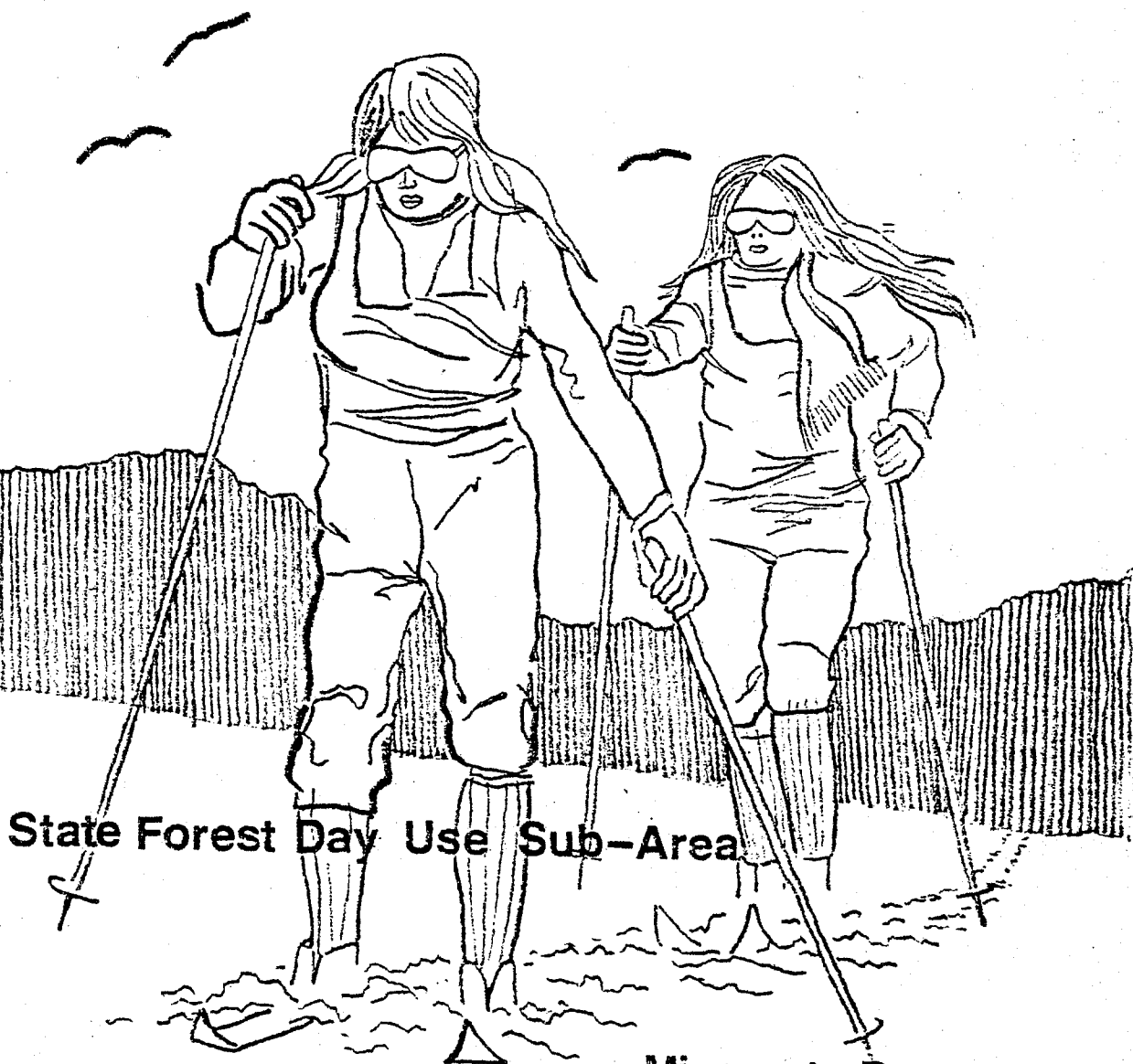




A Management Plan
for the

781361

Remote Lake Solitude Area



State Forest Day Use Sub-Area

FINAL DRAFT
August 1978

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STATE OF MINNESOTA

Minnesota Department
of Natural Resources

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FOREWORD

It is the purpose of this document to serve as both a management plan for the development and maintenance of the Remote Lake Solitude Area (day use sub-area), and as an environmental assessment of this action. The development and maintenance procedures described in this document will insure that the scenic, historic, scientific and recreational qualities of the trail are properly managed for the use and enjoyment of the citizens of Minnesota. The environmental impacts of this action have also been assessed to measure their effects on the environment. This assessment may be used in the event that the Department of Natural Resources - Division of Forestry decides to seek Land and Water Conservation Funding (LAWCON).

SUMMARY

The major sections of the document are: the Introduction, Description of the Proposed Action, Description of the Environment, and Environmental Impact of the Proposed Project.

The Introduction includes: an overview of pertinent legislation, the authority for state forest sub areas, and the goal and objectives for the state forest ski touring and hiking program. The DNR's overall goal is also revealed.

The Description of the Proposed Action reveals: the location of the project, the unit goal and objectives, existing and proposed development, maintenance, how the plan will be implemented, and whose recreational needs will be served.

The Description of the Environment is an inventory-analysis of the natural and socio-economic resources of the project area. This section attempts to "tie together" the interrelated resource factors that are vital in the planning of this unit.

The final section, the Environmental Impacts of the Proposed Project, deals with the possible affects that the proposed action may incur.

The Remote Lake Ski Touring and Hiking Trail management plan will be filed with and be available from Documents Section, Room 140, Centennial Building, St. Paul, Minnesota, 55155.

Introduction to the Plan

Multiple Use Concept

It is the policy of the Department of Natural Resources, Division of Forestry, to protect, develop and administer the renewable resources of Minnesota's fifty-six State Forests so they are utilized in the combination of uses that will best meet the needs of Minnesota citizens. This requires harmonious and coordinated management of the forest resources to bring about their maximum productivity as well as providing other public benefits.

The primary management objective is to maintain a maximum sustained yield of various forest products while utilizing renewable forest resources to benefit the greatest number of people. Renewable forest resources that require management and protection include timber, wildlife, soil and water. Management practices such as timber production and harvest, watershed protection, wildlife habitat maintenance, and recreational development are carried out on lands best suited for each use.

This multiple use approach to management is intended to provide equal opportunity for all citizens to enjoy and utilize our forest resource. This means that the forest is a shared resource that must be utilized by various user groups in harmony with each other.

With this multiple use concept in mind, the legislature included state forests

in Minnesota's Outdoor Recreation System. This system, created in 1975 by the Outdoor Recreation Act (ORA), incorporated all state recreation lands into eleven different kinds of areas, each with its own classification. The eleven classifications are: Natural State Parks; Recreational State Parks; State Trails; Scientific and Natural Areas; State Wilderness Areas; State Forests; State Wildlife Management Areas; State Water Access Sites; State Wild, Scenic and Recreational Rivers; State Historic Sites; and State Rest Areas. Each member of the system is referred to as a "unit".

By passing the ORA, the legislature revealed its awareness of a growing problem in Minnesota: The increasing number of people using state lands each year for more diverse forms of recreation. While some areas could withstand higher levels of use, other areas experienced overcrowding and conflicts between different recreational users.

To insure that the administration of each unit is managed in a manner that is consistent with the purposes for which the unit was authorized, it is required by the ORA that the managing agency prepare a master plan for each unit. The act states:

"No construction of new facilities or other development of an authorized unit, other than repairs and maintenance, shall commence until the managing agency has prepared and submitted to the state planning agency and the state planning agency has reviewed, pursuant to this section, a master plan for administration of the unit in conformity with this section. This requirement shall not apply

To an existing unit until August 1, 1977."

The following day use sub-area plan has been prepared by the DNR to fulfill the requirements of this act as it pertains to state forests. This day use sub-area plan will be incorporated into the overall state forest master plan when that plan is prepared.

This day use sub-area plan has been written prior to the state forest master plan so that monies from the Outdoor Recreation Bonding Bill can be utilized this year (Laws 1977, Chapter 421, Section 13, Subdivision 4).

Under the terms of this bill, the DNR has been allocated \$1,105,000:

"For betterment of public land and improvements needed for trails for skiing, hiking and bicycling within state parks and recreation areas as listed and described in sections 85.012 and 85.013 and State Forests, as listed and described in section 89.021."

The Authority

The authority for establishment of these ski touring-hiking areas (day use sub-areas) was granted by Minnesota Statutes 86.01 (the Outdoor Recreation Act) subdivision 7 which states:

"Subd. 7. STATE FORESTS AND STATE FOREST SUB-AREAS: PURPOSE; RE-SOURCE AND SITE QUALIFICATIONS; ADMINISTRATION. (a) A state forest, as established by Minnesota Statutes, Section 89.021, shall be admin-

istered to accomplish the purposes set forth in that section, and a state forest sub-area shall be established to permit development and management of specialized outdoor recreation at locations and in a manner consistent with the primary purpose of the forest.

(b) No unit shall be authorized as a state forest sub-area unless it is located within a state forest and contains suitable natural resources to accommodate any of the following uses:

(1) Day use areas. Areas which permit recreational use of the forest in its natural state, not requiring an overnight stay, including but not limited to picnicking, fishing, swimming, boat launching, hiking, interpretation and nature observation.

(2) Campground. Provide minimum facilities to accommodate overnight camping.

(c) Outdoor recreation sub-areas located within state forests shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this subdivision."

Goals and Objectives

The statutes and laws previously cited outline the legislation pertaining to state forest ski touring and hiking trails in regard to funding, planning and establishment. Along with this legislation, it is important to establish a goal for the overall State Forest Ski Touring and Hiking Program.

State Forest Ski Touring and Hiking Program Goal

The goal of the State Forest ski touring and hiking program is to provide

Minnesotans with the highest possible variety of quality ski touring and hiking trails. These ski touring and hiking trails shall be developed so that they may be enjoyed for years to come.

However, since state forest ski touring-hiking trails are only a part of the overall program, it is equally important to recognize the overall DNR ski touring-hiking program goal.

Overall Program Goal

The goal of the overall DNR Ski Touring and Hiking Program (which includes natural and recreational State Parks, Recreation Areas, and State Forests), is to provide Minnesotans with the finest ski touring and hiking trails in the nation.

Objectives for Overall State Forest Ski Touring-Hiking Program

- * To provide ski touring-hiking opportunities in state forests which are accessible to all citizens of Minnesota.
- * To improve the 64 miles of existing ski touring-hiking trails in state forests throughout Minnesota.
- * To develop 150 miles of new or additional ski touring-hiking trails where feasible in state forests throughout Minnesota.
- * To provide a variety of ski touring-hiking experiences in state forests taking advantage of scenic, topographic, historic, and recreational areas.

- * To involve the governor's appointed ski touring task force and other concerned citizens in the planning and design of state forest ski touring-hiking trails.
- * To provide complementary facilities along each state forest ski touring-hiking trail to insure the rest and comfort of the trail user.
- * To implement a system of signing design and specifications that are consistent along each state forest ski touring-hiking trail which promotes user enjoyment and safety.
- * To disseminate current, accurate literature of each state forest ski touring-hiking trail for public information and use.
- * To provide interpretation on the cultural, historic and vegetative features along state forest ski touring-hiking trails.

Description of the Proposed Action

Purpose of the Action

It is the Department of Natural Resources' intention to upgrade the 13 miles of ski touring-hiking trail within the Remote Lake Solitude Area. The Remote Lake Solitude Area was created in 1972 as a non-motorized use area within the Savanna State Forest. The upgrading of the trail and complementary facilities will provide a safer, yet challenging trail for ski tourers and hikers.

Location of the Project

The Remote Lake Solitude Area is located in the Savanna State Forest in northeastern Aitkin County, 20 miles north of McGregor, Minnesota (see figure 1).

Magnitude of the Project

Goal Identification

It is the goal of the Department of Natural Resources to improve, develop, and maintain the Remote Lake Solitude Area in order to provide the highest quality ski touring-hiking experience possible.

Objectives

*To properly upgrade and maintain this trail in light of other on-going management activities.

*To gain approval of this plan for the development and management of this day use area.

*To complete the development as outlined in this plan by the winter of 1978-79. (i.e. upgrade the 13 miles of existing trail and complementary facilities)

*To further establish this trail for non-motorized recreational use through formal designation as a state forest day use sub-area for ski touring and hiking.¹

*To develop and implement a maintenance program which will sustain the quality of the trail for the future.

Existing Development

Thirteen miles of ski touring and hiking trail have presently been developed in the area. Parking is available at the trailhead along with a large informational sign outlining the trail. Three rest areas have been developed along the trail, one with an adirondack shelter, two with only picnic facilities. A scenic overlook is located near Glacier Lake, in the southwestern portion of the area (see figure 2).

The ski trails are 8-10 feet wide allowing for two-way traffic. Grooming is done periodically throughout the season to keep the trails in good condition.

¹Motorized vehicles for administrative purposes and contract services will be allowed.



Remote Lake Solitude Area

SAVANNA STATE FOREST

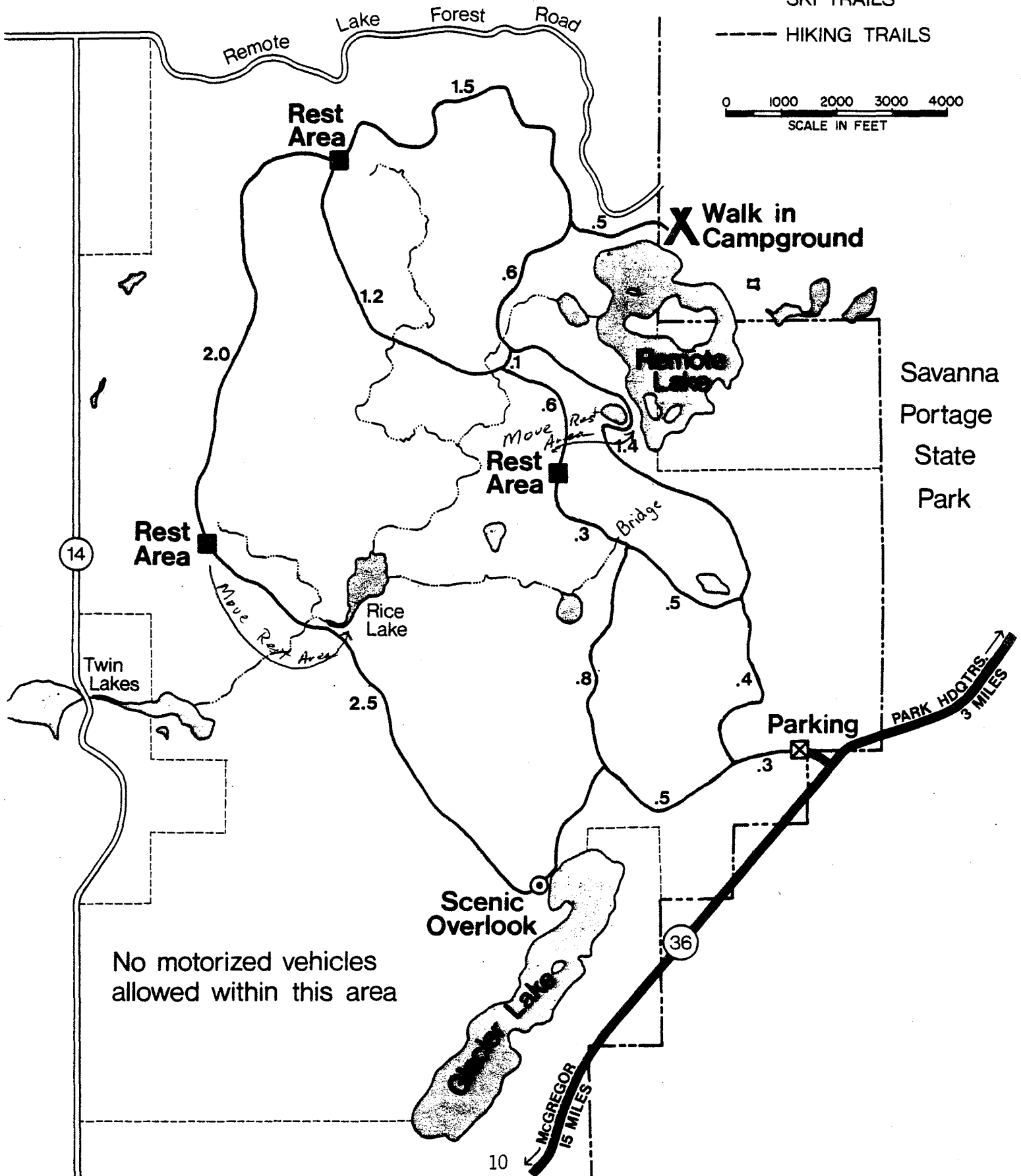
Figure 2



— CROSS COUNTRY SKI TRAILS

- - - HIKING TRAILS

0 1000 2000 3000 4000
SCALE IN FEET



Proposed Development

The following development activities are recommended for upgrading of the Remote Lake Solitude Unit.

Entrance Drive and Parking Lot

The access road and parking area will be upgraded with class V gravel to insure a stable surface for cars to park in all weather conditions. A large wood routed sign should be installed on county road 36 near the entrance road to direct visitors to the trail parking area.

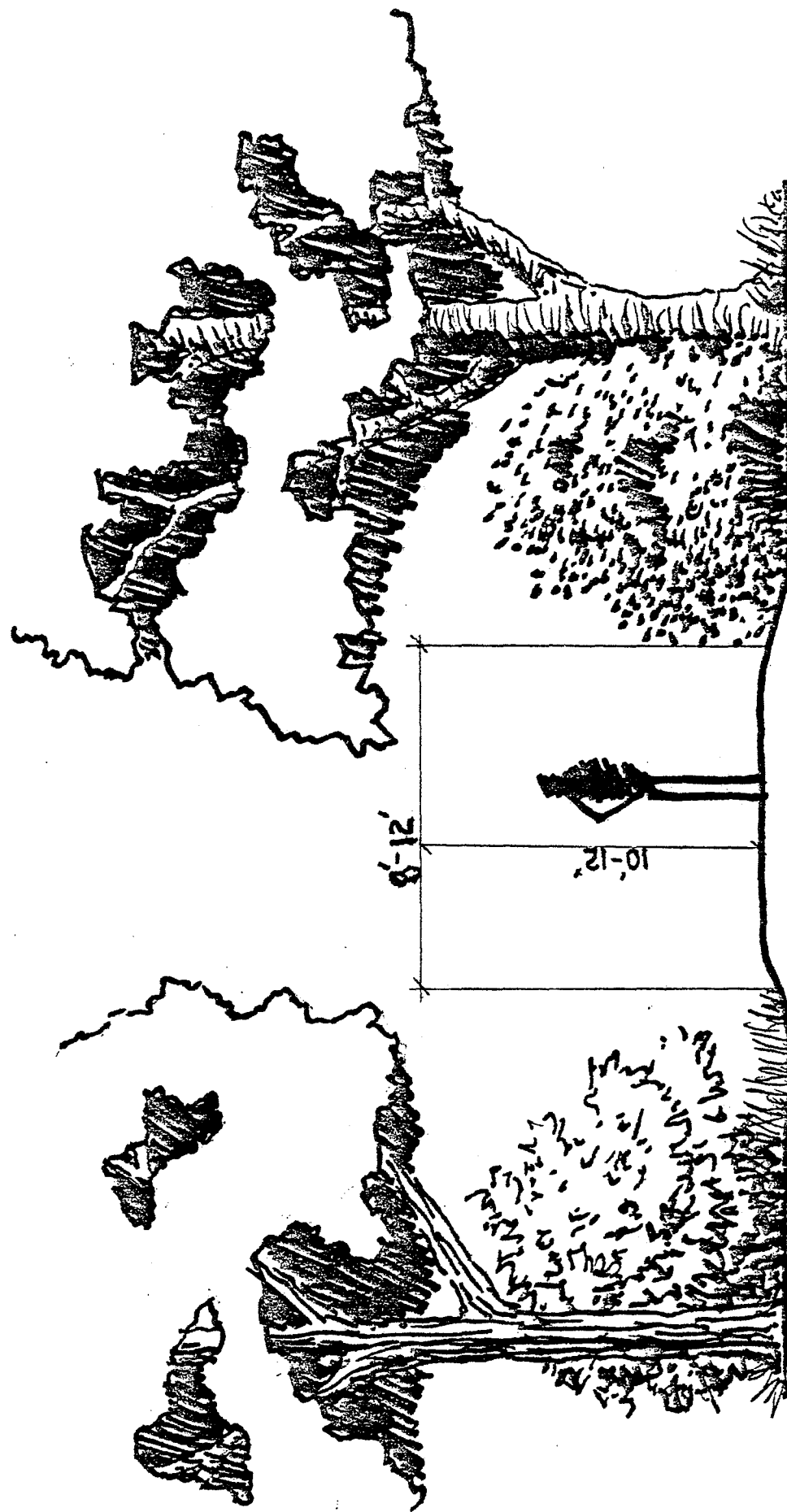
Trailhead Area

A new wood routed sign showing the layout of the trail will be constructed at the trail entrance. An informational bulletin board for posting a printed trail map, emergency phone numbers, trail rules and regulations and other information will also be constructed here (see typical in figure 10, page 23). Pit toilets have already been constructed near the parking area and are sufficient for the amount of use expected at this time.

Existing Trail Treadway

The existing trail treadway will be upgraded where necessary. Trail width will vary from 8-12 feet depending on the terrain and the difficulty of the trail (see figure 3). A minimum width of 6-8 feet will be maintained on hills to allow a skier to herringbone up or snow-plow down. Runouts will be provided at the bottom of steep hills.

Fig.3
Ski Touring Trail Treadways



minimum clearances needed
for ski touring trails

width varies with terrain
height varies with snow depth

In areas where stumps and rocks are a problem, a crawler tractor will be utilized to clear and level the treadway. All stumps and rocks removed from the trail will be pushed into piles in designated areas which are inconspicuous from the trail right-of-way.

In areas where the trail is located on side hills, serious consideration should be given to relocating the trail treadway. If relocation is not feasible, the trail treadway should be properly cut and filled with a crawler tractor to make it safe (see figure 4).

All areas where earth is disturbed or where erosion is currently a problem will be seeded with a wildlife or other seed mixture to prevent destruction of the treadway.

Rip-rap, water bars, or diversion structures may be necessary on steep slopes to stop erosion (see figure 5).

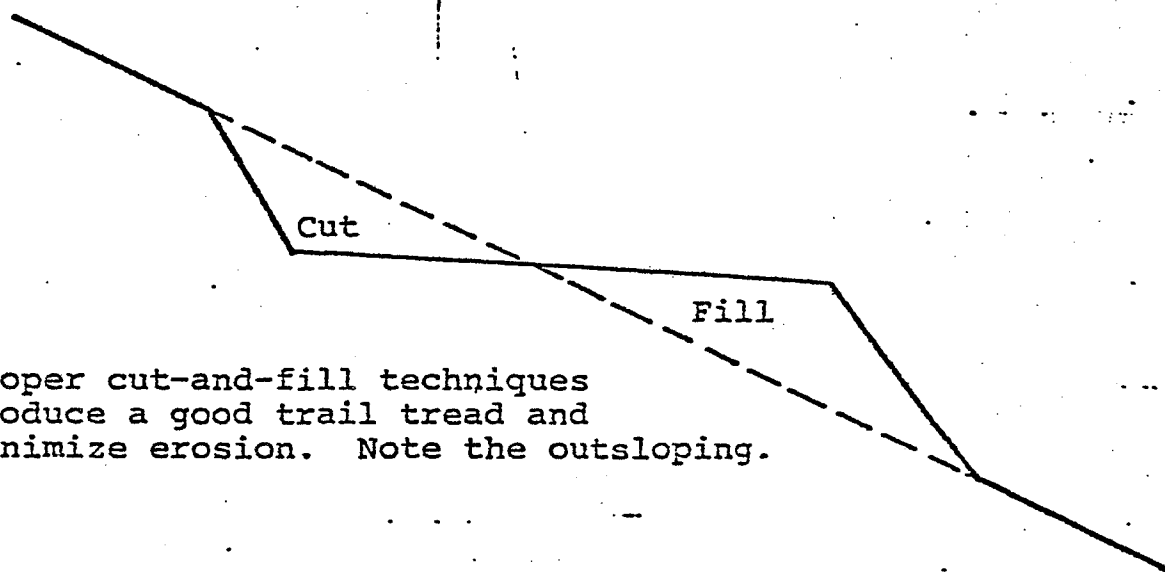
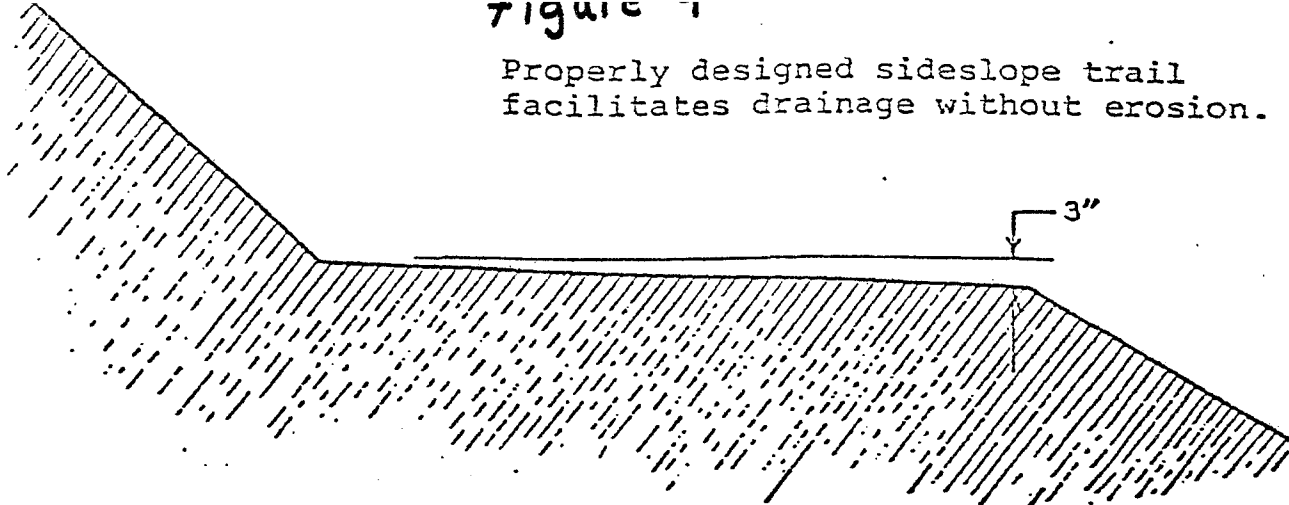
Wet areas along the trail will require courdoroy and/or fill to allow for all season use (see figure 6). Where the treadway is elevated (by courdoroy or fill), culverts may have to be installed to allow for proper drainage.

Bridge Construction

A bridge will be constructed over one of the creeks along the trail to allow for year-around passage (see map in figure 2, page 10). Bridge construction

Figure 1

Properly designed sideslope trail facilitates drainage without erosion.



Proper cut-and-fill techniques produce a good trail tread and minimize erosion. Note the outsloping.

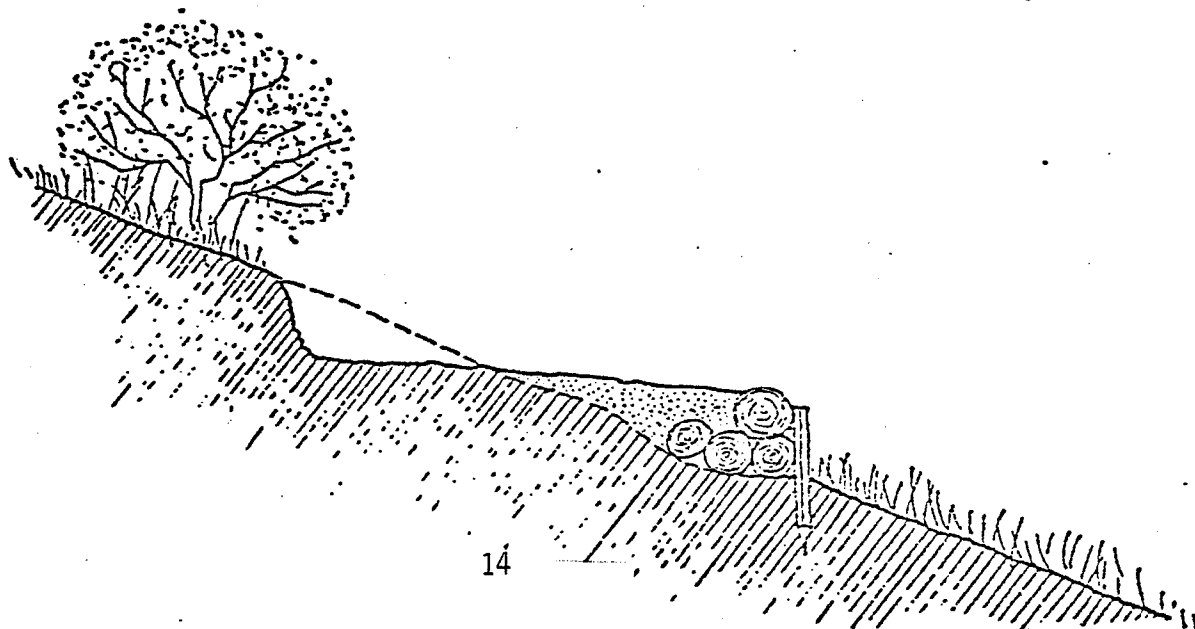
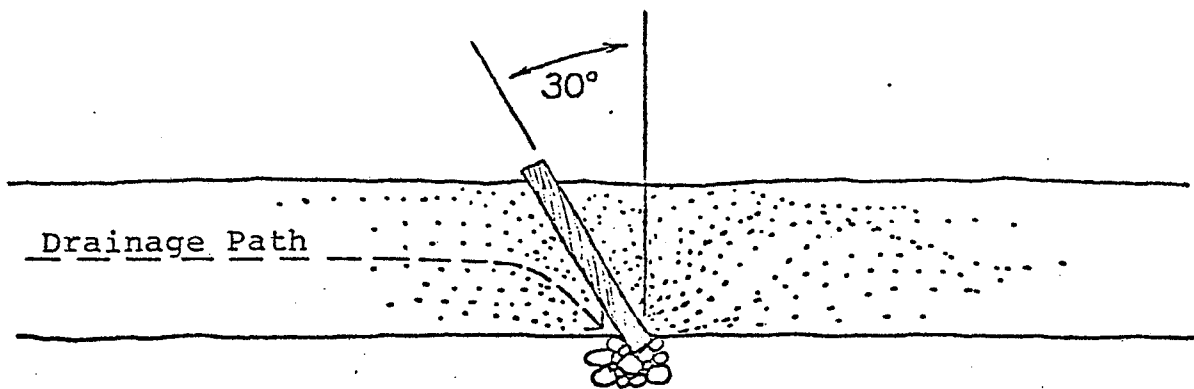
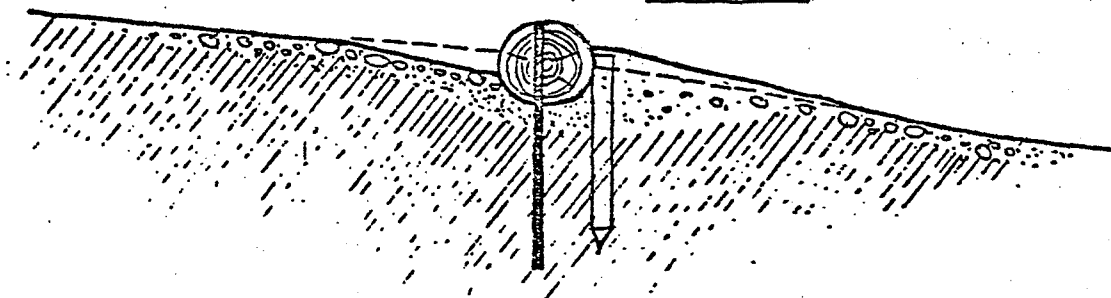


Figure 5

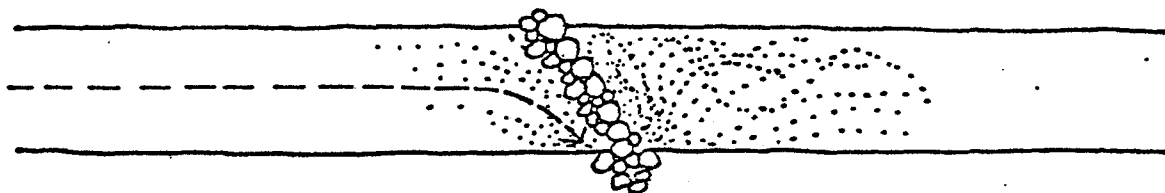


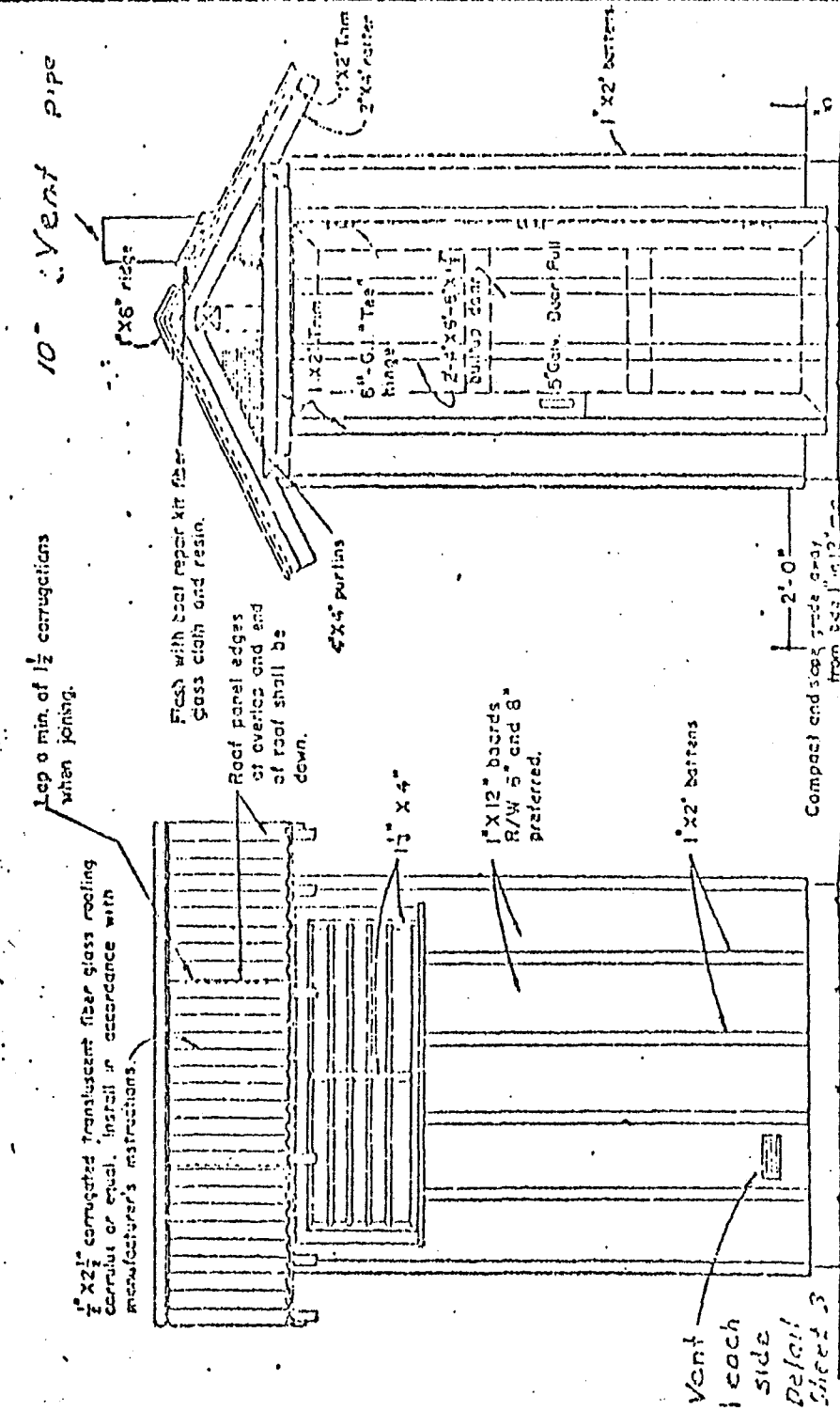
Landscape soil to top of water bar
on downhill side.



Water Bars

Note log is held in place by steel pin and/or wooden stake. Below, stones are used as a water bar.



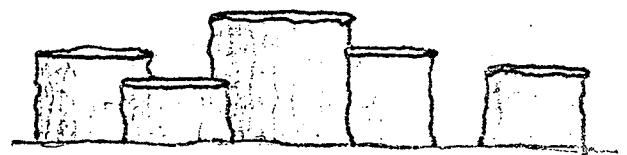
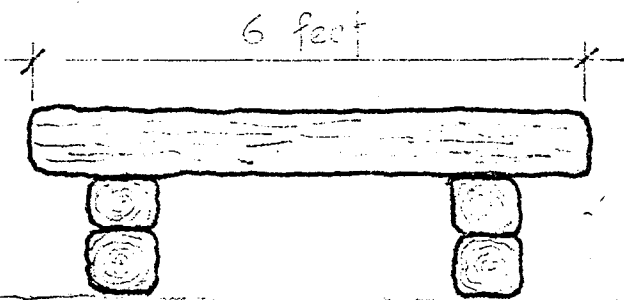
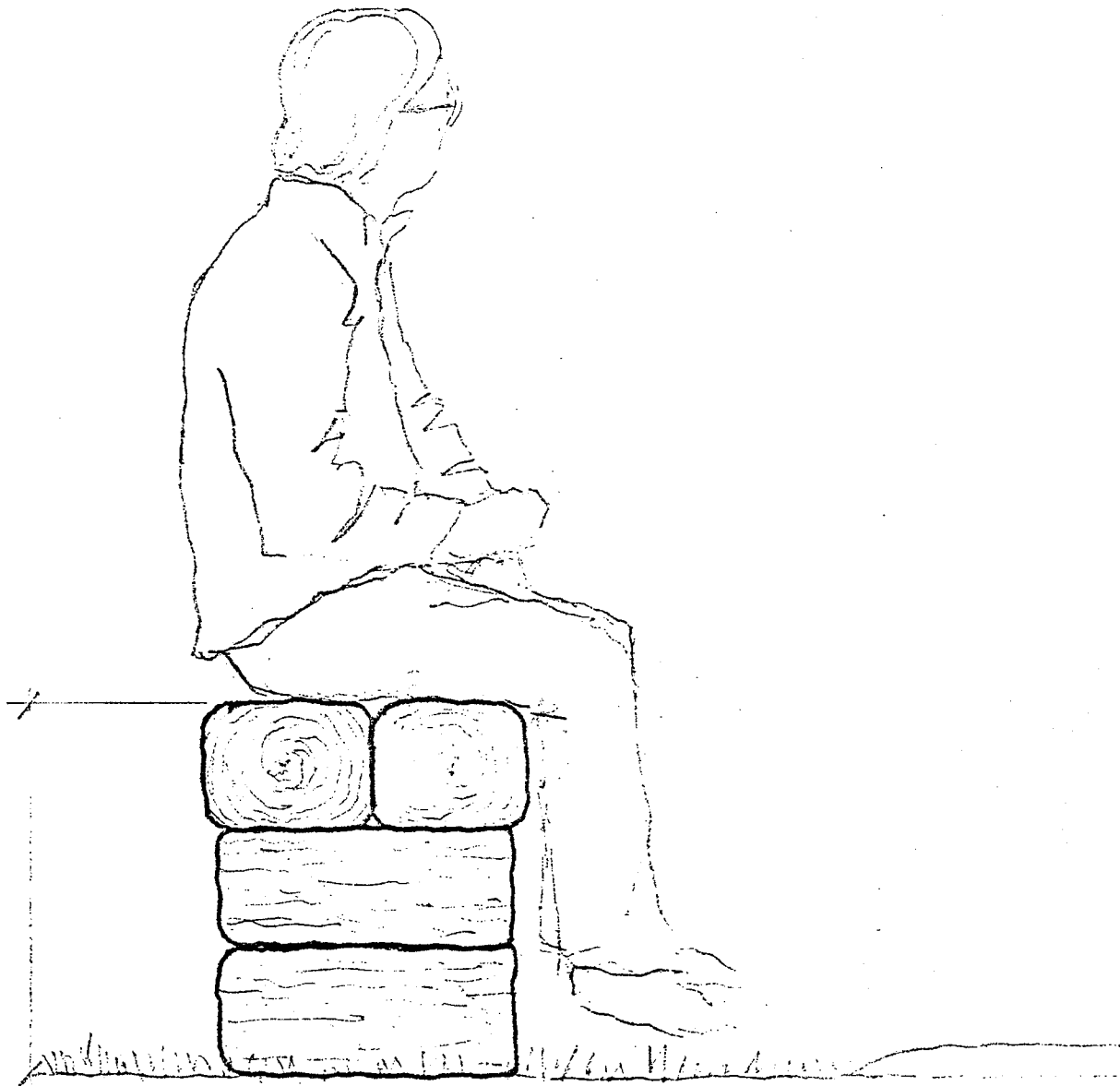


FRONT ELEVATION:

3573

Fig. 9

Simple Log Bench



will be provided to transmit information, insure user safety, and facilitate enforcement. Signs are located for maximum visibility and will be kept to the necessary minimum.

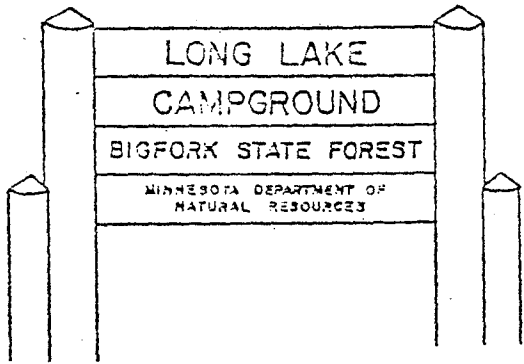
A wood routed trailhead sign showing the layout of the trail has been constructed at the trail entrance. An information bulletin board containing a printed trail map, emergency phone numbers, trail regulations, and other information will also be built here.

"You are Here" signs will be placed at all trail junctions and trail difficulty markers will be placed at strategic locations. Warning, regulatory and information signs will be placed where necessary (see sign typicals in figures 10 & 11). Interpretive signs identifying tree species, management techniques and other special features should also be erected in appropriate places.

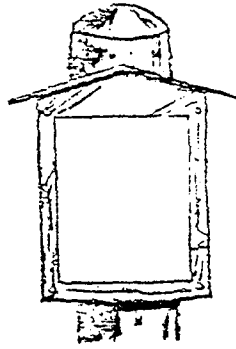
Maps

A user map is extremely important and will be available from a box near the trailhead sign. They will also be available from DNR Forestry offices and the Division of Parks and Recreation in St. Paul. The present Remote Lake map will be upgraded for accuracy and information. The new map should show the location of the Savanna State Forest in the state, an accurate route for access, trail mileage, trail direction and complementary facilities such as campgrounds, rest areas, and parking lots. Also included should be interpretive information about the history, development, and management of the forest. Maps will be the responsibility of the Division of Parks and Recreation to develop and print. The Trail Project Planning Staff and Division of Forestry will have input as to their content and makeup.

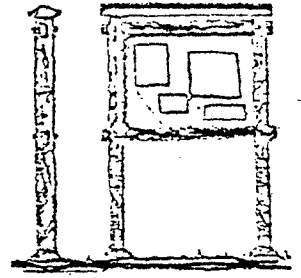
Fig. 10 Sign Typicals



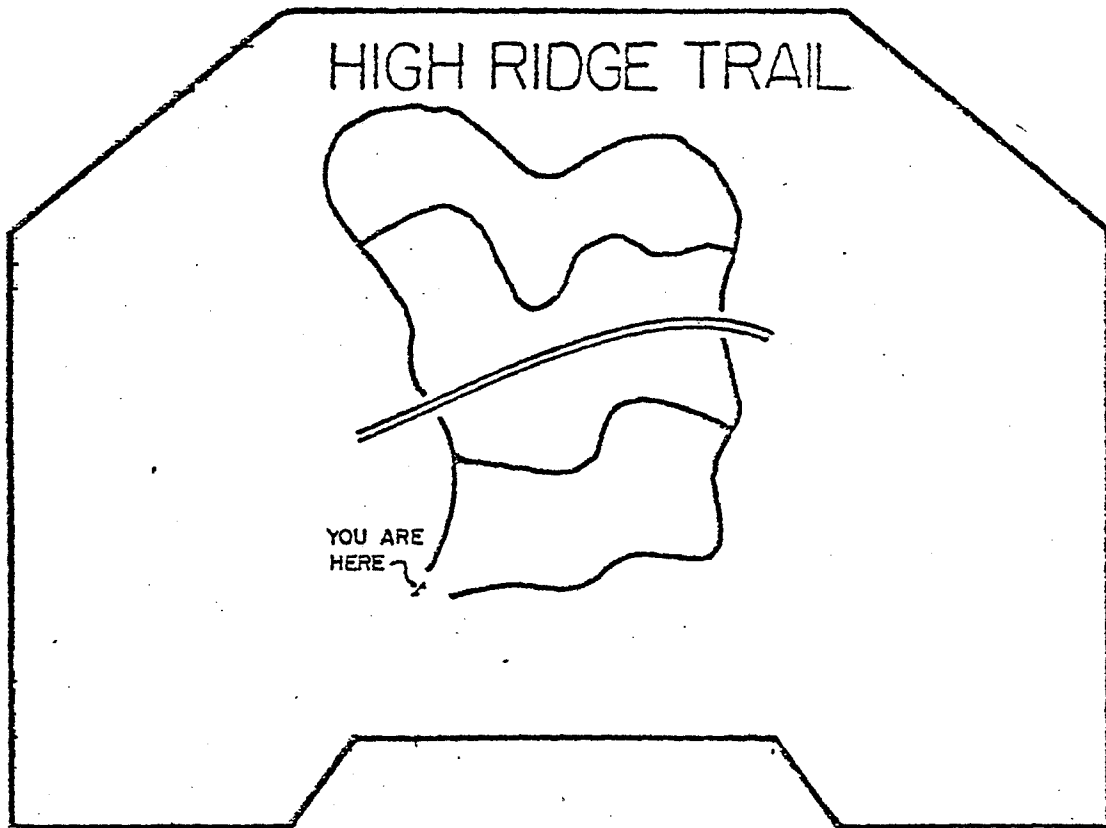
Entrance Sign



**"You are Here"
Sign**



**Information
Bulletin Board**



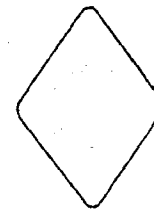
Trailhead Sign



Skier



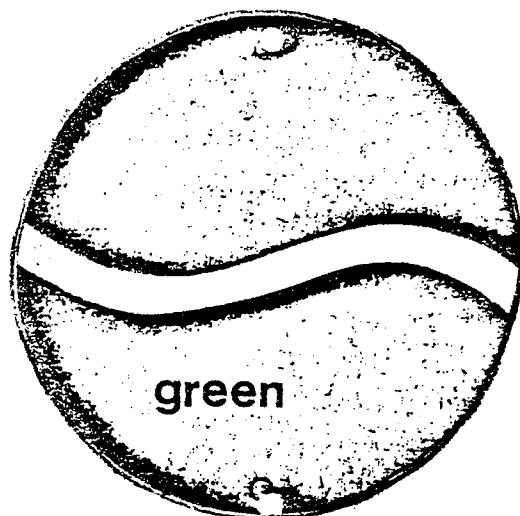
Hiker



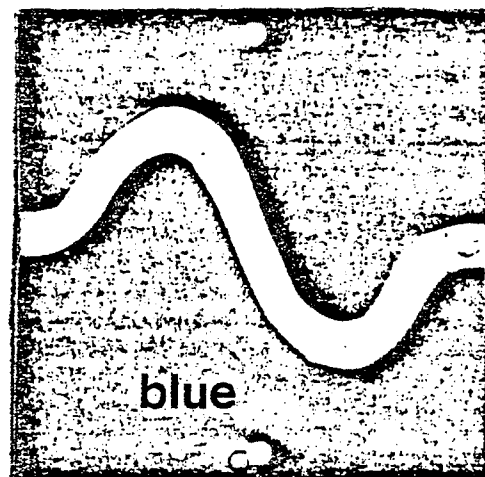
Blazer

Trail Difficulty Symbols

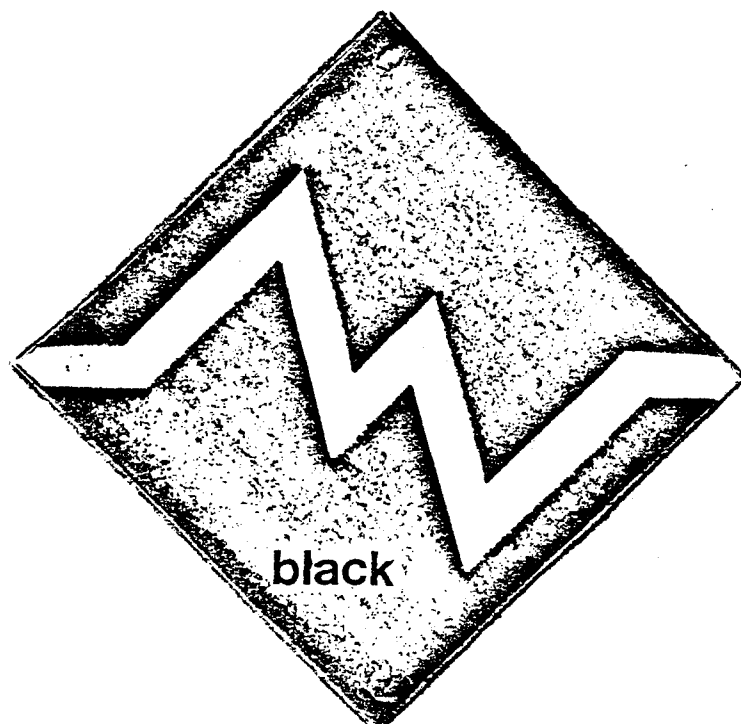
easy



more difficult



most difficult



Maintenance

Maintenance of Remote Lake Solitude Area after development, is the most important tool for sustaining its quality. Therefore, maintenance monies are essential if the Remote Lakes Solitude Area is to remain a quality area for ski touring and hiking.

At present, there are no funds earmarked for maintenance of ski touring and hiking areas developed through the bonding bill program. Therefore, it is a recommendation of this plan that maintenance money be made available through legislation to insure the quality of the area.

Maintenance of the Remote Lake Solitude Area will require a year-around program. Routine maintenance will involve litter pick-up, cleaning shelters and toilets, stacking firewood, maintaining signs and clearing surface vegetation. Major maintenance will involve removal of windfalls, painting and repairing of structures, and controlling erosion where necessary.

Winter grooming of ski treadway will be done on a contract basis or by state employees using DNR equipment. Winter grooming will be set up on a flexible schedule to allow for periods of high and low use. If DNR equipment is necessary to groom the trail treadway, it is recommended that equipment be purchased and shared by the parks and forestry divisions to maintain Savanna Portage and Remote Lakes.

Periodic inspections will be made throughout the year to evaluate maintenance problems and actions needed. Inspections may be made by the District Forester

or his designate (i.e., maintenance foreman or by the person in charge of trail grooming). The regional trails coordinator and appropriate St. Paul Staff may also inspect the trail if necessary.

Steps Involved in the Planning Process

1. Project proposal is initiated by district forester and is submitted through the area and regional foresters (at this time, the proposal is evaluated for worthiness and the potential for public support).
2. After proven feasible and consistent with the state forest multi-use concept, the proposal is sent to St. Paul.
3. Proposal is then investigated by the Bureau of Planning and Research with the input of the regional trails coordinator, area and district foresters, and other involved divisions.
4. Area of study is defined and a preliminary plan is prepared based on this study. The regional trails coordinator, and the area and district foresters perform necessary "groundwork" and report information to the Project Planning Staff. Also, input is received from various levels of government, special interest groups, and others.
5. Preliminary plan is sent out to DNR divisions involved for review.
6. Plan is revised subject to this input and printed for public hearing.
7. A public hearing is held in the local area of the unit.

8. Plan is revised again taking into account public, departmental, and other agency review.
9. Plan is submitted to State Planning Agency for review for consistency with the Outdoor Recreation Act of 1975.
10. Possible revision subject to State Planning Agency review.
11. Final Review by State Planning Agency.
12. Implementation of the plan by the Division of Forestry and the regional trail coordinator.

Note: Planning is an on-going process which does not stop after final State Planning Agency review. The management plan's built-in flexibility allows for site specific decisions at the time of development. After development is completed, periodic re-evaluation of the management program is required for response to changing conditions.

Implementation

The structure of the Department of Natural Resources is such that the Bureau of Planning and Research - Trail Project Planning is responsible for coordinating the planning process and general implementation monitoring. After the plan is reviewed for consistency with the Outdoor Recreation Act, development can commence.

The Division of Parks and Recreation - Trails Section has the responsibility for funding the project. They are also responsible for monitoring development and maintenance to insure that funds are spent in compliance with the bonding bill and master plan.

The Division of Forestry implements the plan by assigning the appropriate regional personnel to carryout development and maintenance of the trail. This development and maintenance must be in compliance with the bonding bill and master plan. The regional trails coordinator will coordinate other managers' activities within the region. He will also coordinate design of trails and facilities with the area and district foresters. Actual construction and maintenance of the trails will be the primary responsibility of the area and district foresters with input from the regional trails coordinator.

Changes to the management plan must be cleared through the Bureau of Planning and Research - Trail Project Planning.

Estimated Costs

Parking Lot and Access Road Improvement	- \$ 4,000
Entrance Sign, Trailhead Sign and Bulletin Boards	- \$ 1,000
Upgrading of Existing Trail Treadway	- \$10,000
Bridge Construction (1)	- \$ 3,000
2 New Rest Areas and Upgrading 1 Existing	- \$ 6,000
<u>Trail Signs and Maps</u>	<u>- \$ 1,000</u>
Estimated Cost	- \$25,000

Maintenance Costs

Maintenance costs will be worked out by the District forester, Area Forester, and Regional Trails Coordinator. A rough estimate of maintenance costs is \$2,000/year.

Timing of the Project

Sixteen state forest ski touring and hiking areas have been identified as prime areas for development or improvement during 1978. The Remote Lake Solitude area is one of these projects.

The proposed developments are scheduled to be constructed during the summer and fall of 1978 so that they will be ready for use in the winter of 1978-79.

The area will be monitored continually by the district forester and other personnel to assess any problems that have occurred and to determine any additional developments which may be necessary.

Future Potential Development

Two areas for expansion of the Remote Lakes area were discussed while the management program was formulated. The two areas are the western portion of Savanna Portage State Park and an area directly north of the Remote Lake Ski Trail. A new trail connecting Remote Lake with the Savanna Portage Ski Trails was also discussed but will not be constructed until the management plan for the state park has been formulated. If additional

miles of ski trail are needed in the future, it is recommended that these areas be studied further. Both areas would require rerouting snowmobile trails.

If additional mileages are developed in these areas, facility and treadway design should be consistent with this plan.

Any future recreational development will be coordinated with this plan and the overall forest management plan for the Savanna State Forest when it is formulated.

Recreational Needs to be Served by the Project

Ski touring and hiking are two activities that have experienced a tremendous growth in popularity in recent years. The 1974 Minnesota State Comprehensive Outdoor Recreation Plan (SCORP) identified ski touring and hiking as two of the fastest growing recreational activities in the state.

At that time, it was estimated that the number of Minnesotans participating in hiking was 300,000 users and it was projected that over 100,000 Minnesotans would be participating in ski touring by 1975. SCORP also emphasized that these activities would continue to grow in popularity in the future.

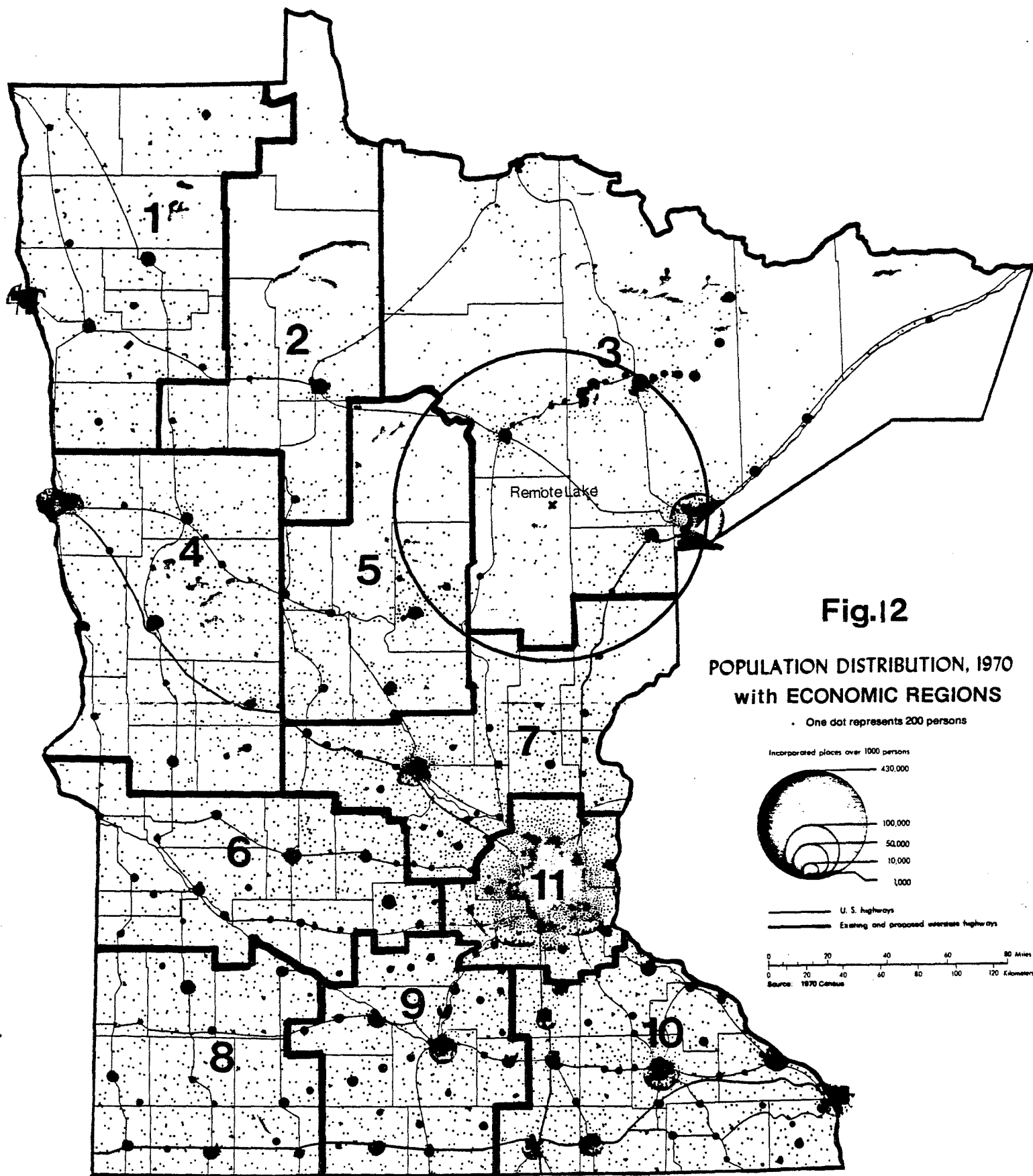
Although no figures are presently available to predict future demand for the Remote Lake Solitude Area, the following rough estimate showing a five fold increase in use of the area in recent years can be used to predict an

increasing number of users in years to come.

Estimates of the number of people using the area show that use has been increasing every year. In 1972, when the area first opened, less than 400 people used the area and the parking lot was seldom full. This past winter, over 2,000 people used the area, with the parking lot full on most weekends.

The potential use area for the Remote Lake Solitude Unit includes Economic Development regions 3, 5, 7, and 11. The map in figure 12 shows the immediate day use area. This area is defined as the distance people would travel to use this unit without requiring overnight facilities. Most of these users can be expected to come from the Iron Range Cities and the Duluth area. Weekend users can be expected from Region 7 and the Twin Cities area where trails are in short supply.

Current users of the unit consist of local residents and a sprinkling of visitors from Duluth and the metro area during the week, with heavier use on weekends from the Iron Range, Duluth and Twin Cities Metropolitan areas.



Description of the Environment

Topography

The topography of the Remote Lake vicinity is very irregular with broken ridges and rolling hills. Areas to the south and east of Remote Lake are classified as the Tamarack lowlands. This broad, flat, swampy plain covers much of Aitkin County and was once occupied by Glacial Lake Aitkin.

Elevations vary from 1,350 feet in the hilly areas to 1,250 feet in the lowlands (see map in figure 13).

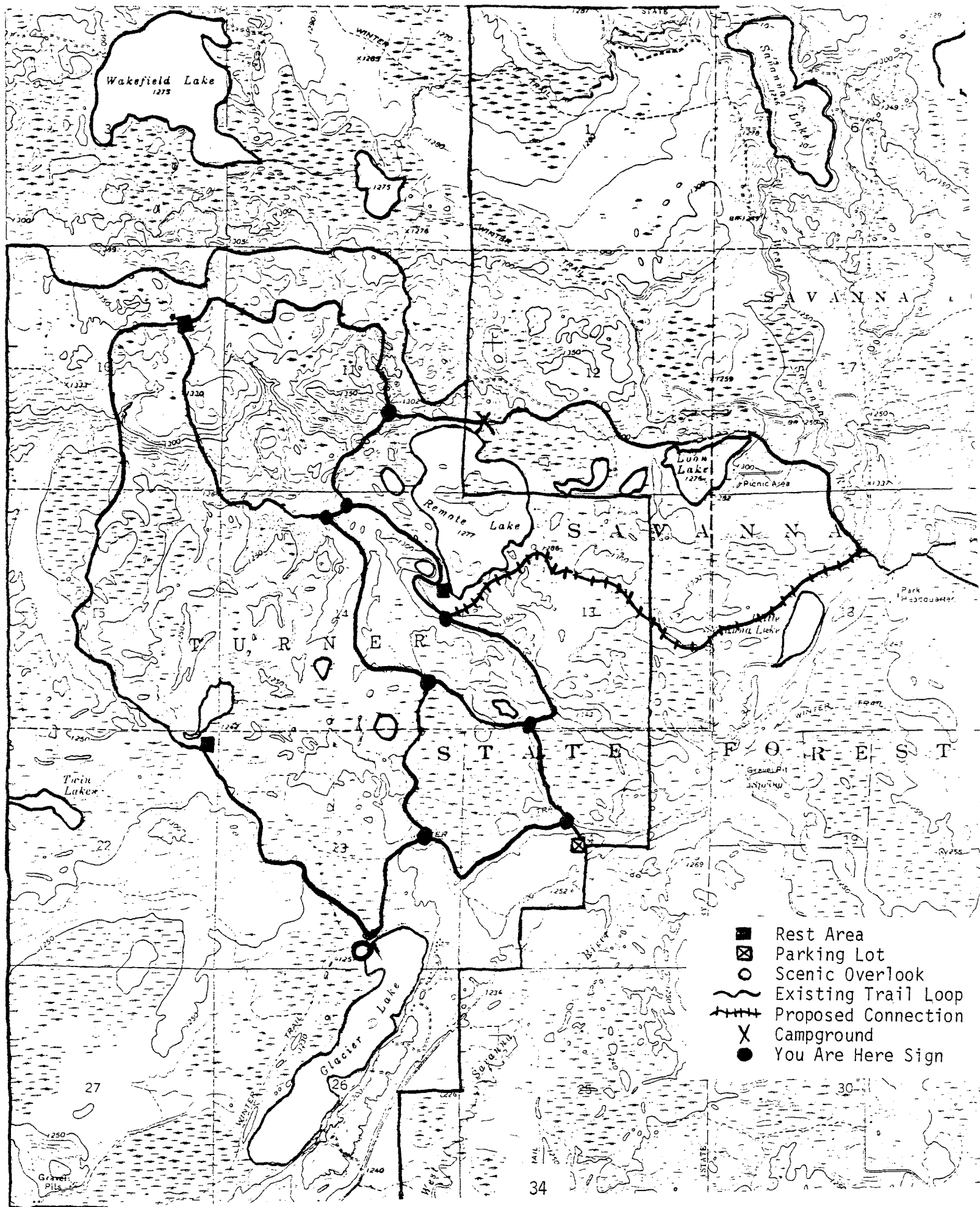
Soils

Detailed soil survey information is not presently available for the Remote Lake unit. Broad soil characteristics show that the area contains coarse to fine textured forest soils and organic soils of the glacial lake plains in the level areas with fine textured forest soils in the rolling areas.

Major soil series for the area is the Peat-Swatera-Spooner in the level areas and the Hibbing-Zim series in the rolling areas. The Peat-Swatera-Spooner series contains organic peat soils with islands of mineral soils. The light colored mineral soils have formed from calcareous lacustrine fine sand (Swatera) and silt loam (Spooner). Swatera is well drained, Spooner poorly drained.

The Hibbing-Zim series contains light colored soils formed from weakly

Figure 13



calcareous red clayey glacial till. Hibbing is well or moderately drained and occurs on the more sloping areas. Zim is somewhat poorly drained and occupies the more level areas.

Climate

Remote Lake, given its location in northern Minnesota, is blessed with excellent weather conditions for year-around outdoor recreation activities. Average annual number of days with snowcover of 1" or more is 120 days with an average of 60 to 80 days with 6" or more. Average annual snowfall is between 50" and 55". Winter (Dec., Jan., Feb.) normal temperature is 13°F. Mean maximum and minimum temperatures for January are 22°F. and -4°F.

Mean annual precipitation averages 26" with a summer normal temperature of 65°F. Mean maximum and minimum temperatures for July are 80° and 54°F.

Water Resources

Surface water resources in the Solitude Area consist of 10 small to medium sized lakes and numerous marshes and creeks which exist in the area.

These natural lake basins are a very important resource in the area. As can be seen from the map (page 34), the trail is located adjacent to several lakes, which add to the scenic quality of the area.

Mineral Resources

No known economic concentrations of mineral resources are known to occur within the Solitude Area.

Vegetative Cover

Much of the Remote Lakes unit is made up of second or third growth Aspen and mixed hardwoods, with scattered areas of pine and other conifers. Small bogs and tamarack-spruce swamps are found in the low areas.

Wildlife

A variety of mammals including deer, squirrels, rabbits, coyotes, mink and raccoon are found in the area. Other animals and birds include beaver, porcupine, roughed grouse, woodcock, waterfowl and songbirds. Sighting animals from the trails is possible, but numbers will vary with the season.

Timber Resource

The Savanna State Forest contains 150,000 acres under state ownership. This ownership is distributed between three forest districts, the Jacobson District (60,000), the Cromwell District (5,000), and the Sandy Lake District (85,000). The Sandy Lake District of which the Remote Lakes unit is a part, consists of the following covertypes - 30% Aspen-Birch, 45% mixed hardwoods, eight percent Black Spruce, 8% Tamarack and 9% mixed conifers.

Of these covertypes 31% is in the reproduction size class, 59% in the pole timber size class, and 10% in the saw timber size class. Annual acreage recommended cut is 270 acres Aspen-Birch, 446 acres mixed hardwoods, and

150 acres of mixed conifers.

Air and Water Quality

Within a 100 mile radius of the forest, there are 14 urban centers with a population greater than 10,000 people. At a population level of 20,000 or greater, there are only three such urban areas. Industrial air pollution does not appear to be a problem here. Auto emissions are a minor source of local air pollution.

Surface water quality in the area is reasonably good and water pollution is not considered a problem in the area. No wells have been planned for development in the area, therefore, groundwater quality has not been studied at this time.

Historical and Archaeological Resources

The Remote Lake Solitude Area is located adjacent to Savanna Portage State Park, home of the six mile portage which was the bridge across the Continental Divide between the Mississippi River Waterway and the St. Louis River to Lake Superior. The Indians used this route for perhaps centuries in their wanderings and warfare, and the Ojibway (Chippewa) gained access to the Sioux territory by this means.

Fur traders, explorers and missionaries also used the portage in later years, making it an area of historical significance that is being preserved in Savanna Portage State Park.

No archaeological sites have been identified within the Remote Lake Solitude area to date. The potential for finding such sights, however, is extremely high and will be investigated before any earth is removed.

Transportation and Utilities

Access is provided to the area from the north-south direction via State Highway 65, which parallels the west boundary of the forest. Access to the area from the east-west direction is via U.S. Highway 2 which intersects Highway 65, 25 miles north of the area, and state Highway 210 which intersects Highway 65, five miles south of the area. Access into the Solitude Area is via County State Aid Highway 36 which borders the area on the south. (see figure 2)

No utilities (telephone or electricity) are presently available within the Solitude Area and are not necessary at this time. Utilities are available, however, to residences and facilities within Savanna Portage State Park located adjacent to the Solitude area on the east.

Socio Economic Factors

The Minnesota State Planning Agency (SPA) population projections for Aitkin County and Economic Development region 3 show a modest population increase for Aitkin County with a decrease in population by 2000 for region 3.

Population Projections

<u>Year</u>	<u>Aitkin County</u>	<u>Region 3</u>
1980	12,300	330,300
1990	12,600	332,400
2000	12,800	325,400

Three areas of major employment for Aitkin County are: agriculture; forestry and fisheries (10.2% of employed labor force); wholesale and retail trade (22.9%); and professional and related services (19.7%).

Tourist-travel expenditures during 1974 totaled \$8,568,741 in Aitkin County. These expenditures accounted for 18.4% of gross sales.

Land Use and Development Trends

Aitkin County General Land Use (Forty Acre Parcels)					
Forested	-	20,796	Marsh	-	3,013
Cultivated	-	1,675	Urban	-	443
Pasture and open	-	3,353	Extractive	-	1
Water	-	2,603	Transportation		3
TOTAL - 31,887					

Source: 1975 Pocket Data Book - State Planning Agency

Agriculture - Current agricultural land use within Aitkin County is not intensive or extensive. Major crops are small grains, wild rice, and feed crops.

The Agriculture trend in the county will probably be for further expansion of cropland. The large amounts of public land (62%), however, may limit significant expansion.

Residential - Current residential land use does not effect the Remote Lake Solitude Area because of state and county lands which surround it. Residential use, however, is increasing around the lakes in the county.

Commercial/Industrial - No commercial or industrial developments are located near the solitude area. Timber harvesting is permitted. This activity, however, will not have an adverse effect on the solitude area.

Facilities in Region 3

Economic Region 3 encompasses all of northeastern Minnesota, a region that has many outdoor recreation facilities. Two national forests, the BWCA, 16 state parks, 4 corridor trails, 12 historic sites, 22 state forests, 559 miles of ski trails and 1,800 miles of snowmobile trails can be found there. One reason for this area's large number of recreational facilities is that over 85% of the land in this region is in public ownership.

Numerous resorts, motels, hotels and campgrounds can also be found throughout the region. Many of these facilities are open year-around to accomodate the needs of outdoor enthusiasts. Gas stations, repair shops and ski shops can also be found throughout the region.

Facilities in the Forest and Area

The Savanna State Forest and Savanna Portage State Park offer a wide range of facilities for outdoor recreationists to enjoy. Within their boundaries are many small and medium sized lakes. Big Sandy is a large lake in the

forest which has become popular for fishing and water sports. The Mississippi River Canoe and Boating Route is within the forest.

The Division of Forestry maintains one campground in the forest near Hay Lake. Twenty campsites, 11 picnic sites, a swimming beach, a boat ramp and a hiking trail are located there.

Thirty four miles of snowmobile trail are also found in the forest.

Facilities for public use at Savanna Portage State Park include campgrounds, picnic grounds, swimming beach and a hiking trail. Ski touring and snowmobile trails have also been developed in the park. (see maps, pages 42 & 43)

Management Programs within the Forest

Management of the Savanna State Forest is based on recommendations outlined in the Sandy Lake District Forest Management Plan. These plans are formulated for each forestry district throughout the state and are based on the state "Timber Management Guide" and other policy manuals. The management program is based on a ten year period, while necessary adjustments are made to fit local conditions.

The management program includes timber, wildlife, soils, water, and recreation. Management of these resources requires a coordinated program which brings about maximum productivity and protection as well as providing other public benefits such as recreation.

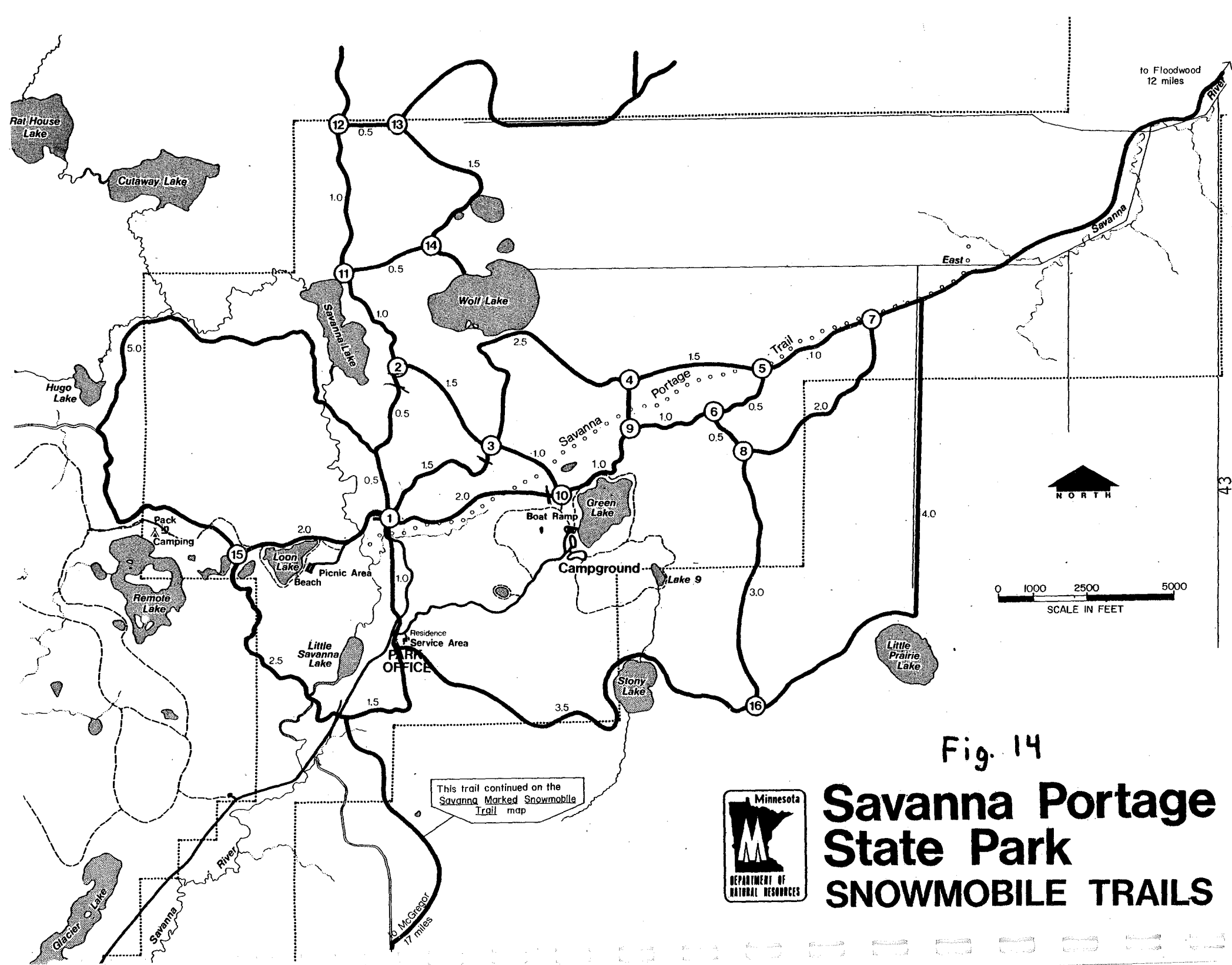


Fig. 14



Savanna Portage State Park

SNOWMOBILE TRAILS

Development of the Remote Lake ski touring and hiking trail has and will be an integral part of this management program and will not inhibit other forest management practices.

Necessary adjustments will be made in the area to avoid conflicts between other management activities and the trail. Development of the ski touring and hiking trail, however, will not exclude use of administrative vehicles and/or contractors who have been assigned to do work in the area. It will also not exclude automobiles from roads which are normally plowed during the winter.

When timber harvest is recommended in the area, cutting and hauling will try to be scheduled between May 1 and November 1 to avoid conflicts between skiers and contractors. In some instances, such as when swamp conifer types are recommended for harvest, logging operations will have to be performed in the winter to take advantage of frozen ground conditions. In these instances, portions of the trail treadway may have to be closed or rerouted temporarily to permit timber harvest operations to be run efficiently.

Timber sale contracts will be adjusted to insure that trees are not felled blocking the treadway. Provisions will be written so that the trail treadway, if damaged, will be returned to its original condition. Provisions will also be written to insure that slash and other debris are scattered away from the trail.

It should be emphasized at this point that some forest trails will not always be permanent. As forests change in age, timber harvest will preclude established trail use in some areas. To adjust for these changing conditions, the trail will be rerouted into other areas in the forest. Thus, while trail use will be an established use in state forests, the trail location may not.

All management decisions concerning the area will be made in a manner that insures that the needs of other management activities and recreation are met with the least possible conflict.

Potential Concerns and Considerations

The Remote Lake Solitude Unit as presently developed has been relatively free of conflicts from motorized recreationists. This is primarily because of adequate snowmobile trail mileage in the adjacent state park and the state forest. Signing, barriers, and natural site factors have also been used to minimize conflicts.

No future conflicts are expected because trail design and signing will be utilized in any future development to minimize problems.

Environmental Impact of the Proposed Project

Impact on the Physical and Biological Environment

Since the soils in the area are generally coarse to fine textured, some soil compaction may occur in high use areas of the trail treadway. Over-use of such areas may also cause denudation of vegetation from these areas making the soils more susceptible to erosion. Reseeding of the trail treadway after upgrading, however, should help to minimize this problem.

The proposed action will not have a significant impact on the surface or ground water resources. Bridge construction will be undertaken in a manner which will not adversely inhibit streamflow or create sedimentation.

No impacts on mineral resources are expected.

Adverse impacts of the proposed action on vegetation will be its loss from trail treadway upgrading and rest area development. These impacts, however, will be offset by reseeding of the trail treadway and rest areas.

Adverse impacts on wildlife will be insignificant. Wildlife will probably benefit from seeding of the treadway with a wildlife mixture.

Increased use will cause some deterioration in air quality as a result of increased auto emissions in the parking area. Use of heavy equipment in development will have a temporary adverse impact on air quality.

Increased use may have an adverse impact on the water quality. Better methods of controlling erosion in the area, however, should have a beneficial impact.

Impact on the Historical and Archaeological Resources

No impact on these resources has been identified at this time. Further study by the Historical Society may reveal sites which must be avoided during development.

Impact on Transportation and Utilities

Expected increases in use of the area will have an insignificant impact on traffic volumes on the highway access routes to the area. Access to the area via CSAH 36 should not be adversely affected.

No impact on utilities will occur.

Impact on Socio Economic Factors

Since all of the land has already been acquired, no loss from local tax revenue will occur. Beneficial impacts on the local economy will be realized. This will result from increased tourist travel expenditures in the area.

Impacts on Land Use

Upgrading of the trail will not change the land use of the area.

References

Facilities In Economic Region III

1. Minnesota State Comprehensive Outdoor Recreation Plan - Minnesota DNR - Bureau of Environmental Planning and Protection, 1974.

Climate

2. Climate of Minnesota Part III. "Temperature and its Application"; Donald G. Baker and Joseph H. Strub, Jr., University of Minnesota Agriculture Experiment Station, 1965.
3. "Minnesota Soil Atlas - Duluth Sheet", University of Minnesota Agriculture Experiment Station, 1969.

Topography

4. "Minnesota Soil Atlas - Duluth Sheet", University of Minnesota Agriculture Experiment Station, 1969.

Vegetative Cover, Wildlife Timber Resource, and Management Program

5. Sand Lake District Management Plan - Minnesota DNR - Division of Forestry, 1970.

Soils

6. "Minnesota Soil Atlas - Duluth Sheet", University of Minnesota Agriculture Experiment Station, 1969.
7. "Soils of Minnesota", H.F. Arneman, University of Minnesota, Agriculture Experiment Station, June 1963.

Development Specifications

8. "The Ski Touring Trail Planner", Timothy B. Knopp and Jack P. Maloney, 1972.
9. "Trail Construction Guidelines", Ontario Ministry of Natural Resources, 1976.

Population

10. SPA/CURA Wall Map Series.
11. Population Projections 1970-2000, State Demographer, State Planning Agency.

Socio Economic

12. Minnesota Socio-Economic Characteristics, State Planning Agency.
13. Minnesota Research Bulletin #06, Department of Economic Development.

Land Use

14. Pocket Data Book, 1975, State Planning Agency.