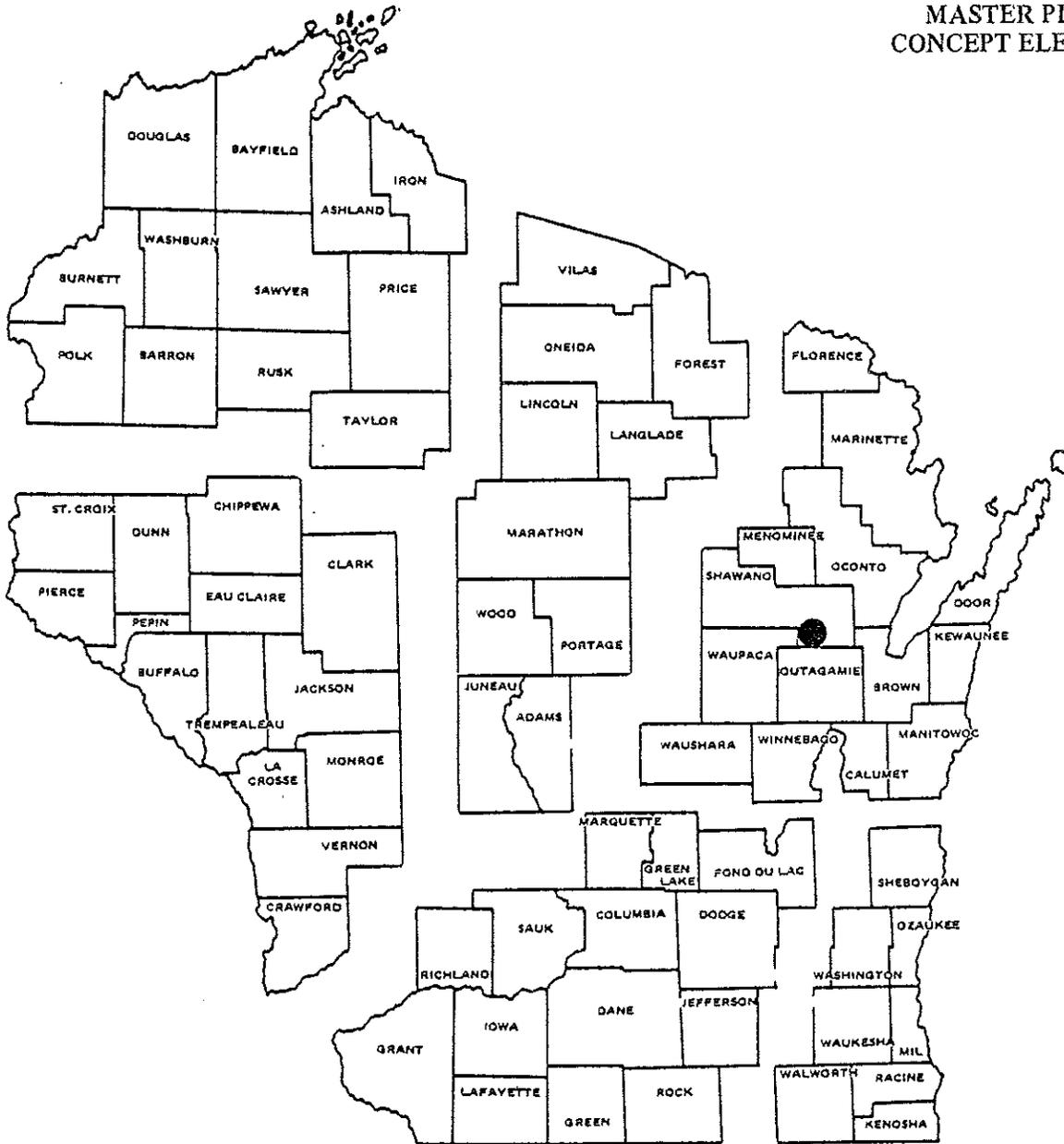


NAVARINO WILDLIFE AREA
 MASTER PLAN
 CONCEPT ELEMENTS



PROPERTY TASK FORCE

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Figure 1. General location of the Navarino Wildlife Area in central Wisconsin.



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BACKGROUND INFORMATION¹

Historical:

The Navarino Wildlife Area is located in southeastern Shawano County, primarily in the townships of Navarino and Waukechon. Part of the area extends into northeastern Waupaca County. The Cities of Green Bay and Appleton are approximately 30 miles to the southeast and south respectively, and Shawano lies seven miles to the north. Navarino is within a 50-mile radius of over a half million people (Figure 1).

The history of the area is one of logging, fire, drainage, and unsuccessful farming attempts. Historically, Navarino was well known as a natural hunting area for prairie grouse, deer, squirrels, rabbits, ruffed grouse, pheasants and ducks. The property proposal was investigated in the early 1950's as a pheasant stocking area and a waterfowl management area. Local conservation groups were interested in developing a large flowage for waterfowl and fur production by impounding the Shioc River, but insufficient water made creation of a large flowage impractical. However, the area was approved as an upland wildlife management area and pheasants were stocked yearly from the early acquisition years through 1967.

Acquisition officially began in October 1953 when the first parcel containing 557 acres was purchased for \$1,500 (\$2.69 per acre). The Shawano County Board of Supervisors offered to deed 985 acres of county owned land to the state at no cost if the state gave notice of intent to establish the wildlife area before July 1, 1954. This notice was defined as an initial purchase of private land in the area. The enthusiastic attitude of local governmental units and local conservation groups at that time can be appreciated by citing this offer to turn over land appraised at \$4,000 to the state at no cost.

The original acquisition goal was 9,400 acres to be obtained at an estimated cost of \$40,000. By 1969 the property had been expanded to its present size of 16,166 acres. Currently, 13,895 acres are in state ownership, acquired at a cost of \$845,076. Acquisition of the remaining acreage proceeded slowly from 1973 to 1976 because of changes in property management personnel and landowners unwillingness to sell to the state. However, over 700 acres have been purchased since 1976.

Management:

Wildlife management on Navarino is presently primarily oriented towards forest wildlife and secondly towards wetland wildlife. During the 1960's, management emphasized the potential of the property as a satellite area for the Horicon goose flock, but in the early 1970's this plan was abandoned in favor of the present management. Goose management would have involved extensive conversion of forest cover to grass, agricultural crops, and flowage areas; and this was considered undesirable.

Forest wildlife management has utilized a timber management program and trails construction to maintain or increase forest wildlife species. Clear cutting is used to maintain the aspen plant community, and selective and

¹Portions adapted from a Game Management Project Report by F. D. Irving, April 19, 1954, 3p.

shelter wood logging are used in thinning hardwood and pine stands to improve habitat quality. Thirty-five miles of trails have been established and are maintained yearly (Figure 2). These trails originated as access to timber sale areas or as roads needed in dike construction and maintenance. All trails are gated and only foot travel is allowed on the trails. The trails provide excellent access to nearly all parts of the property.

Wetlands management has concentrated primarily on increasing waterfowl production. Seven flowages flooding 1,000 acres of cattail, sedge and lowland brush marsh have been constructed. A permanent water supply is lacking for all flowages so they recede to very low levels during dry weather. Prescribed burning has been used to manipulate marsh vegetation and occasional peat burns have resulted. Mowing sedge meadows for marsh hay by local farmers has been permitted.

Public use of Navarino is high especially during the hunting season. Hunter use is excessive on opening weekends of the deer gun and waterfowl seasons and hunting pressure throughout the hunting season remains high. Blackberry and blueberry picking are very popular summer activities despite mosquitos, and ski touring has become the major winter activity. Hunting and trapping have been emphasized on the property and only non-hunting activities that are oriented towards an appreciation and understanding of the local flora and fauna are encouraged. Regulations on the use of the area include: prohibiting motorized vehicles and horses, camping only during the hunting season, designating parking lots, and confining snowmobiles to a cross-through trail. This management policy has been promoted through the news media and through talks to sportsmens clubs and other groups in the Shawano area.

GOAL, OBJECTIVES AND ADDITIONAL BENEFITS

GOAL: To manage the Navarino Wildlife Area for optimum production of forest and wetland wildlife and to provide compatible use of the resource including hunting, trapping, fishing, hiking, nature study, ski touring and primitive camping.

ANNUAL OBJECTIVES: 1. Produce an overwinter herd of about 750 deer and provide 11,500 participant days of deer hunting.

2. Produce a fall population of at least 100 ruffed grouse per section on 10 sections (1,000 birds) and provide about 2,000 participant days of ruffed grouse hunting.

3. Produce a minimum of one duck per acre on about 1,500 acres of water (1,500 ducks) and provide about 1,500 participant days of duck hunting.

4. Provide opportunity for 5,000 participant days of outdoor recreation including nature study, observation and primitive camping.

5. Harvest merchantable timber on about 100 acres.

ANNUAL ADDITIONAL BENEFITS: 1. Accommodate 5,000 participant days of other hunting and trapping as follows:

- a. Woodcock - 1,800.
- b. Squirrels - 2,000.
- c. Trapping and Other Hunting - 1,200.

2. Accommodate about 16,000 additional participant days of other nonhunting activities such as berry picking, cross country skiing and hiking.

*3. Benefit nongame species indigenous to forest and wetland communities.

*4. Contribute toward the habitat of migratory and resident endangered and threatened species.

*NOTE: Objectives may be established following inventory or pursuant to the Operations Plan of the Comprehensive Fish and Wildlife Management System.

RESOURCE CAPABILITY

Soils and Geology:

Navarino is in the northeastern part of the Central Plain Province of Wisconsin (Martin, 1965, the Physical Geography of Wisconsin). Bedrock geology consists of Cambrian sandstone in the east half of the property and Precambrian igneous rock in the west half. The area was glaciated, and surface geology is that of a lake basin with sand sediments. Soil associations are largely wet sandy and peat soils (Surface Water Resources of Shawano County 1968).

Topography is generally level and consists of sandy upland areas among marshy depressions. There is a series of low sand ridges running in an east-west direction through the south half of the property. These ridges rise 30 to 40 feet above the surrounding plain and are the major relief on the property. The ridges provide overlooks to other parts of the property and for this reason have high aesthetic value. Other ridges located in this same vicinity are eskers and are generally composed of gravel and have a potential as a source of gravel for aggregate.

A soil survey has been completed for Navarino by the Soil Conservation Service and 18 major soil series have been identified. Upland soils are sandy and occupy about 35 percent of the area. They have rapid permeability and low available water capacity. The water table, however, is generally high in these upland soils. The remaining 65 percent of the soils are lowland mineral soils and organic soils. These are very wet soils.

The Soil Survey Interpretation Sheets of the Soil Conservation Service describe all soils on Navarino as having moderate to severe limitations for recreational uses such as playgrounds, camp areas, picnic areas, and paths and trails. Upland soils on ridges in particular have a low potential for intense use and are subject to wind erosion when disturbed. Other upland and lowland soils are poorly drained and are seasonally flooded. Natural fertility is low and agricultural crops can be grown only with

extensive management. Native trees and shrubs grow profusely, however, and good to excellent growth of aspen, red maple, oak, and pine can be expected on most upland soils.

Wildlife:

Wildlife is abundant on Navarino. The natural interspersed habitat types is highly productive of forest and wetland species. The important game species are deer, ruffed grouse, gray squirrels, waterfowl, woodcock, and rabbits. Fur bearing animals includes fox, raccoon, mink, beaver, muskrat, coyote and skunk. Many non-game species occur including: songbirds, hawks, owls, shorebirds, herons, rodents, amphibians and reptiles.

Two uncommon non-game species found in the area are the pileated woodpecker and the greater sandhill crane. Pileated woodpeckers frequent areas of old growth timber and because of their elusive habits are seldom seen. In contrast, sandhill cranes are often seen because they utilize the open fields and sedge meadows. Their large size and vocalizations in spring also make them conspicuous and many people actively seek out these birds. Each year 10 to 15 pairs of Sandhill cranes nest on Navarino and together with the non-breeding population the total flock numbers around 40.

The bald eagle, osprey, wood turtle, and double crested cormorant are the only endangered species known to occur on the property. Bald eagles and ospreys are normally seen in flight during migrations, they do not nest on the property. One wood turtle was reported in the summer of 1976, but a field survey by a UW-Stevens Point wildlife intern in the summer of 1978 revealed no wood turtles. The bottomland habitat along the Wolf and Shioc Rivers, however, does appear to be wood turtle habitat and wood turtles are present in other parts of Shawano County and the Menominee Indian Reservation. Additional surveys to establish the presence of wood turtles are planned for 1979 and 1980. Three cormorants were seen on a flowage on May 5, 1977. This is the only record of these birds on the wildlife area.

Threatened species known to occur are Blanding's turtle, red-shouldered hawk and Cooper's Hawk. Two active red-shouldered hawk nests were located in 1978, one in the Wolf River bottoms and one along the Shioc River. At both nests adults were seen bringing food to nestlings. It is probable other red-shouldered hawks nest on the property because the bottomland habitat on Navarino is extensive. Two Cooper's Hawks were seen in 1975 and occasionally a sighting has been reported in other years but no nests have been found.

Other species occurring that have received special, statewide attention (for status and distribution) are the harrier, upland sandpiper, sandhill crane, bluebird, bobolink, green herons, great blue heron (not nesting on area), black tern, American bittern, yellow-headed blackbird, badger, otter, woodchuck, Blanding's turtle, bullfrog, and cricket frog.

Deer numbers on Navarino are currently at the desired level. No precise estimates of deer numbers have been specifically made for the wildlife area but the 1978 overwinter estimate for Unit 63A was 26 per square mile

of deer range. (The overwinter management goal for Unit 63A is 30). Because of the good quality habitat, actual deer numbers on Navarino are somewhat higher than the estimate for Unit 63A.

Deer normally do not "yard" as such during winter but they do tend to congregate in certain areas during very cold weather and periods of deeper snow. The primary area for this activity is the Waukechon Marsh. Habitat in this marsh is a mixture of red-osier dogwood-willow-alder brush marsh, aspen, hardwoods and cedar. Browse is generally plentiful but "shearing" to rejuvenate browse and timber sales are conducted to maintain good winter habitat. Cedar and other green cover is not cut.

Waterfowl also make significant use of Navarino. During spring migration, nearly all species of ducks common to the Mississippi Flyway can be observed on the property. Mallards, blue-winged teal, wood ducks, and hooded mergansers are the most common nesting species. Field studies between 1975-1978 revealed that waterfowl production on the flowages is normally one duckling per acre. This figure compares favorably with waterfowl production in other areas of Wisconsin. A Canada goose flock of up to 700 and small numbers of snow geese utilize the area during spring and fall. Whistling swans can be observed on the property during their spring migration.

Muskrats and mink are abundant on the flowages and beaver and otter are also commonly observed in these areas. Typically, red fox are common on the property but, in recent years, high fur prices paid for this animal have caused a substantial decrease in their numbers through hunting and trapping. Raccoon have also been heavily hunted but, to date, their population levels have not declined. Populations of grey squirrels and rabbits are very good. Ruffed grouse and woodcock are abundant and Navarino has a statewide reputation for providing excellent grouse hunting.

The goal of wildlife management on Navarino calls for developing a high diversity of habitat types (communities) which will support diverse and abundant wildlife populations. Management for most species is accomplished through habitat manipulation. Hunting and trapping can control population levels for only a few species: deer, beaver, otter, fox, and waterfowl. Habitat management can affect the abundance levels of all species by making specific living requirements more or less available.

Although game species are generally given primary consideration, habitat management is recognized as affecting an entire inter-related biotic community. In some cases, no management can be utilized to provide additional plant and animal diversity. The general guidelines followed in promoting wildlife species diversity and abundance are: 1. Maintaining young forest communities throughout most of the wildlife area; 2. Planning timber sales and other vegetation manipulations to create diverse vegetative structure; and 3. Considering species specific requirements when implementing management.

There is considerable future potential for managing game and other wildlife on Navarino. Excellent opportunities exist for increasing populations of cottontail rabbits, gray squirrels, ruffed grouse and woodcock through more intensive habitat management. Deer numbers are currently near the established goal for Unit 63A (30 per square mile of deer range) and should be stabilized at this level. The objective for an overwinter herd of about 750 on the wildlife area would permit an annual harvest of about 250 deer. Waterfowl and furbearer numbers can be increased by construction of additional flowages, by more intensive management of existing flowages and natural wetlands, and by establishing dense nesting cover.

The major problem for future game management will be to balance the hunting demand with the supply of game. Hunting pressure is expected to increase and, while some game populations can be increased through more intensive management, demand is still expected to exceed the supply. Future game management can meet this increased demand only by increasing the quality and the satisfaction derived from the hunting experience on Navarino. To do this, hunter control may be necessary especially for deer and waterfowl hunting.

Non-game management opportunities are diverse due to the large number of species involved. Non-game animals are receiving increased attention by users, and they are often more readily observed than game animals. The most important future non-game problem will be to assess the population status of the various species and to determine their habitat requirements. After this is accomplished, specific management plans can be designed. Some current management opportunities are: preserving sandhill crane and pileated woodpecker habitat components, increasing the populations of uncommon species such as upland sandpiper and bluebird, and making songbirds more visible to property users. Future surveys and management will be made consistent with the Operations Plan of the Comprehensive Fish and Wildlife Management System.

Ideally, future wildlife management for both game and non-game should follow a community approach. Management for one species could inadvertently be detrimental to another if the total community is not considered. However, limited technology and funding will hamper implementation of this management idea.

Vegetation:

Navarino is located on the northern edge of the "tension zone" (Curtis, 1959, Vegetation of Wisconsin) and this factor, together with the interspersed marsh and upland, results in a diverse flora. No detailed floristic study of the area has been conducted but Forest Reconnaissance for timber management purposes has been completed. Forest Reconnaissance has identified 15 general vegetation types, and has divided the property into 17 compartments with 310 stands of vegetation.

Forest comprises about 55 percent of the property, grass and abandoned farm fields 10 percent, and wetland vegetation 35 percent (Table 1 and Figure 3). The northernmost extension of the southern lowland forest occurs along the Wolf River within the project (Curtis, 1959) and is the most unique vegetation type on the property.

No endangered or threatened plant species are yet known to exist on Navarino. However, DNR Technical Bulletin Number 92, "Endangered and Threatened Vascular Plants in Wisconsin" and Chapter 27 of the Wisconsin Administrative Code will be an aid for personnel in attempting to locate these species. Appropriate management steps will be taken if such species are found. In addition, the Office of Endangered and Non-game species will be consulted and inventories conducted as may be necessary on development sites. Protection will be given to significant sites.

Vegetation has been managed to enhance wildlife habitat quality. Commercial timber sales utilizing clearcutting, selective, and shelter-wood cutting have been the primary tools used to achieve forest wildlife management objectives. Considerable revenue has been obtained from timber sales designed for wildlife purposes. Prescribed burning and mowing are used in managing wetland vegetation and also as forest management tools. Only minor use has been made of herbicides.

Sharecropping has been conducted on 280 acres. While domestic crops are not necessary to sustain wildlife populations on Navarino, they are beneficial to certain species in supplementing natural food supplies. The location of sharecrop fields also makes deer, waterfowl and sandhill cranes highly visible to the public when these animals are feeding on the crops.

Future vegetation management will largely determine if the wildlife potentials discussed earlier will be realized. A number of vegetation management needs and problems have been identified and are very important for achieving future wildlife goals: oak regeneration to maintain northern red oak, white and swamp white oak; white pine regeneration, northern white cedar regeneration; establishing an aspen rotation of 100 acres per year; establishing a continual outlet for hardwood pulp; maintaining sedge meadows from brush invasion; increasing the quality and quantity of aquatic vegetation in flowages; and improving upland grasses as waterfowl nesting cover.

Sharecropping should continue on a small scale for the seasonal food and cover it provides certain species; primarily cranes, deer and migrating waterfowl. Sharecropping will reduce in the future as 150 acres now cropped are put into dense nesting cover. Several small red pine plantations exist. These should be managed for their wood producing potential but no further pine plantation establishment should occur.

Table 1. Major vegetation types on the Navarino Wildlife Area as determined from forest reconnaissance.

Type	Acres	% of Grand Total
Northern hardwoods	181	1.1
Bottomland hardwoods	1223	7.8
Swamp hardwoods	1144	7.3
Hemlock hardwoods	13	0.1
Aspen	4542	28.8
White pine and red pine	438	2.8
Tamarack	134	0.8
oak	361	2.3
White birch	181	1.1
Swamp conifers	<u>315</u>	<u>2.0</u>
Total	8532	54.1
Upland brush	145	0.9
Abandoned fields and grass (includes sharecrop areas)	1618	10.3
Total	<u>1763</u>	<u>11.2</u>
Lowland brush	1851	11.7
Marsh grass (sedge spp.)	2613	16.6
Flowage area	<u>1000</u>	<u>6.3</u>
Total	5464	34.6
Grand Total	15,759*	99.9

*Acreage not equal to project size of 16,166 because some private land not included in forest reconnaissance.

Navarino is over half forested and contains a considerable amount of pulpwood and saw timber. The forests are also habitat for wildlife and have aesthetic benefits. The forest will be managed as wildlife habitat, through the use of timber sales and prescribed silvicultural practices. Estimates are that 1,000 cords of pulpwood and 50-100 thousand board feet of saw timber will be harvested annually to achieve wildlife and forest management objectives.

Water Resources:

The water resources on Navarino consist of 4,400 acres of sedge and lowland brush marsh, seven flowages covering about 1,000 acres and sections of the West Branch of the Shioc River and Wolf Rivers (Figure 2). The resource capability of each will be discussed separately.

1. Sedge and Lowland Brush Marshes

Marshes are excellent habitat for many forms of wildlife. They are an integral part of Navarino's wildlife productivity due to their interspersion among other habitat types and the resulting "edge effect". Their wetness hinders recreational pursuits other than hunting, trapping, and nature study. In many lowland brush marshes, and sedge meadows undesirable vegetation is replacing preferred wildlife food plants and regeneration of the desirable vegetation is needed.

Mechanical treatment can effectively accomplish regeneration in the lowland brush areas but in sedge meadows fire or herbicides are needed to control brush. Fire will also benefit waterfowl if selected marshes are allowed to peat burn to create potholes. Numerous potholes present in the 1920's and 1930's have been lost by natural plant succession and peat build up.

2. Flowages

Seven flowages have been constructed in sedge and lowland brush areas to provide permanent water areas for waterfowl. The first flowage was built in 1962 and the other six were constructed between 1969 and 1974. The flowages have greatly increased the production and carrying capacity of waterfowl and aquatic furbearers on Navarino. Flowage management has been mainly for duck production.

The flowages are focal points of visitor use. Recreation available on the flowages include waterfowl hunting, trapping, canoeing, observation of wetland wildlife such as beaver, otter, herons, waterfowl, and sandhill cranes, and a minor amount of fishing for bullheads and northern pike. Waterfowl hunting pressure on flowages is excessive during the first two weeks of the season and trapping activity for muskrats is very high. The use of flowages for wildlife observation, however, is rather low but could probably be increased through an information and education program.

In 1975, an informal study of factors affecting duck production on Navarino was initiated by the property manager. The primary goal of the study was to obtain background information on the importance of existing flowages as duck production areas and as habitat for other wetland wildlife. From this information, decisions could be made on the extent to which future flowage construction should proceed.

Thus far, four years of data have been collected on waterfowl pair use, nesting, brood production, water quality, soils, aquatic vegetation, and non-waterfowl use. Based on data collected from 1975 through 1978, it appears flowages have the capability of producing at least one duckling per acre of water.

There is an immediate need for one flowage project which involves about 300 acres of marsh adjacent to MacDonald Road (Figure 2). The marsh is presently excellent waterfowl habitat. During spring, however, the marsh fills and often floods MacDonald Road. Gradually after spring runoff the

water level recedes through a small culvert under the road. Because the culvert is improperly placed and because beaver normally dam the culvert, the marsh retains a considerable amount of water which results in the excellent habitat conditions.

The flooding and muskrat burrowing into the roadbed cause safety hazards for motorists. The Town of Navarino is willing to cooperate with DNR in elevating the road, installing a water control structure, and riprapping. This project will preserve the marsh and correct the safety problem. The preliminary engineering has been completed and the project should be implemented by 1979. Resource Conservation and Development Funds may be available for 50 percent of the cost, otherwise the cost will come from wildlife funds. Four additional flowages totaling 255 acres are also planned for construction by 1983 (Figure 2).

3. West Branch Shioc River

The 8.4 mile section of the river that flows through the wildlife area has light brown, slightly alkaline, water. The river at one time supported trout but land use changes and pollution from the Bonduel sewage treatment plant and pickle plant have degraded the stream to where only northern pike, suckers, and minnows inhabit the river. If a trout fishery could be re-established the recreational potential of the river would be high. A stream survey in 1978 showed some potential for establishing a Class II brown trout fishery with water flow as the major limiting factor. The water flow ranges from 0 to 238 cubic feet per second. The river gradient is 3 feet per mile.

A fishery presently exists for northern pike, white bass, and suckers during the spawning runs. Access is available off several county roads, but the stream is not easily navigated due to trees across the stream. Hunting and trapping along the river are good and will continue to be the most important recreational use of the river and its floodplain.

4. Wolf River

The nine mile section of the river that flows through Navarino is inhabited by northern pike, walleye, largemouth bass, smallmouth bass, catfish, panfish, lake sturgeon, mooneye, white bass, carp, and numerous sucker and minnow species. Lake Sturgeon uses several of the riffle areas present in the section for spawning. Mooneye and white bass also migrate to this section on their spawning runs.

The stream gradient throughout the wildlife area is less than one-half foot per mile, and the stream, flowing 744-1620 cubic feet per second, is readily navigable. Bottom substrates consist of sand and silt. There is no evidence of pollution. The water is hard, slightly alkaline, and light brown in color. Current uses of the river are fishing, canoeing, boating, hunting, and trapping. Undeveloped public access exists at two points within the boundary of the wildlife area and developed access at one point (Figure 2).

The future recreational potential of this river and its floodplain is very good. Fishing and boating will remain the primary attractions of the river with hunting, hiking, ski touring, and nature study occurring on the floodplain. Throughout this section of river the floodplain is heavily forested and relatively undeveloped making it very scenic and wild in appearance.

Historical and Archaeological Features:

According to the Shawano Historical Society, there is one historical feature on Navarino. In December of 1869, at the home of Martinus and Bertha Anderson, the first Norwegian Lutheran Services in Shawano County were held. The site of the former Anderson home is on State Highway 156. The Ascension Lutheran Church of Navarino has requested permission to place a historical marker at the site. Such a marker would not affect management of the project. Vandalism may be a problem but the Ascension Church would be responsible for maintenance of the marker.

The State Historical Society, Historical Preservation Division, 816 State Street, Madison will be contacted prior to disturbance of any major resource located on the property.

Ownership:

Figure 4 shows the existing ownership pattern on Navarino. The total acquisition goal is 16,166 acres of which 13,895 acres are currently in state ownership. State ownership of the several remaining tracts in the property interior is considered critical for ownership continuity and for preventing undesirable development within the area. The parcels on the periphery of the area are in general not as critical as the interior parcels. The potential for future acquisition looks promising at present. Five purchases have been made since June 1976.

The property boundary should be extended to include an additional 330 acres as shown in Figure 5. Area A contains 3 parcels totalling about 150 acres and is needed for timber management access to the section 13 area and for waterfowl developments on drainages emptying into the Shioc River. Without this parcel, potential wildlife development will be severely limited in this part of Navarino and timber management access will have to be obtained by easement through one of the parcels or by an involved road construction project from the north and west across a marsh. Blocking of the property boundary will also benefit users who under existing conditions have some difficulty in getting onto state land in this area.

Area B in Figure 5 is a single parcel about 60 acres in size. It is openland and currently kept mostly in hay. It has excellent potential for a few small runoff ponds and dense nesting cover. The proximity of this parcel to 2 flowages gives it real management potential for increasing waterfowl production on Navarino.

Area C includes 3 parcels totaling about 120 acres. DNR control of these parcels will allow waterfowl management to occur on a large slough of the Wolf River through establishment of dense nesting cover adjacent to the slough and control over public use. Public access to the river would actually be enhanced by DNR ownership but use can be managed not to conflict with waterfowl production as it now does by controlling vehicle access, parking, and boats with motors on the slough. Summer home development which is just beginning near the slough will also be prevented.

Current Uses:

Hunting and trapping are the primary uses of Navarino (Table 2). Collectively, hunters spend more time on the property than non-hunters, and both hunting and non-hunting uses are increasing. Most hunting is for deer, ducks, grouse and squirrels. Hunting pressure is very high the opening weekends of the deer gun and waterfowl seasons. Opening weekend deer gun hunter densities are 64 per square mile, and opening weekend waterfowl hunter densities average one hunter per eight acres of impounded water.

Hunting pressure for grouse and squirrels is high on the opening weekend but decreases as the seasons continue. Bow hunting for deer is very popular and during the early bow season at least 10 to 20 bow hunters use the property daily. Trapping activity is limited to a few individuals who trap mainly muskrats. Two of the more successful trappers remove 500 to 1,000 muskrats annually.

Non-hunting use varies in intensity. Blackberry and blueberry picking are very popular summer activities and attract families and groups from as far away as 100 miles. Berry-picking is a traditional activity for local residents many of whom had relatives that at one time owned land within the property boundary.

Spring and fall observation of sandhill cranes, geese, and ducks ranks second to berry-picking. Much of the hiking activity is also related to observing these birds. Ski-touring has become extremely popular. A four-mile marked trail was established in 1975 and was expanded to 10 miles in 1976 and 15 miles in 1977. Beginning in 1978, trails will not be marked for cross country skiing because of maintenance costs and potential liability to DNR. However, maps showing the walking trail system can be used by skiers with the knowledge that trails are not maintained or marked for cross country skiing.

Fishing and canoeing are increasingly popular uses of the Wolf River during summer. Camping by permit has been allowed only during the hunting season to accommodate hunters. Since the energy crisis of recent years, the number of permits issued for fall firewood cutting has increased to 100 per year.

The potential for accommodating hunting and non-hunting use on Navarino is very good. However, use for hunting cannot be increased indefinitely without control. Game supplies, in particular, will always be limited and hunter control will be necessary to preserve quality hunting. Based upon field observations, it is felt that hunting pressure for deer and waterfowl

are already at a maximum, but other hunting and non-hunting use-days could be increased somewhat (Table 2). Because Navarino is primarily a public hunting area, future increases in non-hunting use should not be permitted to conflict with hunting. Only wildlife oriented non-hunting uses should be encouraged and other uses should be discouraged to help avoid conflicts. Navarino can probably best satisfy the hunter and non-hunter by supplying natural forms of outdoor recreation specifically oriented around the observation, study, and pursuit of wildlife.

Table 2. Estimates of current and future man days of use for the Navarino Wildlife Area

<u>Type of Use</u>	<u>Man Days of Use Per Year</u>	
	<u>Current</u>	<u>Expected¹</u>
Hunting:		
Deer gun	8000	8000 ²
Deer bow and arrow	3000	3500
Waterfowl	15000	1500 ²
Grouse	1500	2000
Woodcock	1000	1800
Squirrels	1500	2000
Fox-coyote	450	450
Trapping	250	250
Other	<u>500</u>	<u>500</u>
Total	17,700	20,000
Non-Hunting:		
Berry-picking	2500	3000
Boating, canoeing, fishing on Wolf River	2000	3000
Ski touring	1000	3000
Hiking	1000	2500
Wildlife observation	1000	2500
Snowmobiling	<u>5000</u>	<u>6000</u>
Total	12,500	20,000

¹These use levels expected by 1985.

²Hunter control will be needed to stabilize growth of deer-gun hunting and waterfowl hunting.

Land Use Potential:

Figure 6 shows the proposed land use classifications for Navarino. The Wolf River offers the greatest potential for a resource preservation classification. It is proposed that the river, at least within the

property boundary, be designated as a Scenic River. For management purposes, this would involve a 400-foot wide strip on either side of the river in which timber and wildlife management activities that require major alteration of vegetation would be restricted. It is further suggested that the portion of the Wolf River from Shawano to Leeman be investigated for Scenic River classification (Figure 7). A similar classification proposal for the Wolf River has been made by the East Central Planning Commission.

Another major consideration for the Wolf River in this area is the occurrence of the northernmost extension of the southern lowland forest. A representative portion of this forest type found in this area should be set aside for scientific purposes. Presently, 55 acres of land on the river outside the Navarino Wildlife Area (Section 32 of the Town of Navarino) owned by the Division of Trust Lands and Investments has potential for Scientific Area designation. The Scientific Areas Preservation Council will be consulted regarding the feasibility of future designations.

The areas designated as Natural and Habitat Preservation total 400 acres and include the best cedar and old growth hardwood forest on the project. The hardwood has not been disturbed by cutting in many years and is used by the Bureau of Forestry for training purposes. The cedar is important wintering habitat for deer and, due to the high deer populations, it may not be feasible to attempt regeneration. Some of the cedar acreage is on private land, however, and will not be secure from man-caused disturbance until in state ownership.

The remaining and major portion of the property is classed as Resources Development - Wildlife Management (RD2). This designation will allow management to maximize wildlife productivity as stated in the goal. Designating the majority of the project as wildlife management should not be viewed as wildlife development at the expense of natural and aesthetic values.

Generally, all of the wildlife management activities which have occurred and will occur blend with the landscape and have the effect of preserving and enhancing natural and aesthetic values. Flowage construction in particular has had a tremendous positive aesthetic impact. Thus future management though designed to intensively manage wildlife will not conflict with the goal of providing a natural appearing area for wildlife recreation.

There is a potential for a scenic overlook site on the northeast corner of the project (Figure 4, parcel G). This site provides an good overlook for the northern half of the property. The site is not presently within the property boundaries and development would require a boundary extension to purchase 10 acres on the hill top.

RESOURCE MANAGEMENT PROBLEMS

Private Development Encroachment:

At present, there are no developments actively encroaching upon the area. There have been a number of new homes built in the vicinity of the property in the Village of Navarino but, in general, the population of Navarino is

decreasing. Development on the area's periphery is expected to increase but not substantially nor adversely affect management in the near future. Farming is expected to continue as the dominant surrounding land use.

A few summer homes have been built along the Wolf River, but future development is expected to be minor and to have no adverse impact on the area or the proposed Scenic River designation. Fortunately, there has been no recent construction of homes or cabins on private parcels within the property and there have been no indications that such development will occur in the future.

Current Use:

1. Hunting

Based upon field observations, it is the opinion of area field personnel that excessive hunting pressure exists during the opening weekend of the deer gun season and during the first 2 weekends of the waterfowl season. For other hunting activities, pressure is rather high during opening weekends but thereafter diminishes to low or acceptable levels. Opening weekend deer gun hunting pressure was 64 hunters per square mile on the project from 1975 through 1977 (a total of 1,600 hunters).

During the remainder of the deer gun season, hunter densities are about 25 to 35 per square mile. Deer gun hunting problems on the opening weekend are typical of central Wisconsin deer hunting problems that have recently been identified by DNR. If a statewide revision of the deer season structure does not reduce hunter numbers, some form of hunter control may be necessary on this wildlife area in the future.

Waterfowl hunter densities during the first and second weekends of the season are 1 hunter per 8 acres of impounded water. However, following a summer of low rainfall, huntable water area on the property is considerably reduced resulting in hunter densities of 1 hunter per 2 or 3 acres of water. Normally, after the second week of the waterfowl season, hunter numbers decrease and crowding is no longer a problem.

Under crowded conditions, hunter behavior and hunting quality is very poor. During low water years ducks gather onto available water and overkill as well as excessive wounding occurs, especially during opening weekend. Regulation of duck hunter numbers during the first 2 weeks of the waterfowl season to a density of one hunter per 20 acres of marsh is felt necessary to provide reasonable control of hunter behavior and harvest. Control of duck hunter numbers by a permit system on Navarino should be given serious consideration. Without such control, the objective of 1,500 use-days will be difficult to achieve.

2. Non-Hunting Use

Traditionally management has discriminated against recreational pursuits which could promote user attitudes adverse to the established purpose of the area. All forms of foot travel are allowed but camping without a permit, horseback riding, use of motorized vehicles, and use of motorboats

on flowages are prohibited. Snowmobiling occurs only on a cross-through trail leased to Shawano County and, generally, is not a problem, except for the required posting of possible hazards (Manual Code 8615.2) and occasional trail violations. All walking trails are gated which has prevented most problems with motorized vehicles. Picnicking occurs infrequently and most often in conjunction with fishing the Wolf River or hiking. The lack of developed picnic sites has prevented this activity from becoming a problem.

Camping has been limited to the hunting season, and is controlled by requiring a permit, limiting the number of active permits at any time to 12, and designating the camping location. All designated camping locations are parking lots, and campers are spread out so all are not in the same parking lot. Requests for camping during periods other than the hunting season have been denied, and generally none or very few requests are received for camping during summer. Recently, canoeing the Wolf River through the area has increased and camping has occurred. Camping in this situation is probably compatible but needs to be regulated. The establishment of a canoe camping area along the Wolf and requiring a permit for camping would remedy this problem.

The prohibition of horseback riding on Navarino has resulted in the largest controversy of non-hunting user management. Horses were prohibited in 1974 following increased use. It became apparent to management personnel that the potential for damage to light, sandy soils and vegetation on dikes and trails was high. Littering of parking lots and walking trails with straw and manure was also a problem. Horses were determined to be incompatible with the policy of allowing only foot travel. Consideration was given to issuing permits for riding and to restricting horses to a marked trail, but this alternative was not selected because: 1.) concentrated use on a trail be incompatible would result in severe soil and vegetation disturbance, and 2.) it was felt once horses were allowed on the area, control of use would be difficult because a precedent would be set actually encouraging horse use. Future management will not permit horses on the property.

All other types of non-hunting use involves foot travel, such as hiking, ski-touring, berry-picking, and various forms of wildlife observation. In general, participants in these activities support current management policy on foot travel and appreciate the area's wild aspect. Because ski-touring use has increased tremendously since 1974 it is possible that demands for well marked and groomed trails will be made. Grooming could help restrict skiers to selected trails but could also lead to intensive use, marking and maintenance of trails. However, because intensive development of ski trails would place additional maintenance and liability responsibility on management a ski trail system per se will not be developed. The walking trail system will be available for use by skiers, but skiers will be informed that the trails are not marked or maintained for cross-country skiing.

Land Control:

Land control problems concern primarily the remaining private parcels in the interior of the project (Figure 4, parcels A, B, C, D, E and F). These parcels are considered critical for ownership continuity, for maximizing management potential, and for preventing adverse development

within the property interior. Acquisition negotiations for these interior parcels have been discouragingly slow, only 40 acres have been purchased since 1976. However effort should continue to acquire these parcels before any adverse development occurs.

Presently a hunting cabin exists on one parcel (D, Figure 4) and the users have created problems in the areas of game law violations and illegal use of motorized vehicles on the area. This is the type of development and resulting activity that must be prevented. Fortunately, all interior parcels are kept in native vegetation and in this respect do not conflict with DNR management. The parcels are posted and present some problems for people using Navarino.

While private parcels on the periphery of the area are not as critical for management as the interior parcels, the peripheral parcels are highly desirable for overall project size and the additional management, public hunting and recreational benefits they will provide. Acquisition of these parcels has proceeded very well with 700 acres being purchased since 1976.

Land Use Potential:

In addition to the portion of the Wolf River within the property boundary, the Wolf River from County Highway "CCC" in Shawano County to Leeman in Outagamie County (22.5 miles) has the potential for designation as a Scenic River (Figure 7). The shoreline throughout this portion of the river is largely undeveloped. The majority of riverbank and floodplain is heavily forested and has a very natural and scenic appearance. Only a few cabins and permanent homes exist and agricultural activities extend to the riverbank at some points. The East Central Planning Commission also has identified this portion of river as a preservation corridor.

Efforts to preserve this portion of river could include DNR acquisition and conservancy zoning by Shawano, Waupaca, and Outagamie Counties. Fee acquisition would involve approximately 3,000 acres of land as shown in Figure 7 and would be the best method of preservation. Unfortunately, zoning can be effective only if enforced. Acquisition by DNR would result in considerable wildlife management, forestry, recreational, and fishery public benefits but local reaction to acquisition may not be favorable. Effective zoning could reduce the acquisition area and require fee acquisition of only certain key parcels. It is recommended that a Scenic River Designation be applied to this entire portion of river.

Potential exists for enhancing the wild qualities of Navarino by eliminating MacDonald Road which cuts through the center of the wildlife area. Eliminating this road would make access to the center of the property relatively difficult and provide the opportunity for people near the Fox River Valley to enjoy a wild-like environment. The major disadvantages of this proposal are: 1) The loss of a public road for local residents. 2) Conflict directly with the Department's written agreement with the township covering public access and road maintenance. 3) Subsequent "wild area" designation would remove a significant block of land from intensive management plans and, therefore, prevent optimizing objectives.

Difficulties in Law Enforcement:

Law enforcement problems on Navarino involve illegal hunting, unauthorized use of motorized vehicles and horses, vandalism, littering, camping without a permit, and dogs running deer. The area's size precludes the catching of all violators or of checking all users. However, the walking trail system and location of parking lots adjacent to public roads permits checking a large number of users when necessary.

As future development of marked trails and informational bulletin boards proceeds vandalism could reduce the value of such work. Hopefully, the educational program of management will offset serious vandalism problems. Currently, all permanent personnel assigned to Navarino carry law enforcement credentials and has significantly aided law enforcement efforts.

Plant and Animal Diseases:

Dutch elm disease has been the most significant plant disease to affect vegetation on Navarino. Virtually all American elm has been affected and little merchantable elm remains for salvage cutting. Oak wilt occurs infrequently but could do serious damage to large areas of oak. Hypoxylon canker is common in older aspen stands.

Mange periodically occurs in mammals throughout the area, and rabies has occurred only rarely. Duck virus enteritis (DVE) and botulism are potential threats to waterfowl on the area but have never been reported. The status of the blood parasite Leucocytozoon simondi in the local duck population is unknown. Deer on the project have not exhibited any malformities or signs of disease. Continued awareness that disease is a threat to animals and vegetation should result in sufficient surveillance to recognize the outbreak of a major disease problem.

West Branch of the Shioc River:

Historically, the West Branch to the Village of Navarino supported trout populations. However, in the early 1950's pollution from the Village of Bonduel eliminated trout in downstream sections. The main source of pollution still comes from the sewage treatment plant and a pickle manufacturing plant at Bonduel. Above Bonduel the river supports trout. In addition, below Bonduel there are several gravel excavation sites which in the past contributed sediment to the West Branch with the wash water from their operations. The West Branch could possibly be restored to support trout but the pollution from Bonduel must first be stopped. Because pollution now occurring is also deleterious to existing stream biota, the Task Force recommends steps be taken to correct this problem.

LONG RANGE RESOURCES, RECREATION NEEDS, AND JUSTIFICATIONS

In 1966, the Wolf River Basin Regional Planning Commission (now the East Central Planning Commission) published a comprehensive report describing the region's growth and development potential. The following comments from the report discuss the future recreational opportunities and needs in the Wolf River Basin. although 13 years old, the comments are even more applicable today, and help provide a perspective for the role Navarino can play in meeting future outdoor recreational needs.

1. The region's climate is suited for year round recreation.
2. The steep hills, potholes, and wetlands are unsuited for development. These areas should remain in their natural state to preserve the scenic identity of the region.
3. The region is noted for its abundant fish and game resources and efforts should be made to preserve the excellent fishing and hunting opportunities.
4. By the year 2000, the present demand for water and scenic-oriented recreational activities will double. Swimming, boating, fishing, scenic pleasure driving, and sight-seeing will receive the highest demands.
5. Efforts should be intensified to secure considerable additional land for state and local parks, and fish and game habitats. The region's resource base is relatively stable and can be readily diminished with increased development. Uncontrolled development and use will overrun and destroy much of the region's natural beauty, scenic resources, and natural fish and game habitat.
6. Urban development is catching up with the region. Action must be forthcoming to preserve the attractiveness of the region. The Wolf River Basin is located in close proximity to population centers in Wisconsin, and this area will receive increased recreational pressure.
7. Floodplains offer exceptional recreational opportunities. Subject to flooding, these areas offer little opportunity for permanent development.
8. The lower Wolf River (Shawano to Lake Poygan) was identified as a natural recreation area. The Commission suggested this area should be left "as is" without any man-made developments. Typical recreation activities should be hiking, hunting, fishing, camping, canoeing and sightseeing.

The East Central Regional Planning Commission has developed projections showing that for the period 1976-1980 there will be large increases in many non-hunting outdoor activities: Canoeing 50%, ski touring 300%; hiking 100%, nature study 50%, and primitive camping 33%. These activities are already occurring on Navarino and appear compatible with wildlife management objectives. More importantly, these activities (except camping) occur mostly during the non-hunting season so they do not conflict with hunting.

The importance of Navarino as a large wildlife area will greatly increase as the human population of east central Wisconsin, and particularly of the Fox River Valley grows. Navarino is the fifth largest wildlife area in the State and is within an hour's drive of over a half million people. This situation is unique but also potentially threatening.

Navarino cannot be all things to all people and still retain its primary identity as an area for public hunting. Use restrictions will be necessary. With hunting opportunities stabilizing or diminishing statewide, it is important to preserve hunting opportunities on Navarino. Hunting, wildlife production, wildlife refuge, and wildlife habitat preservation were the objectives in establishing Navarino and should continue to dominate management and use.

The Wolf River Basin Plan clearly identifies areas like Navarino as highly valuable to the region as recreational demands increase. Navarino has and can continue to provide many forms of non-hunting recreation. As in the past, however, non-hunting recreation should continue to be managed to not conflict with the area's primary purpose. Most conflicts can probably be prevented by allowing or encouraging only activities which are dependent upon the wildlife resources of the area and discouraging activities which can be satisfied elsewhere.

ANALYSIS OF ALTERNATIVES

1. Continue Present Wildlife Management Emphasis:

The result of this alternative would be to essentially continue present management. Wildlife production would be the primary management goal with forest wildlife receiving emphasis over wetland wildlife. Hunting would be emphasized as the primary use, and only wildlife centered non-hunting recreation would be encouraged. Forest management would continue as the primary tool by which wildlife management objectives are accomplished.

Intensive management for forest products per se would be designed to enhance wildlife objectives. The undeveloped "natural" aspect of the property would be maintained by limiting user facilities to parking lots and walking trails. An informational program would be developed to educate users on the natural history and ecology of the area. This alternative would be most consistent with the original purpose of establishing Navarino as a wildlife management area.

2. Decrease the Scope and Intensity of Management:

This alternative would stress the wilderness aspects of the project. Most of the property would be designated as a wild or wilderness area, and management would not manipulate game habitat to the extent it now does. Timber management would decrease and natural plant succession would be allowed to occur uninterrupted. In time, game habitat, hunting opportunities, and many animal populations would diminish to much lower levels. However, this decrease might not be noticeable to the non-hunting user. Recreational activities would be similar to those permitted under alternative one.

For this alternative to achieve maximum results, MacDonald Road and the snowmobile trail crossing the project would have to be closed thus limiting access to the interior of the property. Also, the remaining private ownerships in the property interior would have to be eliminated. This alternative would probably be of significant value to that portion of the Fox Valley population who desire a wilderness experience close to home. This alternative would also make Navarino unique because of its proximity to population centers. The major adverse impact of a wilderness or wild area designation would be to eliminate most of the wildlife management potential.

3. Increase the Scope and Intensity of Management:

Under this alternative recreational and forestry objectives would receive equal consideration with wildlife objectives. Non-wildlife oriented forms of recreation would be accommodated and developed facilities would be provided for intensive uses such as year round camping and picnicking. As a result the undeveloped, natural quality of the property would be lost. Forestry for the production of wood and fiber would become more intensive and additional red pine plantations would probably be established.

Many wildlife management objectives could still be achieved but the property would not be managed for anywhere near its full wildlife potential. This alternative would convert Navarino from a wildlife management area into a recreation and forestry production area. This alternative would not be consistent with the established purpose of the property and would probably receive considerable criticism from the hunting public.

4. Increase Property Size:

Common to all three alternatives is the potential for enlarging the property boundary to include riparian lands along the Wolf River on the proposed Scenic River designation. The benefit of this action would be to acquire in fee title the necessary riparian and floodplain lands to insure the success of a Scenic River designation. Public reaction to the Scenic River can be expected to be favorable, but public reaction to state acquisition for this purpose may be unfavorable.

State acquisition would permit the proper management of wildlife, forestry, fishery, and recreational resources found on these lands. However, zoning and the existing floodplain and shoreland laws (Administrative Code, Chapters 115 and 116), if enforced, could basically accomplish the goal of preserving the scenic qualities of the river.

5. Other:

Alternatives 1 and 2 preserve options for future management, but alternative 3 exploits the full range of recreational and resource management potentials without providing for future options. Under alternatives 1 and 2, future management could be changed to accommodate more intensive uses if necessary. Under alternative 3, it would be difficult to change management to become more restrictive because of the traditions of use that would become established.

Currently, there is no need or demand to convert Navarino into a multiple recreational facility. In the general area of Navarino there are numerous opportunities for all types of outdoor recreation, and there is demand for and an interest in areas managed specifically for wildlife. This is especially true for hunting because of the increased posting of private land in this part of the state.

RECOMMENDED PLAN OF ACTION

Alternative 1 is the most compatible with the stated goal and objectives. This alternative will allow intensive management for forest and wetland

wildlife production, and will preserve the undeveloped, natural quality of the property for wildlife oriented recreational use. The recommended plan of action is as follows:

Land Use Class Designations:

Adopt the land use classification as shown in Figure 6. Apply the Scenic River classification to the entire Wolf River from Shawano to Leeman as shown in Figure 7 pursue the appropriate zoning protection through local officials. Consult with the Scientific Areas Preservation Council regarding future Scientific Area designation.

Ultimate Use and Non-Use of the Property, Development, and Major Operations:

1. Acquisition:

Continue acquisition of all remaining properties within the existing property boundary contingent upon the landowners willingness to sell to the state. Oppose any home development or similar noncompatible use of private lands within the property boundary. Extend the property boundary to include the 330 acres shown in Figure 5.

Consider additional DNR protection including some fee title acquisition of other lands leased alongside the Wolf River. The Task Force recommends that the DNR give strong support to stringent zoning laws and enforcement of the river corridor.

2. Property Use and User Facilities:

User facilities are intended to provide reasonable and safe access and enjoyment yet maintain a natural, relatively undeveloped atmosphere about the area.

a. Allow only foot travel and encourage only wildlife centered uses such as hunting, fishing, wildlife observation, study, and photography. Prohibit horseback riding, motorized vehicles, motorized boats on flowages, and target shooting. Continue to restrict snowmobiling to the marked Shawano County cross-through trail and move the trail off the property if possible in the future. Use the I & E program (see c. below) to develop perception of wildlife ecology in other compatible non-hunting uses such as ski touring, snowshoeing, dog training, hiking, walking and canoeing.

b. Develop walking trails as the dominant user facility by maintaining a system of at least 35 miles of trails (Figure 2) for hunting, ski touring, hiking, walking, nature study and access for management. Keep gates and marking of trails to a minimum. Encourage users to develop their "woodsmanship" in finding their way about the wildlife area by using materials provided under the I & E program.

c. Locate parking lots on the area periphery. Maintain existing parking lots and construct additional parking lots where needed (Figure 2).

d. Provide developed boating access to the Wolf River only at Highway 156. Develop the other two access points within the property boundary for carry-in boats only.

e. Allow a limited amount of camping only during the hunting season to accommodate hunters and, to a limited extent, canoeing on the Wolf River. Require permits and have the property manager designate the camping location. Twelve to 15 permits at any time during the hunting season is suggested. Establish one canoe camping location on the Wolf River and permit only one canoe camping party to use the site at a time. Require pre-registration for canoe camping. An evaluation of camping on the wildlife area will be completed prior to 1985 and adjustments will be made as necessary.

f. Develop the proposed property overlook to include some limited picnic facilities and an informational bulletin board.

g. Restrict firewood cutting to areas readily accessible from public roads and require cutting permits. Consider firewood cutting in planning timber sales because it will increase in the future. The potential also exists for allowing firewood cutting in non-saleable areas.

3. Information and Education Program:

Increasing use of Navarino makes an I & E program necessary to educate users on the purpose and value of the project. Include in developing the program:

a. Two informational bulletin boards (Figure 2) that will:

- 1.) Display a large map of the project showing location of trails, flowages, topography, and significant landmarks
- 2.) List rules of use on the area.
- 3.) Concisely summarize the purpose of the property.
- 4.) Display information pertinent to the project and general DNR operations as current events dictate.
- 5.) Act as self-registration stations for sampling opinions and success of hunters and other users.

b. A brochure with a map and general narrative about the wildlife area.

c. A booklet entitled, "A Field Guide to the Navarino Area" that will enable users to guide themselves around the property and assist them in the identification, appreciation, and understanding of the ecological systems and individual flora and fauna found on the area. Include discussions on the ecology and management of wildlife and wild plants, animal and plant checklists, and routes for self-guided nature walks.

4. Wildlife Management

- a. Implement a community approach to management, when feasible, emphasizing the production of forest and wetland species using timber sales, controlled burning, mechanical, and to a limited extent, chemical techniques to manipulate habitat.
- b. Place primary emphasis on forest wildlife and adequately evaluate wetland developments on forest habitat loss.
- c. Construct the additional flowages shown in Figure 2. Opportunities for additional waterfowl production projects should be examined and implemented when found compatible with forest wildlife management.
- d. Maximize the interspersion of forest age classes and forest types.
- e. Maintain 4,500 acres of aspen on the property and increase the acreage of oak where possible. Design aspen clear cuts not to exceed 20 acres to help accomplish d. above.
- f. Manage winter deer browse to support a winter deer population of about 750.
- g. Manage various components of ruffed grouse habitat in order to achieve fall population densities of no less than 100 birds per section or 8 sections during cyclic lows; cyclic highs are expected to exceed 300 grouse per section.
- h. Implement specific non-game management practices as part of the overall community approach consistent with property objectives.
- i. Give special consideration to uncommon, endangered or threatened species and manage to maintain or increase the population levels of these animals if possible.
- j. Utilize ongoing management as educational demonstrations to landowners and sportsmen on wildlife management practices.

5. Forest and Vegetation Management:

- a. Continue to integrate forest management with wildlife management with the realization that the success of wildlife management objectives will be affected by the quality and quantity of wood products offered for commercial sale. Commercial sales need to be designed maximize wildlife benefits.
- b. Use silvicultural techniques as the major tool with which to achieve forest wildlife management objectives and as a means of producing wood products.
- c. Give immediate attention to the vegetation management needs and problems identified on page 7. Property personnel may not have the time nor expertise to effectively address each problem, therefore it will be necessary to have assistance from other specialists in and out of DNR.

d. Use minimum management in the Natural and Habitat Preservation Areas (primarily fire control). These sites, combined with Scenic Area Protection of the river floodplain and islands, will provide about 2000 acres of old growth forest types, adding to the habitat and wildlife diversity on the area.

e. Coordinate Scientific Areas designations with the Scientific Areas Preservation Council.

General Timetable for Development:

The Implementation Element will be completed by the fall of 1980. This plan will specify the projects to be accomplished by Fiscal Year. In addition the Implementation Element will guide the district and bureau annual work planning activities as well as determining funding levels for this property.

Operations and Maintenance Cost:

Navarino is administered from the Shawano office, to which 3 wildlife personnel are presently assigned: the wildlife manager, the wildlife technician, and one LTE. This 2.5 man years of labor must be divided between wildlife management responsibilities in Shawano, Oconto, and Menominee Counties. Navarino, in the past, has accounted for over 50 percent of total personnel time. However, since 1975 responsibilities for lands other than Navarino have substantially increased (i.e., Oconto County Forest, scattered wildlife lands in Shawano County, Project Respect.)

In addition, since 1975, a CETA work crew has been available for use on Navarino. This crew has increased work output to only a limited extent because close supervision is normally required and there is a rapid turnover in crew members. These additional responsibilities and supervision are stressing the capabilities of the present work force. Additional workload can be expected as this plan is implemented.

Flowage maintenance is expected to increase because dikes built 6 and 7 years ago have suffered muskrat damage and need repair. Also, as forest management intensifies, more field time will be required for both the DNR forester and property manager to establish timber sales and scale the harvested wood. Acquisition is currently proceeding very well and is expected to continue to do so for the next few years. Considerable time is required in acquisition for negotiating and obtaining information for appraisals.

The need to adequately assess the population status of various wildlife species and to investigate and solve the various vegetation management problems will also add to the workload. Other maintenance such as signing, trail mowing, garbage pickup, and the administration of camping, firewood permits, and sharecropping will increase. Law enforcement will also increase as more people and more activity occur on the project.

It is recommended that the current LTE position be increased to a permanent (12 month), Natural Resource Assistant as a minimum response to the expected workload. This action would allow for the proper recruitment and training

of an individual who would be capable of accomplishing and supervising many activities on Navarino. A major responsibility of the NRA would be the direct supervision of the CETA crew. However, it is recommended that for maximum efficiency in implementing this Master Plan and other responsibilities of the Shawano Station, the LTE position continue, and the 12-month NRA position be added, thus increasing the total man force to 3.5 man-years.

The cost of elevating the LTE position to an 12-month seasonal is estimated at \$8,000. The cost of creating the seasonal position additional to the LTE position is estimated at \$10,000. Under both personnel alternatives an increase in operations funding of \$4,000 would be necessary to effectively handle the property's workload.

A large RC&D project was being planned for Navarino recently until the RC&D funds were cut on the national level. This project would have involved nearly a half million dollars of waterfowl and some public use developments consistent with this Conceptual Plan. Should RC&D receive additional funding or be able to redistribute their funds, The Navarino property may be funded. Up to 50 percent cost sharing is available under RC&D. The proposed work in this plan will be funded through the normal operation budget for the Marinette Area, the PR-Forest Habitat program, Duck Stamp revenue, ORAP and special wildlife program budgeting. The proposed flowage construction on MacDonald Road is estimated at \$75,000 and is already budgeted in the wildlife program.

Other Considerations:

Legislative authority will be needed to control waterfowl hunter numbers on the property. Control of deer hunter numbers will need to be delayed until after the statewide revision of the deer season structure. Stringent floodplain and conservancy zoning should be encouraged for lands adjacent to the Wolf River.

A public informational meeting was held in Shawano on March 7, 1977, to obtain public input on the management of Navarino. About 30 people attended and they were asked for their opinions on what they thought about the existing management. The current management program and policies were explained and some aspects of this Master Plan were also discussed. There were no objections to the foot travel only policy and those in attendance supported the current management of the area. One objection was voiced that the snowmobile trail conflicted with the policy of motorized vehicles on the project. Most of the comments dealt with DNR intentions to further land acquisition and on increasing the amount of game to hunt.

The status of pollution control, including sewage plant facilities as well as non-point source programs within the watershed, was not explored. It is assumed that abatement planning and schedules will be developed by the Department in the near future.

Regarding potential historical or archeological sites, all areas of development will be thoroughly investigated for the presence or absence of sites and appropriate protective measures will be taken for significant

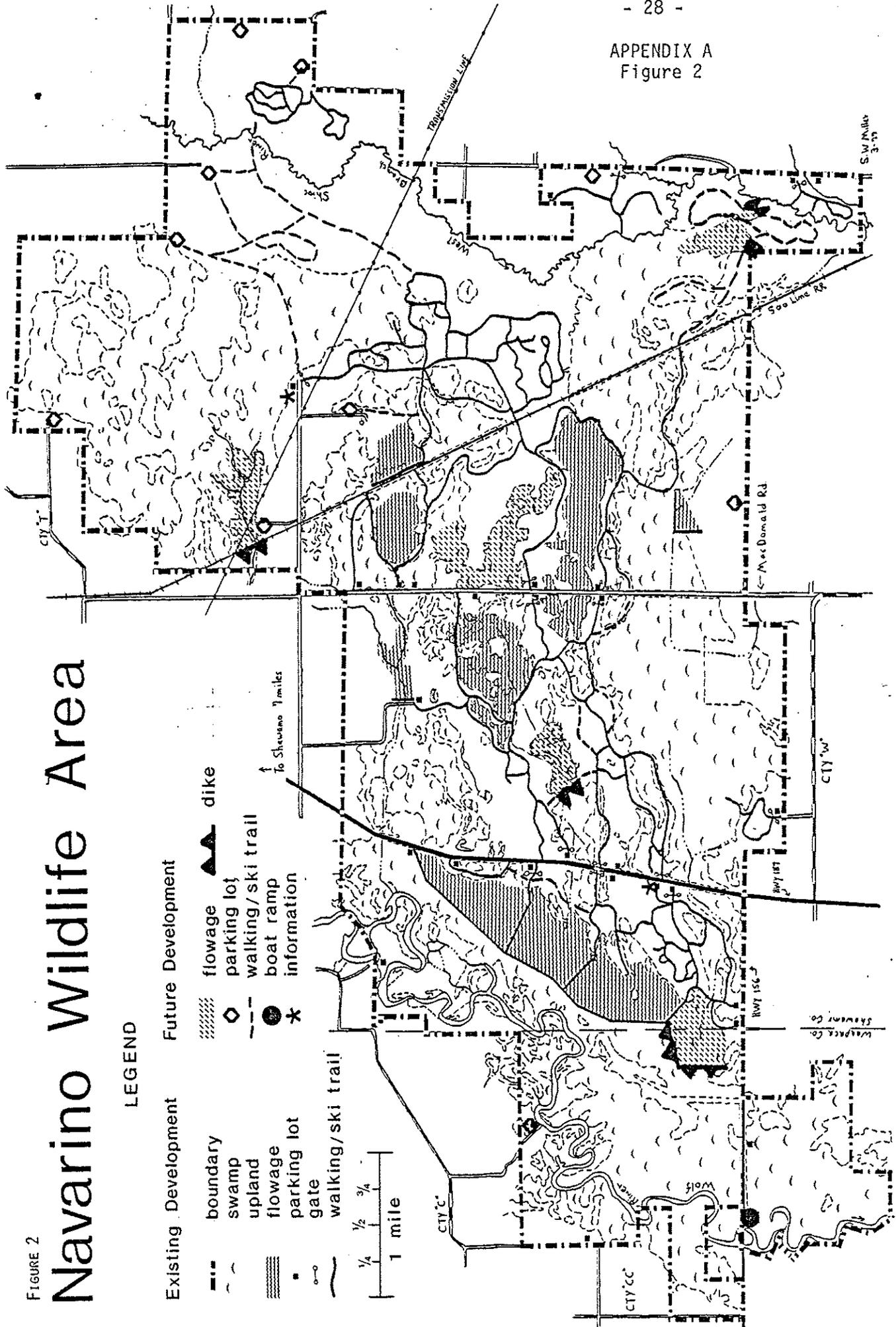
sites. If any are found during development, construction will be suspended until the State Historical Preservation officer is consulted. The site(s) will be evaluated and, if significant, would be preserved.

All areas of development will also be examined for the presence or absence of endangered and threatened species and appropriate protective measures will be taken for significant sites. If any sites are found during development construction will be suspended until the Office of Endangered and Nongame Species (DNR) is consulted. The site(s) will be evaluated and protective measures taken for significant sites.

APPENDIX A
Figure 2

Navarino Wildlife Area

FIGURE 2



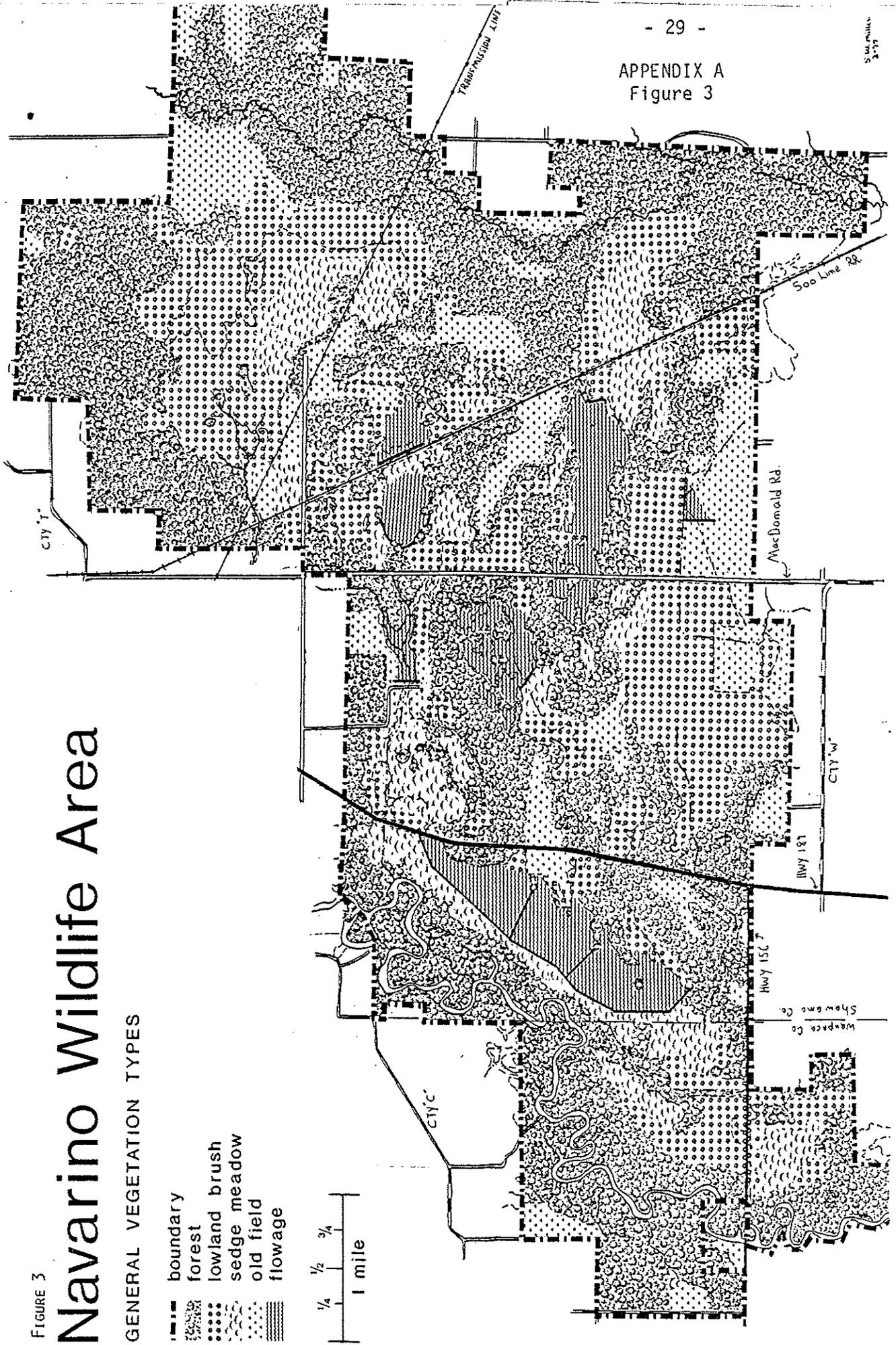
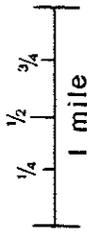


FIGURE 3

Navarino Wildlife Area

GENERAL VEGETATION TYPES

- boundary
- forest
- lowland brush
- sedge meadow
- old field
- flowage



CITY 'Y'

CITY 'C'

CITY 'W'

TRANSMISSION LINE

Soo Line RR

MacDonald Rd.

131 km

Hwy 15C

Shawano Co
Winnebago Co

5/14/64
3/7/77

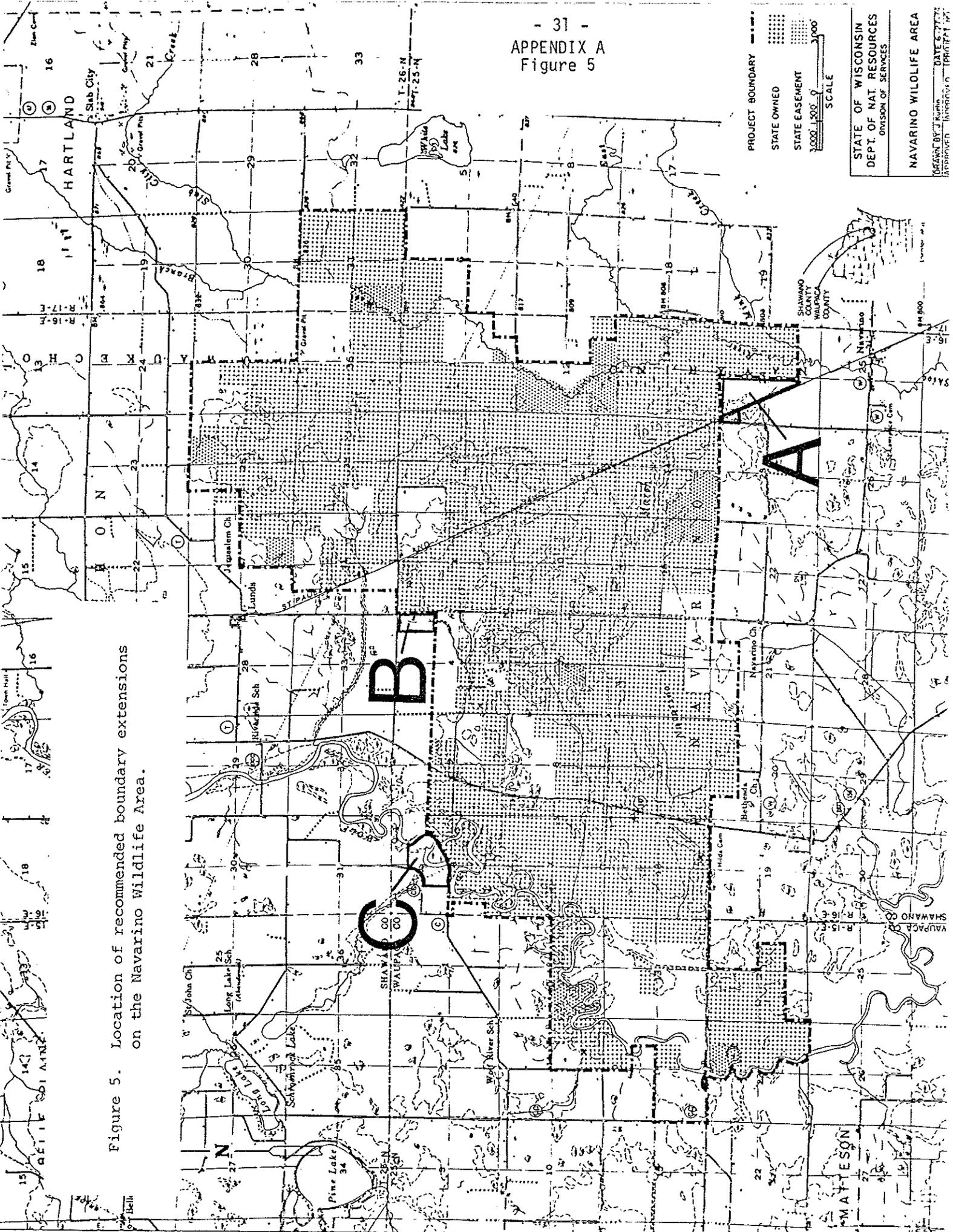


Figure 5. Location of recommended boundary extensions on the Navarino Wildlife Area.

STATE OF WISCONSIN
DEPT. OF NAT. RESOURCES
DIVISION OF SERVICES

NAVARINO WILDLIFE AREA

DRAWN BY: J. Rubin DATE: 6-7-72
APPROVED: [Signature] TITLE: [Title]

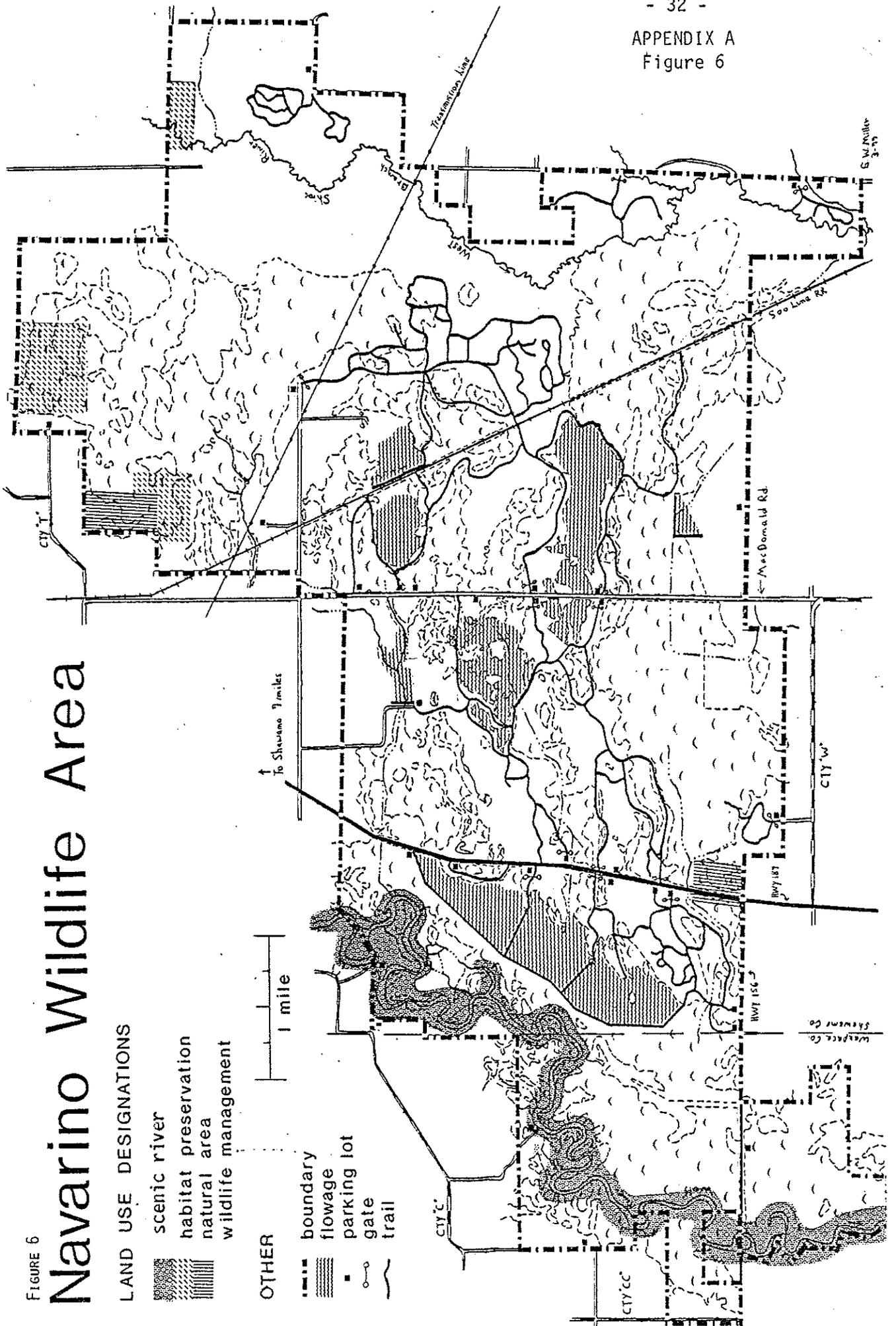


FIGURE 6
Navarino Wildlife Area

LAND USE DESIGNATIONS

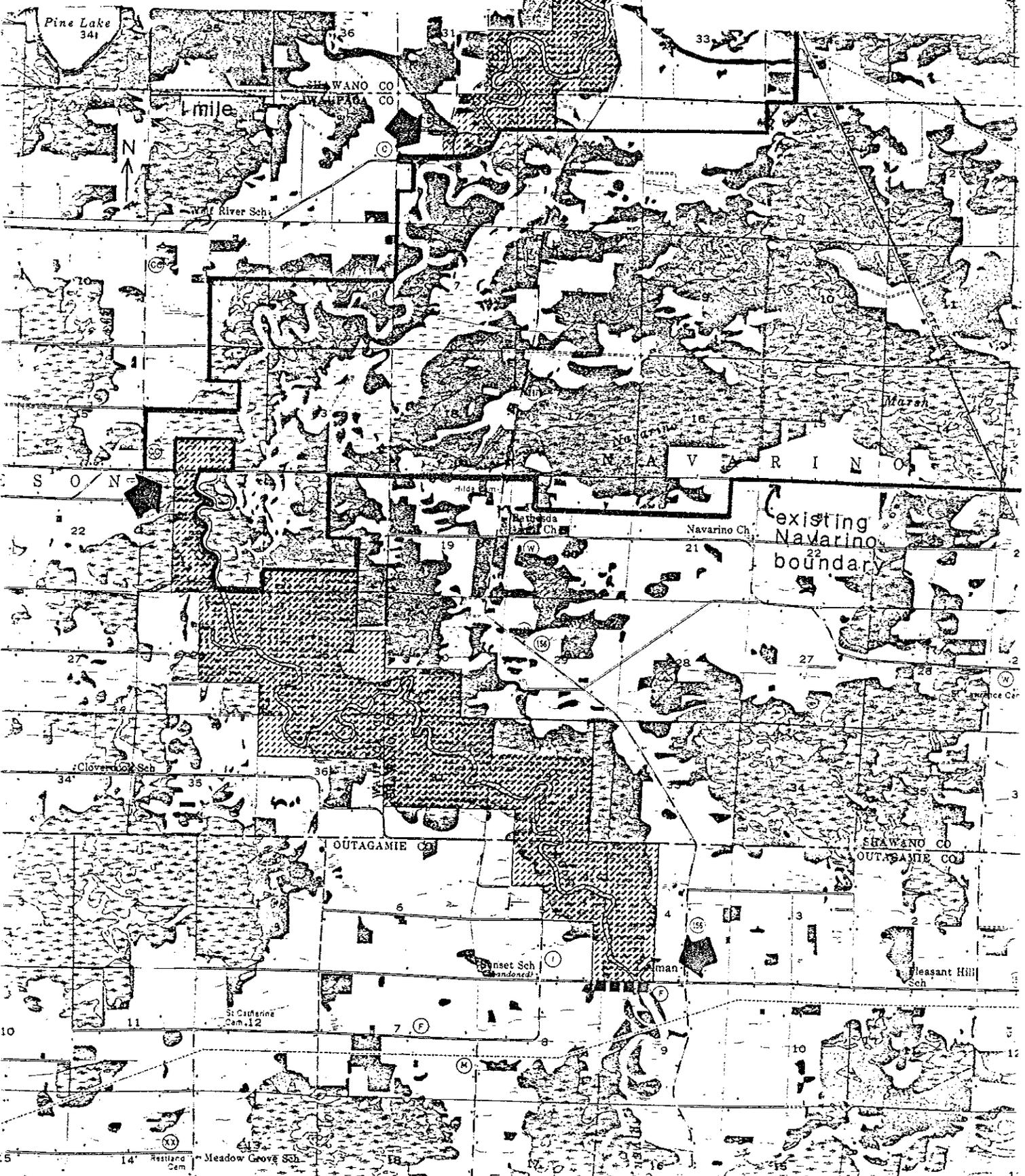
- scenic river
- habitat preservation
- natural area
- wildlife management

OTHER

- boundary
- flowage
- parking lot
- gate
- trail

Shaded area between arrows is proposed for "Scenic River" type protection similar to what is offered within the Wildlife Area

APPENDIX A
Figure 7



APPENDIX B

Master Plan Comments

By: Forest Stearns

Representing: Scientific Areas Preservation (SAPC)

Date: October 1, 1979

Note: DNR comments added where required

The Navarino Wildlife Area Master Plan, Concept Elements is a thorough work which shows an understanding of the resource and the Department's mission.

Generally though we liked the thoughts expressed, the land use classification proposed over-emphasizes wildlife development - especially by emphasizing "young forests." Wildlife species are mentioned that prefer old growth forest, but there is little in the plan to suggest these species will get attention. Especially in view of the very limited acreage classified as natural area - only 120 of 15,000 acres.

The Wolf River Bottoms on the west project boundary offers unusual opportunity for development and maintenance of big trees favored by pileated woodpeckers and other animal species requiring a mature forest. The scenic river classification goes part way in meeting this need, but we suggest not enough; much of this river bottom forest would seem to qualify for natural area or even scientific area classification.

Specific Comments:

page 5, 6th par. - the objective of maintaining young forests communities throughout the site should be modified to allow for development of some old growth forest or mature forest where appropriate to benefit associated wildlife species.

DNR Response: P5&25 amended to clarify management intent.

page 6, 3rd par. - current management opportunities apparently exist for pileated woodpeckers. This is noteworthy, but should be elaborated.

DNR Response: Do not agree; beyond preservation of large trees located within the interior of timberlands, no other opportunity exists.

page 14, 1st par. -management in the scenic river zone will be restricted? How will this be done? Would natural area designation be more appropriate?

DNR Response: Elaboration provided p. 17 and p. 22; zoning protection is the only reasonable protective vehicle. It is felt that the scenic designation is appropriate because of its narrow, linear nature as well as the management flexibility maintained by this classification.

page 14, 2nd par. - "A representative portion of this forest type should be set aside for scientific area purposes." Yes, the task force should confer with the Council to obtain results of ongoing natural area inventories in that region. We suggest that a scientific area be established in the bottomland type regardless of the disposition of the state trust lands site upstream.

Recent inventories by the scientific areas section located high quality northern sedge meadow along MacDonald Road in sections 9 and 10. Classification of this site should be reviewed for possible inclusion in the state scientific area system since it is one of the few wetlands on the project area which has not been disturbed by ditching or diking.

DNR Response: SAPC coordination statements entered pp. 14, 22 and 25.

page 14, 3rd par. - The objective of preserving the old growth hardwood and cedar forest is fine, but the acreage seems quite small. Acquisition of privately owned cedar swamp in the project boundary should have high priority.

DNR Response: No entries; acreage small because that is all that's there; tract priorities are treated in the Implementation Element of the Master Plan.

page 17, 6th par. - Since the potential exists for enhancing wild quality by eliminating MacDonald Road; this needs further consideration. We disagree that the proposal would be detrimental to wildlife management if the road was simply closed to public use and gated for service use only to continue habitat management under the wild area classifications.

DNR Response: While the potential does exist, the reasons cited under "disadvantages" p. 17 prevents such an action.

page 23, 1st par. - the restriction of canoe camping on the Wolf River to only one site on the project area seems unduly restrictive. Since the river forms the west boundary, additional public use should not conflict with the primary wildlife management objective.

DNR Response: The property remains primarily a day-use area and the maintenance of one site should be adequate. However, an evaluation period will be added to the Plan, p. 23.

We appreciated the opportunity to review and comment on this generally very comprehensive and well executed plan.

APPENDIX B

Master Plan Comments
By: Henry W. Kolka
Representing: Wild Resources Advisory Council
Dated: September 27, 1979
Note: DNR response added where required

Overall Review

The Wild Resources Advisory Council wishes to acknowledge and commend the Property Task Force of the Navarino Wildlife Area for producing an exceptionally fine master plan document. Its assessment of the project area is thorough and concise and it recognizes the limits of information available for the project area. The Task Force is forward looking in recognizing the transition of recreational needs and desires of the general public for blocks of wildlife land such as Navarino. Evidently we are on a threshold of a new era where the old standards of management for such limited use as hunting, fishing, and trapping are being challenged more frequently by more people. The Task Force for the Navarino indicates this awareness in its master plan and they have projected a course of action to meet this new public demand much better than most of master plans reviewed by WRAC. Tailoring of the wildlife areas management to meet this new demand may not be easy but it is possible.

Comments and Recommendations

1. Pp. 1 and 2. Management--Paragraph 3, pp. 2
WRAC likes your statement "Hunting and trapping have been emphasized on the property and only non-hunting activities that are oriented towards an appreciation and understanding of local flora and fauna are encouraged."

The WRAC question the policy of permitting camping for hunters only in project area. Question--could peripheral camping only be provided for all segments of users in Navarino. The segregated privilege could become sticky.

DNR RESPONSE: Conflicts with private campgrounds would be aggravated and development and maintenance levels would increase beyond capabilities.

2. Pp. 3. Goals and objectives. Suggestion for statement 4.

Insert after migratory-and resident. Thus the sentence will read "Contribute toward habitat of migratory and resident endangered and threatened species."

DNR RESPONSE: Concur; incorporated p. 3.

3. Resource Capability

Pp. 3--The series of ridges (par. 2) labelled as having "high aesthetic value." Question--could some or all of these ridges be classified as Natural Areas as outlined by Manual Code 1031.1?

DNR RESPONSE: While presenting "nice to look at" physical features, past disturbances and lack of unique flora precludes special designation.

Pp 5 par. 5--The WRAC is concerned about statement 3 of goal of habitat diversity. 3--"Considering species specific requirement when implementing management" will that include leaving scattered blocks of mature timber to cater to Pileated Woodpeckers and forest songbirds that nest in tall timber?

DNR RESPONSE: Scattered blocks of mature timber will be left. (p. 25)

Pp. 6-2nd par.--Not only Navarino but other state's public land need to address itself to hunter controls--pure case of human conservation.

Pp. 6-4th par.--Appropriate philosophy. It recognizes the transition stage of present society "Future wildlife management for both game and nongame should follow communities approach. Management for one specie could inadvertently be detrimental to another if the total community is not considered."

Pp. 6-5th par.--Vegetation--Both inventories, fauna and flora, should be completed at higher level of detail.

DNR RESPONSE: Survey reference incorporated: pp. 7, 26 and 27.

4. Ownership--pp.11.

WRAC supports the acquisition goal of 16,166 acres for the Navarino Project. The Council particularly encourages aggressive action to acquire the in-holdings. These consistently pose an aggravation to any type of harmonious planning.

5. Land Use Potential

Pp. 13 and 14--Wolf River--The WRAC concurs with the Task Force that the Wolf River corridor should be considered sacrosanct and designated as preservation zone. The 400 foot wide strip on both sides of the river planned for preservation is an excellent idea and generally accepted in other similar circumstances. The Council recommends that where the flood plain exceeds 400 ft., it should likewise be planned for preservation management, at least in the project area. Either Scenic or Natural River designation would suffice.

DNR RESPONSE: Do not agree to expansion of proposed habitat protection because of direct conflicts with management required in order to meet property objectives.

Pp. 14--par 2--The WRAC recommend that the Natural Resources Board acquires the 55 acres in Section 32 of the Town of Navarino from the Division of Trust Lands and Investments. According to preliminary investigation, this tract possesses Scientific Area potential. However, the council further recommends that the door be left open for consideration of quality sites on the Navarino Wildlife Area for future Scientific Area designation.

DNR RESPONSE: Concur; incorporated Pp. 14, 22 and 25.

Pp. 14-par. 3--The WRAC recommends a more elaborate and stronger exposure of the identified land uses designated as Natural and Habitat Preservation areas. A more elaborate presentation with ascribed name, location and characteristics would most definitely (in my opinion) add to the quality of planning and to the overall prestige of the Navarino unit. Refer to Figure 6 (map of Land Use Designations). According to the text, 400 acres are designated to Natural and Habitat Preservation category. The map shows 3 areas designated to habitat preservation plus a recommended scenic overlook in the "northeast corner of the project" (pp. 14, 6th par.). Also in the pool of 400 acres in special designation are two areas classed as natural areas. WRAC wishes to congratulate the Task Force for recognizing these special wild resource designations.

DNR RESPONSE: While adding a more elaborate presentation would appear more desirable, it is not essential for the Concept Element and could not be completed within time constraints.

Pp. 14, 6th par. addressing Land Use Potential--Something is wrong with statement within the parenthesis. Please check.

DNR RESPONSE: Correction made.

6. Pp. 15--Non-Hunting Use--In spite of the built-in safeguards permitting public use of one type motorized unit and not others is not quite right and I am not sure it is even legal. Phase out of this practice, as soon as possible, is Council's recommendation.

DNR RESPONSE: Restricting uses are within the authority of Chapter NR 45, Wis. Adm. Code.

7. Pp. 17--last par.--The WRAC endorses the idea of eliminating the MacDonald Road. The council urges further consideration of a sizeable block of Navarino Wildlife Area as Wild Area (in accordance with designated wild area in Manual Code 1031.1).

DNR RESPONSE: While the Task Force mentioned the possibility of road abandonment in the evaluation of property potential, it became very clear that such a move would not only be extremely controversial to local officials and citizens alike, the subsequent management restrictions imposed by Wild Area designation would not be consistent with the goal and objectives of this property.

8. Pp. 20--Analysis of alternatives--The WRAC recommends the combination of certain aspects--Alternatives 1 and 2. The project area within the listed goal of 16,166 acres is certainly large enough in size and possessor of sufficient ecological quality to warrant, if not wilderness, at least Wild Area designation. Increasing numbers of the half a million urbanites within an hour's distance of Navarino are going to demand an opportunity for wilderness experience. This fact is even truer today, with recent energy crunch, than it was when the Task Force put this document together. The WRAC recommends that a wilderness block or at least a wild area block be projected for the Navarino Wildlife Area. Wild Area designation will not infringe on the existing management prerogatives (see Manual Code 1031.1). The Wilderness Designation will have some impact on regulating man management but very little on wildlife management--if the designated block falls into 2,000 to 3,000 acres size category. What is so wrong in allowing nature to take a hand in managing

a small segment of wild land with minimum man's manipulation. The comparative research benefits, over a period of time, could be quite revealing.

DNR RESPONSE: Do not agree; as pointed out under item 7 above, Wild designation would prevent achieving property objectives. Specifically, it is felt that recreational opportunity would be lost. Further, timber management activities would be restricted and have negative effects on achieving wildlife and forestry management objectives.

APPENDIX B

Master Plan Comments

By: William B. Stark

Representing: Conservation Congress

Dated: October 15, 1979

Note: DNR response indicated where required

1. Overall view: Excellent. The concept of diversification of use along with species diversion is basically good. It should be understood that such diversity is applicable only up to a practicable point, and not beyond.
2. Major comments: Page 13, Footnote 2. The idea of limited access by any segment of the public to such an area is to be commended. It will become increasingly necessary to look very seriously at controlling the numbers of individuals that use ANY resource in the very near future. This concept built in to the plan is excellent. It should be coupled to the concept of alternate day hunting licenses for implementation.

Page 5, Paragraph 5 (High species diversity). The methods outlined are reasonable. But, please do not fall into the Federal NWHL trap of trying to use diversity as a hedge against disease outbreaks...it just doesn't work that way. Too much species diversity can cause stress on all wildlife participants thus actually increasing disease threats not reducing them. Tread very carefully with this situation. Try to determine the dominant natural citizenry, and manage accordingly.

3. Editorial comments: Pages 2 and 3. The goals placed forward for examination appear well thought out, carefully researched, and realistically attainable. As long as strict adherence to the plan is practiced (within reason) it should serve as a model for other such programs.
4. Additional comments: The goal of waterfowl production would be measurably more pleasurable if the plan included the establishment of a resident breeding flock of Giant Canada Geese. With the compatibility of Giants with other species of waterfowl, this should be investigated for possible inclusion in the plan.

DNR Response: The viability of small, breeding flocks of Giant Canada geese has not been demonstrated in Wisconsin without large, adjacent refuges.

The feasibility of such an effort is presently being tested on the Pershing Wildlife Area.