen component on the property. While being beneficial to wildlife, the diverse cover types also offer changing vistas and improved opportunities for viewing wildlife.

Many woodland creatures use the aspen forest for nesting and feeding. Species such as the least flycatcher, red-eyed Vireo, rose-breasted grosbeak, black-billed cuckoo and American redstart nest in the tree canopy. Ground nesting species such as the ruffed grouse, veery, snowshoe hare, and white tailed deer use aspen





forest types. A few species of wildlife that nest under ground or in woody debris include the eastern chipmunk, long-tailed weasel, marbled salamander, ringneck snake, milk snake and smooth green snake. Birds and mammals nest in cavities of trees. Species found in aspen stands may include black-capped chickadee, yellow-bellied sapsucker and northern flying squirrel. Natural nesting cavities can be supplemented by creating den trees and placing nesting boxes on poles or trees.

Along with a diversity of cover types, certain wildlife prefer a diversity of age classes, such sapling, poletimber and mature sawtimber of a particular forest type. Ruffed grouse need aspen stands of different age classes for mating cover, brooding cover and food sources. Creating blocks or stands of aspen in various age classes (seedlings, saplings and poletimber) can be accomplished by harvesting 10 to 20 acres size blocks of trees over a number of year period. The clear-cut areas should have an irregular shape. A meandering harvest line results in a greater linear distance of edge than a straight line. This edge or transition zone between mature and immature forest stands creates very desirable wildlife habitat.

The size of this property does not allow for multi-aged blocks of aspen forests. The only opportunity for staged cutting is for adjacent landowners to coordinate cuttings, resulting in the four age groups of aspen in the general area. All landowners would benefit from such cooperation.

To benefit ruffed grouse, two logs a minimum of twelve inches in diameter and eight feet in length, should be left per acre in the clearcut areas. These "drumming logs" are used by male ruffed grouse.

- Create two "drumming log" in the sapling stand.
- Create two brush piles.

A cabin is located in a small opening in this management unit, The landowner maintains the opening by mowing. Apple trees have been planted and are adequately protected from deer browsing with fencing. Additional fruit bearing shrubs can be planted in open areas. Recommended species include:

serviceberry, wild plum, chokeberry, choke cherry, hawthorn, crabapple, sand cherry and beach plum. American bittersweet, Virginia creeper and wild grape are vines that produce fruit cherished by wildlife along with adding to the visual quality of the planting.

- Plant 100 wildlife shrubs

Enhance the openings by establishing a mixture of permanent ground covers. Have the soil tested to determine fertility and pH. It will be necessary to apply lime and fertilizer prior to planting recommended ground covers. To establish permanent cover, plant a mixture of timothy, tall fescue, orchardgrass, alfalfa, trefoil, alsike clover, medium red clover, ladino clover, mammoth red clover, and white tail clover. This mixture is sold by some seed companies and often called the Michigan deer and turkey habitat mixture.





### Management Unit 2

Allow this aspen forest to transition to a white pine and red oak forest. This process can be encouraged by under planting 200 white pine seedlings. Leave all dead standing trees to create cover for cavity nesting birds and mammals. Pileated woodpeckers chip out large square holes in the dead standing trees, which in turn are used as homes for cavity nesting birds such as black-capped chickadees.

- Erect two wood duck nesting boxes in larger trees within 50 feet of edge of the Black River.

### Management Unit 3

Many species of wildlife use the lowland hardwood forest for nesting and feeding. Species such as the red-shouldered hawk, northern parula, and wood thrush nest in the tree canopy. Ground nesting species such as the whip-poor-will, American woodcock, and veery all use lowland forest types. A few species of wildlife that nest under ground or in debris include the belted kingfisher, eastern harvest mouse, mink, river otter and wood turtle. The barred owl, prothonotary warbler, red-headed woodpecker, pileated woodpecker, northern flying squirrel, raccoon, wood duck, and hooded merganser nest in cavities of trees in the lowland forests. Natural nesting cavities can be supplemented by creating den trees and placing nesting boxes on poles or trees.

- Erect two wood duck nesting boxes in larger trees along the 50 feet of edge of the Black River.

### Management Unit 4

Lowland brush types provide resting cover, nesting sites and feeding opportunities for many species of birds, mammals and reptiles. The dense, tangled growth habit discourages intruders. The rose-breasted grosbeak, black-billed cuckoo and yellow-billed cuckoo nest in the shrub canopy. Ground nesting species such as the ruffed grouse, woodcock, veery, and song sparrow all use lowland brush types. A few species of wildlife that nest under ground or in debris include the northern waterthrush, snowshoe hare, least weasel, star-nosed mole, meadow jumping mouse and wood turtle. Many species of birds nest in shrubs. These include alder flycatcher, gray catbird, yellow warbler, common yellowthroat, house wren and black-capped chickadee. The yellow-bellied flycatcher and Wilson's warbler may be seen in spring and fall migrating through the area. There are no management activities that will improve the wildlife habitat, it is best to leave the area in a natural state

### Management Unit 5

The great blue heron and green backed heron patiently stand in the shallow water waiting for food swim within reach. Raccoons, deer, ducks, water shrew, river otter and mink all come to the water to feed. These animals along with many other species drink the water. The northern spring peeper, bullfrog & leopard frog, water snake, snapping turtle, painted turtle, mudpuppy, central newt, red-spotted newt, and greater siren are examples of reptiles and amphibians that use the open marshes. Tree swallows, marsh wrens, swamp sparrows and red-winged blackbirds all frequent marshes in the warmer months. Listening to the repeated calls of the red-winged blackbirds staking out their territory in the marsh is a sure sign spring is here. There are no management activities that will improve the wildlife habitat, it is best to leave the area in a natural state.

### Snags or dead standing trees

Snags or dead standing trees provide cavity nesting sites, perches and food (insects) for many species of wildlife. The pileated woodpecker chops huge rectangular holes in the trunks; these holes are further excavated by other wildlife species and used for nesting cavities. Two to four snags should be per acre. Since these trees are dead they do not compete with the healthy growing trees in the forest. If none exist, snags can be created by girdling or removing two 4" wide strips of bark around the trunk of the tree. A chainsaw





works best, but care should be used when operating such power equipment. To assure all of the bark is removed, cut one inch deep into the wood. This will cause the tree to die but remain standing. Both soft and hard snags should be present in the forest. Soft snags are created from aspen, basswood and conifer trees, while hard snags would be maple, beech and ash.

- Leave dead standing trees for cavity nesting birds and mammals.

Some of the windfalls should be left for wildlife cover and browse. The small branches in the tops fall off and the tree trunks will come in contact with the ground, starting the long process of decomposition. As logs rot, insects, salamanders and fungi inhabit the logs, which in turn, provide food for other woodland creatures. Eventually, the woody materials are returned as decomposed the organic matter to the forest for use by woodland plants. Tree trunks, a minimum of twelve inches in diameter, eight feet in length and laying on the ground, can benefit ruffed grouse. These "drumming logs" are used as perches by male ruffed grouse during their mating display rituals.

### Nesting Boxes

Sometimes, it may be necessary to emulate snags or den trees by placing nesting boxes around the forested areas. The red-headed woodpecker boxes should be placed along mature forest edges adjacent to old fields. Within the mature forest, put up nesting boxes for the following wildlife: downy woodpecker, hairy woodpecker, tifted titmouse, nuthatches, chickadee, gray squirrel, northern flying squirrel and barred owl. Along the edges of forests, place nesting boxes for the northern flicker, great crested flycatcher, and screech owl. It is important to note, with the placement of any artificial nesting box comes the long term commitment to maintain the box. For example, some of the boxes need to be emptied each year.

- Erect 4 nesting boxes on small pole sized trees.

### Building Brush Piles for Wildlife

Cover for many species of wildlife can easily be created on your property by constructing brush piles. Brush piles are best located next to wooded edges and food sources. Brush piles can be constructed from the logging debris. The size of the materials should be coarse next to the ground and get finer toward the top of the pile.

First, loosely pile four layers of 8"+ diameter poles in criss-crossing layers. Next, pile coarse branches, topping the pile with fine bows. Piles should be 5 to 6 feet tall and 8 feet in diameter. The pile can be enhanced by placing 6" - 8" diameter clay tiles or wooden boxes under the base of the pile. Each year more branches and bows can be added to the pile.

- Create two brush piles along the edge of clearings.

### RESOURCE PROTECTION

No timber harvesting is recommended in the lowland brush, marsh and floodplain forest. Keep equipment out of floodplains and drainages.

Logging roads and log landing/loading sites should be seeded to permanent ground cover plants. These areas should be smoothed after a logging operation. To reduce soil erosion from stormwater run-off, create water diversions or water bars on roadways located in hilly terrain. Apply 100 lbs. of 10-20-20 fertilizer and 1000 lbs. of lime per acre of open area or



3.5 lbs. of fertilizer and 35 lbs. of lime per 100 feet of 16 feet wide roadways. Mix this with the soil by raking or dragging the area. Next, a seed mixture of perennial plants should be spread on the area. For sunny sites use a mixture of 10 parts perennial rye grass, 3 parts inoculated birdsfoot trefoil or clover and 1 part timothy.

For shaded areas, use a mixture of three parts creeping red fescue and one part perennial rye grass and one-half part ladino or white Dutch clover. Both of these mixtures can be applied at a rate of 20 lbs. per acre or 1.5 lbs. per 100 feet of a 16 -foot-wide roadway. Planting in the spring or fall will improve success as will using a straw mulch. If the log landing/loading sites are one acre or larger, the planting of food bearing native shrubs will also enhance wildlife habitat.

- *Revegetate skid trails and log landings after timber harvests.*

#### RECREATION & AESTHETICS MANAGEMENT

These forested areas provide excellent opportunities for hunting, hiking and nature study. A good network of trails exist on the property. Trails should be kept open of brush, windfalls, shrubs and seedlings. These can be used for future resource management activities and recreational purposes.

Leave a no harvest buffer along the trails, around the forest opening and adjacent to the dwelling located in the southeast part of the property.





# AREA MAP

