

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: December 27, 1985 File Ref: 2100
To: C. D. Besadny
From: James T. Addis 

Subject: Master Plan for Proposed Tank Creek, Jackson County, Fishery Area

A Department task force has prepared a conceptual master plan for the proposed Tank Creek Fishery Area, Jackson County. With the environmental assessment, it is supplied for your review and approval.

The master plan has been through the 45-day review period and has been scrutinized by a large number of in-house and outside reviewing agencies. Comments received from organizations or individuals outside of the Department and task force responses, are in an attached appendix.

A public meeting was held to discuss the master plan and the environmental assessment was available to the public, without negative response. The environmental assessment has been approved by the Bureau of Environmental Analysis and Review, and is certified in compliance with WEPA.

Currently, 416.15 remnant acres are owned in fee title along the creek. In this master plan, the Department recommends that approval be granted for an increase of 162.85 acres to establish an approved acreage goal of 579.0 acres. At that level, acquisition is 71.9 percent complete. A boundary is also suggested for approval and is shown on the various maps within the master plan.

Tank Creek is a Class I trout stream throughout its entire length within the proposed boundary, and is one of 3 headwaters streams of the Trempealeau River, a major tributary of the Mississippi River.

Fish management activities on the fishery area, if approved, will consist of construction of 2 parking areas, habitat development as lands are acquired consisting of fencing to exclude livestock, construction of instream bank covers and deflectors, streambank riprapping and conversion of lowland brush to grass species along the stream. Trout Stamp funds will be utilized if available.

Two small lakes on the property will be surveyed to determine their suitability for the culture of minnows used in muskellunge rearing.

Wildlife activities will consist of small game habitat development, control of problem beaver, and nest construction of ground-nesting waterfowl. A variety of wildlife shrubs will be clump planted along wildlife travel ways and along borders adjacent to conifer plantations to provide cover and food.

Much of the property owned contains pole-sized oak. As a result, much of the forest management will be deferred until the stands mature in 30 years. Some selective thinning of oak will take place, and one small stand is scheduled for total harvest. One 22-acre stand of jack pines will also be harvested in 1987.

TO: C. D. Besadny - December 27, 1985

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None of the lands acquired are qualified for classification other than as a fish and wildlife management area, RD₂.

Your approval is requested to present this master plan to the Natural Resources Board at their February meeting.

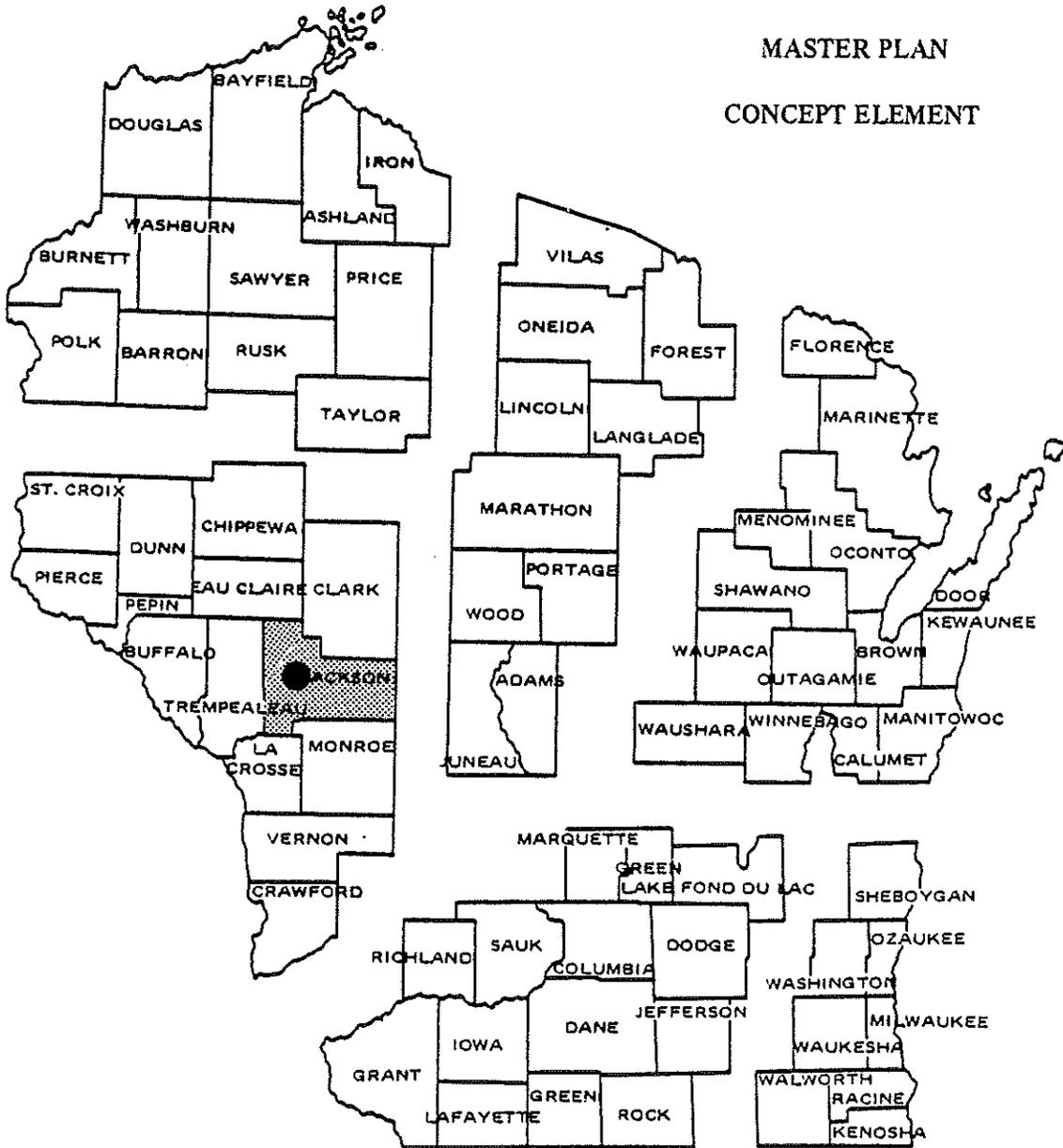
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PROPOSED TANK CREEK FISHERY AREA

JACKSON COUNTY

MASTER PLAN

CONCEPT ELEMENT



Property Task Force

Leader – James Talley, Fish Manager
Eugene Kohlmeier, Wildlife Manager
Richard Mertig, Real Estate Agent
Dean Gullickson, Law Enforcement
Robert Hess, Forest Management

Approved by Natural Resources Board

Date

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SECTION I - ACTIONS

GOALS, ANNUAL OBJECTIVES, AND ANNUAL ADDITIONAL BENEFITS

Goals

To acquire land, and to manage, preserve and protect property owned within the boundary of the Tank Creek Fishery Area in Jackson County; to enhance the habitat for fishing and other recreational and educational uses.

Annual Objectives

1. Provide opportunities for 500 participant-days of fishing for brook and brown trout.
2. Maintain opportunities for 800 participant-days of hunting for white-tailed deer, ruffed grouse, waterfowl, cottontail rabbits, fox and gray squirrels, woodcock, foxes and raccoons.
3. Provide opportunities for 200 participant-days of trapping for beaver, mink, foxes, muskrats, raccoons and skunks.

Annual Additional Benefits

1. Provide 240 participant-days of other recreational uses including berry picking, mushroom picking, nature study, bird watching, photography and hiking.
2. Contribute to the habitat of native, migratory and threatened species.
3. Benefit nongame species indigenous to the area.
4. Manage and grow renewing forest crops with a projected annual harvest of 3 cords of pulpwood and 5 cords of firewood.

RECOMMENDED MANAGEMENT AND DEVELOPMENT PROGRAM

The recommended management and development program for the proposed Tank Creek Fishery Area, Jackson County (Figure 1) is designed to improve angler opportunities for a quality trout fishing experience and to provide the opportunity for trout habitat protection and development.

All lands acquired on Tank Creek to date, totalling 416.15 acres in fee title, have been obtained through the Jackson County Remnant Program (Figure 2). The Department recommends using these properties as the base for a named fishery area with the boundary shown on Figure 2 and with an increase of 162.85 acres, creation of an acreage goal of 579.0 acres, with acquisition currently 72% complete.

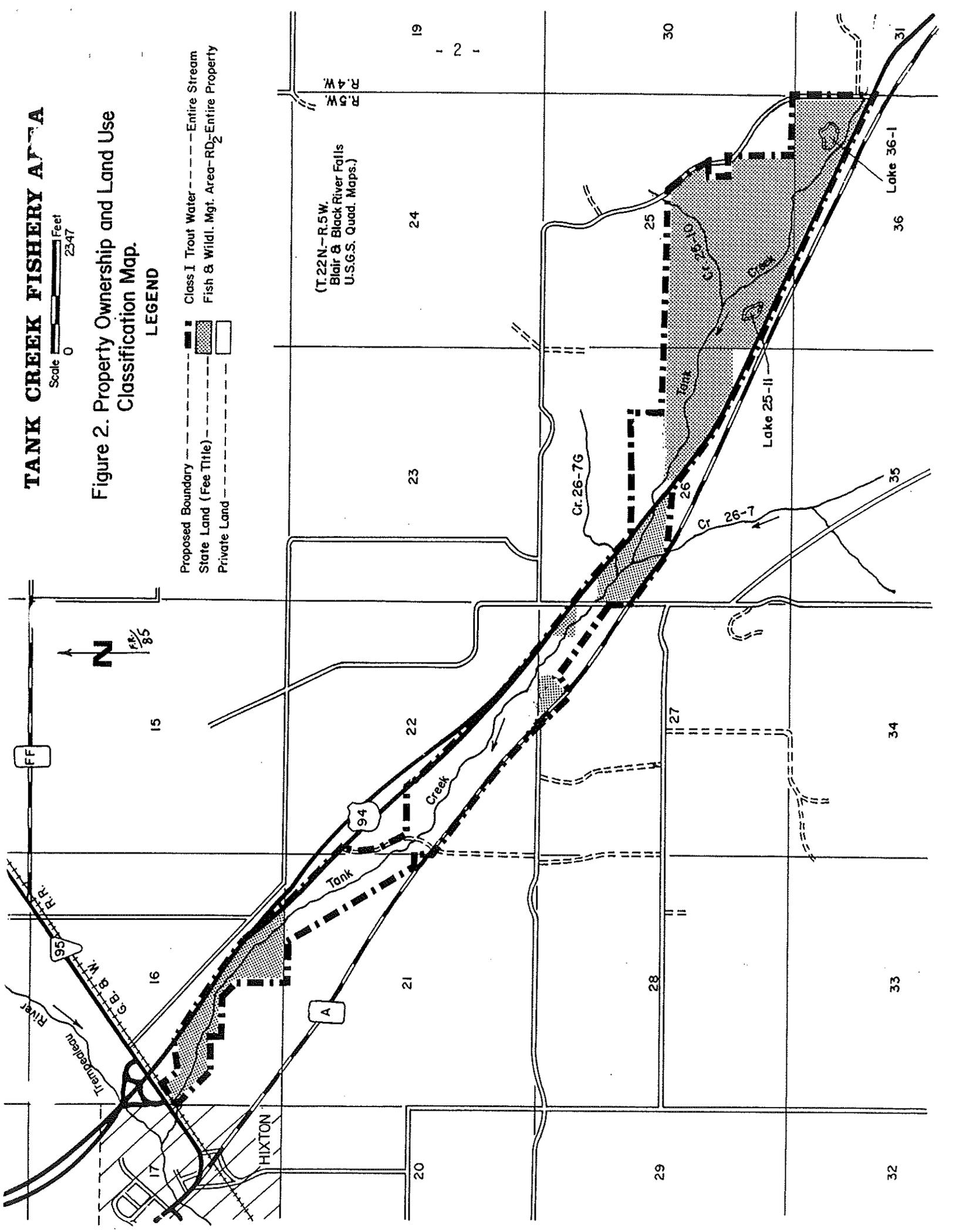
TANK CREEK FISHERY AREA

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Figure 2. Property Ownership and Land Use Classification Map.

LEGEND

- Proposed Boundary - - - - -
- State Land (Fee Title) - - - - -
- Private Land - - - - -
- Class I Trout Water - - - - -
- Fish & Wildl. Mgt. Area-RD₂-Entire Property - - - - -
- Entire Stream - - - - -



(T. 22 N. - R. 5 W.
Blair & Black River Falls
U.S.G.S. Quad. Maps.)

HIXTON

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Lake 36-I

Lake 25-II

Cr. 26-7

Cr. 26-7G

Creek

Tank

Terraced River

G.B. & W. R.R.

FF

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- 2 -

If these recommendations are approved by the Natural Resources Board, the following actions will be necessary:

1. Creation of the named Tank Creek Fishery Area, Jackson County, with the boundary shown in Figures 2, 3 and 4.
2. Transfer of 416.15 acres from the Jackson County Remnant Program to the Tank Creek Fishery Area for property already acquired.
3. Approval of an increase of 162.95 acres to create an acreage goal of 579.0 acres.
4. Reduction of the Jackson County Remnant Program by 416.15 acres.

All parcels for future acquisition should be acquired in fee title from willing sellers as they become available. If there is no opportunity for fee purchase, easements of sufficient width to protect the stream frontage and associated wetlands should be considered. No permanent structures or tillable croplands are within the proposed boundary.

Access to the property will be provided by the construction of 2 small, 3-5 acre parking lots that will be located at the perimeter of the property adjacent to town or county roads (Figure 3). Vehicular traffic will be restricted within the property except for management and development activities. Replacement of a stream crossing near where I-94 crosses the stream in Section 26 will be necessary to retain access to a pond and also to provide access to an advertising sign until the sign contract expires on December 1, 1989.

Habitat development will occur as lands are acquired and will consist of fencing to exclude livestock, construction of bank covers and deflectors, streambank rip-rap and conversion of lowland brush to grass species (Figure 3). Approximately 1.25 miles of fence and three cattle watering/crossing areas will be required. This type of development will be constructed and maintained dependent on acquisition negotiation agreements.

Most of the proposed instream habitat development will occur in the lower one-half of the stream system where the frontage is accessible to heavy equipment. An estimated 1.5 miles of the headwaters of the stream will be improved with an estimated 1,200' of bank covers to provide protection for spawning brook trout. This cover may consist of experimental sand bag structures. Instream development will occur as frontage is acquired and funds become available.

Property that has been acquired will be boundary posted with "Public Fishing" or "Public Hunting and Fishing" signs.

Two small, unnamed but numbered lakes are present within the proposed boundary. They will be surveyed as soon as possible to determine the exact fish species present. It is possible that they may ultimately be used to rear

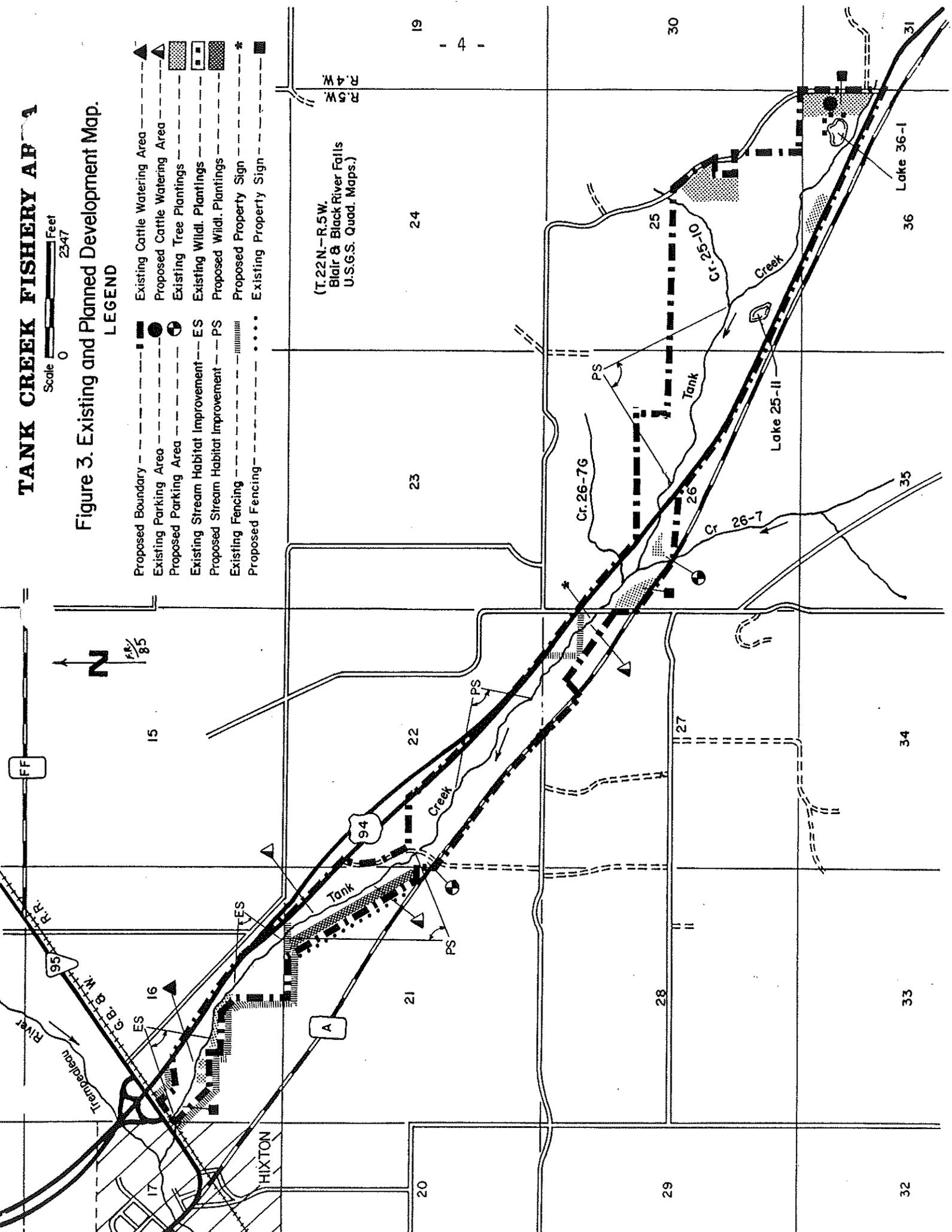
TANK CREEK FISHERY AREA

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Figure 3. Existing and Planned Development Map.

LEGEND

- Proposed Boundary - - - - -
- Existing Cattle Watering Area - - - - -
- Proposed Cattle Watering Area - - - - -
- Existing Parking Area - - - - -
- Proposed Parking Area - - - - -
- Existing Stream Habitat Improvement - - - - -
- Proposed Stream Habitat Improvement - - - - -
- Existing Fencing - - - - -
- Proposed Fencing - - - - -
- Existing Property Sign - - - - -
- Proposed Property Sign - - - - -
- Existing Wildlife Plantings - - - - -
- Proposed Wildlife Plantings - - - - -



(T.22N.-R.5W.
Blair & Black River Falls
U.S.G.S. Quad. Maps.)

Templeton River
G.B. & M. R.R.
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HIXTON

muskellunge forage minnows, with studies toward that end proposed for District Operations personnel.

The predominant forest type on Tank Creek Fishery Area is oak which comprises 200 acres of the total acreage. The majority is pole-sized and will not be ready for harvest for 30 years. A selective harvest of oak is scheduled on 21 acres (stand #8) for 1992. Following harvest, this stand will convert naturally to swamp hardwood species predominated by red maple. Stand #9 is scheduled for a clearcut in 1990. Following the harvest, the stand should regenerate to oak from stump sprouts and advance seedling reproduction.

A total of 114 acres of the Tank Creek area is forested to pine with the following species breakdown: jack pine: 52 acres, red pine plantations: 44 acres and white pine: 18 acres. Twenty-two acres of jack pine (stand #4) will be mature in 1987 and should be harvested at that time. It should produce naturally through seeding. The remaining 30 acres of jack pine will not be mature until 2001. The single 18-acre white pine stand does not need any attention until 1997 when it should be thinned.

The only other wooded areas are two stands of swamp hardwoods totaling 32 acres. They do not require any management activities for the next 30 years.

Nonforested areas on Tank Creek include lowland brush, upland brush, and grassy openings. They provide diversity of habitat for wildlife species and should be retained for that purpose.

Wildlife activities will focus on small game habitat development, beaver control and waterfowl nest construction. Conversion of streambank alder cover to grassland where necessary will benefit some species of wildlife such as waterfowl, muskrats, mink and cottontail rabbits as well as trout. Additional wildlife shrubs may be planted depending on the survival of previous plantings. Species such as black cherry, highbush cranberry, red osier dogwood, wild plum and mountain ash will be clump planted along wildlife travel ways and along border areas adjacent to conifer plantations to provide cover and food. Brush piles will be built in areas lacking this type of cover. All cavity trees on the property will be left as den trees for wildlife. Beaver dams will be removed to protect the coldwater fishery. Approximately 25 wood duck nest boxes will be installed throughout the stream system to supplement natural nest trees.

One billboard advertising sign is located on a parcel of land that has been acquired within the proposed fishery boundary. The sign lease was in effect when the land was purchased. The sign will be removed when the lease expires and the lease will not be renewed.

All areas proposed for development will be examined for the presence or absence of endangered and threatened wild animals and plants. If listed species are found, development will be suspended until the site is evaluated and appropriate protective measures taken for significant sites.

It is recommended that a complete biological inventory be conducted on the property as soon as funds permit. Additional property objectives may be developed following completion of such an inventory.

SECTION II - SUPPORT DATA

BACKGROUND INFORMATION

Tank Creek is one of the better trout streams in the Black River Falls area. Its naturally-reproducing brook and brown trout are highly sought after by anglers. It drains a predominantly agricultural watershed but shows less evidence of agriculture-related abuses than many other area streams. Several large tracts of recreation land and wetland bordering the stream have helped to protect its fish and wildlife habitat. Hunters and trappers have traditionally utilized the wildlife habitat associated with these aquatic resources.

The stream is located in west central Jackson County and is one of the 3 headwater streams forming the Trempealeau River, a major tributary to the Mississippi River. Its headwaters are located in southeastern Hixton township. It then flows northwesterly to its confluence with the Trempealeau River at the Village of Hixton. The entire stream within the proposed boundary is Class I brook and brown trout water.

During the early 1960's the Wisconsin Highway Commission (now Department of Transportation) purchased approximately 162.7 acres of land on Tank Creek which was surplus to their needs in the construction of Interstate 94. The surplus land was then purchased by the Conservation Commission.

In 1962, the Jackson County Remnant Fisheries Program was established by the Commission, the predecessor of the Natural Resources Board. Shortly thereafter, the State of Wisconsin, through authority of the Wisconsin Conservation Department under Chapter 23.09 of the Wisconsin Statutes and with federal aids approved under the Dingell-Johnson Act, initiated a land acquisition program on this stream.

On December 3, 1965, 85.1 acres were acquired from the State Highway Commission and the remaining 77.6 acres of surplus highway lands were acquired on July 29, 1970. To date, Fish Management has acquired 416.15 acres in fee title on the project. If the recommended management plan is approved for this property, 162.85 acres remain to be acquired.

Several management practices have been completed on the acquired lands within the proposed boundary (Figure 3). Approximately three-quarters of a mile of stream thread has been developed with 3,378 feet of instream bank covers, bank rip-rap and experimental streambank brushing. One and one-quarter mile of fence has been built to exclude livestock from the stream and one cattle watering/crossing area built.

All of the 7.34 miles of property boundary have been posted with "Public Fishing and Hunting" signs. Three large wooden routed fishery area signs have been installed on the property. A 5-car parking lot and trail gate has been built on the upper end of the stream.

Approximately 44 acres of open land have been planted with 28,200 red pines while edge openings and fire breaks were left unplanted. A 6-acre pine plantation was thinned resulting in the harvest of 100 cords of pulpwood. Approximately 970 wildlife shrubs were planted at 2 locations on the property. One billboard advertising sign lease expired on the extreme downstream parcel of DNR land and has not been renewed. The sign was removed.

RESOURCE CAPABILITIES AND INVENTORY

Geology

Tank Creek is located in west central Jackson County and lies west of the Black River in the western upland geographical province. This area of the state is characterized by relatively high sandstone ridges and wide valleys giving it the "coulee" look. This region of the state is unglaciated and is known as the Driftless Area of Wisconsin. Pre-Cambrian rock underlies the entire county. This in turn, is overlain with upper Cambrian sandstone. Waters in the county tend to be low in minerals because of the relatively insoluble nature of the rock formations.

Soils

Tank Creek drains a soil association consisting of Norden, Hixton and Northfield loams and Boone sand. The area consists of hilly, rolling and steep soils on dissected sandstone uplands. Relief is mostly 4%-30%. Soil parent material is glauconitic and non-glauconitic sandstone and siltstone with local coverings of loess.

Boone fine sand and Boone fine sandy loam are the predominant soil types in the Tank Creek watershed. These soils are generally well drained, very droughty and easily eroded. They are low in organic matter and mineral plant foods. Most of the land of this soil type adjacent to Tank Creek has been abandoned as cropland. Current use is for some pasture, wildland or forest production.

The stream bisects a narrow band of deep peats throughout most of its length. These soils consist of decaying vegetable matter at the surface and overlie sandy subsoil. They are found in level or depressed areas along the stream and have poor natural drainage.

Hydrology

Wells in the area of Tank Creek are likely shallow, generally 18 to 47 feet deep. The water-bearing horizons are mainly alluvium and weathered sandstone. The mantle material over the sandstone is generally thin and is

not important as a water source. Recharge is by precipitation and is through a single, sandstone aquifer. Jackson County has an annual precipitation of about 31 inches with the majority of it occurring during the growing season. Springs in the area have an average flow of about 13 gallons per minute. These small springs and wetland seepage due to groundwater discharge are important water sources for Tank Creek.

Fish and Wildlife

Electrofishing surveys have been conducted on Tank Creek and its tributary creek 26-7 (Town of Hixton) and are on file at the Black River Falls Area Headquarters. No surveys have been conducted on the remaining two tributaries located in Sections 25 and 26. Naturally reproducing brook trout are found through Tank Creek and tributary creek 26-7. Naturally reproducing brown trout are found primarily in the lower 1-1/4 mile of Tank Creek.

In a recent electrofishing survey of 825 feet of stream near the I-94 crossing, 287 native brook trout and 1 brown trout were taken ranging from 2.0 to 9.5 inches. Of that number, 90 (31.4%) were legal trout above 6.0 inches. Excellent natural reproduction of brook trout was evident at that upstream location.

Other species known to inhabit Tank Creek include: White suckers, central mudminnows, blackside and johnny darters, central stonerollers, brook sticklebacks, northern brook lampreys, blacknose, pearl and longnose dace, creek chubs, black bullheads and bluegills. These species are much less abundant than the trout. Brook stickleback is the only other species found in creek 26-7.

Tank Creek has the potential to support brook and brown trout populations in excess of 100 pounds per acre. This can be achieved primarily in the lower one-half of the stream, with proper protection and instream improvement.

There is no existing wildlife inventory. However, field inspections reveal the following wildlife to be present: White-tailed deer, cottontail rabbits, ruffed grouse, gray, fox and red squirrels, red foxes, raccoons, mink, muskrats, beaver, skunks, meadow voles, 13 lined ground squirrels, pocket gophers, woodcocks, pheasants, wood ducks, mallards, American bitterns, American snipes, sora rails, great blue and green herons, great horned and barred owls, kestrels, red-tailed and broad-winged hawks, various unidentified shorebirds, a large variety of passerine birds, eastern garter, eastern hognose, fox and bull-snakes, snapping and western painted turtles, bullfrogs and northern leopard frogs.

Vegetative Cover (Figure 4)

The lowland adjacent to the stream consists of alder brush, swamp hardwood timber, red maple and birch, with scattered tamarack. Some open wetland supports various grass and other herbaceous species, being noncommercial in nature, but very good wildlife habitat. Commercial forest types exist on the

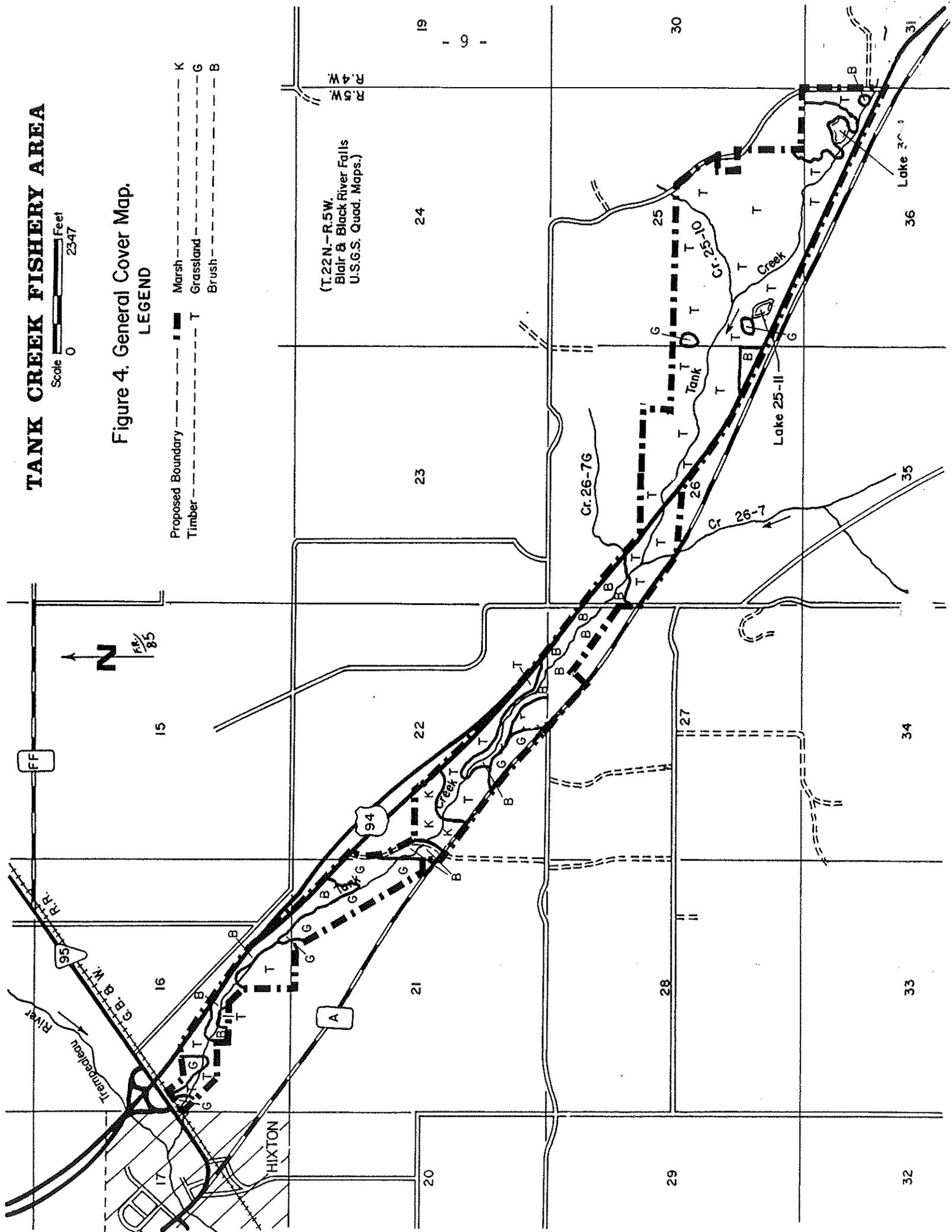
TANK CREEK FISHERY AREA

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Figure 4. General Cover Map.

LEGEND

- Proposed Boundary 
- Timber  T
- Marsh  K
- Grassland  G
- Brush  B



uplands. The predominant forest type is oak, present in pole and sawtimber stands (Table 1). Scattered jack pine, white pine and swamp hardwoods occupy sites near the stream. The white pine is large sawtimber size and does not comprise a pure stand. Some "seeding-in" of young white pine is taking place. Red pine plantations have been established on the higher, sandy ground. Some open grassland remains throughout the property as small openings.

Most of the heavily timbered land is in a large block adjacent to one portion of the stream, while the plantations are scattered throughout the property, the largest occupying 27 acres. Noncommercial cover types, grass and herbaceous cover make up approximately 62 acres, or about 15% of the total ownership.

Table 1. Cover types of the proposed Tank Creek Fishery Area, as determined by reconnaissance survey.

<u>Vegetation Type</u>	<u>Acreage</u>	<u>Estimated Percentage of Area</u>
Oak sawtimber	35.00	9.0
Oak poletimber	161.05	39.0
Oak saplings	4.00	1.0
Jack pine poletimber	52.00	13.0
White pine poletimber	18.00	4.0
Red pine poletimber	6.00	2.0
Red pine saplings	38.00	9.0
Swamp hardwood poletimber	32.00	8.0
Lowland brush (alder)	40.00	10.0
Upland brush	18.00	4.0
Grassy openings	4.00	1.0
Total	408.5	100.0

Surface Water Resources

Tank Creek is a 5-mile long, very soft water tributary of the Trempealeau River. The water is cool, clear and basic. It has a flow of 5.5 cfs and an average width of 10.5 feet. Approximately 50% of the stream bottom consists of sand and the remainder is comprised of gravel, silt, hardpan, rubble, detritus and hardpan. Most of the stream frontage is wooded or bordered by shrub marsh. The stream has a maximum flood crest of 3 feet but flooding is not frequent. Bank erosion is occurring primarily in those areas that are being grazed by livestock. Currently, the entire stream is listed as class I brook and brown trout water.

Creek 26-7 is a 1.8-mile long tributary to Tank Creek. The water is cool, clear and very soft. It has an average width of 3 feet and a flow of 1.2 cfs. Bottom types consist of predominantly sand with small amounts of hardpan, silt and gravel. The stream drains an agricultural valley but is

bordered almost entirely by woods. Approximately 0.2 mile of the stream lies within the proposed boundary. The stream is currently listed as class I brook trout water.

Creek 26-7b is a small spring and seepage tributary stream to Tank Creek. It is approximately 0.6 mile long, has clear water and is assumed to be very soft. The bottom is mostly sand and silt. It has no known fishery but is important as a constant temperature tributary. Approximately 0.06 mile of the stream lies within the proposed boundary.

Creek 25-10 is also a small spring and seepage feeder of Tank Creek and is a headwater tributary. It is approximately 0.6 mile long and has clear water which is assumed to be soft. The bottom is predominantly sand and silt. It has no known fishery and like 26-7b is a source of cold water in summer to Tank Creek. Approximately 0.3 mile of the stream lies within the proposed boundary and is in state ownership.

Two ponds are located on state lands in the headwater portion of the property and are shown on the attached figures. They are unnamed. Lake 36-1 is located in the NE 1/4 of Section 36 and is approximately 3.6 surface acres. It supports a low population of mixed panfish. Lake 26-11 is located in the SW 1/4 of Section 25. It covers approximately 4.4 acres. The fishery is suspected to consist of trout, largemouth bass and mixed panfish. Both ponds will require surveys to determine the existing fishery. Lake 36-1 has good public access and has the most potential for public fishing. Lake 25-11 has relatively poor public access because of adjacent private lands and Interstate 94. Both ponds appear to have the potential for the rearing of minnow species for the West Central District's muskellunge propagation program. Studies will be conducted to determine the feasibility of minnow production by District Operations personnel.

Table 2 lists the streams located within the proposed fishery area boundary and the two lakes. Trout stream classification is shown as it is currently listed in the "Wisconsin Trout Streams" publication of 1980.

Table 2a. Lengths in miles and classifications of streams within the proposed property boundary of the Tank Creek Fishery Area, Jackson County.

<u>Stream</u>	<u>Class I</u>	<u>Class Unknown</u>
Tank Creek	4.6	
Creek 26-7	0.2	
Creek 26-7b		0.06
Creek 25-10		0.30
<hr/>		
Total	4.8	0.36
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Table 2b. Lakes within the boundary of the proposed Tank Creek fishery Area, Jackson County.

Name	Surface Acres	Maximum Depth Ft.	MPA	pH
Lake 25-11	4.4	7.0	N/A	7.3
Lake 36-1	<u>3.6</u>	8.5	N/A	7.4
Total	8.0			

Historical, Architectural and Archaeological Features

The State Historical Society records indicate there are 10 sites of historical or archaeological significance that are located near to, or within, the proposed boundary. These sites are listed in the area files of the Department of Natural Resources and the files of the State Historical Society of Wisconsin. The State Historical Society will be contacted prior to any movement of soils or structures on the area and appropriate protective measures will be taken for significant sites.

Current Use

Known current recreation use on the state-owned lands within the proposed boundary consists of fishing, hunting, trapping, hiking and berry picking. The above uses occur on the privately owned lands within the proposed boundary but with less intensity due to posting and other conflicting private land uses. Snowmobiling use is not allowed on the state lands but does occur to a limited extent on some of the private parcels.

Probable current participant days of use for the above types of recreation on both private and public lands are: 1) fishing: 400 participant-days, 2) hunting: 600 participant-days, 3) trapping: 150 participant-days, 4) additional benefits and other recreation uses: 100 days. Increased forest production would be negligible for the next 10 years. Livestock grazing occurs on 3 privately owned parcels.

Endangered and Threatened Species

Two wood turtles, a threatened species, were observed in the stream in 1979. Other threatened species present include the Blanding's turtle and Cooper's hawk. No other endangered or threatened species of fish, amphibians, molluscs, mammals or wild plants are known to be present on the property.

Land Use Classification (Figure 2)

All acreage within the Tank Creek Fishery Area boundary should be classified as a Fisheries and Wildlife Management Area (RD₂). Development of fish and wildlife habitat will be accomplished under this classification. The proposed boundary surrounds an area sufficiently large enough to permit effective management of the resource and the regulation of resource use.

MANAGEMENT PROBLEMS

Stream Habitat

Trout habitat conditions range from fair to excellent within the proposed property boundaries. Instream habitat is best in those areas protected from livestock grazing and that have been developed with rip-rap and bank covers. Major problems affecting instream habitat is the shifting sand streambed, lack of instream cover and tag alder shading. Livestock grazing is responsible for siltation and bank destruction which is occurring on three areas of the stream on private ownership. Streambank brushing was done on the downstream end of the stream system. A favorable response occurred on low, wet sites only.

Beaver Damage to Trout Habitat

Beaver have caused damage to the stream in the past and are a potential problem. The liberal beaver season is expected to reduce the beaver population so that stream damage will be minimized. Dams will be removed and beaver live trapped by Department of Natural Resources crews if necessary. They will be transferred to warmwater areas of public ownership where they will cause no biological impact such as the Black river, Black River State Forest and Jackson County Forest.

Rural Housing Developments

Housing development are currently present adjacent to the proposed boundary on the middle section of the stream, and the potential exists for further developments near to the stream within the boundary. State acquisition of stream frontage appears to be the only means of assuring public use and preserving the fish and wildlife habitat. Access to the stream is also restricted because of the location of home sites between the public roads and the stream frontage.

Hunting and Fishing Pressure

Overuse of the public lands is only evident early in the trout season and the deer-gun season. Overharvest of larger trout is evident in some portions of the stream system.

RECREATION NEEDS AND JUSTIFICATION

Jackson County is a part of planning region 7 as defined in the State Comprehensive Outdoor Recreation Plan (SCORP) of 1981. According to SCORP, there were 17,975 recreation fishing occasions in the region per average seasonal weekend day in 1979. This type of use is expected to increase to 18,325 in 1985. Tank Creek is located within reasonable driving distance of the following metropolitan areas and is expected to receive increased visitor pressure in the future:

<u>City</u>	<u>Population (1980 Census)</u>	<u>Direct Miles</u>
Minneapolis-St. Paul	1,704,432 (1970)	120
Madison	170,616	130
Rochester, MN	53,655 (1970)	85
Eau Claire	51,509	35
La Crosse - Onalaska	56,062	45
Wausau	32,426	100
Stevens Point	22,970	85
Marshfield	18,290	55
Wisconsin Rapids	17,995	60

According to the 1980 census, Jackson County and the immediately adjoining counties of Clark, Wood, Monroe, La Crosse, Trempealeau and Eau Claire had an estimated total population of 353,633. In 1984, the last year for which such information is available to date, 19,954 trout stamps were sold in those counties.

Most of the better trout streams in the Black River Falls area are located in western Jackson and eastern Trempealeau County. Their quality in comparison to the remaining streams deems them worthy of protection and development. This region's water resources are relatively scarce since there are no natural lakes. The Black River and Mississippi River provide the bulk of the warmwater fishery resource while the trout streams like Tank Creek provide the remainder. Many of the streams in the area are declining in quality due to intensive farm use in the watersheds and properties like Tank Creek are vital in meeting projected demands for recreation there.

Other Recreation Uses

The number of persons participating in nature study, bird watching, berry and mushroom picking and photography has not been determined accurately enough to generate adequate supply and demand data. However, these activities appear to be increasing. No developments are planned for these uses although they will be allowed. Increases in fur prices, with the exception of beaver, have resulted in an increased interest in trapping and an increase of participants.

ANALYSIS OF ALTERNATIVES

Do Nothing

A do-nothing policy is not wise use of this resource. If all management practices were suspended, deterioration of fish habitat would occur in future years. This would be most evident in areas where habitat degradation is occurring now. The potential exists for the further loss of upland wildlife habitat via home developments. Forest products would go unharvested resulting in a loss of community income, raw products and wildlife habitat.

Areas of development such as fences, parking lots and stream improvements would become at least partially nonfunctional over time, resulting in a net loss to recreation use. Without management, the property cannot provide the recreation nor the fish and wildlife that it has the potential to produce.

Establish a Boundary and Acreage Goal with Associated Management Practices (Recommended Alternative)

An enlargement of the existing property ownership of 416.15 acres to 579 acres within an established acquisition boundary is desirable and recommended. Associated intensive management practices outlined in the plan will be necessary for the realization of this property's recreation potential. Blocking of existing parcels will create a manageable property unit.

Reduce the Size of the Proposed Fishery Area

Approximately 74% of the lands needed to achieve the proposed property goals are already in state ownership. The proposed boundary and acreage goals are minimal to achieve the goals and objectives of the property. A reduction in acreage could result if all of the remaining frontage was acquired under a narrow easement strip. This would provide fishing rights but hunting, upland habitat preservation and other recreation development potential would be minimal. This approach is not acceptable for a competent management plan of a multiple-use property.

Maintenance of Existing Lands Only

This alternative is little better than a do-nothing alternative with the exception that existing development will be maintained when necessary. Continued loss of stream and upland habitat will occur. Property ownership will remain fragmented and with a relatively poor management potential. Access will remain difficult in some portions of the stream.

APPENDIX - Comments by persons or agencies outside of the DNR reviewing the Tank Creek Fishery Area Master Plan.

A number of comments were received from outside reviewers of the Tank Creek, Jackson County Fishery Area Master Plan. Their statements, and DNR responses where necessary, follow:

Stan Nichols, Wisconsin Geological and Natural History Survey, Madison

Overall view of master plan: Good

Page 7, par. 1, line 5 - change granite to rock

DNR Response: Agreed.

Page 7, par. 5, line 5 - eliminate "and may be through several aquifers". The sandstone is considered a single aquifer.

DNR Response: Agreed.

The wetland seepage is probably due to groundwater discharge into the wetland.

DNR Response: Agreed.

Forest Stearns, Chairman, Natural Areas Preservation Council

We have reviewed the Tank Creek Fishery Area Concept Master Plan and find that we have no recommendation regarding potential scientific areas (state natural areas) or public use natural areas.

Thank you for providing this opportunity to comment.

Robert G. Fisher, Mississippi River Regional Planning Commission, La Crosse, WI

Overall view of plan: Excellent

Richard Lindberg, Staff Liaison, Wild Resources Advisory Council

The Wild Resources Advisory Council will abstain from commenting on this plan. The council acknowledges the lack of wild resource opportunities for this property.

Mitchell Bent, Chairman, Wisconsin Trout Unlimited, DePere, WI

Overall view of master plan: Good

As Chairman for Wisconsin Trout Unlimited, I am sending to you comments regarding the Master Plan Review - Tank Creek Fishery Area in Jackson County, Wisconsin. Trout Unlimited is pleased to be able to participate in this planning process for management of one of the state's coldwater resource units.

Overall, Trout Unlimited concurs with the goals and objectives of the Tank Creek Fishery Area Master Plan Review. We do, however, have some specific comments on certain aspects of the plan which we will elaborate on here.

- 1) Page 6, last paragraph: Reference is made to the fact that approximately 44 acres of open land have been planted with 28,200 red pines. We are curious as to why the red pines were planted. Their value to wildlife is minimal, except with regard to shelter. I would expect that other species of trees could have been planted that serve dual functions for both shelter and habitat.

DNR Response: The red pines were planted because of the site quality. They do very well on the sandy, well-drained, abandoned agricultural land. When pines are planted, only a portion of the openings are planted, leaving other areas for wildlife edge. Part of these edges are also planted with wildlife shrubs. Red pines are the best commercial species available on these sites that won't even grow grass cover.

- 2) Page 13: Beaver Damage to Trout Habitat. This paragraph expresses that notion that DNR will "live-trap" nuisance beaver from the Tank Creek Fishery Area and transfer them to warmwater areas of public ownership where they cause "no biological impact" to the Black River, Black River State Forest, and Jackson County Forest. TROUT UNLIMITED objects strongly to this management aspect. Rather than livetrapping beaver and transferring them to a warmwater area, the beaver should be removed by regular trapping. There are too many beaver in this state, both on coldwater and warmwater streams, and transferring these beaver to warmwater areas will only allow them to reproduce and then disperse back into the coldwater areas; or, the beaver may simply migrate back to their original homes. In any event, beaver should be removed by regular trapping, NOT live trapping.

DNR Response: Live trapping is only used when still trapping fails or is requested by a landowner who objects to steel trapping. Beaver control on private lands are at the discretion of the owner.

- 3) Page 13: Hunting and Fishing Pressure. This paragraph suggests that overharvest of larger, more desirable sized fish is evident in some portions of the stream. Should this continue to be a problem, DNR should consider restriction on creel and/or size limits in order to bring about increased numbers of these larger fish.

DNR Response: Changes in creel and size limits are being considered by the DNR. Public acceptance remains to be seen.

- 4) Page 14: ANALYSIS OF ALTERNATIVES. Trout Unlimited agrees with the recommended alternative, i.e., establish a boundary and acreage goal with associated management practices. Further, we urge the Department to implement management practices which will be favorable to the sustenance of native brook trout populations. We would urge the Department to avoid plans calling for stocking of the Tank Creek fishery with hatchery brown trout, which will tend to dominate and drive out the brook trout populations.

DNR Response: There are no plans to introduce brown trout into Tank Creek. Their presence is due to movement from the Trempealeau River.

This will conclude Wisconsin Trout Unlimited's comments on the Tank Creek Fishery Area Master Plan Review. We thank you for the opportunity to participate in the planning process for this fishery area, and we hope that DNR will take seriously into consideration what we have commented on regarding certain aspects of the overall plan.

DNR Response: Thank you. Your comments are appreciated and will be considered in the future management of this property.

Cynthia A. Morehouse, Director, Bureau of Environmental and Data Analysis, Department of Transportation.

We have reviewed the Master Plan for the Tank Creek Fishery Area. We support the proposed increased number of parking areas. As you noted in the Master Plan, cars parked on highways present safety problems. This is made more acute by the many narrow roads lacking adequate shoulders serving the Fishery Areas. We recommend that you carefully assess the potential use of each proposed parking area and, if significant, the parking area should be built early in the development of the Fishery Areas.

DNR Response: Thank you. Construction of parking areas will be dependent on need and availability of sites. Early development will be done if possible.

We recommend that when acquiring interests (fee simple or easement) in lands which abut the right of way of State Trunk Highways you coordinate with:

T. R. Kinsey, Director
Transportation District 5
3550 Mormon Coulee Road
La Crosse, WI 54601
(608)785-9022

We recommend that when acquiring interests in lands abutting the right of way of county or township roads that you coordinate with the appropriate highway officials in those levels of government.

Thank you for the opportunity to review and comment on this Master Plan.

DNR Response: Yes, this recommendation will be followed by the area land agent.

Forest Stearns, Chairman, Natural Areas Preservation Council

We have reviewed the Tank Creek Fishery Area's Concept Master Plan and find that we have no recommendations regarding potential scientific areas (state natural areas) or public use natural areas.

Thank you for providing this opportunity to comment.

37930

For All DNR Type II Actions, Except Adm. Rules
FORM 1600-1 REV. 3-82

DEPARTMENT OF NATURAL RESOURCES

Note: (This revision combines Form 1600-1 and
1600-2 into one form.)

DISTRICT OR BUREAU West Central
DOCKET NUMBER
TYPE LIST DESIGNATION(S) NR 150.03 (2)(e) 4

ENVIRONMENTAL ASSESSMENT
(ATTACH ADDITIONAL SHEETS IF NECESSARY)
(REFERENCE INFORMATION SOURCES UTILIZED)

Applicant: Department of Natural Resources

Title of Proposal: Master Plan for the Tank Creek Fishery Area, Jackson County

Location: County Jackson
Township 22 North, Range 5 ~~East~~, West
Section(s) part 16, 21, 22, 27, 26, 25
Political Town Hixton

PROJECT SUMMARY

1. General Description

The master plan for the Tank Creek Fishery Area presents the long-range goals and objectives for the proposed management of this property. The plan is designed to project management and budget proposals for at least the next ten years.

Major actions proposed in this plan are as follows:

1. Establish the Tank Creek Fishery Area with an acreage goal of 554 acres and an established boundary. Acquire an additional 145.95 acres.
2. Construction of small 3 - 5 car parking lots as required by recreation use.
3. Protect and enhance the cold water fishery habitat by streambank fencing, cattle water areas, and construction of instream habitat structures.
4. Post property boundaries.
5. Manage two man-made ponds for fish propagation.
6. Manage the timber resources as prescribed in the property forest reconnaissance.
7. Install wood duck nest boxes as suitable habitat is acquired.
8. Build one stream crossing on the former Nordahl parcel.
9. Remove beaver dams.

Many of the planned developments are shown on the attached figure 3.

2. Purpose and Need

This master plan has been prepared under the guidelines of the Master Planning handbook and Manual Code 2105.1. Master plans are established to assure sound, long-range comprehensive planning for all department owned lands. Goals and objectives for management of the property are established for public review, comments and as an aid for the Department of Natural Resources in its budgeting and management making process.

Public lands were first acquired on Tank Creek from the Wisconsin Highway Commission. All lands to date were purchased under the Remnant Fisheries Area program for a total of 408.05 acres.

The 1979 Census of Population in Wisconsin as reported in the "State Comprehensive Outdoor Recreation Plan, 1981" states the population of Region 7 was 260,348. The need to provide increased fishing participation is stressed in the plan for this region. Per capita hunting participation by regional residents is above the state average. Protection of wildlife habitat is stressed to provide continued quality hunting experiences.

Water resources for Region 7 are unequally distributed with most of the region's recreation waters occurring in the Mississippi River. Subsequently, the trout streams in the interior of this region receive moderate to heavy use.

3. Authorities and Approvals

The policy for the management of state fisheries areas is established in several Natural Resources Laws which read in part, as follows: Section 23.09(2)(d)(3), Wis. Stats., provides legislative authority and direction for the acquisition and management of fisheries areas. The primary purpose

as stated in this Statute is to provide "areas in which any citizen may hunt, trap or fish". Section 23.11(1), Wis. Stats., provides for the general care, protection and supervision of state lands. Section 23.30, Wis. Stats., deals with the provisions of the outdoor recreation program. DNR administrative approval is required for timber sales.

4. Estimated Cost and Funding Source

Estimated minimum cost to develop master plan \$1,000.00

Estimated annual property maintenance costs \$800.00

Estimated annual property development cost (1983 1993) \$2,300.00

Estimated acquisition costs to complete property \$73,000.00

Funding sources are anticipated to include fishing license sales, federal cost-sharing funds and Trout Stamp funds.

PROPOSED PHYSICAL CHANGES

5. Manipulation of Terrestrial Resources

- a. Acquisition of the remaining lands within the boundary may involve 1.25 miles of streambank fencing and construction of cattle water areas on some parcels. Fencing may involve some brush and tree removal along the fence lines. Construction of watering areas will involve some brush and tree removal, streambank sloping and the removal of silt and muck from the construction site and replacement with rock and gravel. Fence line brushing involves removal along a one-rod wide strip on the fence line. Watering areas-crossings require a 3 - 4 rod wide corridor of brushing, sloping, rock, and gravel. Approximately three crossings-watering areas may be constructed dependent on acquisition progress and negotiation agreements.
- b. Streambank brushing will require the treatment of cut stumps with Ammate XN^I a chemical labeled and approved for this use. Stump treatment will prevent resprouting of cut trees and limbs. Follow-up maintenance of cut areas may require the use of Krennite, a bud suppressent. This chemical is also labeled and approved for this use. Copies of each chemical label are attached as Exhibit 1a & 1b.
- c. Construction of small 3 - 5 car parking lots will involve some soil disturbance during grading (usually less than 1 foot in depth) and surfacing of the graded area with pit run gravel. Barrier posts or fences will be built around the lots. The lots will probably be less than 50' x 50'.
- d. Forest management recommendations involve timber harvest, tree planting and firewood sales on select areas of the property. Timber harvest will result in the removal of mature merchantable trees, excluding wildlife den trees, hand and machine planting of conifers, cutting and removal of hardwood species for firewood. All of these may involve some disturbance of the uplands by the creation of temporary access trails and skidding operations. Approximately 21+ acres are scheduled for timber and firewood harvest for the next ten years.

6. Manipulation of Aquatic Resources

- a. Construction of cattle watering areas-crossings will involve some instream use of heavy equipment such as bulldozers and back hoes. The stream bottom may be excavated to remove silt and muck where needed and this material replaced with rock and gravel to the original stream bed dimensions. Usually this work is done on an area of stream to a width of the stream and a length of 3 - 4 rods. Approximately 3 cattle watering-crossing areas will be required depending on future acquisition progress and negotiations.

- b. Beaver dams will be removed when possible to prevent cold water habitat damage. Dams will be removed by hand or by explosives by a licensed blaster. The stream bottom of the dam site may be disturbed by the use of explosives. An estimate of the number of dams to be removed is not possible but past beaver damage has been light with no more than two dams removed annually.

7. Buildings, Treatment Units, Roads and other Structures

Approximately 3,400 feet of instream habitat development is proposed for future operations on the lower half of the stream system where frontage is accessible to heavy equipment. Areas of stream suitable for development are currently not in public ownership, however. The structures will be of the type described in "Guidelines for Management of Trout Stream Habitat in Wisconsin" (DNR, 1967). A typical structure diagram (exhibit 2) is attached to this Environmental Impact Assessment. Construction will involve the jetting of oak piling into the stream bottom and placement of oak planks on the piling. The structure will be covered with riprap size rock. Streambanks will be sloped, fertilized, and seeded at structure sites. In some cases, the stream surface area will be reduced and the average depth increased. Structure placement will create stream bottom scouring. In most cases, the scoured material will be removed from the main channel and deposited by the stream current at the downstream ends of the structures. Structure placement will determine location of deposits. An unknown amount of scoured material will be deposited downstream from the structures in unstructured areas of the stream or possibly carried out of the watershed. On some areas where structure placement is not possible, bank erosion will be controlled by sloping of the banks and placement of riprap on the streambed and extending upland on the banks. Areas of construction will be fertilized and seeded. Placement of wing deflectors in conjunction with instream structures will be accomplished by placing riprap rock on the streambed to deflect currents or by placing large logs on the streambed and anchored by jetted pilings on the stream bottom.

Approximately one and one-half mile of the headwaters of the stream will be improved with approximately 1200 feet of bank covers to provide protection for spawning brook trout. This cover may consist of experimental sand bag structures. Instream development will occur as frontage is acquired and funds become available. These structures will be constructed as the above described bank covers except the sand bags will replace the riprap rock.

An undetermined amount of streambank brushing may be conducted on portions of Tank Creek but will probably consist of less than 1000 feet. Streambank brush, primarily alder and scattered hardwoods, will be removed approximately one rod back from each streambank. Bundles of cut brush will be staked in place on the streambed at select sites within the brushed area to trap silt and sand. This technique will create upland on some areas of the stream where shallow, slow water now exists. The bundles will narrow and deepen the stream. Stream bottom scouring may occur adjacent to bundle placement. A diagram (exhibit 3) of a typical bundle and placement is attached to this E.I.A.

8. Emissions and Discharges

The only anticipated emissions that will occur are vehicle and heavy equipment exhaust. Due to the limited scope of their use, no measurable air quality changes are expected to occur. No discharges are proposed.

9. Other Changes

Other actions proposed in the master plan are acquisition of privately

owned stream frontage. Acquisition will not involve direct manipulation of either terrestrial or aquatic resource although indirect manipulation may occur. The attached figure 2 shows the existing ownership and proposed acquisition areas. No known mineral deposits are present on the property other than sand. This material is not scarce in this area of the state or county and there is not a high demand for it in the area of this property. Excavation of sand or other mineral deposits, should they exist, will not be allowed on this property at this time to protect forestry and wildlife habitat.

10. Attached Maps, Plans and Other Descriptive Material as Appropriate
 - Exhibit 1a & 1b - chemical labels
 - Exhibit 2 - stream improvement diagram
 - Exhibit 3 - brushing diagram
 - Figure 2 - property ownership and land use classification map
 - Figure 3 - existing and planned development map
 - Figure 4 - general cover map

AFFECTED ENVIRONMENT

11. Physical

Surface Water Resources

Tank Creek is a 5 mile long, very soft water tributary to the Trempealeau River. The water is cool, clear and basic. It has a flow of 5.5 cfs and an average width of 10.5 feet. Approximately 50% of the stream bottom consists of sand and the remainder is comprised of gravel, silt, hardpan, rubble and detritus. Most of the stream frontage is wooded or bordered by shrub marsh. The stream has a maximum flood crest of 3 feet but flooding is not frequent. Bank erosion is occurring primarily in those areas that are being grazed by livestock. Currently the entire stream is listed as class I brook and brown trout water.

Creek 26-7 is a 1.8 mile long tributary to Tank Creek. The water is cool, clear and very soft. It has an average width of 3 feet and a flow of 1.2 cfs. Bottom types consist of predominately sand with small amounts of hardpan, silt and gravel. The stream drains an agricultural valley but is bordered almost entirely by woods. Approximately 0.2 mile of the stream lies within the proposed boundary.

Creek 26-7b is a small spring and seepage tributary stream to Tank Creek. It is approximately 0.6 mile long, has clear water and is assumed to be very soft. The bottom is predominately sand and silt. It has no known fishery but is important as a cold water tributary. Approximately 0.06 mile of the stream lies within the proposed boundary.

Creek 25-10 is also a small spring and seepage fed stream to Tank Creek and is a headwater tributary. It is approximately 0.6 mile long and has clear water which is assumed to be soft. The bottom is predominately sand and silt. It has no known fishery and like 26-7b is a source of cold water to Tank Creek. Approximately 0.3 mile of the stream lies within the proposed boundary and is in state ownership.

Two ponds are located on state lands in the headwater portion of the property and are shown on the attached figures. They are unnamed. Lake 36-1 is located in the NE $\frac{1}{4}$ of Section 36 and is approximately 3.6 surface acres. It supports a low population of mixed panfish. Lake 26-11 is located in the SW $\frac{1}{4}$ of Section 25. It is approximately 4.4 acres. The fishery is

suspected to consist of trout, largemouth bass and mixed panfish. Both ponds will require surveys to determine the existing fishery.

Table 2 lists the streams located within the proposed fishery area boundary and the two lakes. Stream classification is shown as it is currently listed in the "Wisconsin Trout Streams" publication of 1980. Attached figure 4 shows the location of the above waters.

Stream Length in Miles & Pond Acreage
Within the Proposed Boundary

<u>Stream</u>	<u>Class I</u>	<u>Class Unknown</u>	<u>Warm Water</u>
Tank Creek	4.6 mi.		
Creek 26-7	0.2 mi.		
Creek 26-7b		0.06 mi.	
Creek 25-10		<u>0.3 mi.</u>	
Total	<u>4.8 mi.</u>	<u>0.36 mi.</u>	
Lake 25-11		4.4 acres	
Lake 36-1			3.6 acres
Total Pond Acreage - 8.0 acres			

Geology

Tank Creek is located in west central Jackson County and lies west of the Black River in the western upland geographical province. This area of the state is characterized by relatively high sandstone ridges and wide valleys giving it the "coulee" look. This region of the state is unglaciated and is known as the Driftless Area of Wisconsin. Pre-Cambrian granite underlies the entire county. This in turn is overlaid with upper Cambrian sandstone. Waters in the county tend to be low in minerals because of the relatively insoluble nature of the rock formations.

Soils

Tank Creek drains a soil association consisting of Norden, Hixton and Northfield loams and Boone sand. The area consists of hilly, rolling and steep soils on dissected sandstone uplands. Relief is mostly 4% - 30%. Soil parent material is glauconitic and non-glauconitic sandstone and siltstone with local coverings of loess.

Boone fine sand and Boone fine sandy loam are the predominant soil types in the Tank Creek watershed. These soils are generally well drained, very droughty and easily eroded. They are low in organic matter and mineral plant foods. Most of the land of this soil type adjacent to Tank Creek has been abandoned as cropland. Current use is some pasture, wildland or forest production.

The stream bisects a narrow band of deep peats throughout most of its length. These soils consist of decaying vegetable matter at the surface and overlie sandy subsoil. They are found in level or depressed areas along the stream and have poor natural drainage.

Hydrology

Wells in the area of Tank Creek are likely shallow, generally 18 to 47 feet deep. The water-bearing horizons are mainly alluvium and weathered sandstone. The mantle material over the sandstone is generally thin and is not important as a water source. Recharge to the sandstone aquifer is by precipitation and may be through several aquifers. Jackson has an annual precipitation

of about 31 inches with the majority of it occurring during the growing season. Springs in the area have an average flow of about 13 gallons per minute. These small springs and wetland seepage are important water sources for Tank Creek.

Air

According to DNR Air Management Section, Eau Claire, air quality in the property area exceeds the secondary air quality standards as set by the Federal E.P.A. and is indicative of very good quality.

Wetland Types

Wetlands are located throughout the property boundary and are characterized as type 6 by the U.S. Fish and Wildlife circular 39 (1956) or as scrub shrub wetlands in the "Classification of Wetlands and Deepwater Habitats of the United States" from the Fish and Wildlife Service, 1979. These wetlands are located adjacent to or connected with the stream. They are characterized by alder marshes interspersed with hardwoods and some conifers. Most of the 40 acres listed in the forest recon as lowland brush comprise this type of wetland.

12. Biological

a. Flora

Vegetative Cover

The lowland adjacent to the stream consists of alder brush, swamp hardwood timber, red maple and birch, with scattered tamarack. Some open wetland supports various grass and other herbaceous species, being non-commercial in nature, but very good wildlife habitat. Commercial forest types exist on the uplands (see figure 4). The predominant forest type is oak, present in pole and sawtimber stands (see table 2). Scattered jack pine, white pine and swamp hardwoods occupy sites near the stream. The white pine is large sawtimber size and does not comprise a pure stand. Some "seeding-in" of young white pine is taking place. Red pine plantations have been established on the higher sand ground. Some open grassland remains throughout the property as small openings.

Most of the heavily timbered land is in a large block adjacent to one portion of the stream. The plantations are scattered throughout the property, the largest occupying 27 acres. Non-commercial cover types, grass and herbaceous cover, make up approximately 62 acres, or about 15% of the total ownership. General cover types of the lands within the proposed boundary are shown on the attached figure 4.

<u>Vegetation Type</u>	<u>Acreage</u>	<u>Estimated Percentage of Area</u>
Oak sawtimber	35	9
Oak poletimber	161.05	39
Oak saplings	4	1
Jack pine poletimber	52	13
White pine poletimber	18	4
Red pine poletimber	6	2
Red pine saplings	38	9
Swamp hardwood poletimber	32	8
Lowland brush (alder)	40	10
Upland brush	18	4
Grassy openings	4	1
Total	408.05 acres	100%

b. Fauna

Fish and Wildlife

Electrofishing surveys have been conducted on Tank Creek and its tributary creek 26-7 (Town of Hixton) and are on file at the Black River Falls Area Headquarters. No surveys have been conducted on the remaining two tributaries located in Sections 25 and 26. Naturally reproducing brook trout are found through Tank Creek and tributary creek 26-7. Naturally reproducing brown trout are found primarily in the lower 1¼ mile of Tank Creek.

Other species known to inhabit Tank Creek are as follows: white sucker, central mudminnow, blackside darter, johnny darter, central stoneroller, blacknose dace, brook stickleback, northern brook lamprey, pearl dace, longnose dace, creek chub, black bullhead and bluegill. These species are much less abundant than the trout. Brook stickleback were the only other species found in creek 26-7.

Tank Creek has the potential to support brook and brown trout populations in excess of 100 pounds per acre and can be achieved primarily in the lower one-half of the stream with protection and instream improvement.

There is no existing wildlife inventory, however, field inspections reveal the following wildlife to be present: white-tailed deer, cottontail rabbit, ruffed grouse, squirrel (gray, fox, red), red fox, raccoon, mink, muskrat, beaver, skunk, meadow vole, 13 lined ground squirrel, pocket gopher, woodcock, pheasant, wood duck, mallard, American bittern, green heron, common snipe, sora rail, great blue heron, great horned owl, barred owl, kestrel, red-tailed hawk, broad-winged hawk, various shorebirds (unidentified), a large variety of passerine birds, eastern hognose snake, bullsnake, fox snake, eastern garter snake, snapping turtle, western painted turtle, bullfrog and northern leopard frog.

No endangered species of wildlife have been observed on the property. Threatened species present include the wood turtle, Blanding's turtle and Cooper's hawk.

13. Social/Economic

Jackson County is a part of planning region 7 as defined in the State Comprehensive Outdoor Recreation Plan (SCORP) of 1981. According to SCORP, there were 17,975 recreation fishing occasions per average seasonal weekend day in 1979. This type of recreation use is expected to increase to 18,325 in 1984. Tank Creek is located within reasonable driving distance of the following metropolitan areas and is expected to receive increased visitor pressure in the future.

Most of the better trout streams in the Black River Falls area are located in western Jackson and eastern Trempealeau County. Their quality in relation to the remaining streams is worthy of protection and development. This region's water resources are relatively scarce since there are no natural lakes. The Black River and Mississippi River provide the bulk of the warmwater fishery resource while the trout streams like Tank Creek provide the remainder of the fishery resource. Many of the streams in the area are declining in quality due to intensive farm use in the watersheds. Properties like Tank Creek are vital in meeting the projected demands for recreation in this area. No permanent structures and no tillable lands lie within the proposed boundary.

The number of persons participating in nature study, bird watching, berry and mushroom picking and photography has not been determined accurately enough to generate adequate supply and demand data. However, these activities appear to be increasing. No developments are planned for these uses although they will be allowed. Increases in fur prices, with the exception of beaver, have resulted in an increased interest in trapping and an increase of participants.

14. Other Special Resources

Historical and Archaeological Features

The State Historical Society records indicate there are 10 sites of archaeological significance that may be located near to or within the proposed boundary. These sites are listed within the area files of the Department of Natural Resources and the files of the State Historical Society of Wisconsin. The State Historical Society will be contacted prior to any movement of soils on the area and appropriate protective measures will be taken for significant sites.

Endangered and Threatened Species

Two wood turtles, a threatened species, were observed on the stream in 1979. Other threatened species present include the Blanding's turtle and Cooper's hawk. No other endangered or threatened species of fish, amphibians, molluscs, mammals or wild plants are known to be present on the property.

ENVIRONMENTAL CONSEQUENCES

15. Physical

- a. Acquisition of remaining lands will have no direct physical impact on the environment but creates secondary actions that may such as fencing, forest management, habitat improvement, and access development.
- b. Timber management actions - Timber harvest, as recommended by forest management, will create beneficial impacts such as production of raw forest products, create new stands of timber through selective cutting and tree planting, benefit a variety of forest wildlife species through wildlife habitat improvement and provide home heating fuel. Adverse impacts are anticipated to be of short duration. The aesthetics of an undisturbed timber stand may be considered by some to be degraded by timber harvest and firewood cutting. Harvest roads and access trails for tree planting will cause minor physical disturbance to some areas. Fields planted to trees may be furrowed, if machine planted, resulting in some soil disturbance.
- c. Access roads for other proposed developments will create temporary soil and plant disturbance. These roads will be necessary for fencing and watering area construction, habitat development, and parking lots. Parking lots will replace existing grassland or wildland.
- d. Fencing and cattle watering-crossing areas - Fence lines will be brushed and maintained if possible as open areas. Cattle watering-crossing areas will have to be cleared, sloped, and graveled resulting, in some cases, in a conversion of grasses and shrubs to graveled road-type areas. Some stream siltation may occur during construction. These developments are expected to be of a long-term nature (20 years plus). Benefits to be derived are the exclusion of livestock from wildlife habitat, prevention of bank erosion by grazing, reduction of livestock related pollution along the stream except for small localized areas, and satisfying legal requirements for boundary fences.
- e. Mineral removal such as sand excavation is not a recommended action in this plan. If allowed, it could result in long-term impacts on the physical environment unless extensive reclamation was done following excavation.

16. Biological

- a. Instream development of structures and streambank brushing - Impacts may be considered to be both physical and biological, but is considered here because of the anticipated direct and long-term effects on fish and wildlife. During the course of structure development, soil and plant disturbance will occur. Some stream siltation will result from construction. Beneficial long-term impacts will be streambank erosion control and improved instream cover for cold-water fish species. Streambank brushing will result in plant removal along the banks. Some wildlife species may be adversely affected such as woodcock with the conversion of alder to grasses. Conversely, some furbearers and duck species may benefit from the conversion. Aesthetics of the areas involved in both types of actions will be adversely affected, but will be of a short-term duration.
- b. Removal of beaver and dams are recommended to retain the long-term productivity of the class I trout waters in the fishery area. Temporary stream bottom disturbance will occur during explosive removal of dams. Some wildlife habitat will be destroyed with the removal of the beaver impoundments. Some waterfowl and furbearers may be displaced because of this action. Typically beaver impoundments are of short duration and during a 1 - 4 year period they are abandoned due to food depletion, flooding, or trapping. Their presence on cold-water streams can result in detrimental impacts for a long-term duration such as excessive siltation and destruction of the stream channel characteristics.
- c. Tree planting on the property will create forest habitat for a variety of wildlife species such as rabbits, small mammals, whitetail deer, and ruffed grouse. Raw forest products will be produced by planting also. Some wildlife species that utilize open fields will have some of their habitat replaced by conifers. Forest and field openings are common adjacent to the fishery area and the impact will be relatively insignificant.
- d. Construction of cattle watering areas-crossings will reduce the livestock damage to the stream. The graveled watering areas may provide increased trout spawning habitat and will replace areas of shifting sand bottoms.

17. Social/Economic

Fishing, hunting and berry picking are current uses of the property which may be considered to be social activities. These activities would be beneficially enhanced through accepted forestry practices, exclusion of livestock grazing, fish stocking and general availability of public lands. Rural residences will not be acquired. Acquisition of farmland is not a goal of the proposed expansion of current ownership.

Acquisition of lands from willing sellers will benefit the sellers economically. Property taxes will not be significantly affected since the town is reimbursed by the state for lands withdrawn from the tax base. Forest management practices will result in the sale of raw forest products and increased employment during the harvesting and processing of these products. Tree planting will provide a future source of forest products. Current users of the property will probably continue to patronize local businesses. Increases in the public ownership will increase the number of users and their input to area businesses.

The Jackson County Zoning Administrator advises there are no county zoning permits that he is aware of that will be required for the proposed actions.

18. Other Special Resources

The plan does not propose any development that would have an adverse impact on the archaeological or historical features as known. These areas will be protected from physical change. Endangered and threatened species will be protected by public ownership. Any areas of development will be examined for their presence and protected if present. No scientific or natural areas are proposed.

19. Probable Adverse Impacts That Cannot Be Avoided

- a. Acquisition of private lands may not be acceptable to some. If the property is to be completed, acquisition must occur.
- b. Habitat improvement practices will result in short time physical disruptions of streambanks as will access roads leading to the project sites. Aesthetics of the areas to be developed will be altered temporarily.
- c. Forest management practices such as tree harvesting and tree planting will create some physical but short-term impacts and the aesthetics of the areas involved may be affected temporarily. Soil disturbance will occur in furrowed areas for tree planting to an approximate depth of 8 - 10 inches.
- d. Beaver removal will result in some stream bottom disturbances and loss of certain wildlife habitat.
- e. Fencing will result in the clearing of some brush and trees and may alter the aesthetics of the areas involved. Cattle watering areas-crossings will physically change small areas along the streambanks.
- f. All access road construction will result in physical and aesthetic alteration of the areas developed.
- g. Energy - Gasoline, diesel fuel, and oil will be expended during the development and maintenance of the proposed actions. An estimate of the amounts over the next ten years is not possible at this time. Fence materials, rock, and gravel will be committed for various developments. Quantities cannot be estimated until further acquisition occurs and specific action plans are approved and funded. The use of sandbag structures in place of rock structures will significantly reduce the energy usage during instream habitat development.

ALTERNATIVES

20. Identify, describe and discuss feasible alternatives to the proposed action and their impacts.

Do Nothing

A do-nothing policy is not wise use of this resource. If all management practices were suspended, deterioration of fish habitat would occur in future years. This would be most evident in areas where habitat degradation is occurring now. The potential exists for the further loss of upland wildlife habitat via home developments. Forest products would go unharvested resulting in a loss of community income, raw products and wildlife habitat. Areas of development such as fences, parking lots and stream improvements would over time become at least partially non-functional resulting in a net loss to recreation use. The property, without management cannot provide the recreation nor the fish wildlife that it has the potential to produce.

Establish a Boundary and Acreage Goal with Associated Management Practices (Recommended Alternative)

An enlargement of the existing property ownership of 408.05 acres to 554 acres within an established acquisition boundary is desirable and recommended. Associated intensive management practices outlined in the plan will be necessary for the realization of this property's recreation potential. Blocking of existing parcels will create a manageable property unit.

Reduce the Size of the Proposed Fishery Area

Approximately 74% of the lands needed to achieve the proposed property goals are already in state ownership. The proposed boundary and acreage goals are minimal to achieve the goals and objectives of the property. A reduction in acreage for example may result if all of the remaining frontage was acquired under a narrow easement strip. This would provide fishing rights but hunting, upland habitat preservation and other recreation development potential would be minimal. This approach is not acceptable for a management plan for a multiple use property.

Maintenance of Existing Lands Only

This alternative is little better than a do-nothing alternative with the exception that existing developmnts will be maintained when necessary. Continued loss of stream and upland habitat will occur. Property ownership will remain fragmented and with a relatively poor management potential. Access will remain difficult in some portions of the stream. Stream degradation resulting from livestock would continue.

EVALUATION

21. Secondary Effects:

If the actions proposed in the Tank Creek Fishery Area Master Plan are implemented, significant improvements in fish, wildlife and forestry resources will occur. Livestock will be excluded from the stream frontage resulting in improved water quality and wildlife habitat protection. Stream improvement will create more instream cover and spawning areas for trout and bank erosion will be reduced. Acquisition will expand the area to be protected and developed allowing for protection of a significant portion of the watershed. Beaver management will significantly reduce stream degradation. Forest management will create long-term production of forest products and long-term wildlife habitat productivity.

22. New Environmental Effect:

New environmental effects will exist if the plan is implemented. Biological effects are expected to show the greatest change as fish, wildlife and forest productivity is expected to produce the greatest changes. Physical effects will be of a short-term nature. Socio-economic changes are not expected to show significant changes or increases although some change is anticipated.

23. Geographically Scarce:

Most of the water resources in region 7 as stated in the "State Comprehensive Outdoor Recreation Plan, 1981" are unequally distributed with most of the recreation waters being localized in the Mississippi River. Subsequently, the trout streams in the interior of this region receive moderate to heavy use. The entire stream within the proposed boundary is a class I brook and brown trout water. Its naturally reproducing brook and brown trout are highly sought after by anglers. Protection and development of this relatively rare resource is desirable and demanded by the angling public.

24. Precedent:

The master plan presents proposals for the long-range management of the Tank Creek Fishery Area. Its approval, denial or modification will all result in influencing the actions taken to met the proposal goals and objectives for this property's management. Master plans are a relatively new concept in the management of fishery properties. Decisions made on this plan could influence those made for proposed plans for other properties. The actions proposed within the plan are not precedent setting in themselves and constitute accepted resource management techniques in Wisconsin.

25. Controversy:
None of the proposed actions have been seriously controversial in the past for this property. Agency and public review may reveal controversies not evident at this time.
26. Consistency With Plans:
This plan, to the best of my knowledge, is consistent with plans developed for this type of resource and follows the recommendations outlined in the "State Comprehensive Outdoor Recreation Plan, 1981". The master plan will be submitted to a variety of planning agencies, special interest groups, etc., for review and comment.
27. Cumulative Impacts:
Master plans for all state lands, if implemented, would result in significant long term beneficial impacts to the environment. Cumulative impacts would result in long term developments on many properties which are currently lacking.
28. Foreclose Future Options:
None of the actions proposed in this plan are irreversible. All proposed developments could be removed and public land sold. These options are neither recommended or feasible at this time. The actions proposed in the plan will commit the resources within the property boundary for the goals and objectives for which it was acquired.
29. Socio-cultural Impacts:
No - see below.
30. Other:
The master plan will have no known direct or indirect impacts on ethnic or cultural groups. The property will continue to be used or available for use by all who wish to do so for the uses outlined in the plan. Social patterns may be altered somewhat since acquisition of stream frontage may reduce subdivision and rural housing developments of these areas.

AFFECTED ENVIRONMENT

Information Based On (check all that apply):

- Literature/correspondence
- Personal Contacts (list in item 31)
 - Field Analysis By: Author, Other (list in item 31)
 - Past Experience With Site By: Author Other (list in item 31)

26. Consistency With Plans: Does the action conflict with local or agency zoning or with official agency plans or policy of local, state or federal government (e.g., NR 1.95)? If so, how? Refer to applicable comments in item 31.

27. Cumulative Impacts: While the action by itself may be limited in scope, would repeated actions of this type result in major or significant impacts to the environment?

28. Foreclose Future Options: Is the action irreversible? Will it commit a resource (e.g., energy, habitat, historical features) for the foreseeable future?

29. Socio-cultural Impacts: Will action result in direct or indirect impacts on ethnic or cultural groups or alter social patterns?

No

Yes, refer to item 17.

30. Other:

LIST OF AGENCIES, GROUPS AND INDIVIDUALS CONTACTED REGARDING THE PROJECT (Include DNR personnel and Title)

<u>31.</u>	<u>Date</u>	<u>Contact</u>	<u>Comment Summary</u>
DNR	fiscal year 1982-83	Master Plan Task Force	Comments provided in Master Plan and this evaluation

This plan is routinely sent to a variety of DNR Bureaus, Federal Agencies, Citizen Councils, sportsmens groups and others for comment during the 45 day review period. News releases regarding the plan, this evaluation and a public meeting is required.

Tank Creek

Project Name: Tank Creek Master Plan

County: Jackson

#2092

RECOMMENDATION

EIS Not Required.....

Analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion therefore, an environmental impact statement is not required prior to final action by the Department on this project.

Refer to Office of the Secretary.....

Major and Significant Action: Prepare EIS.....

Request EIR.....

Additional factors, if any, affecting the evaluator's recommendation:

SIGNATURE OF EVALUATOR <i>James H. Talley</i>	DATE 8-30-83
NOTED: AREA DIRECTOR OR BUREAU DIRECTOR <i>Jon L. Bugenhagen</i>	DATE 8/30/83

Number of responses to public notice 0

Public response log attached?..... —

CERTIFIED TO BE IN COMPLIANCE WITH WEPA
DISTRICT DIRECTOR OR DIRECTOR OF BEI (OR DESIGNEE)

Dary A. Berch

DATE
9/25/85

This decision is not final until certified by the appropriate District Director or the Director of BEI. If you believe you have a right to challenge this decision, you should know that Wisconsin Statutes and Administrative Codes establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.15 and 227.16, Stats., you have 30 days after service of the decision to file your petition for review. The respondent in an action for judicial review is the Department of Natural Resources. You may wish to seek legal counsel to determine your specific legal rights to challenge a decision. This notice is provided pursuant to s. 227.11(2), Stats.

EXHIBIT 1a

HERBICIDE

KRENITE[®]

BRUSH CONTROL AGENT

WATER SOLUBLE LIQUID

ACTIVE INGREDIENT:

Ammonium ethyl carbamoylphosphonate 41.5%

INERT INGREDIENTS 58.5%

U.S. Pats. 3,627,507 & EPA Reg. No. 352-376-AA
3,846,512

Contains 4 lbs. Active Per Gallon

Keep out of reach of children.

CAUTION! MAY IRRITATE EYES, NOSE, THROAT, AND SKIN.

• Avoid breathing dust or spray mist. • Avoid contact with skin, eyes, and clothing

G 21370 B 75A

IMPORTANT

Do not use on food crops. Do not allow drift or spray mist to contact desirable trees, shrubs, or other plants, as injury may result. Do not apply to brush in standing water. Do not contaminate any body of water. Keep from contact with fertilizers, insecticides, fungicides, and seeds.

Thoroughly clean all traces of "Krenite" from application equipment after use. Flush tank, pump, hoses and boom with several changes of water after removing nozzle tips and screens (clean these parts separately.). Do not contaminate water by cleaning of equipment or disposal of wastes. Do not re-use container. Crush and bury when empty.

GENERAL INFORMATION

DuPont "Krenite" Brush Control Agent is a water soluble liquid to be diluted with water and applied as a foliar spray for control and/or growth suppression of many woody species on non-cropland areas, including land adjacent to and surrounding domestic water supply reservoirs, supply streams, lakes and ponds. It is non-flammable and non-volatile.

"Krenite" is applied to brush in late summer or early fall and response is usually not observed until the following spring except for pines which may show a response soon after application. Susceptible treated plants fail to refoliate and subsequently die.

A spray directed to only part of a susceptible plant will provide control of only the portion sprayed, resulting in a trimming effect.

NOTICE OF WARRANTY

DuPont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of DuPont. In no case shall DuPont be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. DUPONT MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

DIRECTIONS

"Krenite" Brush Control Agent should be used only in accordance with recommendations on this label, or in separate published DuPont recommendations available through local dealers.

Non-Cropland Areas — Railroad, pipeline, utility and highway right-of-ways, reforestation areas, drainage ditch banks, storage areas, industrial plant sites, and other similar areas:

For control and growth-suppression of blackberry, white oak, water oak, red oak, loblolly pine, Virginia pine, sweet gum, sumac, and black locust, make a single foliar application using 1½ to 3 gals. of "Krenite" per acre during the 2 month period prior to fall leaf coloration. Application also provides partial control and growth suppression of other brush plants such as red alder, hawthorn, wild cherry, maple, white ash, black gum, hickory, willow, sassafras, yellow poplar, and elm. Use the highest rate on dense brush stands and on stands in which species partially controlled are predominant.

Apply either by air or ground equipment. Use ground equipment on drainage ditch banks. Before applying, calibrate equipment to determine quantity of water necessary to thoroughly and uniformly cover the plants, without drenching, in a measured area to be treated. For ground equipment, use 50 to 300 gals. of spray per acre; gallonage required depends on height, density and type of brush, and on type of equipment used. Use 10 to 40 gals. of spray per acre with aerial equipment.

Measure the proper amount of "Krenite" and use agitation to thoroughly mix into the necessary volume of water. Add a nonionic surfactant such as DuPont Surfactant WK at the rate of 1 qt. per 100 gals. spray. After "Krenite" has been thoroughly mixed in the spray tank, agitation of the spray solution is not required.

For control of only a portion of a plant, as in trimming, direct the spray to thoroughly cover only the section of the plant to be controlled.

Note: If rainfall occurs within 24 hours, effectiveness may be decreased.

NOTICE TO BUYER: Purchase of this material confers any rights under patents of countries outside the United States.

DIRECTIONS—Weed and Grass Control

Tennis Courts—Driveways—Fence Rows—Industrial Sites

"Ammate" X, in water solution or as an oil-water emulsion, is an effective contact spray for control of: Woody Perennials such as poison ivy, poison oak, and poison sumac; Perennials such as leafy spurge, bitter dock, goldenrod, perennial ragweed, milkweed, and blueweed; and Annuals such as crabgrass, broomweed, chickweed, cocklebur, jimsonweed, lambsquarters, larkspur, prickly lettuce, ragweed, and shepherdspurse.

Use "Ammate" X at the rate of 100 lbs. per 100 gals., either as water solution or as oil-water emulsion. Prepare respective spray mixture as directed under "Brush Control" for hydraulic equipment. Thoroughly wet foliage and stems of undesired vegetation. The degree of control and duration of effect will vary with weed species, rainfall, temperature, and other conditions.

DIRECTIONS—Poison Ivy Control

Selective Use in Apple and Pear Orchards

Use 60 lbs. "Ammate" X plus 4 fl. oz. Du Pont Spreader Sticker per 100 gals. water. Apply as a coarse spray to poison ivy under and between trees when ivy plants are in full leaf; wet ivy foliage thoroughly. Spray volume depends upon density and size of poison ivy plants; usually 1 g. will cover an area of 200 to 250 sq. ft. For poison ivy growing on tree trunks, spray only if bark of tree is well developed and shows no green; avoid excessive wetting of bark as injury may result. Do not allow spray or drift to contact tree foliage or fruit as injury will result.

NOTICE TO BUYER—Seller warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. This warranty does not extend to use of this product contrary to label use directions, or under abnormal use conditions, or under conditions not reasonably foreseeable to seller; buyer assumes all risk of any such use. Seller makes no other warranties, express or implied.

EXHIBIT 1b

AMMATE® X-NI

WEED & BRUSH KILLER

ACTIVE INGREDIENT: 95%
Ammonium Sulfamate

INERT INGREDIENTS 5%
USDA Reg. No. 352-311

Keep out of reach of children.

CAUTION! • Avoid prolonged contact of skin with strong solutions of this material.
• In case of contact, wash off with plenty of water.

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GENERAL INFORMATION

Du Pont "Ammate" X-NI Weed and Brush Killer is designed especially for controlling undesirable vegetation growing on land adjacent to and surrounding domestic water supply reservoirs, supply streams, lakes, and ponds. It is highly effective for killing undesirable woody plants and for use as a contact spray for control of weeds and grasses.

Temporary non-productivity of soil may be caused by heavy applications of "Ammate" X-NI; this condition usually disappears in the "over-winter" period. Some species of woody plants and perennial weeds are difficult to control, and retreatment may be necessary if regrowth occurs.

"Ammate" X-NI is water-soluble, non-volatile, and non-flammable.

IMPORTANT

"Ammate" X-NI is non-selective; do not apply to, or drain, or flush equipment on desirable plants or vegetation, as

injury or loss may result. Do not drain or flush equipment near domestic waters.

Wash sprayer thoroughly after use to remove all "Ammate" X-NI and to reduce corrosion. Equipment should be coated with an asphaltic base paint; or thoroughly wash exterior of equipment at end of each day and apply protective coating of oil each week or as often as practical. When equipment is down for week-end, wash exterior and coat with oil; for end-of-season storage, wash inside and outside and coat with oil.

Do not re-use bag. Bury when empty.

DIRECTIONS—Brush Control

"Ammate" X-NI is highly effective for killing most woody plants, including hardwood and coniferous species such as alder, ash, birch, cedar, elm, gum, hickory, maple, oak, pine, and willow. Application may be made as a foliage spray; by frill, notch or cup method; or as stump treatment.

DuPont Spreader-Sticker or 1 qt. DuPont Surfactant WK per 100 gals. of spray.

Apply any time after brush has reached the full-leaf stage if foliage begins to discolor, preferably during periods of temperatures and high humidity. Apply as a full-coverage spray to foliage, stems, limbs, and base of brush; thorough coverage is essential for best results. On tall, dense brush, it is often necessary to spray from both sides to obtain adequate coverage. Spraying away from domestic waters and away from crops planted close to right of ways will aid in preventing spray or drift into these areas; coarse sprays are less likely to drift.

Stump Treatment — On New Construction; Following Cutting Crews: Treat stumps as soon after cutting as possible. Sprinkle crystals of "Ammate" X-NI liberally on freshly cut surface, or spray stump thoroughly with solution of 7 to 10 lbs. "Ammate" X-NI in 2 gals. water; be sure to wet outer growth ring. A water-soluble wood dye may be added to spray solution to mark treated stumps. Stumps under 2 inches are best treated by crystal method.

Treatment of Undesirable Hardwood Trees — To kill hardwood species, such as blackjack oak, sweetgum, poplar, pecan, maple, ash, red oak, post oak and hickory, treat at any time of year as follows:

Frill Method — At convenient chopping height, make a continuous cut completely around tree with downward axe strokes, cutting well into sapwood. Saturate frilled area with solution of 7 to 10 lbs. "Ammate" X-NI in 2 gals. water. Water-soluble wood dye may be added to the solution to identify treated trees.

Notch or Cup Method — Make a notch or cup by two upward axe cuts, one above the other, prying out chip.

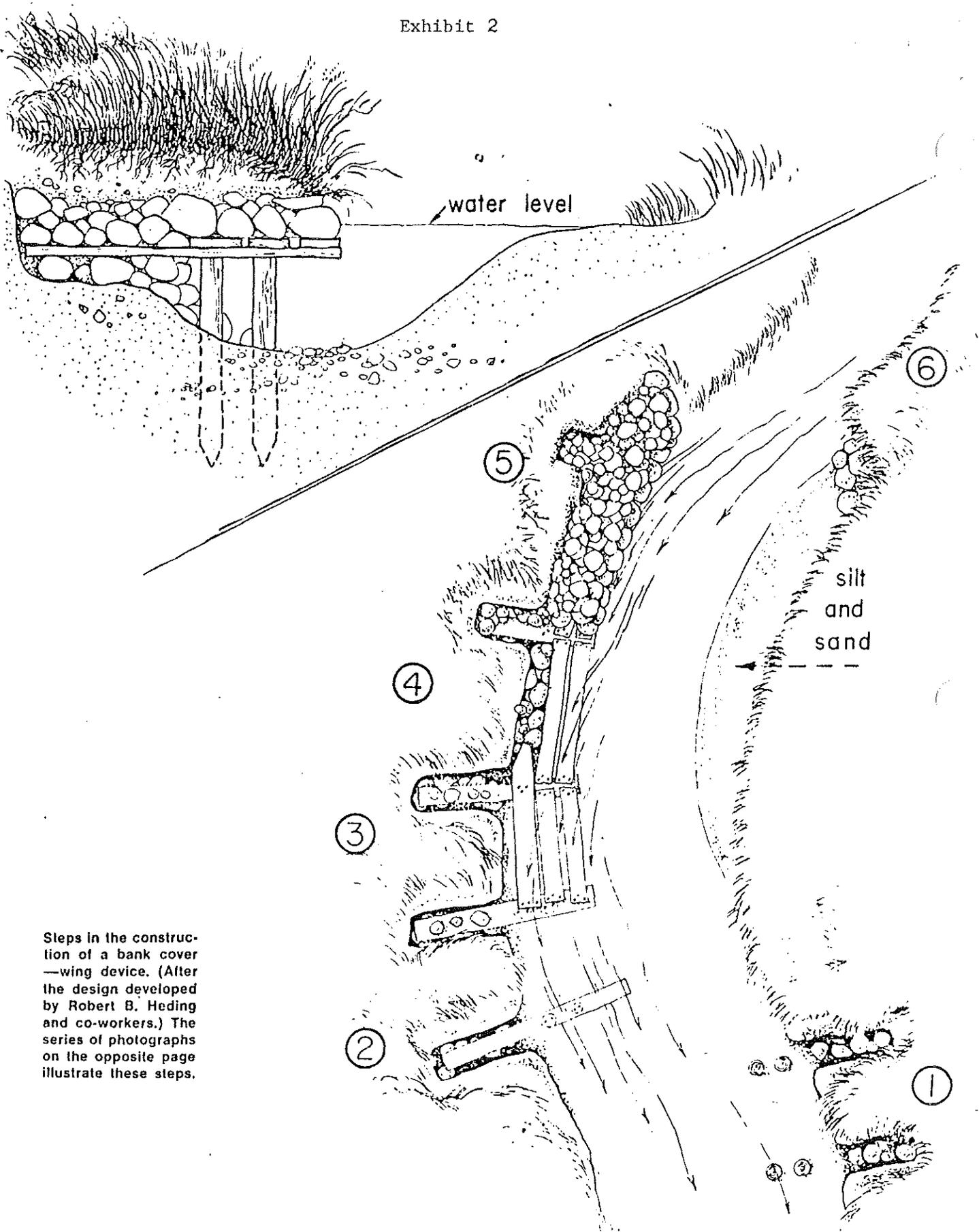
Notches should be at base of tree as near ground as possible and on main roots, if any show. Cut two notches on trees 3 to 6 inches in diameter; space notches every 4 to 6 inches around circumference of larger trees. Apply ½ oz. "Ammate" X-NI in each notch. For trees under 3 inches, cut close to ground and use stump treatment.

DIRECTIONS — Weed and Grass Control

"Ammate" X-NI, in water solution, is an effective contact spray for control of: **Woody Perennials** such as poison ivy, poison oak, and poison sumac; **Perennials** such as leafy spurge, bitter dock, goldenrod, perennial ragweed, milkweed, and blueweed; and **Annuals** such as crabgrass, broomweed, chickweed, cocklebur, jimsonweed, lambs-quarters, larkspur, prickly lettuce, ragweed and shepherdspurse.

Use "Ammate" X-NI at the rate of 100 lbs. per 100 gals. of water; add 4 to 8 fl. ozs. DuPont Spreader-Sticker or 1 qt. DuPont Surfactant WK per 100 gals. of spray to improve wetting of foliage. Use hydraulic equipment; thoroughly wet foliage and stems of undesired vegetation. The degree of control and duration of effect will vary with weed species, rainfall, temperature, and other conditions.

NOTICE TO BUYER — Seller warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. This warranty does not extend to use of this product contrary to label use directions, or under abnormal use conditions, or under conditions not reasonably foreseeable to seller; buyer assumes all risk of any such use. Seller makes no other warranties, express or implied.



Steps in the construction of a bank cover—wing device. (After the design developed by Robert B. Heding and co-workers.) The series of photographs on the opposite page illustrate these steps.

Exhibit 3

Segment of stream channel showing typical brush bundle positioning on silt flats and secondary channels.

