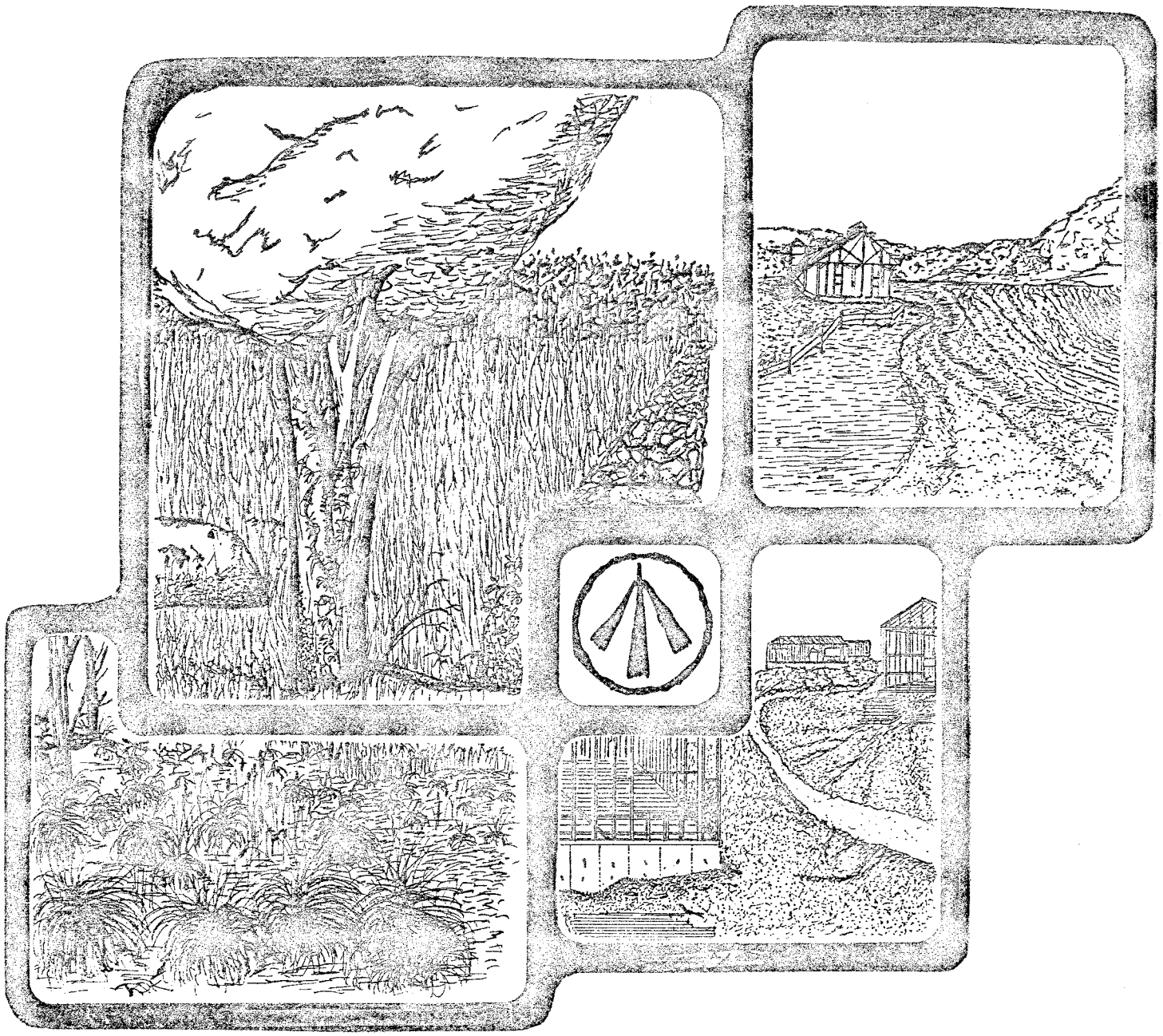
ENVIRONMENTAL REVIEW TEAM REPORT

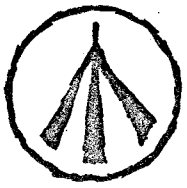


YMCA SLOPER OUTDOOR CENTER
SOUTHINGTON, CT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

YMCA SLOPER OUTDOOR CENTER
JANUARY 1984



King's Mark Resource Conservation and Development Area
Environmental Review Team
Sackett Hill Road
Warren,Connecticut 06754

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The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies
U.S.D.A. Soil Conservation Service

State Agencies
Department of Environmental Protection
Department of Health
University of Connecticut Cooperative Extension Service
Department of Transportation

Local Groups and Agencies
Litchfield County Soil and Water Conservation District
New Haven County Soil and Water Conservation District
Hartford County Soil and Water Conservation District
Fairfield County Soil and Water Conservation District
Northwestern Connecticut Regional Planning Agency
Valley Regional Planning Agency
Central Naugatuck Valley Regional Planning Agency
Housatonic Valley Council of Elected Officials
Southwestern Regional Planning Agency
Greater Bridgeport Regional Planning Agency
Regional Planning Agency of South Central Connecticut
Central Connecticut Regional Planning Agency
American Indian Archaeological Institute
Housatonic Valley Association

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FUNDING PROVIDED BY
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Northwestern Connecticut Regional Planning Agency

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Sandra Bausch, ERT Cartographer
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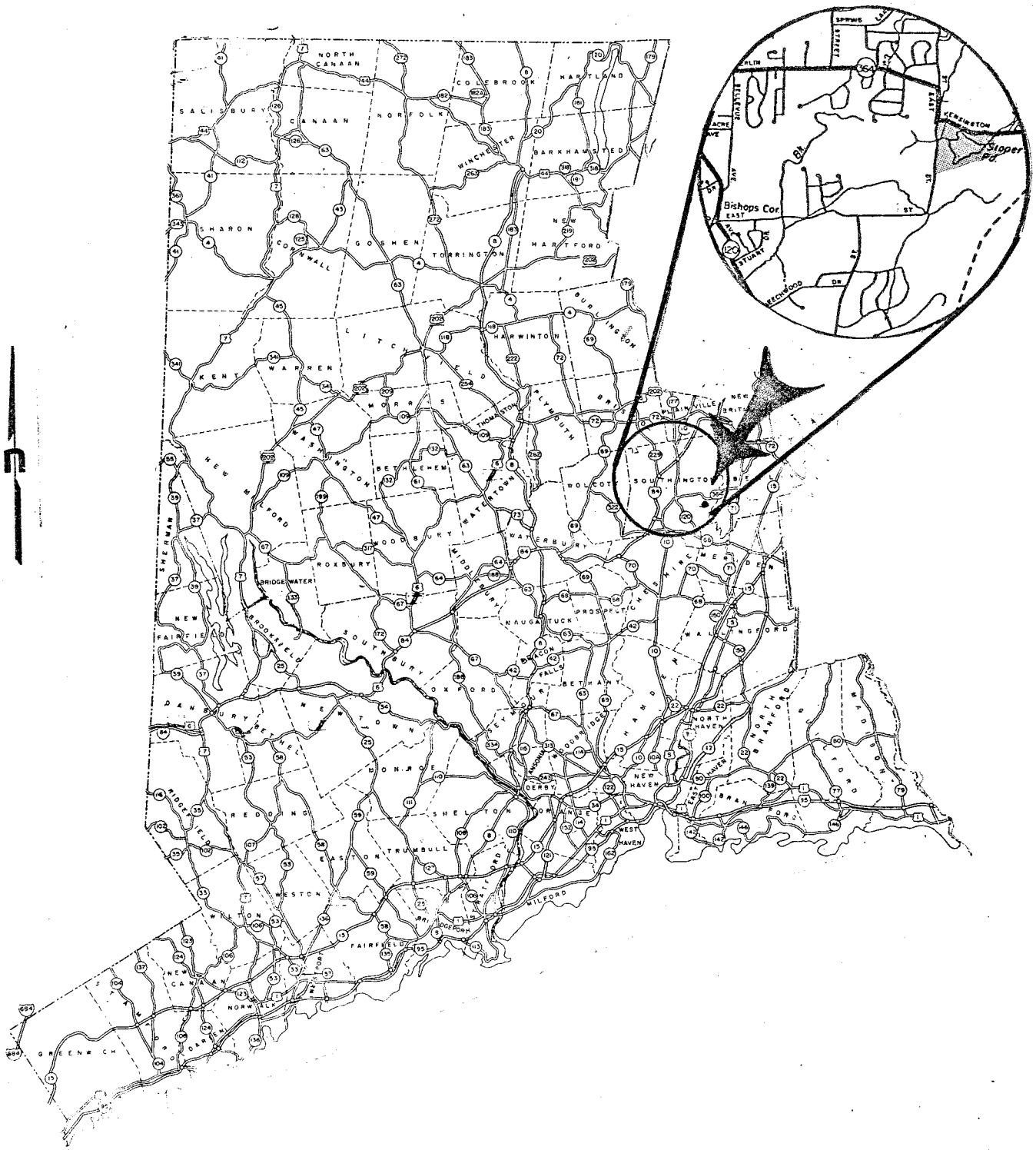


ENVIRONMENTAL REVIEW TEAM REPORT
ON
YMCA SLOPER OUTDOOR CENTER
SOUTHINGTON, CT

I. INTRODUCTION

The Southington YMCA, in cooperation with the Southington Town Manager, requested this ERT study to learn more about the natural resources and management potential of the Sloper Outdoor Center.

The Sloper Outdoor Center is ± 143 acres in size and located in the southeastern quarter of town. Access to the site is available from the north off Kensington Road and from the west off East Street. The site is characterized by moderately sloping wooded land in the eastern half of the site and gently sloping openland characterizes the western portion (see Figure 1).

The Southington YMCA is anticipating an increase in the use of the Center in the near future and is in the process of preparing a comprehensive plan for the use of the land. The ERT was asked to assist the YMCA in this endeavor by 1) providing a natural resource inventory of the area, and 2) discussing the opportunities and limitations of the site for forest management, wildlife management, and outdoor recreational use.

The King's Mark Executive Committee considered the YMCA's request for an ERT study, and approved the project for review by the Team.

The ERT met and field reviewed the site on September 14, 1983. Team members participating on this project included:

Paula Pendleton Bepko	Recreational Health Specialist	CT Department of Health
Alan Buzzetti	Sanitarian	CT Department of Health
Rob Cochron	Soil Conservationist	U.S.D.A. Soil Conservation Service
Andy Petracco	Recreation Specialist	CT Department of Environmental Protection
Bill Hyatt	Fishery Biologist	CT Department of Environmental Protection
David Poirier	Archaeologist	CT Historical Commission
Paul Rothbart	Wildlife Biologist	CT Department of Environmental Protection
Ralph Scarpino	Forester	CT Department of Environmental Protection
Bill Warzecha	Geohydrologist	CT Department of Environmental Protection

Figure 1
TOPOGRAPHIC MAP

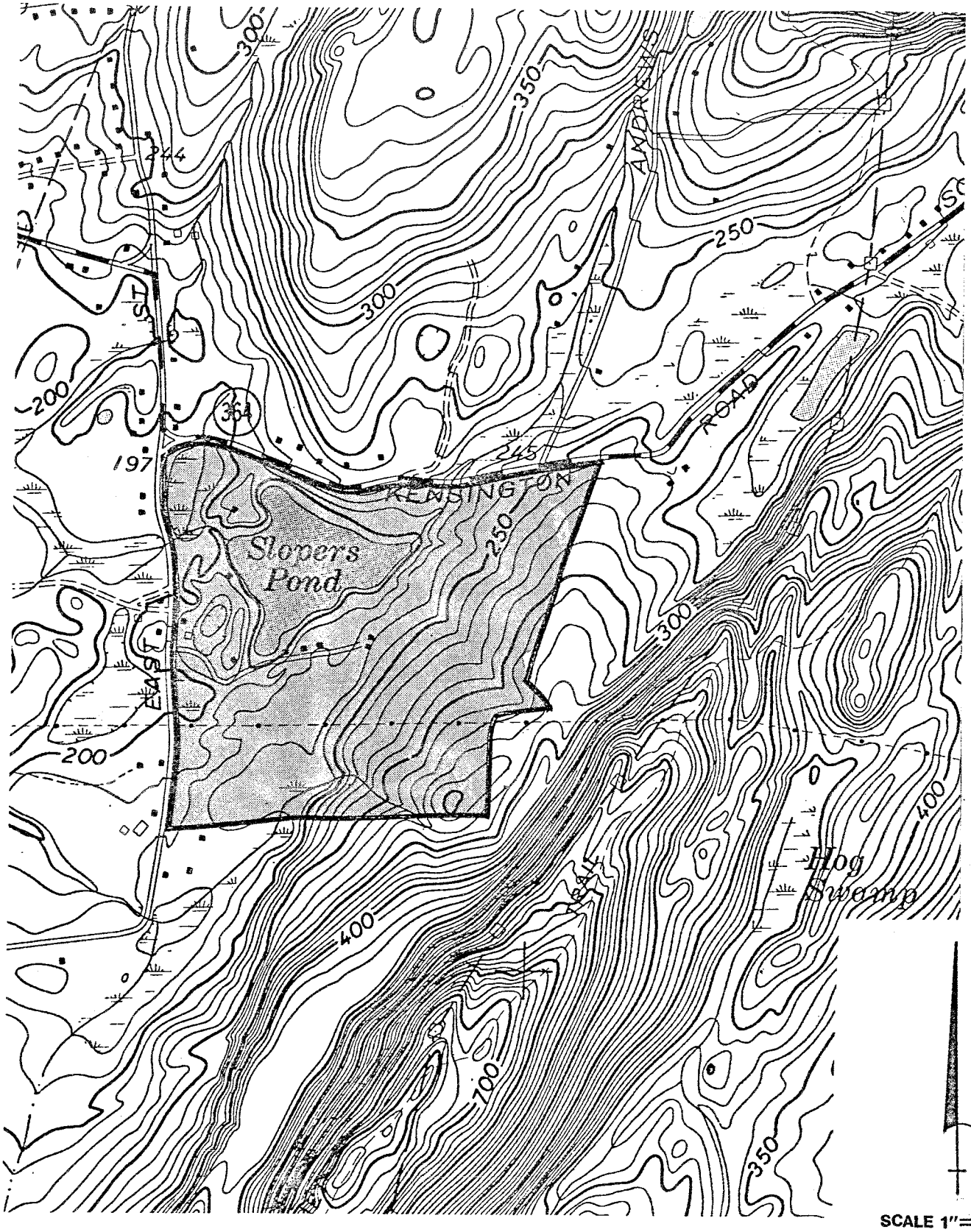
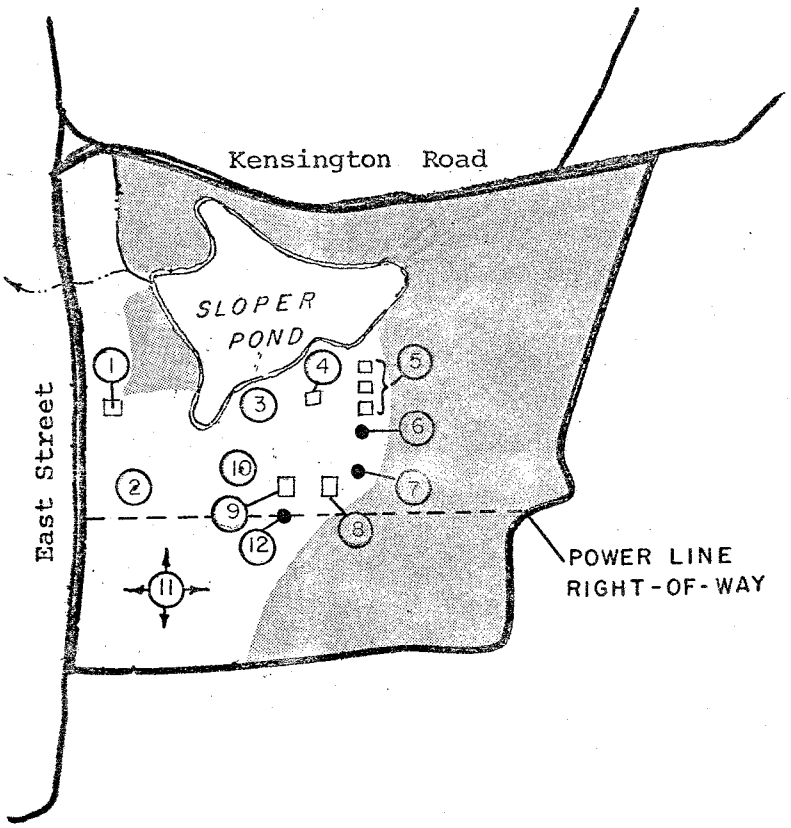


FIGURE 2
RECREATIONAL FACILITIES MAP



EXISTING FACILITIES

(1)	BARN WITH STAFF ROOM	(7)	PARKING SPACES
(2)	SOCCER/SOFTBALL FIELD	(8)	OPEN PAVILLION
(3)	BEACH	(9)	TENNIS COURTS (3)
(4)	REST ROOMS	(10)	OPEN FIELD
(5)	CRAFT SHED, INTERNATIONAL & DIRECTORS CABINS	(11)	FRISBEE GOLF COURSE
(6)	BASKETBALL COURT	(12)	ARCHERY FIELD

Scale 1" = 1000'

WOODED AREA TRAVERSED BY RECREATIONAL TRAILS; PRIMITIVE CAMPING AREA

Prior to the review day, each team member was provided with a summary of the proposed study, a checklist of concerns to address, a topographic map, a soils map, and a soils limitation chart. During the ERT's field review, team members met with representatives from the YMCA and walked the property. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the Team's findings. The report identifies the natural resource base of the Sloper Outdoor Center and discusses opportunities and limitations for land management. All conclusions and final decisions with regards to future land use rest with the Southington YMCA. It is hoped the information contained in this report will assist the YMCA in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, Sackett Hill Road, Warren, Connecticut 06754.

II. TOPOGRAPHY AND GEOLOGY

As shown in Figure 1, the YMCA Sloper Outdoor Center is characterized by a gentle to moderate terrain most of which slopes towards Slopers Pond and Misery Brook. Steepest slopes are found throughout the eastern half of the site. Elevations rise from about 190 feet above mean sea level along East Street in the western portion of the site to about 320 feet above mean sea level along the eastern boundary line.

Slopers Pond as well as a small intermittent pond, occupy the north central section of the site. The southern portion of Slopers Pond is the designated bathing area for the Outdoor Center.

The entire site lies within the Meriden topographic quadrangle. Both the surficial geologic map (GQ-150) and the bedrock geologic map (GQ-736) have been prepared by Penelope M. Hanshaw and published by the U.S. Geological Survey. They are both available at the Department of Environmental Protection's Natural Resources Center in Hartford.

The principal type of bedrock underlying the site is New Haven Arkose (see Figure 3). It is a medium to fine grained sedimentary rock whose main minerals are quartz and feldspar. "Sedimentary" rocks consist of rocks mechanically formed by fragments of old rocks. These old rocks were transported from their source and deposited in water and later cemented to form consolidated bedrock. New Haven Arkose is commonly a brick-red color; however, it may contain beds which have a green mottle to them. This rock unit does not outcrop on the site.

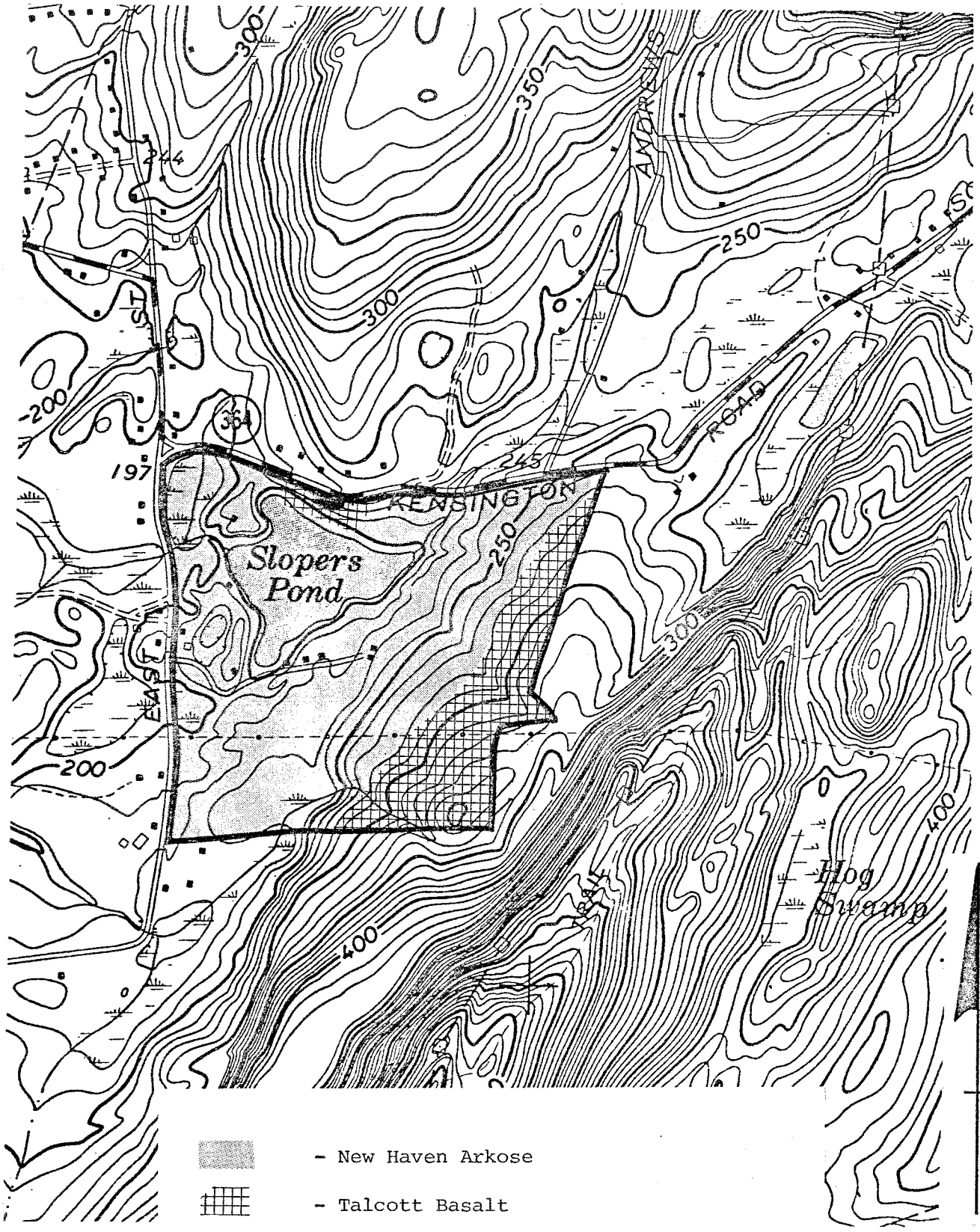
Another rock unit which underlies and outcrops in small areas along the northern and eastern limits of the site is Talcott Basalt. It consists of a dark colored (bluish gray to bluish green) fine to medium grained basalt. Basalt is a dense, hard rock of igneous (rock formed by the solidification of molten magma) origin which is relatively resistant to weathering. It formed approximately 200 million years ago when molten magma outpoured from volcanoes along cracks in the floor of the Connecticut Valley. As the molten magma or lava cooled, it hardened into the basalt (also called traprock). Common minerals in the rock include plagioclase feldspar (labradorite) and pyroxene.

Depth to bedrock ranges from zero where it outcrops along Rt. 364 to the north to approximately 10 feet throughout the remainder of the site.

The surficial deposits or that material overlying solid bedrock throughout the site consists primarily of sediments of glacial origin. These sediments include till and stratified drift (see Figure 4). Till, which covers the eastern half of the site was deposited directly from glacial ice as the ice front retreated northward. It consists of a varied mixture of rock particles ranging in size from clay to boulders. These particles were picked up by and incorporated into the moving ice mass. They were later either plastered directly onto the surface underneath the ice or lowered gently onto the surface from within or from the top of the ice sheet.

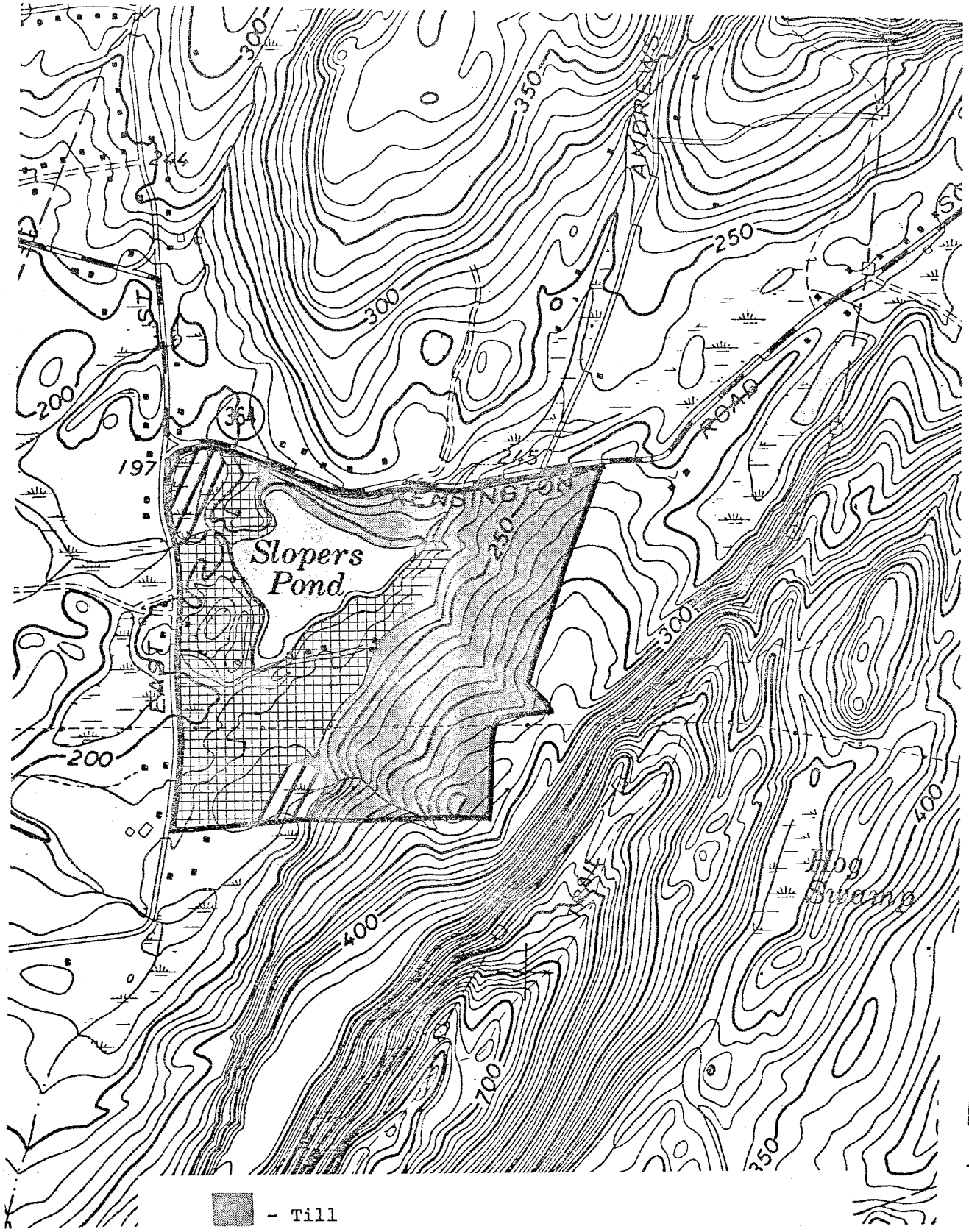
The texture of till is variable due mainly to the mode of deposition. In the upper few feet, the till appears to be sandy, stony, and relatively loose, while at depths below this, it generally is somewhat siltier and more

Figure 3
BEDROCK GEOLOGIC MAP



Note: See text for bedrock descriptions

Figure 4
SURFICIAL GEOLOGIC MAP



- Till

- Stratified Drift (glacial meltwater deposits)

- Swamp Deposits

Scale 1" = 1000'

compact. Due to its compact nature, till usually impedes the downward movement of groundwater resulting in a high groundwater table. Also, it is commonly very stony.

The other type of sediment which covers the western portion of the site is stratified drift. These sediments, which are generally composed of sand and gravel, were deposited by meltwater streams flowing from glacier ice. Because meltwater streams significantly reworked the glacial material, the materials were deposited in layers (stratified/ and to some degree sorted). These deposits are probably not more than 10 feet thick on this particular site.

Swamp deposits, which formed towards the end of the glacial period or after its disappearance, overlie stratified drift in small areas in the northwest, west and southern sections of the property. The swamp deposits consist chiefly of decayed vegetative material, intermixed with layers of sand, silt and clay. These soils are designated as Scarboro and Walpole soils on the soils map in the Appendix of this report. Swamp deposits within the site range in thickness between 3 and 5 feet.

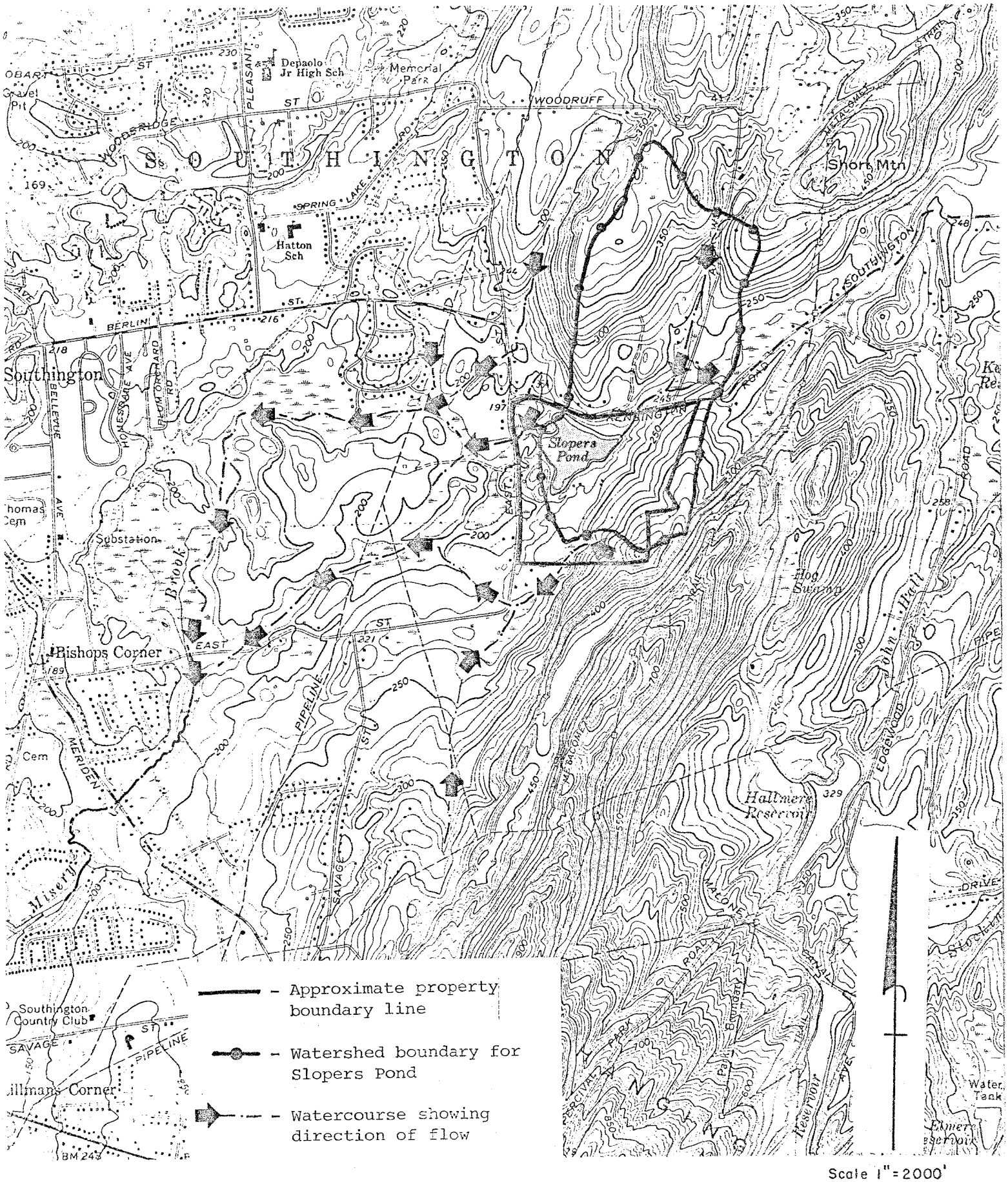
III. HYDROLOGY

The Sloper Outdoor Center lies within the watershed of Misery Brook. As shown in Figure 5, most of the property drains westerly into Slopers Pond, which in turn, drains to Misery Brook. Sloper Pond, which is a man-made pond, receives drainage from a watershed of approximately 307 acres. Also, according to YMCA officials, bottom springs contribute in-flow to the pond.

Since the watershed draining to Sloper Pond is covered largely by till, it would be expected that Misery Brook in this area experiences a very low flow rate during the dry times of the year. Stratified drift deposits, which are better able to absorb rainfall and release to watercourses in dry weather, are found only to a small extent w i t h i n t h i s d r a i n a g e area. The day of the ERT's field review, Misery Brook was observed to be flowing minimally at the inlet to the Pond. This may be due to groundwater discharges occurring in the swampy areas along Misery Brook and the presence of some stratified drift deposits in the watershed.

Based on visual inspection and the results of samples collected from the bathing area, it appears the natural quality of the pond water is satisfactory. However, in reviewing air photos and topographic maps, the watershed draining to Sloper Pond is presently only lightly developed. Intensive development in the watershed could lead to deterioration of the quality of Misery Brook and Sloper Pond. The major causes of water quality change due to development include erosion/sedimentation and wastewater discharges. Erosion and sedimentation may result from increases in runoff (which is commonly associated with development), removal of vegetation, improperly monitored excavations and/or filling, or from concentrated surface discharges. Erosion and sedimentation causes surface waters to become turbid and allows ponds and lakes to fill in with sediment more rapidly than otherwise would be the case. Therefore, it is recommended that any new development in the watershed should include an appropriate sediment and erosion control plan, which also includes runoff control measures, particularly where development will be intensive.

Figure 5
WATERSHED BOUNDARY MAP



- Approximate property boundary line
- Watershed boundary for Slopers Pond
- Watercourse showing direction of flow

If homes within the watershed are served by on-site sewage disposal systems, waste water discharges resulting from malfunctioning and/or improperly installed septic systems may cause serious degradation of water quality within the watershed. This, of course, depends upon the nature of the discharge and the means used to mitigate the detrimental effects. As mentioned earlier most of the watershed is covered by till which can be limited in terms of suitability for septic systems. These limitations may include a compact soil zone, high water tables, extreme stoniness and commonly shallowness to bedrock. In many cases these limitations can be overcome by a properly engineered system; however, it must be carefully designed and installed according to the final approved plan. Also, the installation process must be carefully monitored and inspected by the town health official. If development in the watershed was served by public sewers, the risk of substantial groundwater contamination should be effectively eliminated. This is provided that collection and transmission pipes do not leak.

Other types of contaminants which may adversely affect the water quality in Misery Brook and Sloper Pond include street drainage (which contains automobile residue), road salt, soap, fertilizer from lawns, and agricultural practices. Bathers themselves may also introduce contaminants to a water body; this aspect is considered in Section VIII of this report.

IV. SOILS

The soils for this parcel are identified on the soils map and soils limitation chart presented in the Appendix of this report. The soils limitation chart provides general information on the soils suitability for different uses.

Some of the soils at the Center are considered inland wetland soils as defined by the CT Inland Wetlands Act. A permit from the local Inland Wetlands Agency is needed for any construction and/or disturbance of these soils. The WtA, WcA and SeA soils are the wetland soils on this parcel (see Figure 6).

The soils limitations chart also lists soils which are probable sources of gravel. Generally, most of the soils mapped as sand and gravel soils in Figure 6 are probable gravel sources.

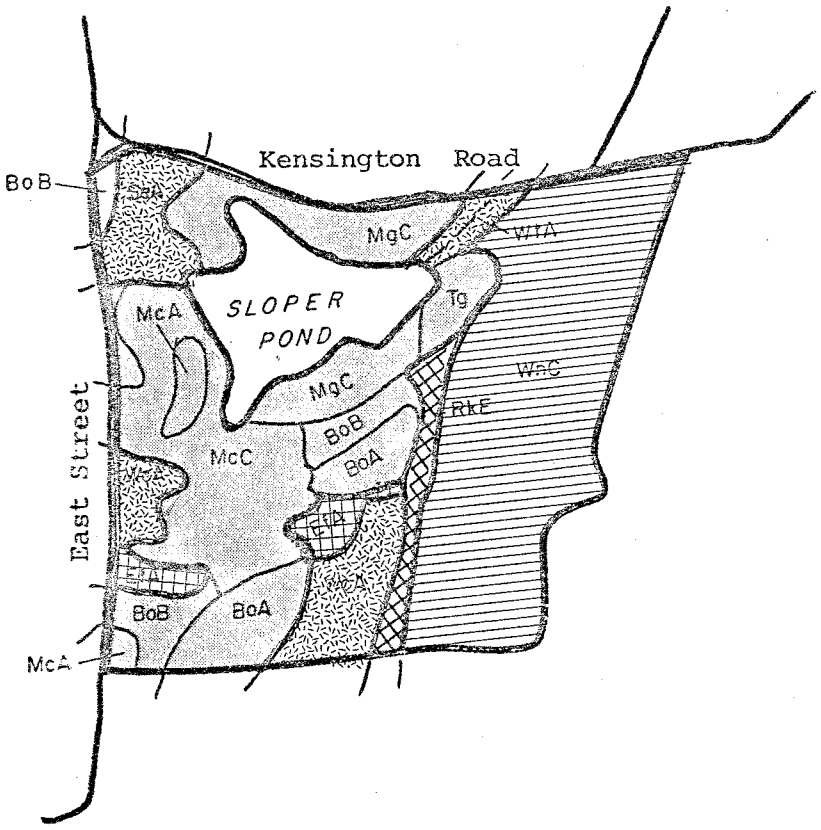
The soils chart can also be of assistance in locating potential sites for other buildings, septic systems and any additional facilities which may be desired for future development at the Center.

It was mentioned during the ERT's field review, that a new building for sanitary facilities may be constructed on the wooded hillside on the eastern part of the property. This is an area of the Wethersfield very stony loam soils which contain a slowly to very slowly permeable hardpan layer at a depth of around 36 inches. This layer restricts the downward movement of water. Septic systems installed in this soil usually require special design and careful installation. In periods of high precipitation such as early spring, this hardpan layer may cause the soil to be saturated creating a need for subsurface drainage tile.

SOILS AND RECREATION POTENTIAL

The Branford soils and the Manchester soils prevalent on the western half

Figure 6
GENERAL SOILS MAP



- Inland wetland soils
- Well drained and excessively drained sand and gravel soils
- Sand and gravel soils with seasonal high water table
- Upland soil over compact glacial till
- Upland soils, rocky and shallow to bedrock

Scale 1" = 1000'

of the site are suited for active or passive recreational uses. Other than small stones and slopes over 8 percent, these soils present few use limitations. There are no impermeable layers which would restrict water movement. Since these soils tend to be droughty, heavy recreational use of the grassed areas may damage the vegetative cover. It was mentioned that the number of campers could possibly double in the future. This may create a need for another athletic field, tennis courts and basketball court. If there is heavy use of vegetated areas such as the athletic fields, it may be necessary to reseed these fields. Kentucky 31 Tall Fescue at 150 - 200 lbs per acre is a grass suited to heavy use areas and is drought tolerant. The Soil Conservation Service can provide additional seeding information if desired at 688-4946.

Presently there is a problem with surface water ponding in the parking area adjacent to the tennis courts and shelter. Also the water is flowing over land to the baseball/soccer field adjacent to East Street. Diversions and waterways would help redirect this water to safe outlets. The Soil Conservation Service can provide technical assistance on these measures.

The existing wooded campsite areas are accessible by a trail system. Some parts of this trail system are on steep grades creating an erosion problem in some areas. These steep trails could be relocated on a lesser grade, seeded with Kentucky 31 Tall Fescue and improved with the installation of log water breaks on the trails to cut off the water flow down the trail. An alternative to seeding would be to use 6 - 8 inches of wood chips on the steeper slopes along with the water breaks. The campsite areas are lacking in vegetative cover due to heavy foot traffic. Since the number of campers will probably increase in the future, a plan for stabilizing these areas is needed to control erosion. Designating specific areas for the camp fires would make available the rest of the site for vegetative cover protection. A system of possibly rotating sites may be helpful. Again Kentucky 31 Tall Fescue is an ideal grass for use here.

EROSION AND SEDIMENT CONTROLS

To insure long term protection of Slopers Pond, erosion and sediment controls are needed in several areas within the Center. Future development of facilities should also provide for these controls. Lastly, as discussed earlier in this report, there should be erosion and sediment controls on all new development within the watershed. Should new housing, industrial development, highways, etc., be constructed without these controls, there is a potential for erosion and sediment damage to the pond and other sections of the Center. Presently there are no catch basins on Kensington Road near the Center. Should new housing developments be constructed and not provide for storm water impoundment and erosion and sediment controls, this water could flow into the brook feeding the pond and deposit sediment in the pond.

The areas which should be seeded with Kentucky 31 Tall Fescue and Creeping Red Rescue are the former logging landing area, the main assembly area up on the hillside with the campsites, several skidder trails, and part of the cross country ski trails. While each area in itself may not be a major erosion problem, it is best to start now to stabilize these areas.

It should be noted that there is extremely limited access to the majority

of the wooded section on this site other than the power line road. Consideration should be given to providing adequate access for fire protection. Any future roads and trails constructed in this area should be well planned to provide this need.

V. VEGETATION

The vegetation found on the Sloper Outdoor Center can be divided into 8 separate cover types (see Figure 7). These types are described below. Several of the listed types are similar in early successional species composition. About ¼ of the land area is presently open field, about ½ forested, and the remainder is in various stages of "old field" growth.

The largest single stand (stand 4 in Figure 7) was commercially logged last year, however, the forested area in the southeast corner still has commercial sawtimber available. The remainder of the property does not have much commercial wood value. The varied landscape plays an important role in the aesthetics of the area, however, and provides a varied wildlife habitat.

A. Vegetative Type Descriptions

Type 1 - Old field, with some open area. This type contains a variety of early successional species of vegetation and is referred to as the "old nursery area". Vegetation is mixed from mowed grasses to clumps of brush, to an old nursery bed. Much of the vegetation in the clumps of brush are mixes of "old field" species and include red cedar, sweet and black cherry, red maple, sumac, raspberries, and grape vines. The remnants of a nursery bed contain primarily white spruce which is about 3 to 4 feet in height.

Type 2 - Red Maple Swamp. This type lies in the far northwestern corner of the property. Surrounding some open water are pole sized red maple on very wet ground conditions. Other species include elm, ash, king solomon seal, sensitive fern, barberry, and spice bush.

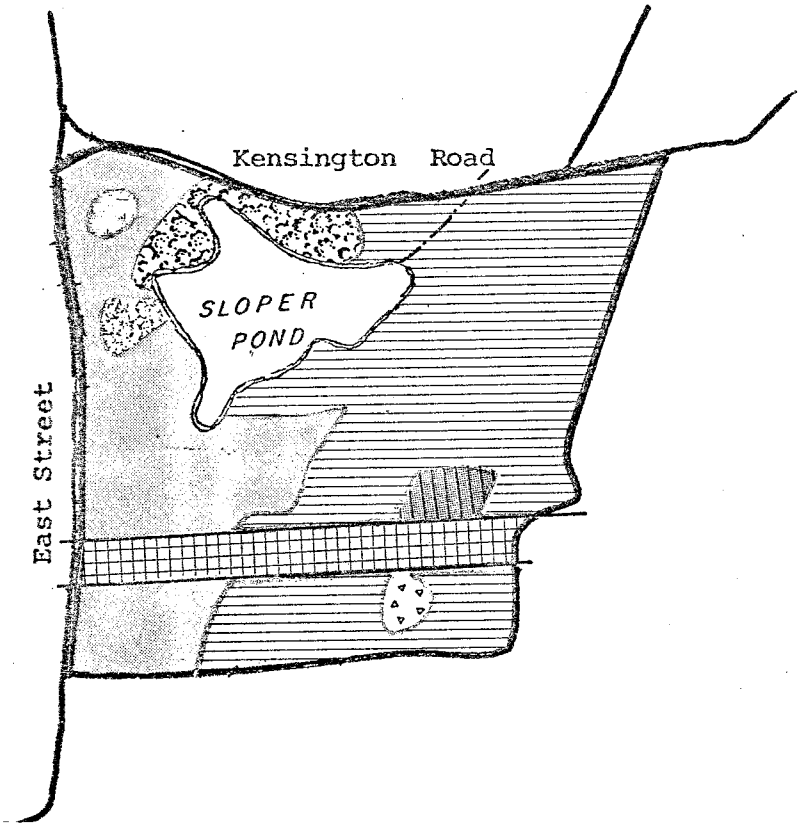
Type 3 - Old Orchard Area. This type lies along the north shore of the pond. It once was an orchard and now consists of the old apple trees overtopped by red maple, black and sweet cherry, aspen and white pine. The understory consists of spice bush, red cedar, poison ivy and sugar maple seedlings.

Type 4 - Mixed Hardwood Forest. This large area was commercially logged in 1982. The residual stand includes pole and sawtimber sized sugar and red maple, beech, and chestnut oak. The stand has an understory of viburnum, white ash and aspen. Several acres of this parcel were underplanted with white pine and hemlock in the spring of 1983.

Type 5 - Council Ring Area. This piece is heavily used by the campers for campfire ceremonies. The hardwood species mentioned in type 4 abound but this area contains a heavy hemlock understory.

Type 6 - Power Line R-O-W. This area lies directly under the power line right-of-way. Early successional species dominate along with many tree species. Commonly found are willow, aspen, sumac, golden rod tulip poplar, white pine, blackberry, and sweet fern.

Figure 7
VEGETATION MAP



LEGEND

Stand	Description
1	Old field
2	Red maple swamp
3	Old orchard
4	Mixed hardwood forest
5	Council ring area
6	Power line ROW
7	Mixed hardwood forest
8	Open field

Scale 1" = 1000'

Type 7 - Mixed Hardwood Forest. Tree species are similar to those found in type 4, with the exception that there is a large component of white oak, and the understory includes quite a bit of dogwood. This area was not logged in 1982 and there exists a lot of sawtimber sized trees.

Type 8 - Open Field. These fields are maintained in an open condition and are utilized for recreation and hay production. There does exist hedgerows of trees. Species within the hedgerows include hickory, red and sugar maple, and several varieties of oak.

B. Limiting Conditions and Potential Hazards

With the exception of Type 2 (the red maple swamp), most of the property is well suited to a variety of management options. Type 2 limits any development because of a high water table close to the surface of the ground. These wetland types of soils allow for shallow root penetration of the trees. Openings and clearings in and along side this area should be avoided if possible.

C. Management Considerations

Recent past management has included a timber sale and partial underplanting in Type 4, and underplanting around the north and west sides of the pond with hemlock and white pine with the girdling of many of the overtopping hardwoods. Also in Type 3 much of the trail sides were sprayed to widen the trail walkway.

Coniferous plantings around the edge of the pond add a diversity of color and enhance wildlife habitat. However, a balance should be struck between species so a diversity of vegetation will continue to exist. Large decidous trees, particularly the maples, add much to the landscape. Fall foliage would suffer from the removal of these types of trees.

Trail systems add particular pleasure for campers and other users. The summer spraying of the trail systems caused a brown edge on both sides of the trail back a distance of 2-3 feet. This detracts from the aesthetics offered by the walk. This "brown-out" could be alleviated by either hand cutting or the spraying with alternative chemicals. An application of a bud development inhibitor in late summer shows little or no apparent affect until the following spring when the plant fails to refoliate.

Vegetation Type 7 is a sawtimber sized stand of hardwood which could use a sawlog thinning to remove the poorer quality stems. This thinning would generate income and could be handled much in the same manner as the previous sale in Type 4.

Additional plans may call for expansion of the day camp facilities to accomodate campers from the surrounding communities. Some of this expansion is proposed for the wooded area in and near Types 4 and 5 and would come in the form of an access road, several buildings (including a toilet facility), and perhaps a small gathering area for special occasions. No large ball fields are anticipated. Any facilities should be well planned in advance as to their exact location. This would allow for necessary clearing in an orderly fashion and avoid the possibility of removing some trees unnecessarily. It should be realized that trees are quite sensitive to changes in soil conditions. Devel-

opment practices near trees may disturb the root zone and ultimately their health and vigor. Trees in the process of dying, and indeed dead trees, reduce the aesthetic appeal of an area, become hazardous, and may be expensive to remove. If possible, clumps of vegetation should be left rather than individual stems. This lowers the possibility of soil disturbance and mechanical injury to individual trees.

Any cutting, whether it is done for thinnings, unit sites, or roadways should be done to take advantage of the high demand for wood products. Firewood could be a main product and is highly sought after. The proper marketing of this product should be a concern and should be planned for.

A public service forester or a private forester may be of assistance in either the on-the-ground planning or the marketing of wood products.

VI. WILDLIFE

The 143 ± acre tract comprising the YMCA Sloper Outdoor Center is made up of three major wildlife habitat types. These are open water, mixed hardwood forest, and open land.

Open Water

This habitat type consists of one large (19 acre) man-made lake and two small (1/8 to 1/2 acre) ponds.

The large lake is primarily utilized for swimming, boating, and fishing. It is surrounded by a mixed hardwood forest. The immediate shoreline vegetation consists of dogwood, spicebush, sumac, alder, and various herbaceous species. During the ERT's field review, little to no surface vegetation was observed on the lake.

Wildlife observed or previously documented include mallards, black ducks, wood ducks, snapping turtles, water snake, muskrat, bass, catfish, perch, and a small number of trout. Other species typically utilizing such habitat include other waterfowl, shorebirds, deer, rabbits, raccoon, opposum, and numerous amphibians and reptiles.

During the ERT's meeting, possible problems with snapping turtles and algae and weed control were discussed.

Turtles are seldom a serious problem to man or wildlife. They often provide a valuable janitorial service by killing diseased or weakened fish, and by cleaning up dead or decaying animals of all kinds. Their indiscriminate killing is strongly discouraged and every effort should be made to insure that local populations are not exterminated unless it can be clearly demonstrated that they are a hazard. If a hazard does exist, trapping with a baited hoop net trap could be conducted during spring, summer and early fall.

Although not observed, apparently there is an algae and weed control problem during the summer. Current control methods are application of copper sulfate for filamentous algae and aquathol K for curlyleaf pondweed. In addition, hardwoods and shrubs are being removed from a ten foot zone around the lake in an attempt to reduce the organic load of the lake. The eventual goal is to have a conifer-grass edge.

Application of copper sulfate is a good method of algae control. However, if trout are of value in the lake, copper sulfate should not be used and cutrine should be substituted.

For weed control the application of aquathol K is effective and environmentally safe. It has a wide safety margin for fish and fish food organisms.

If large areas of the lake are to be chemically treated the Team's wildlife biologist recommends doing partial treatments. This will maintain portions of aquatic habitat and prevent possible suffocation of fish due to decaying vegetation using up a large percentage of the oxygen present in the water.

The removal of hardwoods and shrubs from around the lake as proposed is undesirable from a wildlife standpoint. The practice may negatively impact wood ducks, herons, egrets, and kingfishers and it is not expected to have any significant impact as far as reducing the organic load in the lake. The removal of well established root systems will increase erosion, and the sedimentation problem will be worsened. In addition, this practice will be aesthetically unpleasing.

It would be beneficial to construct a water control structure at the outlet of the lake. This would provide the Center with water manipulation capabilities which could be used for better wildlife, fisheries, and weed control management.

The two small ponds are located within a mixed hardwood stand. Red maples dominate immediately around the ponds. The understory consists of spicebush, sumac, and dogwood. Aquatic vegetation is dominated by duckweed and buttonbush. Wildlife observed were kingfishers, wood ducks, frogs, water snake, deer browse, and raccoon tracks. Other wildlife typically frequenting such sites are egrets, herons, skunks, mallards, and muskrat. These areas are best left in a natural state with the possible addition of one wood duck box at each pond and a nature trail passing by.

Mixed Hardwoods

This habitat type consists of a great diversity of hardwood species including red oak, white oak, sugar maple, red maple, cherry, sycamore, hickory, beech, birch, and tulip. There are also scattered apple, aspen, a small stand of hemlock, a small stand of cedar-white pine, and an old apple orchard. The understory consists of spicebush, sassafrass, sumac, barberry, ferns, viburnum, poison ivy, blackberry, grape, mulberry, basswood, and witch-hazel.

Wildlife observed were mourning doves, white-crowned sparrow, deer browse, and raccoon scat. Other species typically utilizing this habitat type are squirrels, fox, rabbits, opposums, and ruffed grouse.

Enhancement practices to encourage wildlife utilization include:

1) Create diversity of habitat by making small irregularly shaped openings (1/4 to 1 acre) located in an east to west direction (to obtain maximum sunlight). This will encourage fruit producing shrubs valuable to many types of wildlife. Edges of openings should be feathered (gradually blended into the forest type). Openings should be mowed every three to five years.

2) Pile brush along edges of openings for small mammals and birds.

3) Maintain snag trees as they provide nesting and escape cover for numerous species.

4) Placement of various size nest boxes in forest to provide nesting cavities for squirrels and various birds. This project can serve as an environmental education program for campers.

5) The practice of removing all hardwoods and shrubs from around the lake should stop.

6) Where aspen and apple trees exist, clearing of competitive vegetation should be conducted to release these high value species. Apple trees should be pruned and fertilized one year after the release.

7) Control of shrubs along trails should be done mechanically. If herbicides must be used, consider krenite. This herbicide is a bud inhibitor which is applied to foliage approximately one to two months prior to leaf fall, with control of vegetation occurring the following growing season. This will eliminate the unpleasant brown appearance along the trails.

8) If a timber harvest is planned, consider these wildlife practices:
   a. Encourage mast producing trees (oak, hickory, beech).
   b. Leave five to seven snag trees per acre.
   c. Create small opening (1/4 to 1 acre) with feathered edges.
   d. With brush construct small piles along edges of openings for nesting and escape cover.
   e. Maintain some evergreen cover.

Open Land

The open land habitat consists of numerous recreational fields (grass habitat) and a powerline right-of-way (brush habitat).

Due to extensive human use of the recreational fields they have limited value to wildlife. However, because of their proximity to forest cover, vegetative diversity, and islands of shrubs (sumac and dogwood) they do benefit some wildlife, particularly birds such as mourning doves, robins, sparrows, and numerous songbirds.

The powerline right-of-way is a brush type comprised primarily of dogwood, alder, sumac, ash, and blueberry. Understory consists of herbaceous vegetation, grape, and blackberry. This area is located within the mixed hardwood type and provides habitat diversity essential to numerous wildlife species such as deer, woodcock, ruffed grouse, raccoon, and various birds.

Enhancement practices to encourage wildlife utilization include:

1) Maintain islands of shrubs throughout the grass recreation fields.

2) A fifteen foot uncut border should be left where grass fields abut forest. This border should be mowed every three to five years (after August 1) and not all the same year. These uncut borders are valuable to many wildlife species.

3) Powerline right-of-way should be maintained as a low shrub type by mechanical control every three to seven years. If herbicides are used, consider tordon application during fall or winter.

4) Creation of a feathered edge between the powerline right-of-way and forest habitat. This could be accomplished with cordwood sales.

5) Bluebird boxes should be erected at edges of fields and along the powerline right-of-way.

It should be recognized that for optimum wildlife habitat potential, a variety of successional stage vegetation should be encouraged. Proper maintenance of openings, field borders, aspen and apple tree releases etc. should be conducted to ensure and maximize habitat diversity at the site.

If and when expansion occurs at the Center, it would be desirable to concentrate future development (e.g. athletic fields, sanitation facilities, buildings) in the vicinity of the existing facilities to minimize negative impacts to wildlife.

For any further assistance the Center or town should feel free to contact the Wildlife Biologist at the Western District DEP Headquarters (485-0226).

VII. FISHERIES

Sloper's Pond is a 19 acre artificially impounded body of water. The pond has a maximum depth estimated at 10 feet and an average depth of nearly 5 feet. A beach area located on the southern shore is currently used by the YMCA day camp as a supervised swimming area. Fishing by camp staff, volunteer help and day campers is allowed. Additionally, a consistent level of poaching is reported to occur along the north shore with entry taking place via Kensington Road.

Fish species inhabiting the pond include large mouth bass, bluegill sunfish, pumkinseed sunfish, yellow perch, white perch and white catfish. Various minnow species may also be present. Based upon word-of-mouth information, it appears that most panfish species currently exhibit a healthy size distribution capable of providing fishermen with good numbers of fish 6 inches or larger in length. Largemouth bass growth, however, may be suppressed as large numbers of fish in the 10 inch size range are reported to dominate in the pond. As such, this could represent a stockpiling of bass just below the legal size limit (12 inches). Scale samples from bass and bluegills have been requested by the ERT's fishery biologist for age-growth analysis. If stunting of bass and/or bluegill appears to be occuring, an increase in the take of panfish would be recommended. No change in regulations could be enacted to reduce the number of sublegal bass as Sloper's Pond would not qualify as "private waters" (can not completely control its water source) - a prerequisite for allowing the taking of fish less than the statewide legal size limit.

Current management of the pond includes 1) chemical treatment with copper sulfate 2 or 3 times annually to control algae growth, 2) periodic application of diquat (once in last three years) to control macrophyte growth, and 3) the placement of brush upon the winter ice. All chemical treatment is performed by Borg Pesticides of Suffield. It is possible that the reported quality-size distribution of panfish is partially the result of the elimination of weed

cover from the lake via chemical treatment. The reduction of macrophyte cover allows more efficient bass predation, resulting in lower total numbers but a more uniform size distribution of panfish. However, the elimination of all cover should be avoided as a moderate amount is beneficial in providing shelter for all fish and spawning areas for perch. Thus, the policy of submerging brush to provide cover should be continued on a biannual basis.

Concern has been voiced in regards to the contribution of nutrients via leaf fall to the algae bloom problem of the pond. Measures have been proposed and some action taken involving a gradual removal of hardwood trees adjacent to the lake, and their replacement with pine. It is unlikely that the amount of nutrients added by wind blown leaf sources warrant the expense necessary to complete this plan and it is questionable whether any benefit would ever be observed if it were completed. Algae blooms are the result of an excess of nutrient input in the presence of acceptable light and temperature. Foliage from trees in the watershed does contribute to the organic loading of streams, both as dissolved and particulate organic matter. This matter is transformed by animal utilization and microbial degradation during its transport to and within the runoff water. Eventually, it enters the pond where it contributes to the lake metabolism. Foliage entering the lake directly from the nearby shoreline can be expected to contribute little to the nutrient budget of the lake in comparison to the organic matter entering via the stream and the remainder of the watershed. Exceptions to this rule do occur, but only in small ponds located in heavily forested areas (Wetzel 1975)*. Thus, in most instances, the replacement of deciduous tree species with coniferous ones along the immediate lake shoreline can be expected to be futile as a means of reducing a lake's nutrient load and incidence of algal bloom.

IX. RECREATIONAL HEALTH CONSIDERATIONS

During the ERT's field review, it was indicated by YMCA staff that current use of the Center approximates 200 users per day. A proposed increase in use would double this load to 400 uses per day. From a recreational, health and safety viewpoint, two issues are of particular significance. These relate to: 1) the proposed construction of a new unit site in the eastern woodland portion of the site; and 2) the capability of Sloper's Pond to support additional bathers. Both of these issues are discussed below. The suggestions and regulations outlined below are offered to guide the YMCA in planning the future use and development of the Center.

A. Projected New Unit Site: If a new unit site is planned for the projected increase of campers, a determination must be made of the extent of services and facilities to be provided. The water supply must be provided in ample quantity to meet all requirements of the maximum number of persons using the camp at any time. If water is to be supplied, it must be in compliance with Sections 19-13-B51a and 19-13-B27a of the Public Health Code. An established yield should be resolved on existing water supplies to determine whether another well is needed. Water must be easily obtained within a distance of not more than three hundred feet of any camping spot.

When toilet facilities are provided, they must meet Sections 19-13-B103 and 19-13-B27a of the Public Health Code. All plans for subsurface sewage

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* Wetzel, Robert G. 1975. Limnology. W. B. Sanders Company, Philadelphia, PA. 742 pp.

disposal systems serving a building with a designed sewage flow of two thousand gallons per day or greater must be approved by the State Commissioner of Health Services. The toilet facilities must be located so that no unit site within the camp is at a distance greater than three hundred feet from the toilets. The location of all toilets shall be plainly indicated by signs. At least one toilet seat for each twenty persons or fraction thereof shall be provided in the day camp. If plans are made for the camp to become residential in nature, then the ratio would change to one toilet per fifteen persons or fraction thereof.

Adequate handwashing facilities must be provided with at least one sink for each twenty persons or fraction thereof. These sinks must be readily accessible from the toilet rooms. Plumbing must conform with Section 19-13-B45 of the Public Health Code.

Drinking fountains shall conform to Section 19-13-B35 of the Public Health Code.

Refuse depositories must be within two hundred feet of each unit site in the camp.

YMCA staff has indicated that the camp would continue to have campers bring bag lunches. Adequate refrigeration facilities must be provided for the proposed increase in campers and staff. Any preparation of food, such as cookouts, must be done at unit sites located at least two hundred feet from privies.

Access trails and roads must be free of obstructions and in adequate condition for emergency transport. Location of unit sites must be such that necessary and emergency information can be readily communicated between unit sites, infirmary, and main office.

Any future forest improvement programs conducted must continue to be done outside the camping season. This will prevent any overlap of heavy equipment being present in the same general area used by campers and/or staff.

B. Bathing Area: Factors influencing bathing water quality include the quality of incoming water, the flow through and dilution of water within the bathing area as contamination will be introduced by bathers, and the number of bathers utilizing the area. A review of data on file at the State Dept. of Health Services has provided the following bacteriological analyses results.

Date	Total Coliform Organisms (Membrane Filter Technique)
7/1/80	60
7/17/80	60
7/7/81	170
7/5/83	50

These coliform bacteria levels are considered satisfactory for bathing areas.

A review of past youth camp inspection reports on file at the State Dept. of Health Services for the years 1977 through 1983 indicates that water was not

overflowing the pond spillway at those times. Inspections were conducted for those years during the mid July through August time period. This indicates that flow through of water cannot be relied upon for bathing area water dilution during a significant portion of the bathing season. Therefore circulation of water within the pond would have to be relied upon during this period as the major factor in maintenance of satisfactory bathing water quality. Other factors such as flow from Misery Brook and underground springs would appear to be negligible.

Experience has shown that a minimum figure of 1,000 gallons of dilution water per bather per day, based upon the average number of bathers per day is necessary to assure satisfactory water quality. Since it can be assumed that the entire volume of water in the pond will circulate twice per year, an average flow within the pond can be determined by dividing the total pond volume by 180 days.

Example #1: (Note these figures are based on estimated data given and derived during the review and the example is provided only to show method of determining this bather load figure. Accurate data should be determined in the future)

19 acres (pond surface area) X 43,560 $Ft.^2$ X 4 feet (average depth) X 7.48 $\frac{gal_3}{Ft.}$ =

$$\frac{24{,}762{,}988 \text{ gallons}}{180 \text{ days}} \qquad \frac{1000 \text{ gals.}}{\text{bathers}} = 137 \frac{\text{bathers}}{\text{day}}$$

Thus in this example, flow within the pond could be expected to maintain satisfactory water quality for a bather load of 137 bathers. Flow from Misery Brook and underground springs may be used to supplement this bather load, if accurately quantified.

Additionally, dilution within the bathing area itself must be considered. At least 1000 gallons per bather per day should be provided within the immediate bathing area.

The state standard for acceptable bathing water quality is a coliform content of 1000 per 100 ml or less.

Example #2: (Same provisions as example #1)

(110 ft. X 80 ft.) (bathing area size) X 3 ft. (average depth) X 7.48 $\frac{gal_3}{ft.}$ =

$$197{,}472 \text{ gallons} \qquad \frac{1000 \frac{\text{gals}}{\text{bather}}}{\text{day}} = 197 \frac{\text{bathers}}{\text{day}}$$

Thus in this example the volume of water in the immediate bathing area could be expected to maintain satisfactory water quality for a bather load of 197 bathers.

During the site review, YMCA staff noted that present usage figures approximate an average of 200 bathers per day. Proposed increase in use would double

this load to 400 bathers per day. Using the figures noted above (which are subject to revision with more accurate data) it does not appear that the pond could be expected to adequately support increased bather activity. This is particularly true in regard to available total dilution as bathing area size could be increased in order to increase water within the immediate bathing area.

It may be possible to somewhat increase acceptable bathing loads in a youth camp setting because of the higher degree of bather control as opposed to a normal public bathing area. This may be possible if a requirement for showering prior to bathing is strictly enforced. A high level of contaminants would be expected to be introduced immediately after entry into the water by the bather. Strictly enforced shower requirements could reduce this contaminant load. Of course, an adequate number of showers for males and females would have to be provided in the vicinity of the bathing area. Appropriate water supply and sewage disposal systems would be needed for these facilities.

Other alternatives such as increase of flow through the bathing area via a well and pumping ground water may be considered if hydrogeological conditions are satisfactory, but would entail additional expense. Additionally an increase in use of the entire facility may be considered while restricting use of the bathing area to present levels of usage.

It should be noted, in closing, that according to the State Public Health Code (Section 19-13-B34e), "if the bacterial standard is maintained (in a water body), the flow requirement may be reduced for short periods of time to no less than 500 gallons per day per bather, with approval of the director of health." It may therefore be possible for the Center to handle 400 bathers per day at least on an occasional basis. Such opportunities would be enhanced if other alternatives to increase acceptable bathing loads were implemented, as discussed above.

IX. WATER SUPPLY

As mentioned above, YMCA officials have stated that the present usage of Slopers Pond by 200 bathers per day could possibly be increased to 400 bathers per day. Based on the approximate bathing load figures computed earlier, it does not appear that the pond could support such an increase of bathers without significantly decreasing the water quality. However, it is possible that inflows to the pond could be augmented during the summer months by pumping ground water from a drilled well into the pond. Because no substantial groundwater resource (i.e., a high yielding sand and gravel aquifer) underlies the site, it is likely that the underlying bedrock would be the principal aquifer. Stratified drift deposits in the western portion of the property are probably too thin to allow the development of a high yielding well. Yields from bedrock wells depend upon the number and size of water bearing fractures penetrated. Since the distribution of fractures in the bedrock is irregular, it is difficult to predict what the yield of a well drilled on the site might be. Nevertheless, the Team geologist reviewed two well completion reports for residential wells drilled on Andrews St. and Kensington Road, which is north of the site. They revealed yields of 9 gallons per minute and 25 gallons per minute at depths of 310 feet and 125 feet, respectfully. If a moderate yielding bedrock source, such as the above mentioned, was found in the vicinity of the YMCA Property, it is possible that the well could bolster inflow to the pond. However, finding such a well cannot be predicted and/or guaranteed without a search process which would be expensive. Costs of operation and maintenance of the system are additional factors which must be considered in analyzing this alternative.

X. CULTURAL RESOURCES

The Sloper Outdoor Center has a varied and interesting historic background. The historic development of the site has been researched and documented by Peter Nemeth of the YMCA staff. Noted historic sites include a creamery just west of the outlet of Slopers Pond, a cement mill near the Misery Brook inlet to Slopers Pond, and two icehouses near the dam at Slopers Pond. While these historic sites appear to lack archaeological integrity and thus offer minimum possibility for professional interpretive treatment, they nonetheless have educational value and enhance the character of the Center. Consideration should be given to the possibility of placing plaques along the trail system beside these historic sites to inform trail users of the unique heritage of the area.

The YMCA-owned residence and associated barn, located at 1000 East Street, appears to possess historic and architectural significance. Together with two residential structures located on the opposite side of East Street, this cluster of rural buildings appear to meet the eligibility criteria for the National Register of Historic Places as a small rural neighborhood district.

The National Register of Historic Places is the official list of the Nation's historic properties worthy of preservation. Among the benefits provided by a listing in the National Register are: 1) eligibility of property owners for Federal tax benefits, and 2) qualification for Federal grants for historic preservation when funds are available. Should the YMCA be interested in pursuing designation of the above structures on the National Register of Historic Places, the State Historic Preservation Officer should be contacted at 566-3005.

XI. ADDITIONAL RECREATION CONSIDERATIONS

As shown in Figure 2, existing recreational facilities at the Sloper Outdoor Center are located on the south side of Slopers Pond. They include an improved beach, restrooms, picnic sites including a pavilion, soccer field, three tennis courts, basketball court, several small buildings, a frisbee golf course, and fields for other activities. A network of trails through the wooded portions of the tract provide a base for passive recreational pursuits. Sloper Pond is encircled by these foot trails.

The varied topography combined with the open grassy areas and pond provide good opportunities for existing recreational uses with room for modest expansion as well as some resource management. The possibilities for expansion of bathing opportunities from a public health standpoint has been discussed in section VIII of this report. Along with water quality considerations, the area imposes a physical limitation on the total number of bathers able to swim here. Enlargement of the present beach area may be prohibitively costly and should not be considered until a determination is made that water quality, quantitiy and turnover rate can accommodate the added use. The State Health Dept. and USDA Soil Conservation Service can provide help in making this determination.

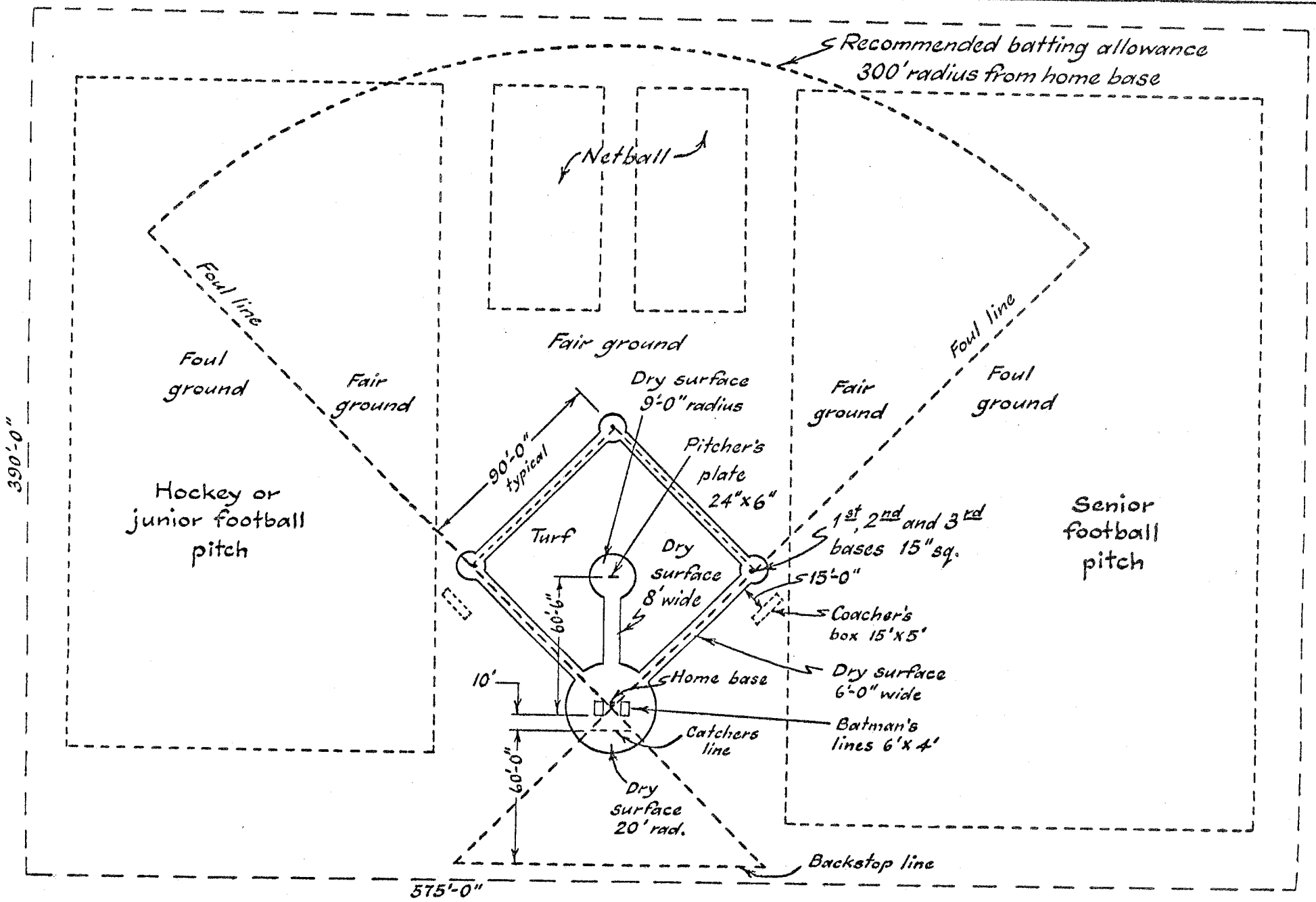
Modest expansion and/or upgrading of the network of foot trails may be possible via cutting operations undertaken under management of the forest resource. Some cutting has been done on the hillside in the eastern portion of this site as discussed earlier. This area is stoney and rather steep in places, affording little more than tent camping opportunities presently. Present use of this area has already resulted in soil compaction and some soil erosion on the sloped pathways. Heavier use will accentuate this problem and result in more rapid decline in tree vigor with some die back. To accommodate more campers, it will be important to implement stringent erosion and sediment control measures. These measures might include the selection of numerous tent areas, using one in one year, another the next and so on, thereby allowing rest periods for recovery of the areas during their unused periods. Adherence to guidelines which limit the climbing and carving of trees and the building of fires near trees will help prolong their life span and the availability of a woodland setting. Supplemental plantings of more abuse tolerant conifers such as hemlock and white pine, while altering the character of the woods, might enhance its usability. Camping use of the grassy, open areas, while maybe not as desirable as camping in the woods, may provide more camping opportunity by further diluting the use of specific areas. Rotation of use areas will, here again, reduce negative site impact.

As discussed in the previous section of this report, opportunities exist for incorporating the historically significant sites within this property into an educational program (e.g. an interpretive trail).

The power transmission line crossing the southerly portion of the tract may possibly afford an opportunity for winter use. While formal recreational use is not permitted along these rights of way, activities such as sledding, tobogganning, learner down hill skiing, etc. may be possible on well brushed, snow covered slopes leading into the lawn areas.

While the pond will undoubtedly continue to be the focus of attention with its swimming, boating and fishing opportunities, with possible winter skating, additional facilities such as a fitness course with exercise stations along

FIGURE 8 MULTIPLE USE PLAY FIELD



From: PLANNING DESIGN CRITERIA, DeChrara and Koppelman, 1969

a jogging trail would attract other types of users.

As discussed in Section VI of this report, the opportunities for wildlife habitat and its observation by users could possibly be enhanced by the management of the woodland resource. "Snowshoe" walks might be promoted for winter animal track identification.

Expansion of existing facilities to provide additional opportunities for tennis, basketball, volleyball, softball, soccer, etc, while not seen as a large need, is nonetheless possible in the flat, open areas particularly to the south of the existing facilities (i.e. in the area of the present Frisbee golf course). Large scale expansion of the tract to the point where many more sanitary facilities are needed and site degradation is probable, should be avoided however. If additional ball fields are desired at the Center, consideration should be given to designing a multiple-use field such as the one shown in Figure 8.

XII. APPENDIX

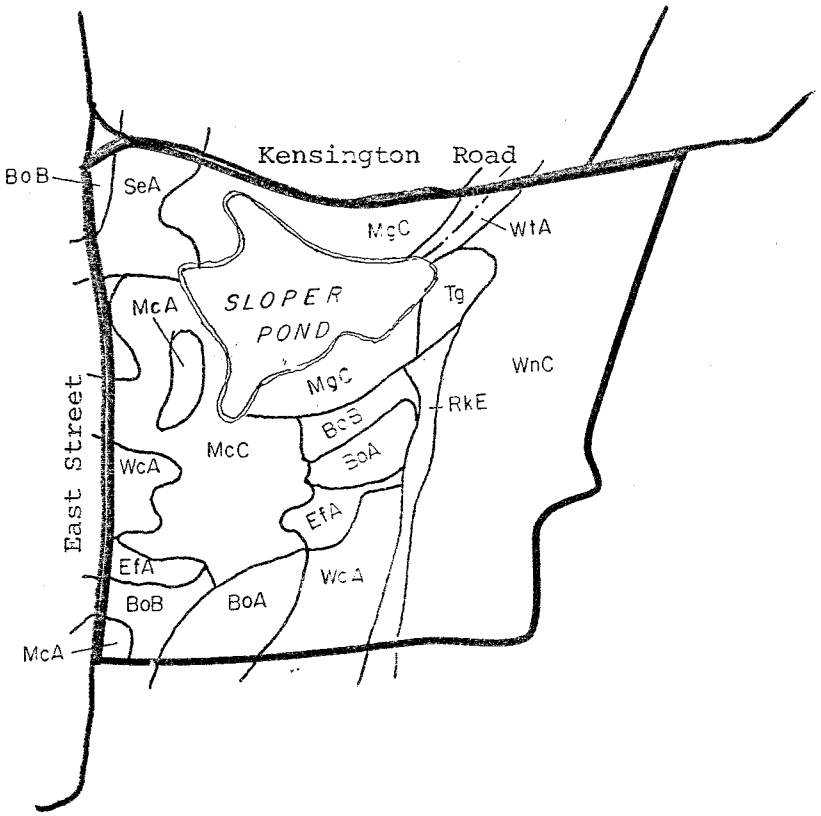
Soils Map

Soils Limitation Chart

* * * *

APPENDIX

SOILS MAP



Scale 1" = 1000'

SOILS LIMITATION CHART - YMCA SLOPER OUTDOOR CENTER, SOUTHINGTON CT

Limitation ratings for:

Map Symbol	Soil Name	Septic	Camp Areas	Picnic Areas	Source of Gravel	Playgrounds	Dwellings w/basements	Paths and Trails
BoA	Branford silt loam, 0-3% slopes	severe poor filter	slight	slight	probable	moderate slope,small stones	slight	slight
BoB	Branford silt loam,3-8% slopes	severe poor filter	slight	slight	probable	moderate slope,small stones	slight	slight
EfA	Ellington fine sandy loam, 0-3% slopes	severe wetness poor filter	moderate wetness	moderate wetness	probable	moderate wetness small stones	moderate wetness	moderate wetness
McA	Manchester gravelly loam, 0-3% slopes	severe poor filter	moderate small stones	moderate small stones	probable	severe small stones	slight	slight
McC	Manchester gravelly loam 3-15% slopes	severe poor filter	moderate slope, small stones	moderate slope, small stones	probable	severe slope, small stones	slight	slight
MgC	Manchester gravelly sandy loam,3-15% slopes	severe poor filter	moderate slope, too sandy	moderate slope, too sandy	probable	severe slope, small stones	moderate slope	slight
RkE	Rocky land Holyoke material 15-35% slopes	severe slope, depth to bedrock						
SeA	Scarboro loam, 0-3% slopes	severe ponding poor filter	severe ponding excess humus too sandy	severe ponding	improbable too sandy	severe ponding	severe ponding	severe ponding
WcA	Walpole loam, 0-3% slopes	wetness poor filter	severe wetness	severe wetness	probably	severe wetness	severe ponding	severe wetness
WnC	Wethersfield stony loam, 3-15% slopes	severe percs slowly	moderate slope large stones	moderate slope, large stones	improbable excess fines	severe slope large stones	moderate wetness slope	slight
WtA	Wilbraham and Menlo very stony silt loams 0-3% slopes	severe wetness percs slowly	severe ponding	severe ponding	improbable excess fines	severe ponding	severe wetness	severe ponding

Limitation ratings for:

NOTES:

1) Limitation ratings from current USDA Soil Conservation Service criteria and Hill, David "Soil Interpretations for Waste Disposal", CT Ag Experiment Station, 1979

Explanation of rating system:

Slight limitation: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.

Moderate limitation: indicates that any property of the soil affecting use of the soil can be overcome at a somewhat higher expense.

Severe limitation: Indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrical developments, and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the team to enter the property for purposes of review, and a statement identifying the specific areas of concern the team should address. When this request is approved by the local Soil and Water Conservation District and the King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.