

*Forest Stewardship Plan*  
*Willow Pond Farmstead*

*2451 Brick Mill Road*

*Coats (Harnett County) NC 27521*

*11/26/01*



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# *Forest Stewardship Plan*

## *Willow Pond Farmstead*

### **Property Description**

#### ***Location***

We are a 39.07 (more or less) tract consisting of a combination of residential, farm, and woodlands uses. The property address is 2451 Brick Mill Road in Harnett County, midway between Coats and Buies Creek, NC.

For farmland, our farm sits remarkably close to the crossroads of exploding growth. Interstate 40 (Wilmington to Los Angeles) intersects I-95 (Miami to New York/Boston) only twelve miles from here. Raleigh-Durham International Airport is 50 minutes away (as is Fayetteville Regional). Amtrak passenger services are available in Raleigh, Cary, Fayetteville, Selma and Southern Pines (each within an hour's drive). We sit between Wake, Johnston, and Cumberland Counties,<sup>1</sup> in the tenth most populated state in America. The University of North Carolina at Chapel Hill, N.C. State University, N.C. Central University, Duke University, Campbell University and a host of smaller colleges and technical schools are within a sixty-mile radius. US 421 (within earshot of the farm) has recently been five-laned. We are close enough to this growth activity to benefit from it and secluded enough to ignore it. In less time than it takes to leave the house and drive to Florida, we can be in London. This is a good "base of operations."

There is no reason to expect the growth to stop or even slow. North Carolina's economy is diverse, strong and adaptable.

#### ***Topography***

The property rests at 200' above MSL. Its lowest point is on its western line where it encompasses the wetlands area and designated flood plain of Thornton's Creek. The highest point is approximately 100 feet above the Thornton Creek area. There are sufficient shallow ravines running downhill to the creek area to support the three present impoundment ponds, and at least two additional pond sites. At the eastern edge of the land is approximately 10 acres of gently rolling pastureland.

#### ***Management Situation***

The existing residence was built in 1902 (by J. E. Link and his wife) and the property was continuously farmed and occupied throughout the Twentieth Century by the Links and a scattering of other succeeding owners. Tobacco was the predominant crop throughout this history.

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<sup>1</sup> These are the first, fifth, eighteenth and forty-first fastest growing counties in the state, respectively.

The current owners, Richard T. and Nancy P. Rodgers (husband and wife), acquired the property in two purchases during the early 1990's. During their ownership, they have extensively restored and improved both the buildings and the land; the agricultural use of the land has shifted from tobacco to the production and preservation of rare/endangered/heritage breeds of livestock and poultry. Considerable efforts were expended in 1997 and 1998 cleaning up the property after Hurricane Fran (which blew down over 200 trees on the property during the night of September 6, 1996).

While Fran disrupted many of their initial property development plans, it also gave rise to many new ones. A gasoline -powered Woodmizer LT40HD sawmill (and much manual labor) converted the downed trees into 75,000<sup>±</sup> b/f, approximately 90% of which the owners have already used in farm building erection and/or re-construction. A 14' x 50' red oak garden shed, greenhouse and equipment storage shelter is the last of these structures and is scheduled for completion by December 31, 2001.

The owners do much of this work themselves. Occasionally, they will employ a framing crew, earthmoving contractors and the odd plumber and brickmason – but most of the work they perform themselves with the help of their sons and several pieces of farm and construction equipment.

### ***Major Timber Types***

Prior to Hurricane Fran, it was evident that the land's timber had been haphazardly managed by prior owners. Hardwoods from one area had been completely removed (presumably for firewood) while stands of mature and beyond -mature poplar and sweetgum existed in the boggy parts.

The current owners had grazed goats in the wooded areas in an effort to make them accessible by foot. By the time Fran arrived, the goats had effectively cleared the bottom five feet of the understory of its once-dense brush, vines, brambles and poison ivy stands.

Fran left relatively little of the tract's merchantable timber standing; the owners counted over 200 freshly-downed trees after Fran's visit. Cleanup took two years and involved several tens-of-thousands of Dollars in heavy equipment contractor services.

Today what remains is 20-acre woodland is a natural loblolly pine -sweetgum-southern red oak forest that is 25 to 55 years old. The loblolly pine trees are 75' to 85' tall and 12" to 18" in diameter. The trees are in fair condition and growing fairly well. There are signs of damage caused by recent hurricanes (Hurricanes Fran and Floyd). This entire forest area is well suited to grow loblolly pine trees.

### ***Understory***

The understory consists largely of sweetgum, green briar, switch cane, holly, water oak, red maple, turkey oak, American elm, southern red oak, sour wood, ironwood, dogwood and holly

All the trees blown over by Hurricane Fran have been removed and milled. Approximately 80% of the stumps and logging debris have already been gathered and burned. By December 1, 1998, all the logging trails were stabilized and seeded; the owners have placed culverts and gravel (from the on-site quarry) wherever necessary.

### ***Other Notable Features***

#### **Gravel Quarry**

As part of the Hurricane Fran reconstruction activities, the owners developed a ½ acre area near their southwestern corner as a gravel quarry. To date they have removed between 2,500 and 2,700 tons of material from this site and deposited it throughout the rest of the property; they anticipate they will need only 300 tons more for various smaller projects. They have no intention of developing this quarry for commercial purposes, so now they want to begin restoring this area to forest – and complete it as soon as the last gravel is removed.

#### **“Duck Pond”**

Another area created by the Hurricane Fran clean-up activities is the Duck Pond. Prior to the hurricane, this area was the site of a thoroughly overgrown 200' x 50' irrigation pond dug by former owners in the early 1950's. This site was known to have clay deposits suitable for dam building and so the owners excavated the clay for Lake Fran dam from this site. When finished with this area, the clay excavation site was joined with the old irrigation pond to form what is now called “Duck Pond.”





## **Resource Objectives**

### ***Prefatory Considerations***

The owners have an overall plan to develop the property for the following uses and purposes:

- 1) Expansion and improvement of existing single-family residential uses;
- 2) Expansion and improvement of existing farm and rare breed production, preservation and sale facilities; and,
- 3) Expansion and improvement of the property's existing "Special Occasions" site potential (Willow Pond Farmstead has already been the host site for various
  - A) Weddings
  - B) Family reunions
  - C) Business retreats, and,
  - D) School visits.

The owners expect to continue these uses and add to them the following new ones:

- E) "Living history farm park";
- F) Rental cottages; and,
- G) Bed and breakfast.

Accordingly, all the property's resource evaluations are made not only of the owners' personal interests but also in expectation of increasing visitations to the property by the general public.

### ***Aesthetic Quality***

It is the primary objective of the owners' Forest Stewardship Plan to restore, protect, enhance, manage, and maintain each aesthetic resource on the property.

### ***Recreation***

It is the secondary objective of the owners' Forest Stewardship Plan to develop, manage and maintain every recreational opportunity the property affords, consistent with the overall goal of preserving the natural state of the land.

### ***Fish***

The owners' third objective is to improve and manage the property's three ponds for their maximum recreational fishing potential.

### ***Wildlife***

The fourth objective is to afford, protect, manage, maintain, and enhance sanctuary and forage for the land's local wildlife, with the expectation that its abundance will enhance the educational/recreational experience of the land's visitors.

### ***Timber***

Fifth, the land's remaining timber resources must be protected, managed, and maintained not only for their ultimate harvest value but also for their more immediate benefits afforded the land's existing and potential aesthetic, recreational and wildlife assets.

### ***Water***

Sixth, the property's ground and surface waters must be protected, managed, and maintained for, without water, there is no life.

### ***Soil***

Seventh, requires completion of the property's original soil management plan by restoring the skid trails, gravel pit, and other areas disturbed by Hurricane Fran and the cleanup activities that followed it.

## Resources Evaluations

### ***Aesthetics – use and potential***

Thanks to the clean-up activity necessitated by Hurricane Fran, many aspects of the land's aesthetics have already seen improvement. Gone is the universe of brush and brambles; today, the forest floor everywhere sufficiently clear for foot travel. Forest edges are no longer the impenetrable jungle of poison ivy, grapevines, and uninviting brush. The newly opened trails and more park-like atmosphere invite guests to stroll and discover a managed woodland.

But there are still a few areas that require the owner's attention:

1. The random deposits of trash left by the land's former owners must be removed and their sites restored.
2. The islands on Duck Pond must be hand-graded and several willow and/or pine trees planted there in the Fall of 2001 or 2002.

### ***Recreation – use and potential***

The owners have built two miles of perimeter and interior fencing along which hiking trails have developed. Also, they have built several thousand feet of interior trails, yielding today a well-defined woodland hiking trail system. All these trails are sufficiently clear for all-weather foot travel, horseback, and off-road vehicle access.

Awaiting completion is the construction of a series of gates and hiking styles that would permit crossing between the forest and farmland areas – and the creation of a continuous hiking path two miles or more in length. Once these connections are completed, the 39-acre property presents fine opportunities for:

- General nature or education trails;
- Conservation trails;
- Soil or geology trails;
- Water and wetland trails;
- Forest stewardship and ecology trails; and,
- Wildlife observation trails.

### ***Fish***

The property has three farm ponds, each capable of supporting good fishing opportunities:

#### **Willow Pond**

A 45-year-old, surface runoff-fed pond impounding about one acre of water having a maximum depth of 12 feet. It is sporadically fished by guests of the owners – and they report the fishing is good. Bass and bream are the only species reported caught.

Twelve triploid grass carp were introduced in 1992 to control the weed population. Ten of these fish remain, they weigh approximately 25 pounds each, and the pond is totally clear of vegetation.

The owners have been unable to develop a scientific census of the fish population (shocking boats are apparently unavailable in Harnett County) so only anecdotal evidence supports the current conclusions about the pond's general good health.

Willow Pond enjoys a robust algae bloom, supported at least in part by the current owners' application of two tons of agricultural lime across three-year rotations. Fertilizer broadcast upon the fields surrounding the ponds also contributes to the pond's algae bloom.

Over the past eight summers, the owners have noticed occasional significant drops in pond water level, sometimes as much as 18 inches in unusually dry seasons. During these periods, pond oxygen levels have apparently remained adequate since no fish losses have been observed.

During the summer of 1995, the owners witnessed a partial fish kill caused (apparently) from insecticide applied via crop-duster to a neighboring tobacco crop.

Sediment is returning to the intake area of the pond from the exposed upstream land of others that, for the past several winters, has been left plowed but unseeded with a winter cover crop. The owners cleared this pond in 1991 with a dragline and installed sediment traps. They have kept the traps cleared (using their backhoe) yet the sediment continues to accrete.

### **Duck Pond**

Duck Pond is really the confluence of two pond-construction operations: the first occurred approximately 45 years ago and the second "installment" (which doubled the pond to its present half-acre size) happened in 1997. It is a ground water fed pond; surface runoff contributes little to its maximum 12-foot water depth level. Recent summertime observations indicate its pond level varies by up to two feet in driest conditions.

While several visitors to the property during the past eight years claim to have caught fish there over past decades, no serious fishing occurred in Duck Pond since 1992 (when the present owners acquired it). Until Hurricane Fran, the pond edge was inaccessible because of dense underbrush; after Fran, the pond was filled with tree, limbs and other debris. These downed trees have since been removed, but their submerged limbs remain.

Even after the Fran cleanup, the pond was simply too snag-infested to invite fishermen. Accordingly, the owners drained and reconstructed the sides of the pond in June of 1999. During this reconstruction, the remaining fish were killed with Rotenone™ (applied by Tom Rachaels of the NC Fish and Game Service). The pond is too small to maintain an ecological balance, so, in the Spring of 2001, the owners re-stocked this pond with 50 6" largemouth bass and 15 pounds of minnows. It is their plan to restock the pond with minnows each year so that the bass will continue to grow.

Duck Pond's overflow runs into another pond on the property that, in honor of the event that caused its construction, the present owners have named "Lake Fran." Accordingly, whatever fish originally existed in Duck Pond, including unwanted species, inevitably migrated into this larger downstream impoundment.

### **Lake Fran**

Containing approximately two acres of surface area, "Lake" Fran is the largest impoundment on the property. It was built in 1997 and has a maximum depth of 14 feet.

Shortly after its construction, its edges teemed with minnows that either migrated downstream from Duck Pond or were brought in by visiting waterfowl.

In the Spring of 2001, the owners stocked Lake Fran with

- 150 2"-4" largemouth bass,
- 100 2"-4" shellcrackers,
- 200 2"-4" bluegill,
- 200 2"-4" hybrid bluegill,
- 200 4"-6" channel catfish, and
- 10 pounds of fathead minnows.

### ***Wildlife***

The property enjoys a typical variety of wildlife. The owners have observed the following species:

- Deer
- Small Game (squirrel, rabbit)
- Predators (fox, raccoon, possum)
- Beaver
- Game Birds (dove, quail)
- Avian Predators (hawk, owl, osprey, and one male bald eagle sighted in the Spring of 2001)
- Songbirds
- Canada Geese
- Waterfowl
- Kingfisher and heron

## **Water**

Nothing within the owners' present or future development plans should adversely impact the current water resources.

Small areas of the property qualify as wetlands and other newly developed wetland areas have developed at the headwaters of the several ponds on the land.

## **Timber**

The remaining timber stand is young mixed hardwood interspersed with the occasional mature hurricane-survivor specimen. Tree spacing is optimal for growth and the forest floor receives adequate sunlight.

## **Soils**

The following table is drawn from official county soil maps and describes the various types of soils on the property – and their timber uses:

<b>SOIL TYPE</b>	<b>SPECIES</b>	<b>SITE INDEX</b>
<b>Co</b> – <i>Coxville loam</i> . Nearly level Crop – Poor Capability Timber – Moderate Capability	Loblolly pine	84
	Longleaf pine	60
	Sweetgum	84
	Yellow poplar	86
	So. Red oak	87
	Water oak	75
	Willow oak	88
<b>NoA</b> - <i>Norfolk loamy sand</i> – 0% to 2% Slope Crop – Good Capability Timber – Good Capability	Loblolly pine	80
	Longleaf pine	77
<b>NoB</b> - <i>Norfolk loamy sand</i> – 2% to 6% Slope Crop – Good Capability Timber – Good Capability	Loblolly pine	80
	Longleaf pine	77

<b>Bb</b> –	<i>Bibb loam</i> – level – Frequently flooded		
	Crop – Poor Capability		
	Timber – Moderate Capability		
		Loblolly pine	90
		Sweetgum	90
		Water oak	90
		Blackgum	*
<b>LnD</b> -	<i>Lillington very gravelly sandy loam</i> – 8% to 15% Slope		
	Crop – Poor Capability		
	Timber – Good Capability		
		Loblolly pine	80
<b>WaB</b> -	<i>Wagram loamy sand</i> - 0% to 6% Slope		
	Crop – Good Capability		
	Timber – Moderate Capability		
		Loblolly pine	81
		Longleaf pine	72

Generally, the forestland at Willow Pond Farmstead is highly susceptible to erosion and retains water and nutrients relatively poorly. Humus content and depth varies considerably with some sites having up to two feet of material while others having virtually none.





## **Management Recommendations for Designated Areas**

### ***Brief Description of area***

For the purposes of this plan, the land is divided into six management areas:

#### **Thornton's Creek Wetlands**

This land is located at the extreme western point of the property, this area is both wetlands and flood plane. Its boundaries are designated in Exhibit A.

##### ***Past Management***

was limited exclusively to intermittent timber harvesting. Otherwise the area was neglected and left to its native mosquito and reptile residents.

##### ***Current Condition***

is already greatly improved thanks to the current owner's extensive fencing, brush removal and habitat-building activities. The land is accessible on foot and two large brush piles have already been built for habitat and nesting purposes.

##### ***Management Needs***

are limited to the conclusion of the owners' designs for this part of the property. Selected trees will be killed by girdling or by the proper application of herbicides. As these trees die, they will attract insects, which in turn will attract insect-eating birds and other wildlife. Many of these trees will produce natural cavities that will be used by various species of wildlife for nesting. Additional brush piles and will add to the habitat potential of the area.

#### **Central Woodlands**

Approximately 8 acres of young mixed hardwood timber stand, shown on Exhibit A.

##### ***Past Management***

These woods are divided into approximately equal historic ownership areas (the Baker Tract that the current owners acquired in 1990 and the Stewart tract that they purchased in 1991). As such, the parcels have received somewhat different management practices.

The Baker part of the property received no formal logging activity during the past 30 years, but the Bakers and their predecessors randomly removed oaks for firewood. Many of the remaining trees were lost to Hurricane Fran so only a few mature trees remain.

The Stewart part of the property was logged approximately 25 years ago so there are no mature hardwood trees here. A few mature pines remained, but

most were located in the Gravel Quarry area and were, accordingly, lost during its construction.

### ***Current Condition***

Both the Stewart and Baker parts of the Central Woodlands tract are now clear of the debris from Hurricane Fran, an undertaking that solved the aesthetic as well as the fire hazard problems.

A footpath and off-road vehicle trail system crisscrosses both tracts. This area has been limed, fertilized and seeded with orchard grass. There remain occasional minor erosion points.

The Stewart tract also was the household and agricultural trash depository for its former owners. This is an obvious aesthetic concern of the present owners.

### ***Management Needs***

The footpath and road system across both tracts needs some additional stabilization.

The refuse on the Stewart tract should be removed and properly disposed.

As in the previous area, selected trees will be killed by girdling or by the proper application of herbicides so that natural songbird feeding and nesting areas will evolve.

## **Gravel Quarry**

Consisting of approximately 1 acre, this unique site is located at the southwesternmost corner of the property.

### ***Past Management***

Until the former owners developed this area as a private gravel quarry in 1997, this one-acre area was simply another part of the Stewart Tract. It was unusual in one respect: exhibited the property's steepest elevation drop (which made building the high tensile fence in this corner of the land more challenging). This part of the Stewart Tract had a surprisingly dense collection of mature pines (perhaps because the terrain made them difficult to harvest during the last logging operation).

### ***Current Condition***

The gravel pit has been graded and a dam built at the lowest end. Clear water rises from the gravel bottom and flows year-round. The owners contemplate making the area a "swimming hole" after a final clearing of the bottom and spreading sand to create a beach area for bathers.

### ***Management Needs***

The owners will allow the present pit to fill with groundwater as soon as the "beach" area is constructed and some final brush clearing is completed around the area's perimeter.

## **Duck Pond**

Approximately 3/4 acre of water and adjacent shoreline is also shown on Exhibit A.

### ***Past Management***

For all practical purposes, this area was unmanaged by its former owners. Originally intended as an irrigation pond, the entire area had become so densely overgrown with pines, brush and brambles that no foot access was possible. Hurricane Fran effectively flattened all vegetation in this area in 1997 and the owners have conducted extensive clean-up and restoration (the last of which occurred in January of 2001).

### ***Current Condition***

All original fish were removed with Rotenone™ and the pond restocked with 50 largemouth bass and 15 pounds of minnows during the winter of 2000-2001. The banks around the water's edge have been graded, seeded and stabilized with hay straw. A small quantity of brush remains on the island but otherwise the area is simply waiting for the re-stocked fish to mature and the opportunity to plant trees on the wildlife islands.

### ***Management Needs***

The owners' plans for this area are largely in place and awaiting appropriate time(s) when the last of the reclamation activity will commence. It is likely the area will need fencing to keep the owners' livestock from using the pond for watering purposes (which eroded the pond banks prior to the recent earthmoving activity).

## **"Lake" Fran**

This "lake" area occupies approximately 2 acre of water plus the immediately adjacent shoreline and pedestrian trails. It is also shown on Exhibit A.

### ***Past Management***

Prior to Hurricane Fran, this area was an inhospitable bog filed with large poplars, poison ivy vines, briars, and mosquitoes. For all intents and purposes, it had been "un-managed" by all known former owners. Their neglect was obvious.

Hurricane Fran uprooted most of the poplars, making the area completely impassible, even by foot. The current owners removed the felled timber and then decided to build Lake Fran on this site as the most expedient way to enhance the area's aesthetics. After the lake's perimeter became established, they built a ¼-mile walking trail around the lake and then enveloped the entire site with a white board fence (made from the lumber milled on-site from the salvage timber operations following Hurricane Fran).

The owners concluded a re-forestation plan inside this area during the winter of 1998-1999 by planting over 600 assorted seedlings (including 150 bald cypress) purchased from the NC Forest Service Nursery. They also planted

six large weeping willow trees and one large river birch obtained from a local nursery. Finally, the owners added a layer of mulch over all exposed soils.

#### ***Current Condition***

Approximately 40% of the seedlings planted during the Winter of 1998-1999 died in the Spring drought. Offsetting this, however, is the substantial numbers of spontaneous poplar and sweetgum growth occurring in the recently disturbed soils. Perhaps more seedlings will be necessary, and perhaps not. Otherwise, this area is simply waiting for some good growing seasons.

#### ***Management Needs***

Very little. The area is stable and should require little more than occasional mulch replenishment, pathway re-seeding and perhaps a re-establishment of seedlings from the NC Forest Service Nursery.

### **Willow Pond**

This is approximately one acre in size, is located at the extreme northern part of the property and is surrounded entirely by active livestock pasture.

#### ***Past Management***

There is no evidence previous owners practiced any active organized management techniques on this pond since it was built and initially stocked approximately fifty years ago. The current owners found the dam leaking, the headwaters almost completely silted up, and aquatic vegetation choking all parts of the pond having a depth of less than four feet. Irrespective of this, fishing the pond yielded good results -- and it still does.

The current owners rebuilt the dam and dredged the silt with a dragline. Triploid grass carp were introduced in 1992 and there is now no underwater vegetation.

The owners apply two tons of agricultural lime to this pond every three years (the last application was in April of 1999); annual broadcast fertilizer applications also contribute to the healthy algae bloom this pond sports.

#### ***Current Condition***

Although only a proper census would establish this, the pond appears to maintain a healthy and balanced fish population. In spite of sediment traps that the current owners installed, some sediment is returning to the headwaters and will need removing in about five more years. Otherwise, this area requires no special or immediate management activity.

#### ***Management Needs***

There are none on the immediate horizon. Longer term needs include a monitoring of the fish population, continued periodic liming, fertilizing and sediment removal.

## **Area specific objectives**

### ***Thornton's Creek Wetlands***

- (1) Encourage wildlife habitat usage.
- (2) Incorporate area into existing trail system.
- (3) Stabilize existing roadways.

### ***Central Woodlands***

- (1) Clear all refuse left by prior owners.
- (2) Encourage wildlife habitat usage.
- (3) Add a footbridge and new trail.

### ***Gravel Quarry***

- (1) Complete the establishment of the area as a "swimming hole" with sand beach.
- (2) Stop erosion at roadway entrance to quarry.
- (3) Encourage wildlife habitat usage.

### ***Duck Pond***

- (1) Complete current site restoration activity.
- (2) Stop erosion at pond perimeter.
- (3) Maintain recreational fishing population by reintroducing 25 to 50 pounds of minnows annually.
- (4) Encourage wildlife habitat usage.
- (5) Discourage cattle-induced erosion of the newly graded pond banks.

### ***"Lake" Fran***

- (1) Complete Winter of 1998-1999 reforestation activity by replacing seedlings lost of drought in Spring of 1999.
- (2) Maintain balanced recreational fishing population.
- (3) Encourage wildlife habitat usage.

***Willow Pond***

- (1) Maintain in its current state.
- (2) Maintain current balanced recreational fishing population.

## **Management Recommendations and Action Plan**

### ***Overall Re-Forestation Plan - uneven-aged forest management***

Currently our forest is mature and was thinned after Hurricane Fran. The forest is susceptible to wind throw during summer storms and hurricanes, disease, and insect infestation. To ensure we have a forest in the future that will replace the current mature forest we will implement a slow renewal process that will meet our aesthetic and timber management goals.

#### **1-acre Harvesting Every Three Years**

To begin the renewal process we will harvest at least 1 acre every 3 years. We may use the harvest to supply wood to maintain the barns and structures that we built after Hurricane Fran.

Every three years, we will choose the location in our forest to conduct the harvesting. We will harvest everything found in this area to leave the area open and clean. We anticipate that the re-sprouting hardwoods that grow in these clean areas and open sunlight will grow straight and maintain good form. Furthermore, volunteer loblolly pines will have a better opportunity to naturally re-seed from the surrounding trees where enough mineral soil has been exposed and snags that normally shade have been removed. After our last block is harvested, the first block harvested will again be a mature forest so we (or the farmstead's future owners) can begin the process again.

During any of the harvesting operations, we will follow all applicable Best Management Practices (BMPs) so that our land remains in-compliance with Forest Practice Guidelines (FPGs). We will maintain a minimum of a 50-foot buffer from all ponds and Thornton's Creek and will always reduce rutting and souping in commonly wet areas caused by heavy equipment by using old wood pallets, treetops, or drag mats.

#### **Disease Monitoring**

Lastly, we will examine our forest on a quarterly basis for insects and disease. We will report any problems to the County Ranger's Office and will request them to examine our progress and provide us with further management recommendations.

### ***Thornton's Creek Wetlands***

#### **Build additional brush piles for wildlife habitat.**

##### ***(a) Who will carry it out?***

The owners, using their existing logging and brush cutting tools, tractors and trucks. The owners may employ casual laborers to assist them when such help is available.



***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Add nesting boxes.**

***(a) Who will carry it out?***

The owners, using their existing lumber supply, woodworking shop and tools -- and plans provided by the North Carolina Wildlife Management Resources Commission.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Girdle trees to create nesting and feeding areas.**

***(a) Who will carry it out?***

The owners, using axes and/or chemical herbicides.

***(b) When it will be done?***

Continuously as needed, beginning December 31, 2002.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Complete foot trail through area.**

***(a) Who will carry it out?***

The owners, using their existing logging, brush cutting, and earthmoving equipment (including their tractors and trucks). The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

Simultaneously with the cleanup operations described in Items 1 and 2, *supra*. – and no later than December 31, 2004.

***(c) Why it is needed***

To achieve the owners' recreational development objectives.

**Hand grade road margins**

to turn water from travel surface before erosion can begin.

***(a) Who will carry it out?***

The owners, using their existing hand tools. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To control erosion on these freshly-disturbed areas.

***Central Woodlands***

**Clear all refuse left by prior owners.**

***(a) Who will carry it out?***

The owners, using their tractors, trucks, and hand tools. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' aesthetic objectives.

**Girdle trees to create nesting and feeding areas.**

***(a) Who will carry it out?***

The owners, using axes and/or chemical herbicides.

***(b) When it will be done?***

Continuously as needed, beginning December 31, 2002.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Harvest select trees for firewood.**

***(a) Who will carry it out?***

The owners, using their existing logging and brush cutting tools, tractors and trucks. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

Continuously, but only as needed.

***(c) Why it is needed***

To provide growing space for better species specimen.

**Build additional brush piles for wildlife habitat.**

***(a) Who will carry it out?***

The owners, using their existing logging and brush cutting tools, tractors and trucks. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Add nesting boxes.**

***(a) Who will carry it out?***

The owners, using their existing lumber supply, woodworking shop and tools -- and plans provided by the North Carolina Wildlife Management Resources Commission.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

**Build new trail with footbridge across stream at Baker Tract southern line.**

***(a) Who will carry it out?***

The owners, using their existing logging, brush cutting, and earthmoving equipment (including their tractors and trucks) – plus a supply of commercially acquired CCA treated posts and the owners' own current supply of white oak planking for the bridge. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

Simultaneously with the cleanup operations described in Items 1 and 2, *supra*. – and no later than December 31, 2004.

***(c) Why it is needed***

To achieve the owners' recreational development objectives.

**Re-seed, lime and fertilize road banks.**

***(a) Who will carry it out?***

The owners, using their existing distribution equipment and commercial seed/fertilizer/lime products.

***(b) When it will be done?***

Continuously as needed to maintain the erosion-reducing grasses planted by the owners during the Spring of 2001.

***(c) Why it is needed***

To prevent loss of the existing grass cover and subsequent erosion of these areas.

**Hand grade road margins**

to turn water from travel surface before erosion can begin.

***(a) Who will carry it out?***

The owners, using their existing hand tools. The owners may employ casual laborers to assist them when such help is available.

***(b) When it will be done?***

Continuously as needed.

***(c) Why it is needed***

To control erosion on these areas.

***Gravel Quarry***

**Rake bottom, clear vegetation, build sand beach, and fill the swimming hole.**

***(a) Who will carry it out?***

The owners (using their existing hand tools) will do the raking and clearing. An independent hauling company will deliver the sand.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To complete the construction of the "Swimming Hole."

**Stop erosion at roadway entrance to quarry.**

***(a) Who will carry it out?***

The owners, using their existing tractors, trucks and earthmoving implements.

***(b) When it will be done?***

December 31, 2002.

***(c) Why it is needed***

To complete the stabilization of this service trail.

**Encourage wildlife habitat usage via nesting boxes and girdled trees.**

***(a) Who will carry it out?***

The owners, by using their existing woodworking shop and tools to build nesting boxes – and their axes and other tools to girdle the trees.

***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To encourage the return of wildlife to this recently disturbed area.

**Plant seedlings around the perimeter**

***(a) Who will carry it out?***

The owners (using their existing hand tools) will re-plant a mix of dogwood, redbud and crabapple seedlings obtained from the NC Forest Service Nurseries.

***(b) When it will be done?***

March 1, 2002.

***(c) Why it is needed***

To restore understory and mid-story for wildlife and to prevent erosion.

***Duck Pond***

**Maintain recreational fishing population.**

***(a) Who will carry it out?***

The owners, with the consulting assistance of the North Carolina Wildlife Resources Commission and the fish stock of one or more commercial hatcheries.

***(b) When it will be done?***

Continuously.

***(c) Why it is needed***

To promote the maturity of this site's fishing potential *and* to conform the fish population of the waters upstream to "Lake" Fran.

**Encourage wildlife habitat usage.**

***(a) Who will carry it out?***

The owners, by using their existing woodworking shop and tools to build nesting boxes – and hand tool to final grade and plant willows and other trees on the island areas.

***(b) When it will be done?***

December 31, 2002.

***(c) Why it is needed***

To complete the development of this site's wildlife habitat potential.

**Stop erosion at pond perimeter.**

***(a) Who will carry it out?***

The owners, by using their existing farm equipment and hand tools.

***(b) When it will be done?***

March 31, 2002.

***(c) Why it is needed***

To complete the erosion plans of the owners and to forestall any further accreted sediment dredging at this site.

**Discourage cattle-induced erosion of the newly graded pond banks.**

***(a) Who will carry it out?***

The owners, by using their existing tools, equipment and store-bought materials to build a 48" high woven field fence around this area (which fence will include livestock access to the Duck Pond waters for drinking purposes).

***(b) When it will be done?***

December 31, 2002.

***(c) Why it is needed***

To complete the erosion protection plans of the owners.

***"Lake" Fran***

**Replace seedlings lost during Spring, 1999 drought.**

***(d) Who will carry it out?***

The owners (using their existing hand tools) will re-plant a mix of seedlings obtained from the NC Forest Service Nurseries.

***(e) When it will be done?***

March 1, 2002.

***(f) Why it is needed***

To complete the re-forestation plan attempted by the owners during the winters of 1997 and 1998.

**Re-seed, lime and fertilize road banks.**

***(a) Who will carry it out?***

The owners, using their existing distribution equipment and commercial seed/fertilizer/lime products.

***(b) When it will be done?***

Annually in the spring.

***(c) Why it is needed***

To maintain the ground cover first planted by the owners on these areas during the winter of 1999.

**Add nesting boxes at perimeter of water.**

***(a) Who will carry it out?***

The owners, by using their existing woodworking shop and tools to build nesting boxes – and hand tool to final grade and plant willows and other trees on the island areas.

***(b) When it will be done?***

December 31, 2001.

***(c) Why it is needed***

To complete the development of this site's wildlife habitat potential.

**Build apparatus to adjust water level in Nooney Wetland area.**

***(a) Who will carry it out?***

The owners, by using their existing woodworking shop and tools to build a moveable baffle across the existing 18" culvert so that the natural water level can be temporarily increased for weed control purposes.

***(b) When it will be done?***

December 31, 2002.

***(c) Why it is needed***

To control perimeter weeds and encourage the development of the area's wildlife potential.

**Restore pasture between Lake Fran and Stewart Pasture with switchgrass.**

***(a) Who will carry it out?***

The owners, with the possible assistance of their current existing independent contractor,

***(b) When it will be done?***

May 1, 2002.

***(c) Why it is needed***

To complete the owner's land reclamation and wildlife development plans.

***Willow Pond***

**Monitor fish harvest.**

***(a) Who will carry it out?***

The owners. Who else?

***(b) When it will be done?***

Continuously.

***(c) Why it is needed***

To monitor the health of Willow Pond's fish population.

**Continue liming and fertilizing pond at current levels.**

***(a) Who will carry it out?***

The owners.

***(b) When it will be done?***

Liming will be done each odd-numbered year, starting with 2003. Fertilizing occurs simultaneously and indirectly with the springtime fertilizing of the field surrounding the waters.

***(c) Why it is needed***

To maintain algae bloom and appropriate fish population health.

**Add nesting boxes at perimeter of water.**

***(a) Who will carry it out?***

The owners, using their existing lumber supply, woodworking shop and tools -- and plans provided by the North Carolina Wildlife Management Resources Commission.



***(b) When it will be done?***

December 31, 2004.

***(c) Why it is needed***

To achieve the owners' wildlife management objectives.

## Schedule of Management Activities

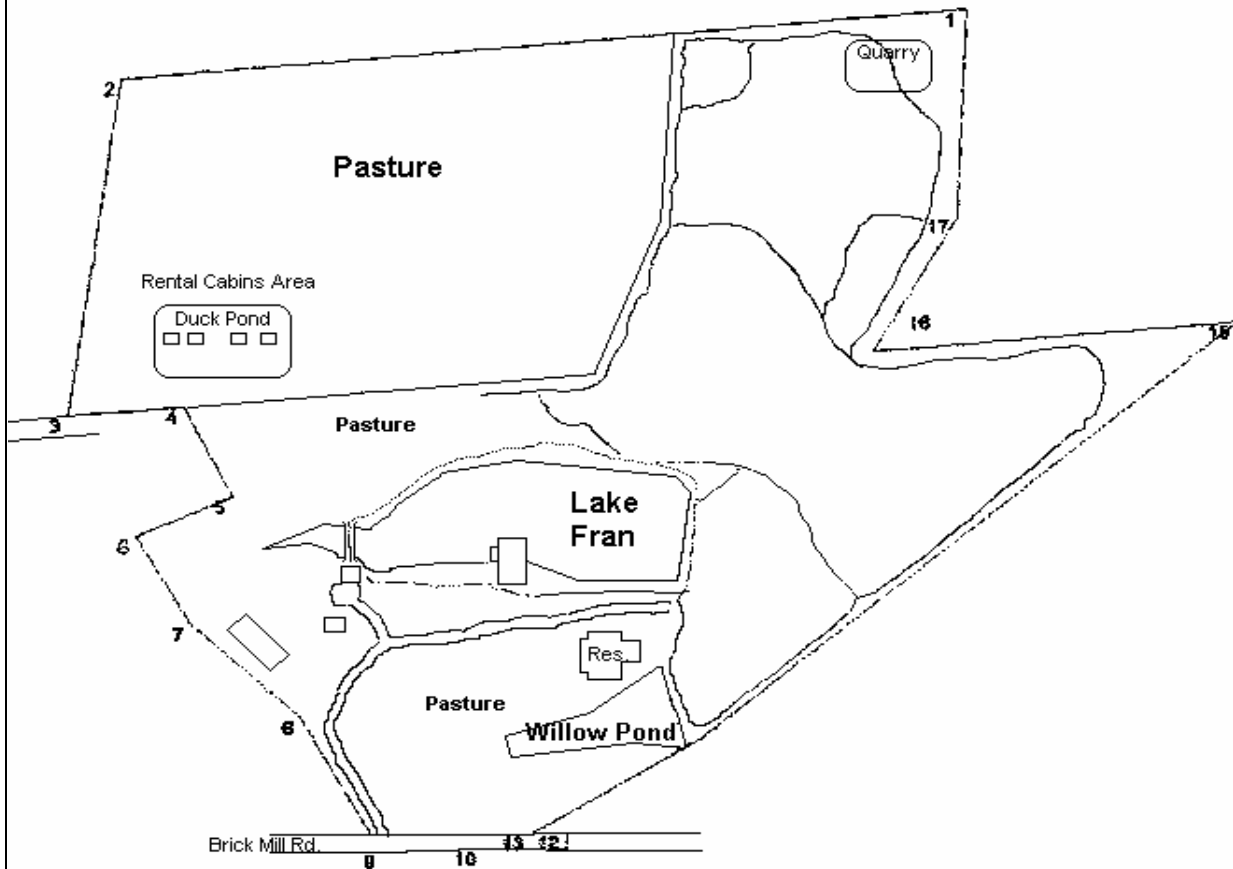
<u>Due Date</u>	<u>Area</u>	<u>Activity</u>
Continuously		Harvest select trees for firewood
Continuously	Willow Pond	Monitor fish harvest
Continuously	Willow Pond	Continue liming pond at current levels
5/1/02	"Lake" Fran	Restore pasture between Lake Fran and Stewart Pasture with switchgrass
12/31/02	Duck Pond	Discourage cattle-induced erosion of the newly graded pond banks
3/1/02	"Lake" Fran	Replace seedlings lost during Spring, 1999 drought
3/31/03	Duck Pond	Complete current site restoration activity
3/31/02	Duck Pond	Stop erosion at pond perimeter
12/31/01	"Lake" Fran	Add nesting boxes at perimeter of water
12/31/02	"Lake" Fran	Build apparatus to adjust water level in Nooney Wetland area
12/31/04	Central Woodlands	Clear any refuse left by prior owners
12/31/04	Central Woodlands	Build additional brush piles for wildlife habitat
12/31/04	Central Woodlands	Add nesting boxes
12/31/04	Central Woodlands	Build new trail with footbridge across stream at Baker Tract southern line
12/31/04	Central Woodlands	Re-seed, lime and fertilize road banks
12/31/04	Central Woodlands	Hand grade road margins to turn water from travel surface before erosion can begin
12/31/04	Gravel Quarry	Reclaim the area and restore its forest cover when final gravel removal is complete
12/31/04	Gravel Quarry	Stop erosion at roadway entrance to quarry
12/31/04	Thornton's Cr. Wetlands	Build additional brush piles for wildlife habitat
12/31/04	Thornton's Cr. Wetlands	Add nesting boxes
12/31/04	Thornton's Cr. Wetlands	Complete foot trail through area
12/31/04	Thornton's Cr. Wetlands	Re-seed, lime and fertilize road banks
12/31/04	Thornton's Cr. Wetlands	Hand-grade road margins to turn water from travel surface before erosion can begin
12/31/04	Willow Pond	Add nesting boxes at perimeter of water

## Record of Activities

<u>Due Date</u>	<u>Date Done</u>	<u>Area</u>	<u>Activity</u>
Continuously	___/___/___		Harvest select trees for firewood
Continuously	___/___/___	Willow Pond	Monitor fish harvest
Continuously	___/___/___	Willow Pond	Continue liming pond at current levels
5/1/02	___/___/___	"Lake" Fran	Restore pasture between Lake Fran and Stewart Pasture with switchgrass
12/31/02	___/___/___	Duck Pond	Discourage cattle-induced erosion of the newly graded pond banks
3/1/02	___/___/___	"Lake" Fran	Replace seedlings lost during Spring, 1999 drought
3/31/03	___/___/___	Duck Pond	Complete current site restoration activity
3/31/02	___/___/___	Duck Pond	Stop erosion at pond perimeter
12/31/01	___/___/___	"Lake" Fran	Add nesting boxes at perimeter of water
12/31/02	___/___/___	"Lake" Fran	Build apparatus to adjust water level in Nooney Wetland area
12/31/04	___/___/___	Central Woodlands	Clear any refuse left by prior owners
12/31/04	___/___/___	Central Woodlands	Build additional brush piles for wildlife habitat
12/31/04	___/___/___	Central Woodlands	Add nesting boxes
12/31/04	___/___/___	Central Woodlands	Build new trail with footbridge across stream at Baker Tract southern line
12/31/04	___/___/___	Central Woodlands	Re-seed, lime and fertilize road banks
12/31/04	___/___/___	Central Woodlands	Hand grade road margins to turn water from travel surface before erosion can begin
12/31/04	___/___/___	Gravel Quarry	Reclaim the area and restore its forest cover when final gravel removal is complete
12/31/04	___/___/___	Gravel Quarry	Stop erosion at roadway entrance to quarry
12/31/04	___/___/___	Thornton's Cr. Wetlands	Build additional brush piles for wildlife habitat
12/31/04	___/___/___	Thornton's Cr. Wetlands	Add nesting boxes
12/31/04	___/___/___	Thornton's Cr. Wetlands	Complete foot trail through area
12/31/04	___/___/___	Thornton's Cr. Wetlands	Re-seed, lime and fertilize road banks
12/31/04	___/___/___	Thornton's Cr. Wetlands	Hand-grade road margins to turn water from travel surface before erosion can begin
12/31/04	___/___/___	Willow Pond	Add nesting boxes at perimeter of water

# Exhibit A

**Willow Pond Farm - 39.24 acres (more or less) with 6,372.87 perimeter feet**



Area = 39.24 acres (1,708,418.13 sq ft) Perimeter = 6,372.87 Gap = 4 (Prec=1 in 1347.18)



Scale = 1:300  
Feet

1	266° 50' 33" 1404.62	11	004° 12' 57" 30.53
2	189° 22' 38" 600.32	12	268° 25' 48" 66.27
3	085° 51' 58" 195.11	13	058° 51' 07" 329.83
4	153° 47' 31" 175.93	14	051° 32' 26" 1146.59
5	247° 20' 42" 175.00	15	285° 51' 58" 609.51
6	160° 14' 27" 190.72	16	031° 25' 58" 278.17
7	132° 20' 22" 244.57	17	003° 02' 52" 362.49
8	150° 58' 05" 289.97	18	Back to job
9	089° 03' 50" 171.29		
10	091° 24' 18" 137.22		