

LEGISLATIVE REFERENCE LIBRARY
F612.K47 M36 1985

- A Management plan for Kettle River



3 0307 00052 0968

Portions of
Sections 10, 15, 22, and 23
Township 41 North, Range 20 West
Barry Township
Sandstone Quadrangle - N18D
Pine County
Minnesota

F
612
.K47
M36

1 copy
851120

A MANAGEMENT PLAN
FOR
KETTLE RIVER SCIENTIFIC AND NATURAL AREA

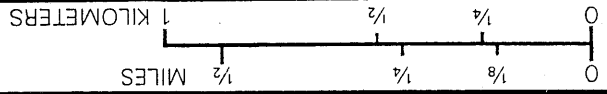
Portions of
Sections 10, 15, 22, and 23
Township 41 North, Range 20 West
Barry Township
Sandstone Quadrangle - N18D
Pine County
Minnesota

Prepared by
The Scientific and Natural Area Program
Division of Fish and Wildlife
Minnesota Department of Natural Resources
June 1985

F 612
K47
M36
1985

SITE

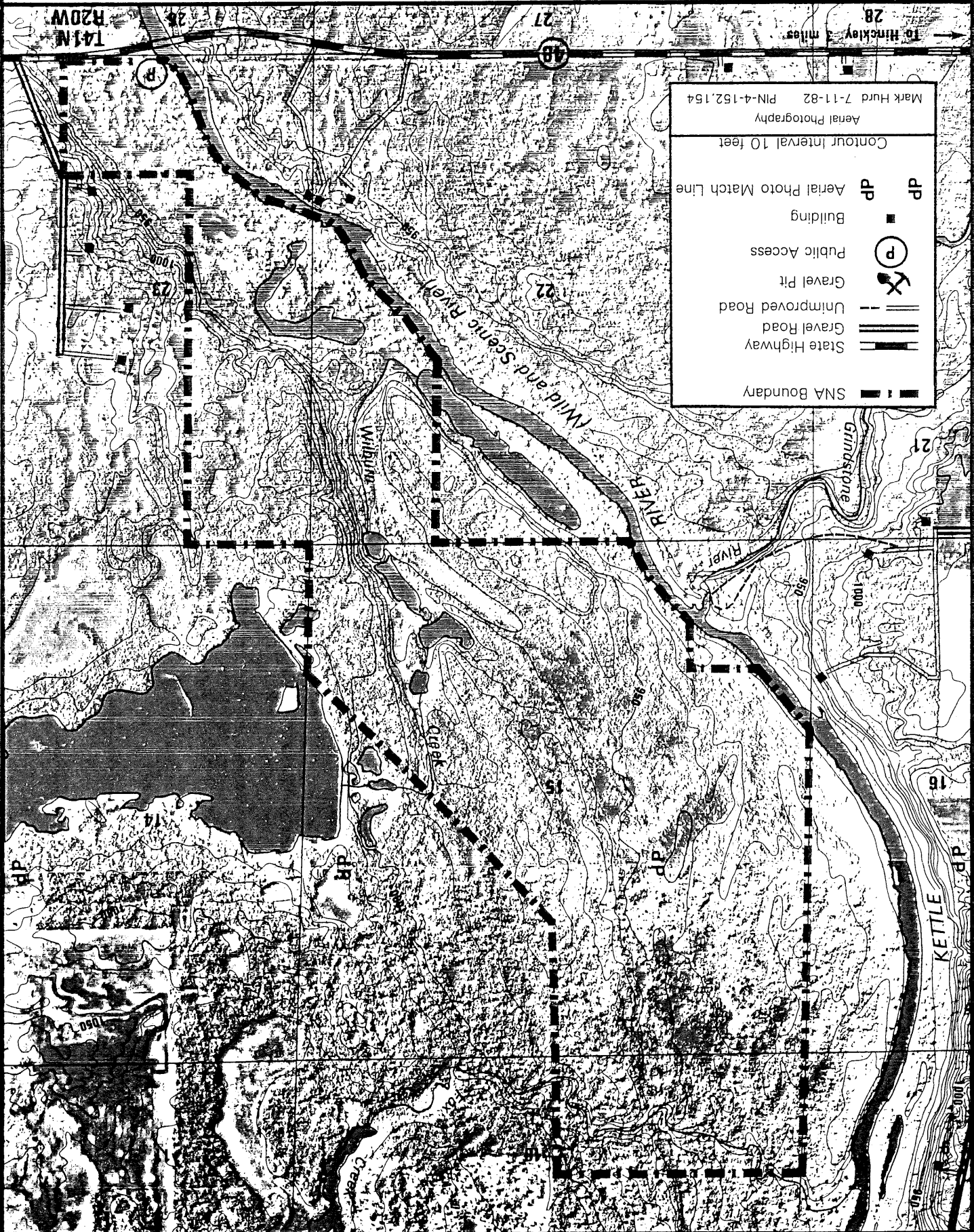
KETTLE RIVER SNA

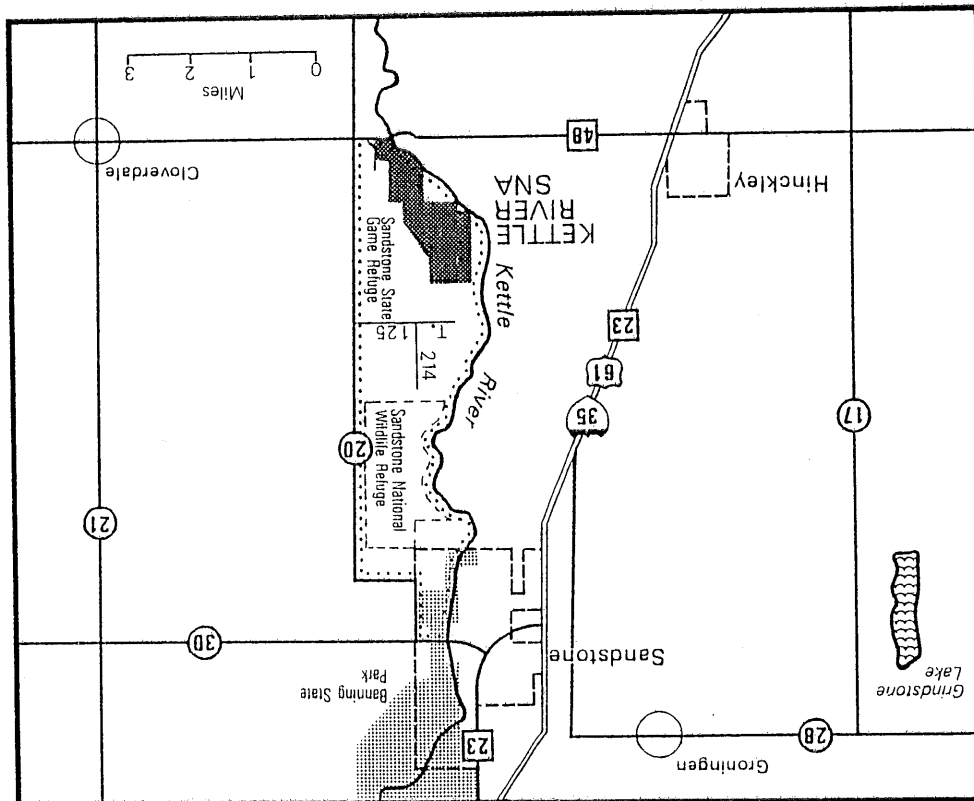


Mark Hurd 7-11-82 PIN-4-152,154
Aerial Photography
Contour Interval 10 feet

dp	dp
■	Public Access
⊙	Gravel Pit
⌘	Unimproved Road
≡	Gravel Road
≡≡	State Highway
▬▬▬	SNA Boundary

Aerial Photo Match Line





This SCIENTIFIC and NATURAL AREA was established to protect and perpetuate Minnesota's rare and unique natural resources for nature observation, education, and research.

Principal activities which are UNLAWFUL in the use of this area are listed below. Further information is available at Department of Natural Resources Offices.

- Collecting plants, animals, rocks, or fossils.
 - Camping, picnicking, and swimming.
 - Horses, dogs, and other pets.
 - Snowmobiles and other motorized vehicles.
 - Hunting, trapping, fishing, and boating.
- Entry into restricted areas and sanctuaries.

WALK GENTLY

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

PREFACE

Scientific and Natural Areas are established to protect and perpetuate natural features which possess exceptional scientific or educational value. Nominated areas must substantially satisfy a set of rigorously drawn criteria to qualify for designation. Scientific and Natural Areas serve many purposes. They are places for the quiet appreciation and study of nature, and serve as outdoor classrooms for teachers. They provide areas against which the effectiveness of resources management techniques employed elsewhere can be evaluated. Scientific and Natural Areas often protect some of the best, remaining occurrences of a rare species or plant community. They also serve as control areas for scientists engaged in furthering our knowledge of natural processes.

However, land control alone does not assure long term preservation of natural areas and their endangered species. Natural areas will decline in quality if they are not properly managed. Management of vegetation, control of foreign species, and management of visitors are important concerns.

Comprehensive planning is the key to effective and successful management. In 1975, the Minnesota legislature passed the Outdoor Recreation Act (86A), establishing the Outdoor Recreation System. This act directed managing agencies to prepare master plans for units of the system. This document is part of a planning effort to satisfy the mandates of that act. The goal of this plan is to coordinate a strategy for stewardship that addresses biological management, obligations of ownership, and visitor management.

This plan was prepared by the Department of Natural Resources, Scientific and Natural Areas Program with the assistance of the Commissioner's Advisory Committee on Scientific and Natural Areas. It was based on a resource inventory prepared by the Scientific and Natural Areas Program and the Natural Heritage Program. Funding was provided through the Legislative Commission on Minnesota Resources.

SUMMARY OF MANAGEMENT PROGRAMS

General Management Considerations

Approximately 40% of the Kettle River SNA lies within the Kettle Wild and Scenic River land use district. In all cases, actions proposed in this plan, SNA rules and regulations, and department policy for SNAs are at least as restrictive as the rules for Wild and Scenic Rivers. This SNA plan has been coordinated and is consistent with the Kettle River Management Plan (Minnesota Rules 6105.0600 - 6105.0760).

The Kettle River SNA plan has also been coordinated with DNR Forestry's Moose Lake Area Unit Plan. The Land Management and Fire Management sections of the unit plan directly involve the SNA. Recommendations in the unit plan are consistent with SNA protection and management.

The DNR Area Wildlife Manager in Hinckley is the closest DNR staff member to the site. The wildlife office also maintains the public water access site on the southern boundary of the SNA. Enforcement is the responsibility of DNR staff. The SNA lies entirely within the Sandstone State Game Refuge.

Structures and Facilities

The Kettle River provides the best access corridor into the SNA. Information about the SNA will be provided to river users at water access sites in Sandstone and at CSAH 48. There is no dry upland access into the SNA at present. Actions relating to this problem are addressed under Section 4, Adjacent Lands. The boundaries of the SNA will be surveyed and posted. An entrance sign, interpretive sign, and rules and regulations will be posted at the public water access site on CSAH 48, and along the river on the northwest boundary of the SNA.

Vegetation and Animal Management

A set of permanent plots or transects will be established and maintained. Priority areas are covertypes with rare features and forest types being harvested commercially. The primary objective of community research and monitoring will be to generate and maintain data suitable for ecologically oriented successional research.

Rare species management activities include searching all potential habitat for Poa paludigena, monitoring the population, conducting a habitat analysis and investigating the hydrology of the spring system. Searches and monitoring will also be conducted on Hydrocotyle americana, Carex bromoides and Louisiana waterthrush.

Adjacent Lands

Several parcels of land are recommended to be included in the SNA project boundary to improve management, enforcement or protect natural features. In certain cases these are small corners of land separated by the

river from the major part of the ownership lying west of the river. Others include slightly larger public and private parcels. Land use activities which would result in erosion or increased runoff could threaten high priority resources along the eastern boundary of the SNA. Protection measures are recommended for soils with slopes of 6-24%. In total, approximately 60 acres of adjacent public land and 5 acres of private land are recommended to be included in the SNA project boundary. Protection measures are necessary on an additional 60 acres of private land. Enforcement of existing ordinances, voluntary conservation practices, land exchange and gifts will be the primary vehicles to accomplish these actions.

TABLE OF CONTENTS

	<u>Page</u>
PREFACE	i
SUMMARY OF MANAGEMENT PROGRAMS	ii
OVERVIEW	1
A. Introduction	1
B. Preservation Value	1
C. ORA Classification	3
D. Management Philosophy	3
1. GENERAL MANAGEMENT CONSIDERATIONS	4
A. The Kettle Wild and Scenic River	4
B. Canoe and Boating Route Program	4
C. Moose Lake Area Unit Plan - DNR Forestry	4
D. Management Resources	5
E. Surveillance and Enforcement	5
2. STRUCTURES AND FACILITIES	7
A. Access	7
B. Signing	7
3. VEGETATION AND ANIMAL MANAGEMENT	10
A. Plant Communities	10
B. Rare Species Management	10
4. ADJACENT LANDS	15
A. Parcel A	16
B. Parcel B	16
C. Parcel C	17
D. Parcel D	17
E. Parcel E	18
F. Parcel F	18
G. Parcel G	19
H. Parcel H	20
5. EFFECT OF MANAGEMENT ON SIGNIFICANT RESOURCES	22
6. MANAGEMENT COSTS AND IMPLEMENTATION	23

OVERVIEW

A. Description

The Kettle River Scientific and Natural Area (SNA) is a 761 acre unit in west-central Pine County, approximately eight miles east of Hinckley, Minnesota. It is bounded on the west by the Kettle River, a state designated Wild and Scenic River, and on the south by State Highway 48. The SNA encompasses a wide variety of landforms and habitats. Floodplain forest covers the southern third of the SNA. North of this is a composite of well drained uplands, rocky terraces, and peaty lowlands. Forest types in these areas include aspen-birch, oak savanna, mixed northern wetland forests, willow and alder thickets, and sedge meadows.

Agriculture and forestry are the primary land uses surrounding the SNA. Some low-density residential development occurs along the southeastern boundary. Development along the river is restricted by the Wild and Scenic River designation. Over the last 10 years population growth trends for Pine County have been above the state average and this trend is expected to continue.

Most of the acreage within the Kettle River SNA has been donated to the SNA program by Dr. R. M. Christianson, of Hinckley, Minnesota.

B. Preservation Value

Kettle River SNA is located within the Mille Lacs Landscape Region. Several highly significant natural features have been identified on the SNA by the DNR's Natural Heritage Program. The Natural Heritage Program maintains the most comprehensive data base on Minnesota's rare plant and animal species and biotic communities. These biological entities (species and communities) are known as elements and are ranked according to their endangerment in the state. The Kettle River SNA contains three rare plant species, one rare animal species, a significant geologic feature, and a colonial nest site, and a varied range of plant community types.

Rare Plants

There are three rare plant species which occur in the Kettle River SNA. Two are protected under the Minnesota Endangered Species Act (M.S. 97.488), and one is on a "watch" list.

1. Poa paludigena (bog bluegrass) - state endangered

This species is currently under review by the U.S. Department of the Interior for listing as a federally threatened species under the Endangered Species Act of 1973. A population of several hundred plants was discovered in the SNA. This is the only known record of this species from Minnesota.

2. Hydrocotyle americana (water pennywort) - special concern

Water pennywort is a plant of the midwest and northeastern United States. In Minnesota it has only been collected five times. Four of the

five collections were from the St. Croix drainage basin. The Kettle River site is the only recently verified occurrence for this species in the state. This species was collected in a silver maple floodplain forest type. It is a fairly inconspicuous plant and it is not known how extensively it occurs in the SNA.

3. Carex bromoides (a species of sedge) - DNR "watch" species

The status of this species in Minnesota is not well known. The sedge occurs frequently in the low wet woods along the Kettle River in the SNA and has been found in a few other locations along the river in Pine and Carlton Counties. These occurrences represent the northwestern most stations for this species in North America.

Rare Animal Species

Louisiana Waterthrush (Serriurus motacilla) - special concern

The Louisiana waterthrush is most commonly found along wooded ravines with swiftly flowing streams. The range and abundance of this species in North America has shrunk dramatically in the last 50 years. The breeding record at Kettle River SNA is one of less than 10 known nesting sites in Minnesota. In addition, both the Louisiana waterthrush and Northern waterthrush co-occur in the same location on the SNA. This is a rare phenomena and provides a valuable research opportunity.

Plant Communities

The Kettle River SNA displays a rich mix of landforms and habitats. They range from a broad floodplain forest with oxbow lakes, wetlands, and natural levees; to bedrock terraces; to glacial till covered forested uplands. Among the more significant plant community types are the red pine stands and the floodplain forest. In addition, the sandstone bedrock terraces provide a diversity of habitats with an extraordinary array of biota. Very few non-native species occur in the SNA.

Geologic Feature

The ravine along the lower reaches of Wilburn Creek contains the best surficial representation of the Douglas Fault in Minnesota. The Douglas Fault is a major structure associated with the Midcontinent Rift system. The Chengwatana basalt is exposed on the southeastern side of this ravine and on the opposite side is the Hinckley Sandstone.

Colonial Nest Site - special concern

A small great blue heron colony occurs on the South Shore of the Oxbow Lake in Section 22.

C. ORA Classification

The Kettle River SNA fully meets the designation criteria for a scientific and natural area as outlined in the Outdoor Recreation Act of 1975 (86A.05 Subd. 5). The preserve includes: (1) natural features which significantly illustrate an undisturbed plant community; (2) habitat supporting the following rare, endangered or restricted species: Poa paludigena, Hydrocotyle americana, Carex broimoides, and Louisiana waterthrush; (3) natural formations which significantly illustrate geological processes; (4) a seasonal haven for concentrations of birds; and (5) an area large enough to permit research and educational functions and to preserve the inherent natural values of the area.

D. Management Philosophy

The most important attributes of the Kettle River SNA are (1) its large size providing undisturbed conditions along an ecological continuum from upland to river, and (2) its rare species and unique habitats. The primary research goal is to investigate natural community and species population dynamics. The major management problems are to provide clear, enforceable boundaries, and protect high priority resources from impacts arising from adjacent land use activities.

To preserve the priority natural features of the SNA will require conservative, largely research-directed management policy.

Section 1

GENERAL MANAGEMENT CONSIDERATIONS

A. The Kettle Wild and Scenic River

In 1975 the Kettle River, from CSAH #12 in Carlton County to the St. Croix River, was designated a Wild and Scenic River pursuant to the Minnesota Wild and Scenic Rivers Act (MN St. Ch. 104.31-104.40). The segment from CSAH #12 to the Sandstone Dam in Pine County is designated as a Scenic River; and the portion from the Sandstone Dam to the St. Croix River is designated as a Wild River.

The standards and criteria for state and local management of the waters and shores of the Kettle River are covered in MN St. Ch. 104.31-104.40. These rules establish the manner in which public recreational use of the river and its shores will be provided for and controlled, and the manner in which public and private development of the shorelands may take place.

Approximately 40% of the SNA lies within the Wild River land use district. In all cases SNA rules and regulations (NR 300-303) and Department policy on SNAs are at least as restrictive as the rules for Wild Rivers. The objectives and actions proposed in this plan have been coordinated and are consistent with Wild River designation and the Kettle River Management Plan. No recreational facilities were proposed in the Kettle River Management Plan along the stretch of river paralleling the SNA. Several opportunities exist upstream in Sections 9 and 3, T. 41, R. 20 to accommodate any future facilities if needed.

B. Canoe and Boating Route Program

In addition to Wild and Scenic River classification, the Kettle River is a state designated Canoe and Boating Route, established pursuant to M.S. 85.32. This river is the most heavily used of any of the 19 rivers in this system. The Canoe and Boating Route Program, in Trails and Waterways Unit, is responsible for maintaining canoeing conditions, providing information to the public and marking hazards and other obstacles.

C. Moose Lake Area Unit Plan - DNR Forestry

The Moose Lake Area is one of 20 Division of Forestry administrative areas. It includes all of Pine and Kanabec Counties and the southern two tiers of townships in Carlton County. A draft plan for the Moose Lake Area has been prepared. A major objective of that plan is to coordinate the Division of Forestry's activities with those of other DNR administrative units, other agencies, local governments and the private sector. The plan for the Kettle River SNA has been coordinated and is consistent with the Moose Lake Area Unit Plan.

Two sections of the Moose Lake Unit Plan directly involve the Kettle River SNA: the Land Management Plan and the Fire Plan.

Land Management Plan - Two tracts of Forestry administered land lie adjacent to the SNA: compartments 110 and 112. Proposed actions in the SNA plan relating to these parcels are 4.1 and 4.5 (pages 16 and 18, resp.).

Fire Management Plan - The SNA will be treated as a special fire management area in the Moose Lake Fire Plan. Forestry will take immediate action on all wildfires in the SNA using fire crews or aerial support. Mechanical firebreaks (plowlines, etc.) and equipment will be permitted only along the SNA boundaries. Dispatchers will alert fire crews and personnel that is a sensitive area. Maps and other information are provided in the Fire Plan.

D. Management Resources

The amount of management that takes place in an SNA is dependent not only on the need, but also on the availability of management resources. Some of these resources are described below.

1. DNR offices or facilities

Kettle River SNA is approximately 75 miles from both the St. Paul based SNA staff and Region III Nongame Specialist in Brainerd. The Area Wildlife Manager and District Forestry offices are located 4 miles west of the SNA in Hinckley. St. Croix State Park offices are 15 miles east of the SNA. There is a public water access site off CSAH 48 on the SNA's southern boundary which is operated by the Trails and Waterways Unit with the assistance of area wildlife staff.

2. Proximity to University and College campuses

The University of Minnesota Twin Cities campuses and Duluth campus are all approximately 75 miles from the SNA. The U of M Forestry Center is located in Cloquet. The SNA program should be able to solicit some research attention from these and other educational and research institutions.

E. Surveillance and Enforcement

Inappropriate uses or overuse can damage natural conditions and the aesthetic appearance of natural areas. Because of the fragility of nature preserves, continued protection and maintenance requires systematic surveillance and enforcement.

Enforcement is the responsibility of DNR enforcement officers and other division staff. Additional protection can be provided by local residents and visitors who support and recognize the values and permitted uses of the SNA. People wishing to report problems or who have questions relating to the SNA should contact the DNR Area Wildlife Manager or Conservation Officer in Hinckley, the Nongame Specialist in Brainerd, SNA staff in St. Paul, or other DNR official.

The Kettle River lies entirely within the Sandstone State Game Refuge. This refuge is closed to deer and bear hunting with firearms. Hunting and trapping within the SNA is prohibited by DNR rules and regulation.

The most frequently reported violations in the SNA are hunting, snowmobiling and camping along the river. Some of these violations result from the public's unfamiliarity with SNA rules and regulations, and the unit boundaries. Boundary posting and additional signing will improve compliance (Actions 2.1 - 2.5, pages 7 and 8). Section 4 - Adjacent Lands (pg. 15) addresses boundary modifications to improve enforcement. The SNA presently receives a relatively high level of routing patrol by conservation officers. This is focused at the public access site on Hwy. 48, and by boat along the river. These are also the primary access routes into the SNA.

Action 1.1 Maintain the high level of patrol by conservation officers.

Considerations:

Meet and Confer - regularly meet and confer with the conservation officer to discuss enforcement problems and strategies.

Section 2

STRUCTURES AND FACILITIES

A. Access

The Kettle River provides the best access corridor into the SNA. There is a public water access site on the south boundary of the SNA and another 6 river miles upstream in Sandstone.

Action 2.1 Provide river users with information about the SNA at water access sites

Considerations:

Location - public water access sites at Sandstone Dam and at CSAH #48, and at the proposed Travel Interpretation Center near Sandstone.

Format - Informational sign and included in Canoe and Boating Route Maps for Kettle River produced by Trails and Waterways.

B. Signing

The objectives of signing are to identify the boundaries of the SNA and provide basic visitor information. The SNA boundaries need to be surveyed and signed. Entrance signs, rules and regulations, and informational signs should be placed at primary arrival points.

Action 2.2 Survey and post boundaries

Considerations:

River - boundary signs along river should be posted on trees to minimize loss caused by annual flooding and ice scour. Coordinate posting of river boundary with Regional Trails and Waterways Coordinator.

Action 2.3 Post 2 wood routed entrance signs

Considerations:

- Location - a. at the public water access on CSAH 48
 - b. along the river at northwestern boundary
-

Action 2.4 Post rules and regulations signs

Considerations:

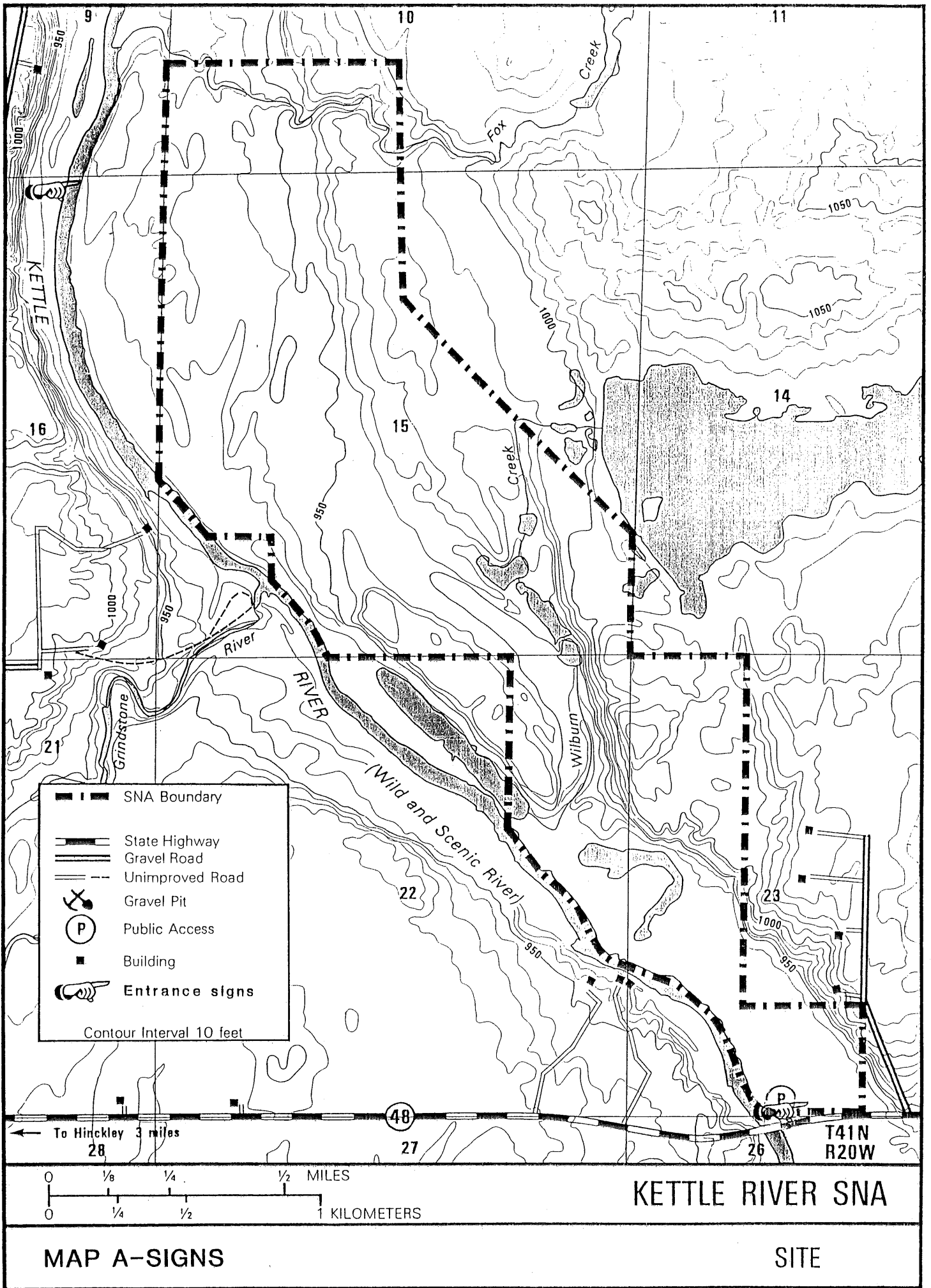
- Location - same as 2.2
-

Action 2.5 Post interpretive sign

Considerations:

- Location - same as 2.2

Map - Sign will include an accurate map of the SNA showing boundaries, general land features, and explain the significance of the area.



- SNA Boundary
 - State Highway
 - Gravel Road
 - Unimproved Road
 - Gravel Pit
 - Public Access
 - Building
 - Entrance signs
- Contour Interval 10 feet

← To Hinckley 3 miles

48

P

T41N
R20W

0 1/8 1/4 1/2 MILES
0 1/4 1/2 1 KILOMETERS

KETTLE RIVER SNA

Section 3

VEGETATION AND ANIMAL MANAGEMENT

A. Plant Communities

The Kettle River SNA contains a broad mix of plant communities. Logging and extensive settler fires from 1850 - 1930 played a major role in the patterns and composition of the present plant communities. In general, forest land productivity and quality deteriorated during that period. Tree species composition shifted towards aspen, birch and sprout hardwoods; tree stocking was reduced; growth rates declined; disease and insect related decadence increased; and forested swamplands were converted to marsh and shrub carr.

No habitat management programs are proposed that restore or recreate former presettlement plant community types in this SNA. Though fire was once an important ecological factor in this region, no specific objectives were identified for a prescribed burn program by the SNA. This is partly due to the degree of alteration that the natural communities have undergone. The general management policy will be to allow succession to proceed without intervention. The primary objective of community research and monitoring activities in this SNA will be:

- to generate and maintain data suitable for ecologically oriented successional research.

Rare species habitat studies have been addressed under "B. Rare Species".

Action 3.1 Establish and maintain a set of permanent reference plots or transects

Considerations:

Standardization - Sampling design and data collection should be standardized for similar habitat types on other SNAs. Information should be compatible with standard forestry data sets (i.e. Phase I and Phase II Inventories).

Priorities - 1st, communities with rare or unusual features; 2nd, forest types being harvested commercially in the Moose Lake Area. SNA plots could serve as reference stands for comparison with managed areas.

B. Rare Species Management

The conservation of threatened, endangered, and special concern species is a primary management objective for SNAs. Monitoring studies that contribute towards a complete understanding of the biology of rare species are the basis for conservation management. Successful management of a rare plant population implies the ability to manipulate the size and structure of that population. If monitoring is to contribute significantly to this

ability, it must yield predictive understanding of population structure and functioning.

As a minimum, censusing of those species with the highest conservation priority is necessary on Kettle River SNA. The objective would be to document numbers of individuals in a population over time. This might provide guidance for future management decisions and practices.

Major deficiencies in a censusing approach are a) one is monitoring the end result without knowing precisely how it was arrived at, and b) generally only one phenological stage is considered. Both of these difficulties may be overcome by intensive monitoring that studies autecological information on life history, phenology, population flux, survivorship, and the causes of mortality. This level of information is highly desirable but requires an intensive effort.

1. Poa paludigena (bog bluegrass) - state endangered

Several hundred plants were estimated to occur near the base of the bluff in the NW 1/4 SW 1/4, and SW 1/4 NW 1/4 of Section 23 (1983). The habitat here is characterized by peat/muck soils with springs and seeps, a rich herbaceous groundcover, and an abundance of mosses and liverworts. The overstory includes black ash (Fraxinus nigra), yellow birch (Betula lutea), basswood (Tilia americana), tamarack (Larix laricina), black spruce (Picea mariana), and elm (Ulmus americana) (See Resource Inventory: Community descriptions; Black Ash-Tamarack, pg 53-55).

There is approximately 20 acres of potential habitat for bog bluegrass. It appears to be relatively stable in an ecological sense. The groundlayer species and aerial photographs indicate that this area is rarely flooded. Not all of the potential habitat has been searched yet for Poa paludigena.

The hydrology of the springs and seeps is not known. They may be the result of local discharge from the Keweenaw basalt. It is also possible that the spring discharge is derived from local groundwater discharge from the overlying glacial drift; possibly at the contact between the drift and the basalt. It is likely that some mixing of the water in the drift and basalt occurs in this locale. Several small streams or rivulets flow into this area from poorly drained depressions above the bluff. Land use activities that would cause increased runoff or erosion from bluff slopes and adjacent uplands outside the SNA could potentially threaten this area (see Section 4, Adjacent Resources).

Action 3.2 Search all potential habitat for Poa paludigena

Considerations:

Purpose - to determine the distribution of the species within the potential habitat. This will provide the basic information necessary to design the hydrological monitoring, and community studies (Actions 3.3, 3.4, 3.5)

Timing - early June

Action 3.3 Monitor the Poa paludigena population

Considerations:

Initial scope - Establish a censusing program to indicate major changes in population numbers and which only requires a low sampling frequency.

Future scope - This population is relatively large relative to others reported for the species. This, and the fact that this is a protected site makes this population a strong candidate for intensive autecological study.

Action 3.4 Investigate the spring system hydrology

Considerations:

Purpose - To provide the basic information necessary to evaluate the relationship between the springs and Poa paludigena.

Scope - Determine the general hydrological characteristics of the spring system including: source, water chemistry parameters, and flow characteristics.

Action 3.5 Sample and describe the Poa paludigena habitat

Considerations:

Purpose - To document baseline conditions and define important habitat parameters.

Scope - Provide on-site description and measurement of habitat variables including: overstory age and structure, soil characteristics and habitat phenology.

2. Hydrocotyle americana (water pennywort) - special concern

This species was collected in a silver maple-floodplain forest in the SW corner of the NW 1/4 SW 1/4 Section 23. This location is near the boundary of the SNA. A voucher specimen was not made for this collection and it is not known how extensively this species occurs on the SNA.

Action 3.6 Search for Hydrocotyle americana

Considerations:

Purpose - To verify the occurrence of the species and determine the extent of the population.

Potential habitat - The collection was made in the silver maple-floodplain forest type which occurs predominantly in the southern end of the SNA. This habitat should be searched. In addition most of the other Minnesota collections describe the plant growing in "springy bogs". The seep habitat in NW 1/4 SW 1/4, SW 1/4 NW 1/4 Section 23, and SE 1/4 NE 1/4 Section 24 should also be searched (this is the same habitat where Poa paludigena occurs).

Action 3.7 Monitor Hydrocotyle americana

Considerations:

Scope - Establish monitoring stations or a replicable survey procedure that would permit periodic reverification of the species' status in the SNA.

3. Carex bromoides (a species of sedge) - DNR "watch" category

This species is reported to occur frequently in the low, wet alluvial woods in the SNA. It has been found at several locations along the Kettle River in Pine and Carlton Counties.

Action 3.8 Monitor Carex bromoides

Considerations: (Same as for 3.7)

4. Louisiana Waterthrush (*Seriurus motacilla*) - special concern

Nests of both Louisiana waterthrush and Northern waterthrush were discovered in 1983 along Wilbern Creek in the E 1/2 NE 1/4 Section 23. The birds were initially found around the Oxbow Lake in the W 1/2 Sec. 23, and E 1/2 Sec. 22. The co-occurrence of these two closely related waterthrushes provides a valuable research opportunity.

Action 3.9 Monitor Louisiana Waterthrush

Considerations:

Scope - Determine the presence of the species and confirm breeding status.

Frequency - Annually for 5 years and then repeat the survey every 2-3 years.

5. Heron Colony

The small colony of great blue herons in SE 1/4 NE 1/4 Section 22 will be monitored through the Nongame Program's Colonial Waterbird Inventory Program.

Section 4

ADJACENT LANDS

Lands adjacent to the Kettle River SNA may be important to the protection and management of the SNA if:

1. Its vegetation is contiguous and of a quality similar to that being protected on the SNA.
2. It contains significant natural features.
3. Land use activities would threaten important natural features protected in the SNA.
4. It affects SNA management capabilities.
5. It affects enforcement capabilities.

The Kettle River is a natural, easily recognized and enforceable boundary on the west. It forms the boundary of an ecological continuum from river, to floodplain, to bedrock terraces, to till covered uplands. The river is also a primary access corridor into the SNA since upland access is difficult.

Along the river segment which parallels the SNA, 40% of the shoreline, in 3 separate segments, is included in the SNA. If current negotiations for a private parcel in Section 23 are successful, 58% of the shoreline would be part of the SNA. Total public ownership along this river segment (SNA, trust fund land, township land) is close to 83%. In addition, half of the remaining private ownership is under scenic easement to the DNR.

CSAH 48 makes an obvious boundary on the south end of the SNA. Fox Creek provides a natural landmark near the north end of the unit. On the east there are no major natural boundaries. Here, the primary protection concern is protecting the rare plant habitat at the base of the bluffs from sedimentation and erosion of the bluff slopes and adjacent uplands.

In the following section, each surrounding land parcel with important protection or management features is discussed. In certain cases these are small corners of land separated by the river from the major part of that property west of the river. Other slightly larger public and private parcels along the river and eastern boundary contain important natural features or are important for protecting resources within the SNA, or to provide clear, enforceable boundaries. Where an action recommends acquiring a property interest in a parcel, land exchange will be pursued as the first alternative. Table 1 summarizes and prioritizes the actions recommended for each parcel.

PARCEL A -- School Trust Fund land (E 1/2 NE 1/4, Sec. 16) - 55 acres

Resources: The vegetation and bed rock terraces in that portion of Parcel A east of the river are contiguous and part of the same feature being protected in the SNA. The forested cover types include 48% aspen, 16% silver maple-floodplain, 25% black ash-basswood-elm, and 11% lowland shrubs.

Status: The Division of Forestry currently administers this parcel for the school trust. The Moose Lake Forest Unit Plan (review draft - Land Management Plan) recommends transferring administrative control or exchanging this parcel (compartment 112) with SNA or Trails and Waterways.

SNA Considerations: Designation of the trust fund land east of the river (55 acres of the total 80 acres) would complement protection and management efforts on the SNA. It would provide additional rare species habitat (i.e. Hydrocotyle Americana and Carex bromoides) and the river is an easily recognized and manageable boundary. The trust land west of the river (25 acres) is not needed for the SNA and could be used in exchange for Parcel B (retaining a scenic easement), or transferred to Trails and Waterways.

Action 4.1 Include Parcel A in the SNA project boundary

Considerations:

Compensating the Trust - In order to designate this tract, the trust must be directly compensated, or the trust dedication must be transferred to other lands.

PARCEL B -- Part of NE 1/4 SE 1/4, Sec. 16 east of river - < 5 acres

Resources: This small tract contains silver maple-floodplain and black ash-basswood-elm cover types. It is contiguous with similar habitat within the SNA. It is bordered by SNA on the east and Parcel A on the north. The river forms the west boundary.

Status: Private ownership. This parcel is a small corner of a private 40 acre tract lying primarily west of the river. The entire 40 acres is within the land use district for the Kettle Wild and Scenic River.

SNA Considerations: Visitors to the SNA commonly walk along the natural levee bordering the river. In doing so they may trespass across this small private parcel. Parcel B interrupts an otherwise continuous public ownership of 2.5 miles of shoreline from Section 16 to CSAH 48.

Action 4.2 Include Parcel B in SNA project boundary

Considerations:

Alternatives - 1) Use exchange as first option, or 2) try to purchase Parcel B.

PARCEL C -- Part of SW 1/4 SW 1/4, Sec. 16. East of river < 5 acres

Resources: This small tract contains a silver maple floodplain forest type that is contiguous with similar habitat being protected on the SNA.

Status: This parcel is part of a 40 acre tract owned by Barry Township and used for park purposes. The northeast corner of the 40 acres is separated from the rest by the river. The entire 40 acres is within the land use district for the Kettle Wild and Scenic River.

SNA Considerations: Current Barry Township ownership and use of Parcel C is compatible with the SNA. However, to assure permanent protection and provide a continuous SNA boundary along the river, it would be beneficial to include the township land east of the river in the SNA.

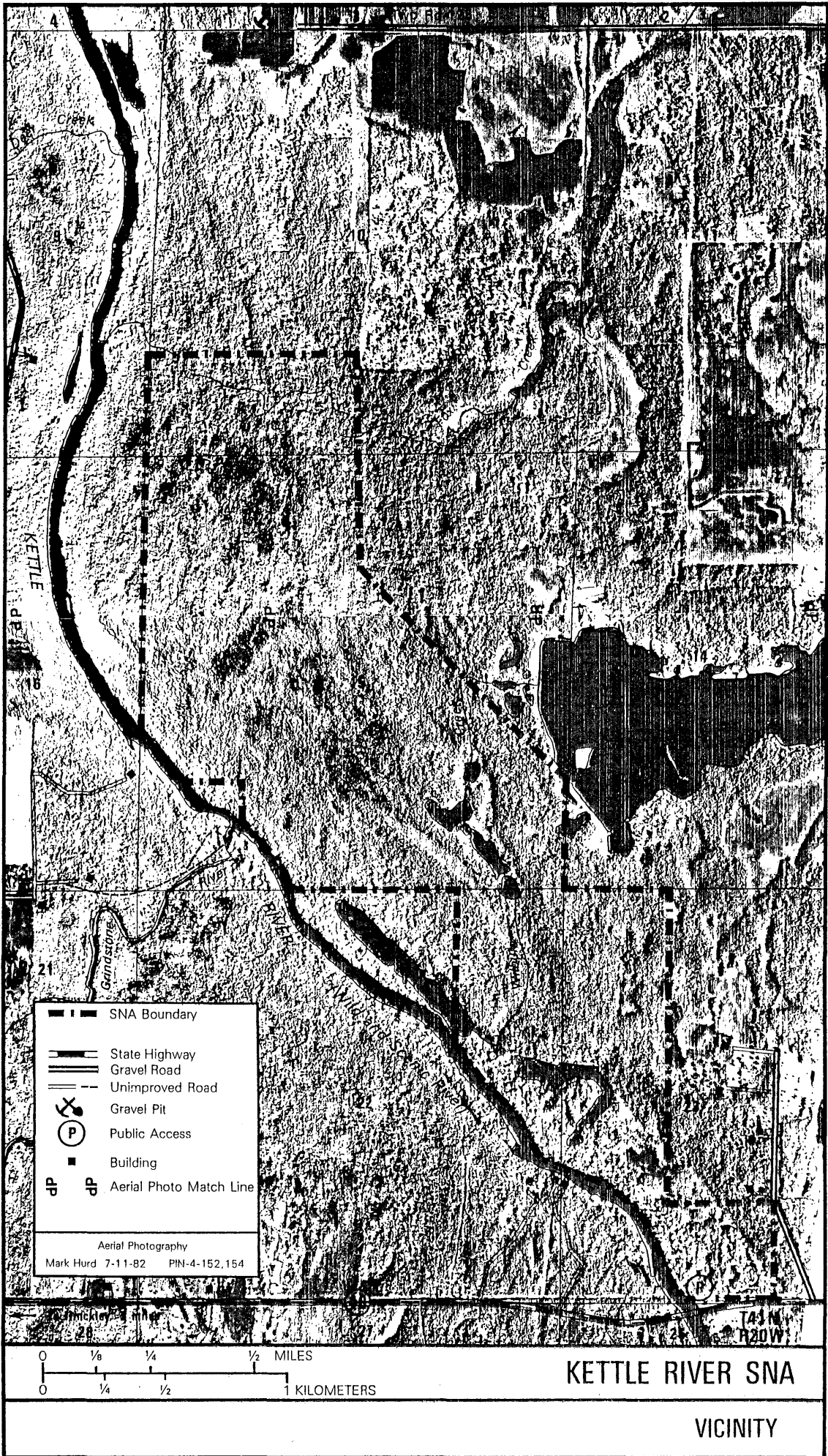
Action 4.3 Include Parcel C in SNA project boundary









Considerations:

Designation - The DNR requires a property interest to designate land as an SNA. Some alternatives for designating Parcel C include: exchange state owned Tract c1 for Parcel C, longterm lease to DNR, or DNR purchase (either fee title or easement).

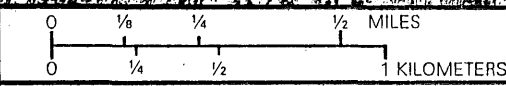
PARCEL D -- Part of SE 1/4 SE 1/4, Sec. 9, east of river 25 acres

Resources: This tract includes aspen, silver maple-floodplain, and black ash-basswood-elm cover types. It is contiguous with similar vegetation types within the SNA on the east and trust land on the south.



-  SNA Boundary
-  State Highway
-  Gravel Road
-  Unimproved Road
-  Gravel Pit
-  Public Access
-  Building
-  Aerial Photo Match Line

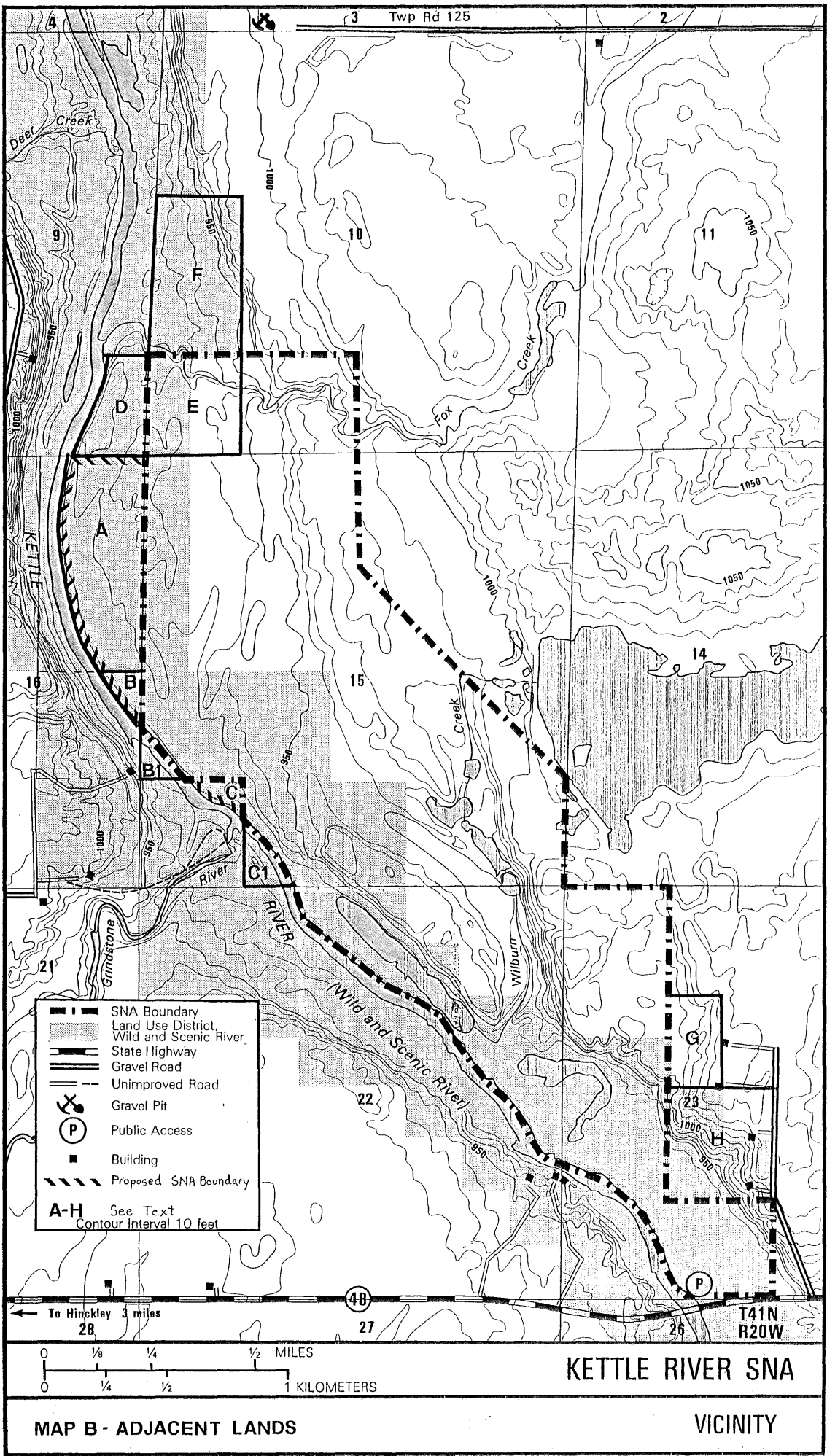
Aerial Photography
 Mark Hurd 7-11-82 PIN-4-152,154



KETTLE RIVER SNA

VICINITY

T43N
 R20W



- SNA Boundary
- Land Use District, Wild and Scenic River
- State Highway
- Gravel Road
- Unimproved Road
- Gravel Pit
- Public Access
- Building
- Proposed SNA Boundary
- A-H** See Text
- Contour Interval 10 feet

← To Hinckley 3 miles

0 1/4 1/4 1/2 MILES

0 1/4 1/2 1 KILOMETERS

KETTLE RIVER SNA

MAP B - ADJACENT LANDS

VICINITY

Status: Private ownership. The state owns a scenic easement on approximately 12 acres of Parcel D bordering the river. The entire tract is within the land use district for the Kettle Wild and Scenic River. A cabin is located near the river.

SNA Considerations: Owner intends to continue using cabin and surrounding property. Scenic easement and Wild River land use restrictions currently provide an adequate level of protection.

PARCEL E -- SW 1/4 SW 1/4, Sec. 10, 40 acres

Resources: This tract includes aspen, lowland shrub, and red pine covertypes. Fox Creek flows roughly E/W through the north 1/2 of this tract.

Status: Leased to DNR. Parcel E is privately owned, but leased to the DNR as part of the SNA. All of the land in the SNA was originally leased. Parcel E is the only remaining tract which has not yet been conveyed to SNA. The west 20 acres of this parcel is within the Wild and Scenic River land use district.

SNA Considerations: Parcel E has already been designated as part of the SNA. The north boundary is contiguous with trust fund land (Parcel F). Fox Creek provides a good landmark near the SNA's northern boundary and may provide habitat for Louisiana waterthrush.

Action 4.4 Retain Parcel E in SNA.

Considerations:

Lease - continue leasing Parcel E pending conveyance.

PARCEL F -- School Trust Fund Land; NW 1/4 SW 1/4, SW 1/4 NW 1/4

Resources: The eastern portion of this tract lies on upland, till soils and is predominantly aspen. The western part lies below the escarpment and is within the floodplain. It is chiefly a black ash-basswood-elm coertype. Parcel F has relatively low potential for forestry management and has no access. A deer yard is located in the tract.

Status: The Division of Forestry administers this parcel for the school trust. The Moose Lake Forest Unit Plan (Land Management Plan - compartment 112) recommends consolidating Parcel F with either the Kettle River SNA or the Wild and Scenic River. The entire parcel is within the wild and scenic river land use district.

SNA Considerations: At present there is insufficient resource information to evaluate Parcel F for SNA status. Field survey work is necessary to identify the occurrence of any rare species, determine the quality of the plant communities, and identify any other important features that would contribute significantly to the management and/or protection of the SNA.

Action 4.5 Survey Parcel F for significant natural features

Considerations:

Features - Including, but not limited to, a survey for those elements and important habitats found in the SNA.

Parcel G -- W 1/2 SE 1/4 NE 1/4, Sec. 23, 20 acres

Resources: A steep bluff oriented NW to SE, from the north edge of Section 22 to CSAH 48, cuts across Parcel G. At the base of this bluff is a spring/seep area which provides habitat for the state endangered Poa paludigena and Hydrocotyle americana. The soils of the bluff and adjacent uplands with slopes 6-24% are very susceptible to erosion.

Status: Private ownership, several parcels. None are within the Wild and Scenic River land use district.

Relationship to SNA: Changes in land use and/or vegetative cover along the bluff and adjacent uplands could increase runoff, erosion, and sediment transport into the SNA. This would threaten the rare species habitat along the base of the bluff.

Action 4.6 Protect soils with 6-24% slopes in Parcel G

Considerations:

Protection Alternatives:

- a) Acquire a property interest in 6-24% slopes on Parcel G that would prohibit clearing, grazing, development and other activities. This interest could be full fee title ownership, easement or lease.

- b) Contact landowners and obtain a voluntary agreement to protect slopes 6-24%.

PARCEL H -- Parts of NE 1/4 SW 1/4, Sec. 23 - 30 acres

Resources: Same as Parcel G.

Status: Private ownership, several owners. The NW 1/4 NE 1/4 SW 1/4 and the S 1/2 NE 1/4 SW 1/4 is within the Wild and Scenic River Land use district and controlled by county zoning ordinances.

Relationship to the SNA: Same as Parcel G. In addition, part of the SW 1/4 NE 1/4 SW 1/4 also extends out into the floodplain. This restricts access from the south end of the SNA, especially during flood periods.

Action 4.7 Protect soils with 6-24% slopes in Parcel H

Considerations:

Existing Protection - Land use restrictions under the Wild and Scenic River ordinances prohibit clearcutting anywhere in the land use district where soil, slope or other watershed conditions are fragile and subject to injury. In addition, set back distances for roads and structures in the wild river land use district is 40' from the bluff-line (corresponds roughly with the C soil type). These ordinances should be stringently enforced in Parcel H.

Additional Protection Alternatives - In the event that existing protection is inadequate, additional protection alternatives described under Parcel G should be pursued. These would provide greater protection than the existing ordinances. A property interest could be acquired by either the SNA or Wild and Scenic Rivers Program.

Table 1. Adjacent Lands

Parcel	Size (ac.)	Ownership	Recommended Action		SNA Considerations				Action Priority				Comments
			Include in Project Boundaries	Protection Measures	Natural Features	Management/ Enforcement	Land Use Impacts	Access	high 1	2	3	low 4	
A	55	DNR For.	X		X	X						X	
B	< 5	Private	X		X	X						X	Exchange for adjacent State land.
C	< 5	Twp.	X		X	X						X	Exchange for adjacent State land.
D	-	Private	-	-									No proposed action
E	40	DNR Leased	X		X	X		X					Negotiate for fee title ownership
F	80	DNR For.	-	-									Needs inventory
G	≈ 20	Private		X	X			X					
H	≈ 30	Private		X							X		

Section 5

EFFECTS OF MANAGEMENT ON SIGNIFICANT RESOURCES

A. Poa paludigena (bog bluegrass)

No habitat or population manipulation is proposed. Survey and monitoring activities will provide a sound basis for determining trends in the population (Actions 3.2, 3.3). Habitat and hydrology studies (Actions 3.4, 3.5) will provide the information for assessing population trends and identifying management needs. Actions 4.6 and 4.7 will assure that the habitat for bog bluegrass is protected from land use activities outside the SNA.

B. Hydrocotyle americana (water pennywort)

No habitat or population manipulation is proposed. Survey and monitoring activities (Actions 3.6, 3.7) will establish and track the protection status of this species within the SNA.

C. Cares bromoides (a species of sedge)

No habitat or population manipulation is proposed. Monitoring activities (Action 3.7) will permit periodic reverification of this species' status in the SNA.

D. Louisiana Waterthrush (*Seriurus motacilla*)

Monitoring activities proposed in this plan (Action 3.9) will establish the breeding status of this species in the SNA and provide periodic reverification of that status. Protection measures on lands adjacent the eastern boundary (Action 4.6, 4.7) will provide additional protection for the waterthrush. Operation of the dam upstream on Wilbern Creek is not anticipated to directly impact this species or its habitat.

E. Douglas Fault

No alteration of this partial exposure will result from actions recommended in this plan.

Section 6

MANAGEMENT COSTS AND IMPLEMENTATION

Actions recommended in this plan have been separated into two categories: (1) administrative and (2) operational. The costs of administrative actions are difficult to itemize because they are included in an SNA staff member's salary.

Operational actions are on-site activities. These often have both capital and labor costs. Capital costs have been listed. Estimates of labor needs are provided where possible.

Administrative and operational actions are often funded out of different budget sources. This makes it difficult to present an implementation schedule that equates both types of actions. To accommodate budget planning, separate implementation schedules are outlined for each category.

It is important, however, to have a mechanism that does allow comparison between all actions in this plan and between actions from different plans. The system outlined below distinguishes between (a) actions needed to improve or maintain the integrity of a site's most important features called elements, (b) legal or moral obligations of ownership or land management by the Department, and (c) all other actions important for reasons other than above.

Group I Actions: Actions that prevent or reduce the vulnerability of the element to destruction or serious degradation. That is, in the absence of these actions the preservation of the element is threatened on this site. Research, ecological survey and monitoring may be included here if, without such information, it is not known what actions are necessary to maintain the element.

Group II Actions: Actions necessary because they constitute an obligation of land management/ownership by the Department. These may be legal obligations, departmental, or SNA program standard requirements.

Group III Actions: Actions taken for all other reasons. For example, actions taken to provide for public use, acquire supplementary resource information, administrative coordination, etc.

The following chart illustrates the scheduling of actions described in the text, and the immediate and on-going capital costs of implementation. The scope of this plan covers a ten year period. The plan should be reviewed every five years to evaluate progress, reassess priorities, and refine management techniques. Actions listed under the category "Begin Immediately" need immediate attention or are a continuation of an existing program. "Phase I" is the first five year period. "Phase II" is the second five year period. Implementation of many actions depend on availability of materials, equipment and labor. An action may be initiated sooner than scheduled if circumstances so dictate and earlier schedule actions will not suffer as a result.

ADMINISTRATIVE ACTIONS	Group	Begin Immediately	Phase I	Phase II	Comments*
Action 4.4 Retain Parcel E in SNA	I				SNA
Action 4.6 Protect Soils in Parcel G	I		X		SNA
Action 4.7 Protect soils in Parcel H	I		X		SNA
Action 1.1 Maintain high level of patrol	II	X			SNA
Action 2.1 Provide river user information	III		X		EF
Action 4.1 Include Parcel A in SNA project	III			X	SNA/TW
Action 4.2 Include Parcel B in SNA project	III		X		SNA
Action 4.3 Include Parcel C in SNA project	III		X		SNA
Action 4.5 Survey Parcel F	III			X	NHP

OPERATIONAL ACTIONS

Action 3.1 Establish permanent plots or transects	I			1300	SNA Labor = 80 hours, Lodging = 10 days
Action 3.2 Search for <u>Poa paludigena</u>	I		520		NHP Labor = 32 hours, Lodging = 4 days
Action 3.3 Monitor <u>Poa paludigena</u>	I		1050		NHP Low intensity: Labor = 80 hours, Lodging = 5 days
Action 3.4 Study spring/seep hydrology	I		2100		SNA Labor = 160 hours, Lodging = 10 days
Action 3.5 <u>Poa paludigena</u> habitat study	I			2350	SNA Labor = 160 hours, Lodging = 15 days
Action 3.6 Search for <u>Hydrocotyle americana</u>	I		520		NHP Laborer = 32 hours, Lodging = 4 days
Action 3.7 Monitor <u>Hydrocotyle americana</u>	I			260	SNA Labor = 16 hours, Lodging = 2 days
Action 3.8 Monitor <u>Carex bromoides</u>	I			260	SNA Labor = 16 hours, lodging = 2 days
Action 3.9 Monitor Louisiana waterthrush	I		400	80	NG Labor = 8 hrs/yr for 1st 5 yrs, 8 hrs/2-3 years
Action 2.2 Survey and post boundaries	II		1450		EG/W Survey to be done by DNR Engineering, Labor = 80 hours, Lodging = 10 days 60 signs/posts @ \$2.50/post
Action 2.3 Post entrance signs	II		300	labor = 16 hrs.	W 2 signs @ \$150
Action 2.4 Post rules and regulations signs	II		11	lodging=2 days	W 2 signs @ \$3.00/sign + \$2.50/post
Action 2.5 Post interpretive sign	II		311	Total = 260	SNA 2 signs @ \$300 preparation costs, \$5.50 for sign and post

*Cost only show development costs, they do not include maintenance costs of monitoring projects etc.

Labor costs = \$10.00/hr. Lodging costs \$50/day

SNA = Scientific and Natural Areas primary responsibility
 NG = Nongame Program primary responsibility
 EG = Engineering primary responsibility

W = Area Wildlife Manager primary responsibility
 EF= Enforcement primary responsibility
 NHP= Natural Heritage Program primary responsibility