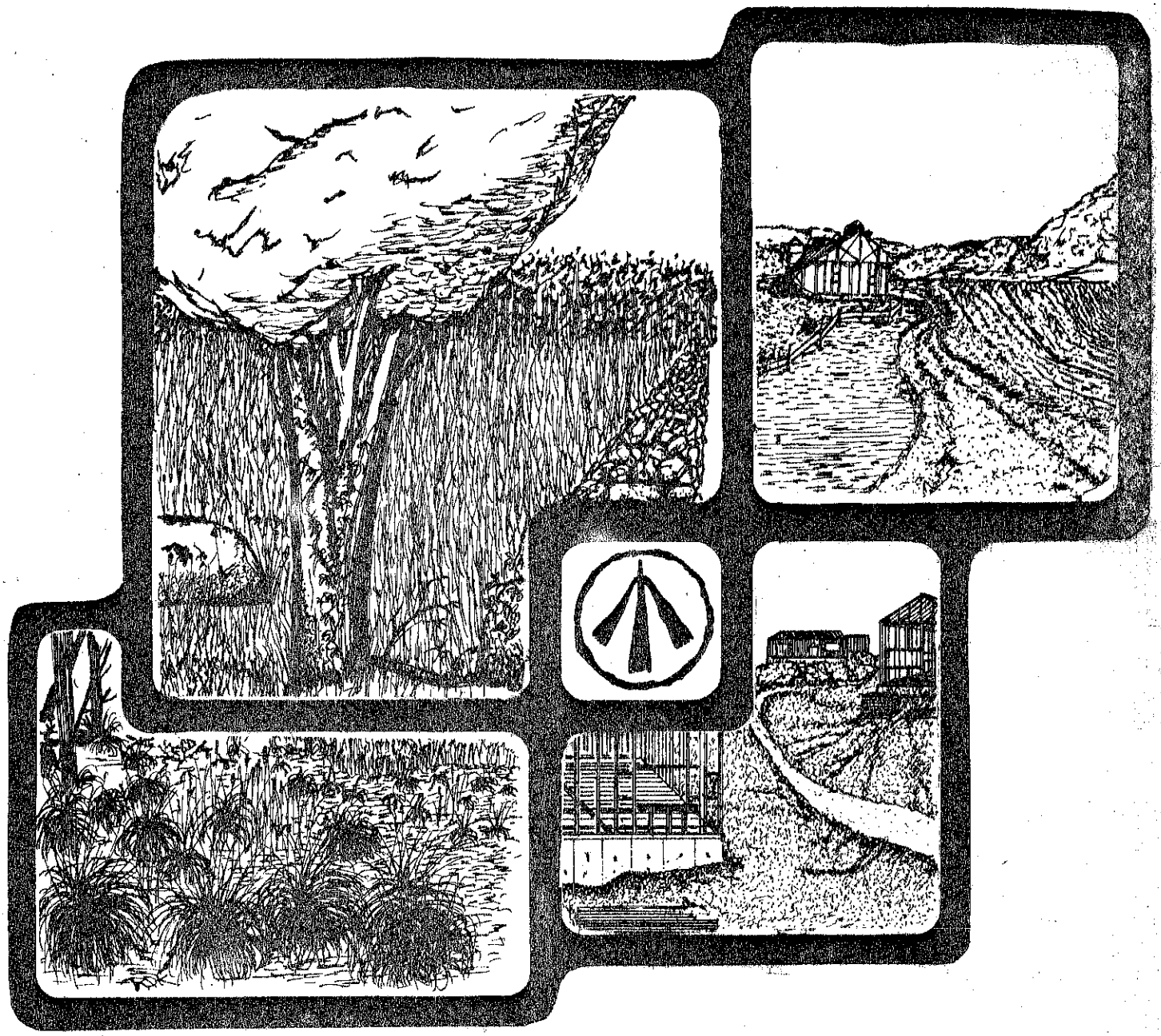
ENVIRONMENTAL REVIEW TEAM REPORT



THE BABCOCK PROPERTY
GREENWICH, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

ON

THE BABCOCK PROPERTY
GREENWICH, CONNECTICUT

MARCH 1980

King's Mark Resource Conservation and Development Area

Environmental Review Team

P. O. Box 30

Warren, Connecticut 06754

ACKNOWLEDGMENTS

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
DEPARTMENT OF TRANSPORTATION
UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

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
LITCHFIELD HILLS REGIONAL PLANNING AGENCY
CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY
HOUSATONIC VALLEY COUNCIL OF ELECTED OFFICIALS
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Funding Provided By

CONNECTICUT STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION
Stanley J. Pac, Commissioner

Policy Determined By

KING'S MARK RESOURCE CONSERVATION AND DEVELOPMENT AREA

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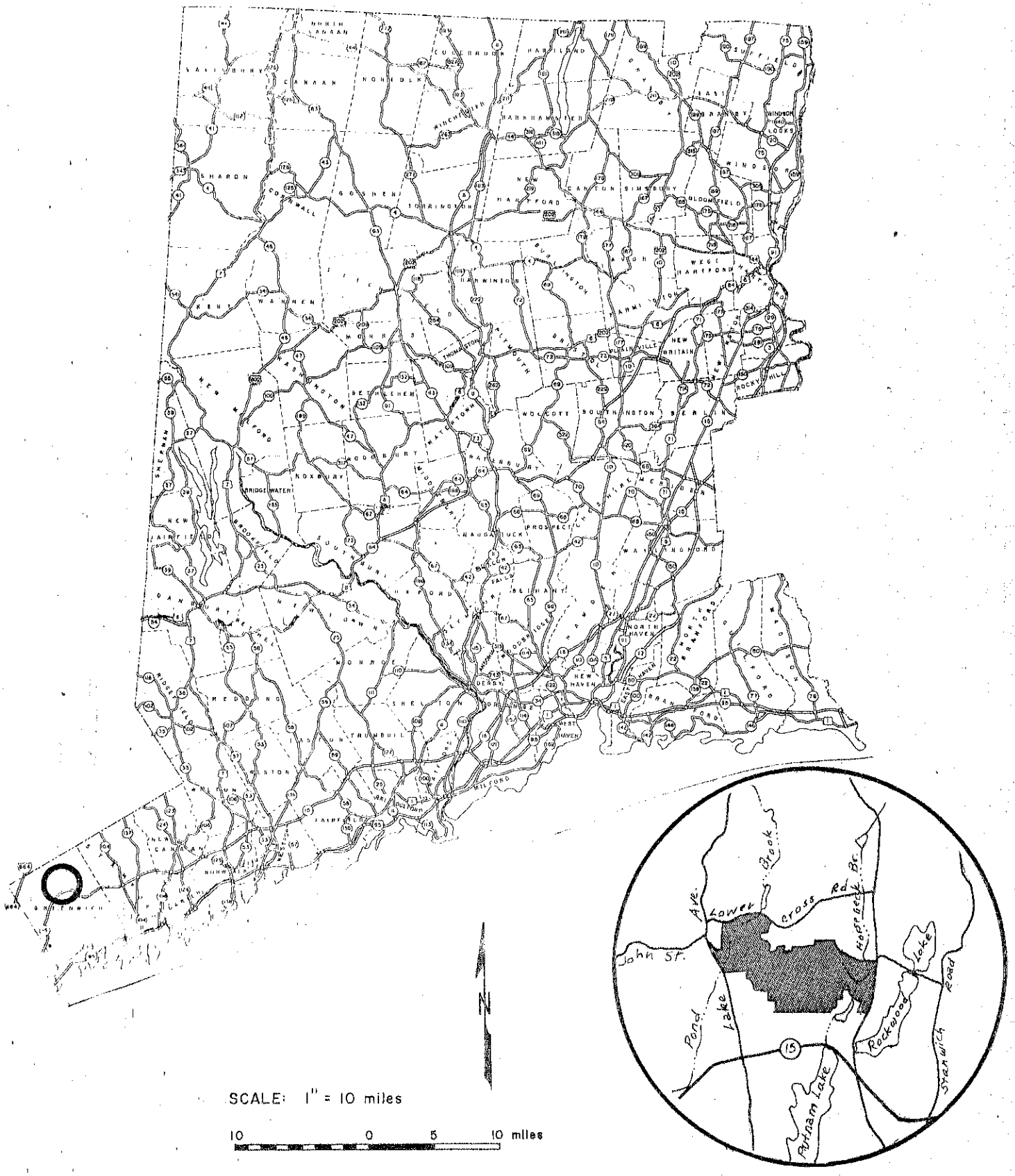
LOCATION OF STUDY SITE

THE BABCOCK PROPERTY
GREENWICH, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
THE BABCOCK PROPERTY
GREENWICH, CT.

I. INTRODUCTION

The Greenwich Conservation Commission is presently considering a municipal proposal to construct a public safety center on ± 3 acres of land in the north-central portion of town. The subject site is located in the southeastern corner of a ± 297 acre parcel of town-owned land known as the Babcock Property. The Babcock property is presently undeveloped and widely used by townspeople for passive recreation and nature study purposes.

The proposed public safety center would consist of a fire station, ambulance station, fire training center, pistol firing range and various support facilities. Figure 1 of this report shows the general location of the proposed public safety center within the Babcock parcel and also shows a simplified site plan of the proposed project.

The Conservation Commission requested the assistance of the King's Mark Environmental Review to help the town in analyzing the environmental impact of the proposed project. Of major concern is the potential impact of the project on Putnam Lake, a public water supply reservoir. This reservoir is located just downstream from the project area.

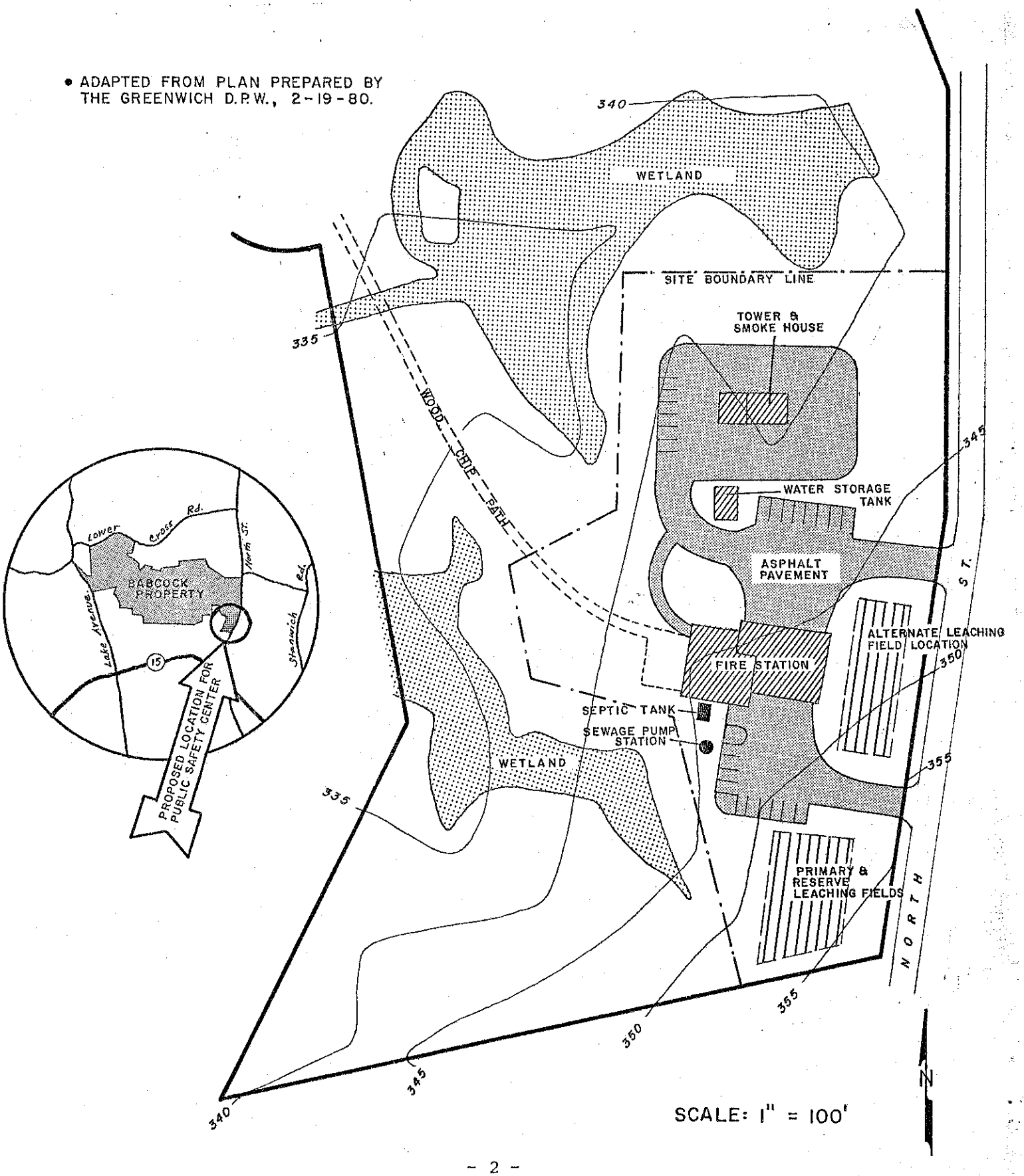
The Conservation Commission also requested that the ERT identify those portions of the Babcock property having high natural rsource value. This information was requested to guide the town in determining which portions of the entire property should be preserved for conservation and nature study. According to the property deed, at least 30% of the property must be "...limited to conservation and nature study area uses which will preserve such land as open space in its natural state...".

The ERT was further asked to discuss the opportunities and limitations of the Babcock property for future town uses. According to the property deed, the balance of the land not set aside for conservation and nature study "...may be used for any proper public purpose ...".

The King's Mark RC&D Executive Committee considered the request of the Greenwich Conservation Commission for an ERT study of the above, and approved the project for study by the Team.

FIGURE I.

PUBLIC SAFETY CENTER SIMPLIFIED SITE PLAN



The ERT met and field reviewed the site on February 14, 1980. Team members for the review consisted of the following:

Richard Mason	Principal Sanitary Engineer	Connecticut Department of Environmental Protection
David Miller	Climatologist	Connecticut Cooperative Extension Service
Robert Orciari	Fishery Biologist	Connecticut Department of Environmental Protection
Robert Rocks	Forester	Connecticut Department of Environmental Protection
Dave Thompson	District Conservationist	U.S.D.A. Soil Conservation Service
Mike Zizka	Geohydrologist	Connecticut Department of Environmental Protection

Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, a topographic map, and a simplified site plan of the public safety center development proposal. 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 and recommendations. It is important to understand that the ERT is not in competition with private consultants, and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town. It is hoped the information contained in this report will assist the Town of Greenwich 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, P.O. Box 30, Warren, Connecticut 06754.

* * * * *

II. NATURAL RESOURCE INVENTORY

A. General Site Conditions

The Babcock property is situated in north-central Greenwich with principal frontage on North Street immediately north of the Merritt Parkway. The property extends westerly to Lake Avenue, and Northwesterly to Lower Cross Road (see Figure 2).

Topographically the property is erratically and deeply scored. As shown in Figure 2, elevations range from 390 feet to 440 feet above sea level. Approximately forty percent of the property consists of wetlands; the remainder is predominantly shallow to bedrock ridges, however a few small areas of deep till do exist. The entire tract is wooded.

Runoff from the property contributes to either Horseneck Brook or Converse Brook. Both of these brooks traverse the property and contribute to Putnam Lake Reservoir which is located some twenty five hundred feet south of the property.

There is no record of the property being in other than woodland, although some evidence of agricultural use, principally stone walls, is present.

B. Geology

The Babcock Property is located within the Glenville, Connecticut - New York topographic quadrangle. Although no bedrock or surficial geologic maps of that quadrangle have yet been prepared, several other geologic studies have been made of the northeastern Greenwich area. Among these studies are "Geology in the Glenville area, Southernmost Connecticut and Southeastern New York", by L. M. Hall (1968); "The Surficial Geology of the Watershed of Converse-Putnam-Rockwood Lakes, Town of Greenwich, Southwestern Connecticut", by G. G. Hollands (1972); and "Hydrology and Hydrogeology of Northeastern Greenwich, Connecticut", by Geraghty & Miller, Inc., Consulting Groundwater Geologists and Hydrologists (1972). An overview discussion of the geology of the site was provided in "Environmental Analysis of the Babcock Property, Greenwich, Connecticut", by V. E. Burkhardt and R. M. Rochefort (1978).

The Team's field review of the site showed an abundance of bedrock outcrops of various sizes. Lithologies (rock types) varied somewhat among the outcrops but the major mineral components remained essentially the same. Quartz, feldspar, muscovite, and biotite were the major components observed; garnet, hornblende, sillimanite, and kyanite were among the minor components. Differences in rock types arose principally from localized variations in grain size, rock texture, and concentrations of individual minerals. The most common lithologies found on the site were pegmatite (a very coarse-grained rock, rich in quartz, feldspar, and muscovite), granitic gneiss (a lineated, commonly pink-colored, medium- to coarse-grained rock rich in potash feldspar, quartz, and mica), light-colored feldspar-quartz-muscovite gneisses and schists, and mica-quartz schists (strongly foliated rocks). Although Hall's report divided the Babcock Property into three zones by rock type, the divisions could not be independently confirmed by the Team because of the limited area of study. However, the portion of the site classified by Hall as the "White Gneiss" member of the Hartland Formation (see Figure 3) did appear to contain a more consistent lithology (granitic gneiss) than the portion classified as the "Carrington Pond" member.

FIGURE 2.

TOPOGRAPHIC MAP

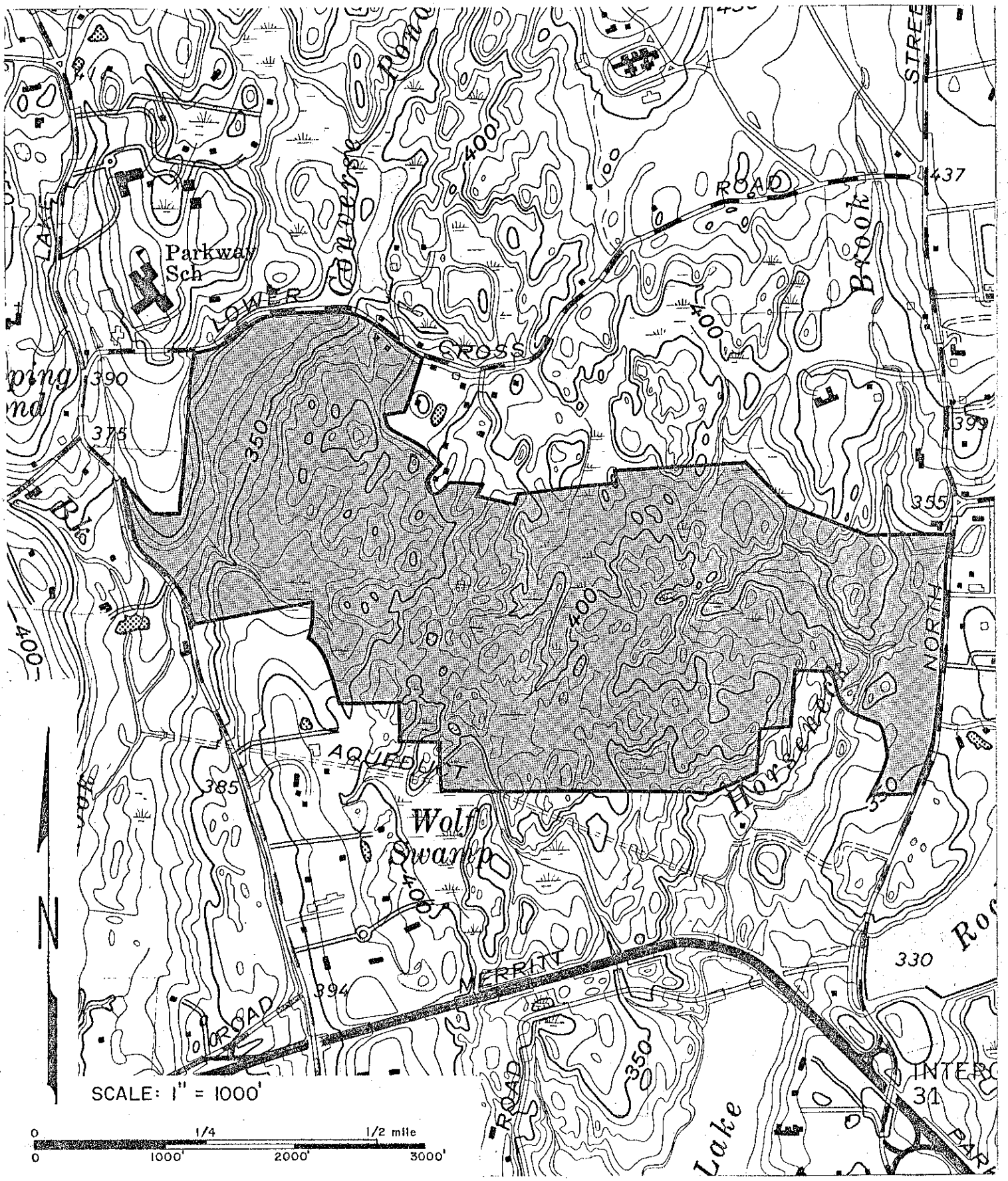
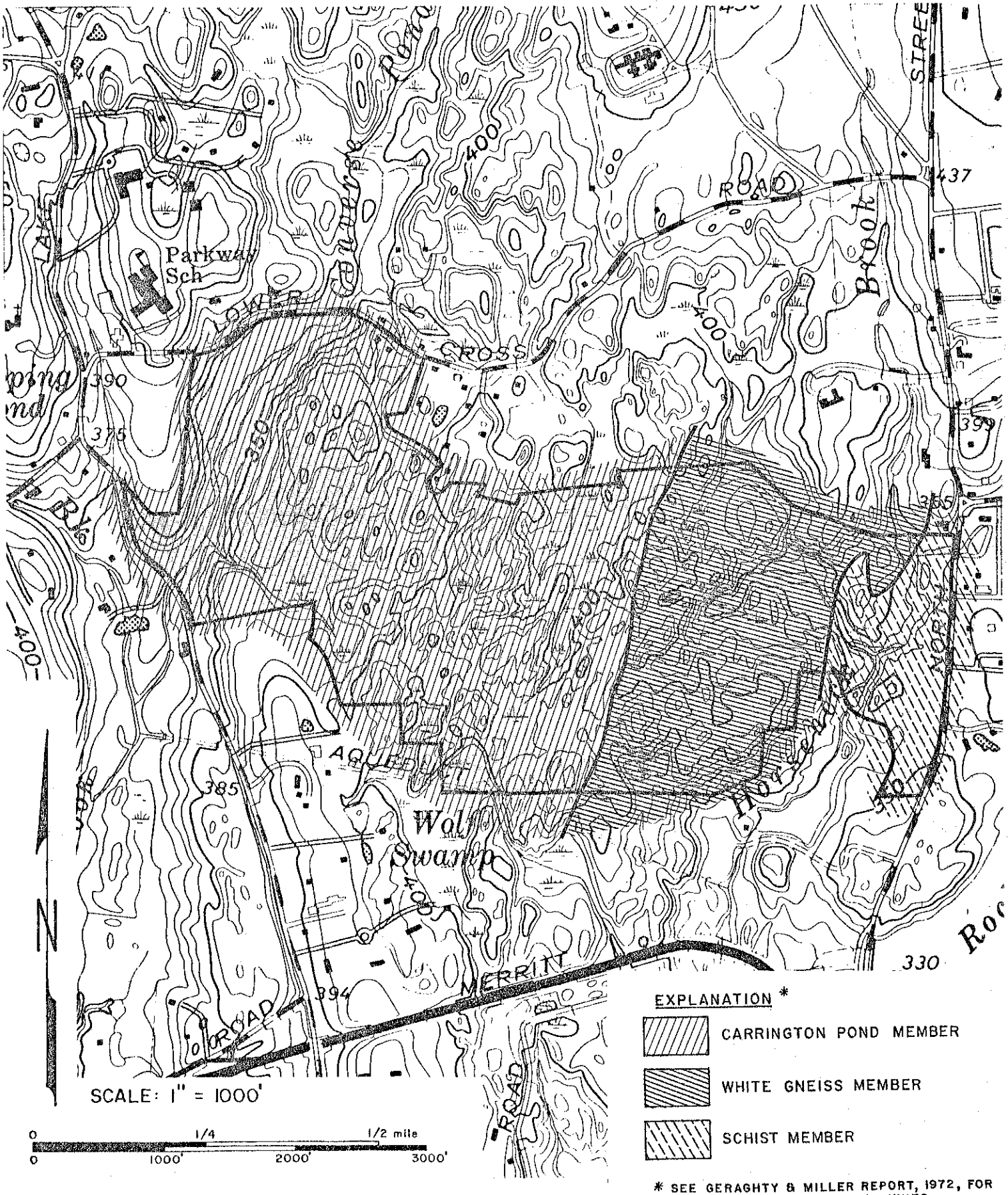


FIGURE 3.

BEDROCK GEOLOGY

ADAPTED FROM HALL, 1968, AS PRESENTED IN GERAGHTY & MILLER REPORT, 1972.



The outcrops encountered by Team members on the Babcock Property are shown in Figure 4. Three sites of particular interest are also indicated on that figure. Site 1 contains, within a small area, a large number of outcrops of various lithologies. Site 2 features an outcrop with quartz and feldspar crystals as large as one foot. Site 3 offers what appeared to be the longest continuous outcrop on the site: a cliff of granitic gneiss approximately 500 feet long.

The abundance of bedrock outcrops on the Babcock Property may be explained both by the resistant nature of the rock, in general, and by the thinness of the till cover. Till, an unconsolidated, nonsorted sediment composed of rock particles of widely ranging shapes and sizes, was deposited by a glacial ice sheet as it moved southward through Connecticut. The reason for the shallowness of the till (generally less than 10 feet) in the area is unclear. It is possible that the irregular, pitted bedrock surface obstructed glacier movement through the site (at least in the lower portion of the ice sheet) and thereby precluded a substantial deposit of till. The rugged bedrock surface is probably a result of the localized differences in lithologies and resistance to weathering. Till thicknesses of 15 feet or greater may be the rule, rather than the exception, along the eastern and western boundaries of the property, where the topography is smoother and less suggestive of bedrock control. Test pits in the area proposed for the public-safety center confirmed a relatively substantial depth of overburden.

Till textures on the property appeared to be principally coarse-grained, with sand being the major constituent. This texture probably derives from the quartz-rich nature of the parent rocks. Quartz usually resists mechanical deterioration well. In most parts of Connecticut, coarse-grained, loose till is found in the upper few feet of the overburden, while a siltier, compact till is found at greater depths. Highly compact till may be sporadically present in the Babcock Property, but the general shallowness of the sediment suggests that its overall volume would be minimal.

C. Soils

A detailed soil survey map, a soils limitation chart and a numerical list of soils on the tract is presented in the Appendix of this report. The soils map illustrates the geographic location of all soils identified on the property. The soils limitation chart identifies limiting factors for various land uses on individual soil types and also rates the severity of these limitations as determined by the U.S.D.A. Soil Conservation Service. Detailed soil descriptions of all soils identified on the property are available from the Fairfield County Office of the Soil Conservation Service.

SOIL CHARACTERISTICS:

There are twenty-seven soil types on the property which may be categorized into five natural soil groups. These include:

A. Terrace soils over sands and gravels.
B. Upland soils over friable to firm glacial till.
C. Upland soils over compact glacial till.
D. Upland soils rocky and shallow to bedrock.
E. Floodplain soils/muck and swamp soils

FIGURE 4.

BEDROCK OUTCROPS & THICK TILL AREAS

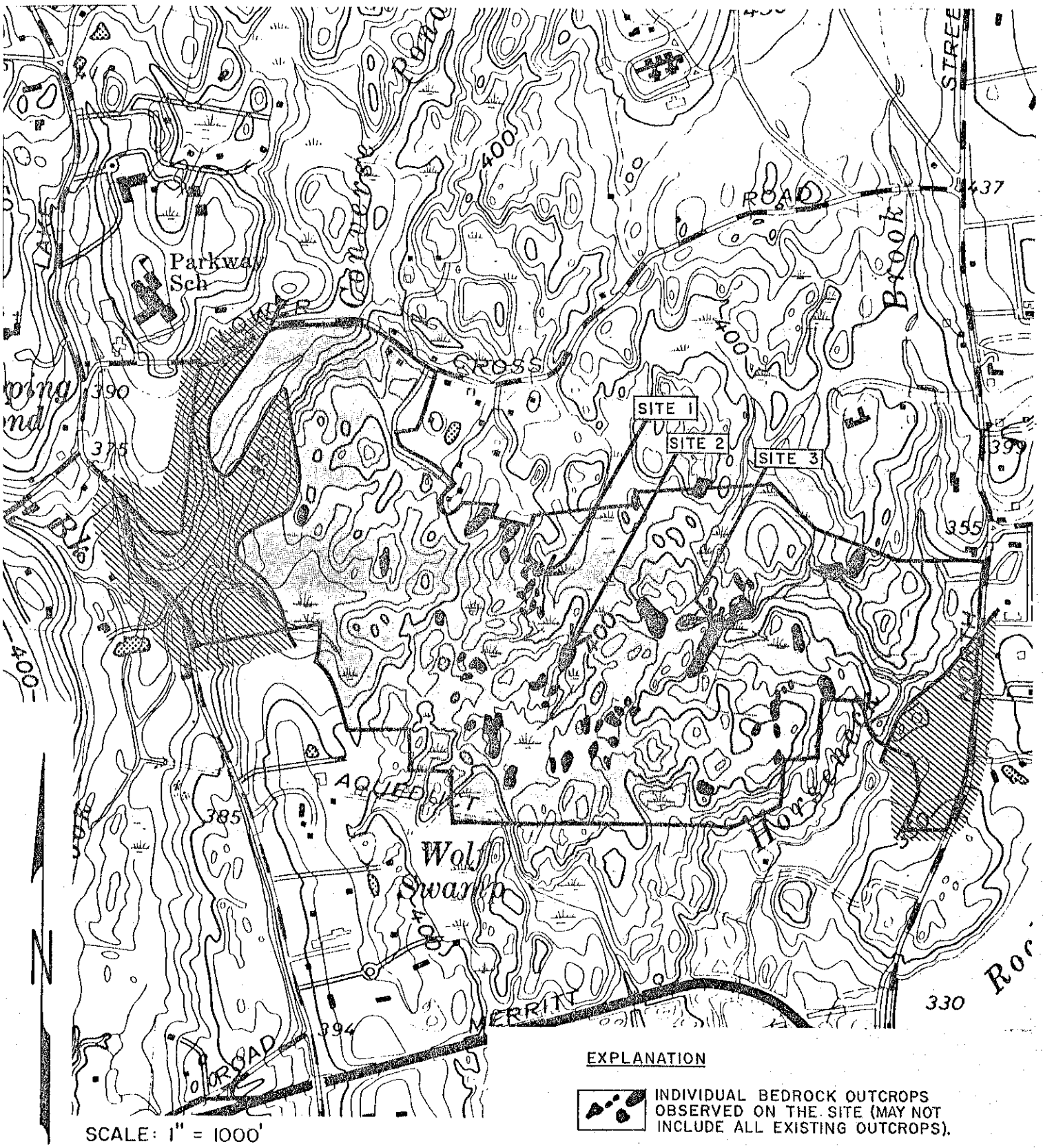


Figure 5 shows the distribution of these natural soil groups throughout the Babcock property. Below is a brief description of each of these groups.

GROUP A SOILS: Terrace Soils over Sands and Gravels

These soils are underlain by water deposited beds of sand or sand and gravel. In most places a few inches to three feet of loamy or fine sandy material cover the older, coarser water deposits. Most of the Group A soils on the Babcock property have a seasonally or persistently high water table. Utilization of these soils is therefore restricted unless special structural measures are installed to control the water level. Building construction and subsurface sewage disposal present special problems in design requirements that substantially increase construction costs.

GROUP B SOILS: Upland Soils Over Friable to Firm Glacial Till

The soils in this group are formed in the thicker, unconsolidated deposits of till usually occurring on hillsides. The capacity of these soils to hold water for plant growth is good where the till is loamy, but is fair to poor on the sandy till. Stones and large boulders are common in these glacial deposits and add difficulty when excavating or earth moving operations are needed.

Group B soils on the Babcock property range from the well drained Charlton soils to the moderately well-drained Sutton soils to the poorly drained Leicester soils. The Charlton soils have the greatest potential for community development on the property. The Sutton and Leicester soils of this group are limited by a high water table.

GROUP C SOILS: Upland Soils Over Compact Glacial Till

Group C soils on the Babcock property occur only on the western border. The soils are underlain by compact glacial till and have a hardpan 16 to 36 inches below the soil surface. Permeability above the hardpan is moderate, but the pan drastically reduces percolation. During wet seasons, excess water in the soil moves downslope above the hardpan. The till commonly contains stones and boulders which add difficulty when excavating or earth moving operations are needed. Due to the perched water table which typically develops on the surface of the hardpan in normally wet seasons of the year, special considerations are needed in land development. The installation of groundwater control drains and/or earth filling are the most common techniques used to combat the natural soil limitations.

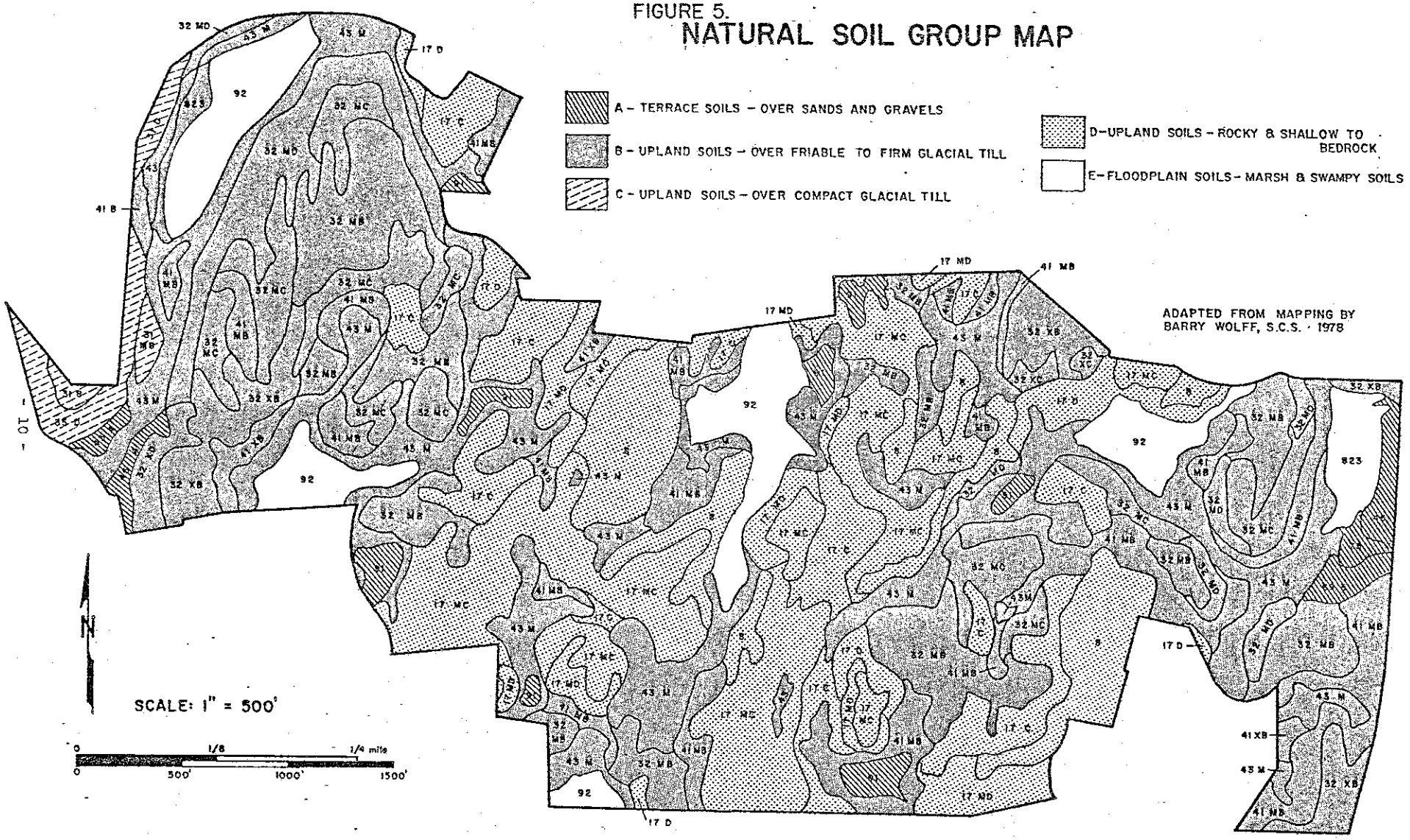
GROUP D SOILS: Upland Soils, Rocky and Shallow to Bedrock

These soils occur mostly in the rougher upland areas of the property. They are generally less than twenty inches in depth over bedrock; with ledge outcrops occupying up to fifty percent of the land surface. It is important to note, however, that in all soil complexes there are inclusions of other soils. Reports of successful deep test pits should not be discounted.

The shallowness of the soil coupled with slope and the fracture characteristics of the bedrock can present insurmountable restraints in the utilization of these soils for on-site sewage disposal. The potential for groundwater and well pollution is always present.

FIGURE 5.

NATURAL SOIL GROUP MAP



GROUP E SOILS: Floodplain Soils/Marsh and Swamp Soils

Soils in this group are considered unsuitable for community development. They do offer high potential for wildlife habitat however.

SOILS VS. ALTERNATE LAND USES

As shown in Figure 6, the vast majority of the Babcock Property has severe limitations for community development.

Because the interior of the property would be so difficult to develop, it seems likely that any relatively broad type development, such as a subdivision or commercial area, would either directly or indirectly result in destruction of wetlands. Grading and road crossings would entail direct filling; erosion from graded areas would lead to siltation and indirect filling.

Use of septic systems in the interior would also necessitate either grading or importation of fill, since the soil generally is too thin to allow adequate renovation of effluent. Inadequate purification of septic effluent could, in turn, allow the groundwater supply to be contaminated.

The problems associated with development of the interior of the Babcock property are therefore interrelated--mitigation of one problem (e.g. filling to establish septic systems) could lead to other problems (erosion of fill and siltation in the wetlands).

The portion of the property proposed for the public safety center is perhaps the only portion that can avoid these problems. Wetland crossings are eliminated, substantial reworking of the topography is not required,and soil depths are suitable. Some filling may be required for the septic-system leaching field if groundwater is found to be seasonally high, but this would be a minor problem because of its very limited scope.

Two other areas on the property are of sufficient area and accessibility to be considered significant for community development purposes. One area, of approximately 20 acres in size, spans the western portion of the property. This area is underlain by gently sloping Charlton soils and is bounded on the west and north by a steeply sloping hillside and on the south and east by an extensive wetland system (see Figure 6). This area could be made accessible from Lower Cross Road. The second area with community development potential is situated at the terminus of the present interior access road. This area is also underlain by gently sloping Charlton soils and is about ten acres in area.

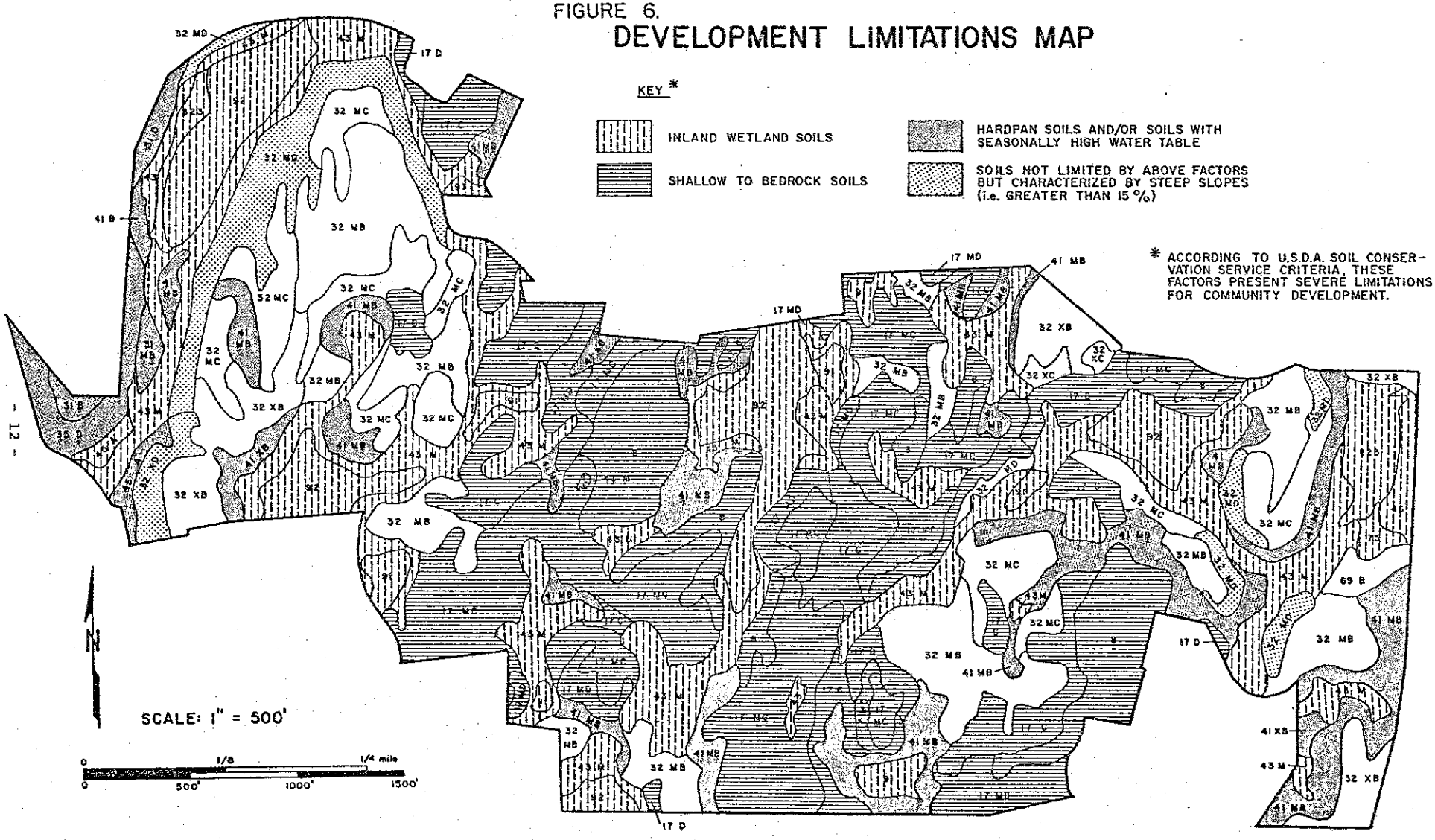
Other less significant areas exist on the property with site development opportunities. These appear as the unscreened portions of Figure 6. These sites sbould be considered for whatever structures and facilities may be planned or required to support recreational and educational programs.

D. Hydrology

All of the Babcock Property lies within the effective watershed of Putnam Lake. The watershed is approximately 6.8 square miles in area, but only about 2 square miles are within the natural topographic drainage area of the lake. Flow from Converse Pond Brook is diverted through an aqueduct to Horseneck Brook 500 feet north of the lake's inlet. Water from Rockwood Lake is also diverted to Putnam Lake. Part of Rockwood Lake's water reportedly is derived from Mianus

FIGURE 6.

DEVELOPMENT LIMITATIONS MAP



Reservoir in Stamford by means of a 20-inch pipeline (Geraghty & Miller, 1972). This water would be additional to that derived from the 6.8 square mile watershed mentioned above. Surface drainage on the Babcock Property flows either into Converse Pond Brook or Horseneck Brook; there is no flow to Rockwood Lake (see Figure 7).

Heavy precipitation on the interior of the parcel would cause ponding in many areas because of the irregular, knob-and-basin topography. Most of the ponding would occur in existing wetlands. The large percentage of these wetland storage areas on the site indicate that the site is serving an important role in flood-flow mitigation, particularly along Converse Pond Brook. Filling of these wetlands would prevent storage, forcing water to be transmitted more rapidly downstream. Increased erosion and other flood-related damage would occur. In addition, the loss of the wetland "filter" could lower the overall quality of the surface water. Due to the importance of the wetlands on this property, disturbance to these areas should be kept to a minimum.

E. Water Supply

Fractured bedrock is the only aquifer available to supply the needs of the proposed public safety facilities. Yields from wells drilled into bedrock depend upon the number and size of water-bearing fractures that are intersected by the well. Because the distribution of fractures in bedrock is irregular and difficult to predict, it is virtually impossible to estimate the yield that would be available from a well drilled at a given location. Even local wells may not give a fair representation of what to expect on this particular site. Nevertheless, statistical studies of bedrock wells in southwestern Connecticut indicate that a probability of approximately 50 percent exists for obtaining a yield of 5 gallons per minute or more. These studies also indicate that the chances of increasing a well's yield (i.e. encountering another water-bearing fracture) decrease with depth. If a yield of 2 gpm or less results from drilling through the first 200 feet of bedrock, it may be more practical to test a new location rather than to deepen the first well further.

F. Vegetation and Wildlife Habitat

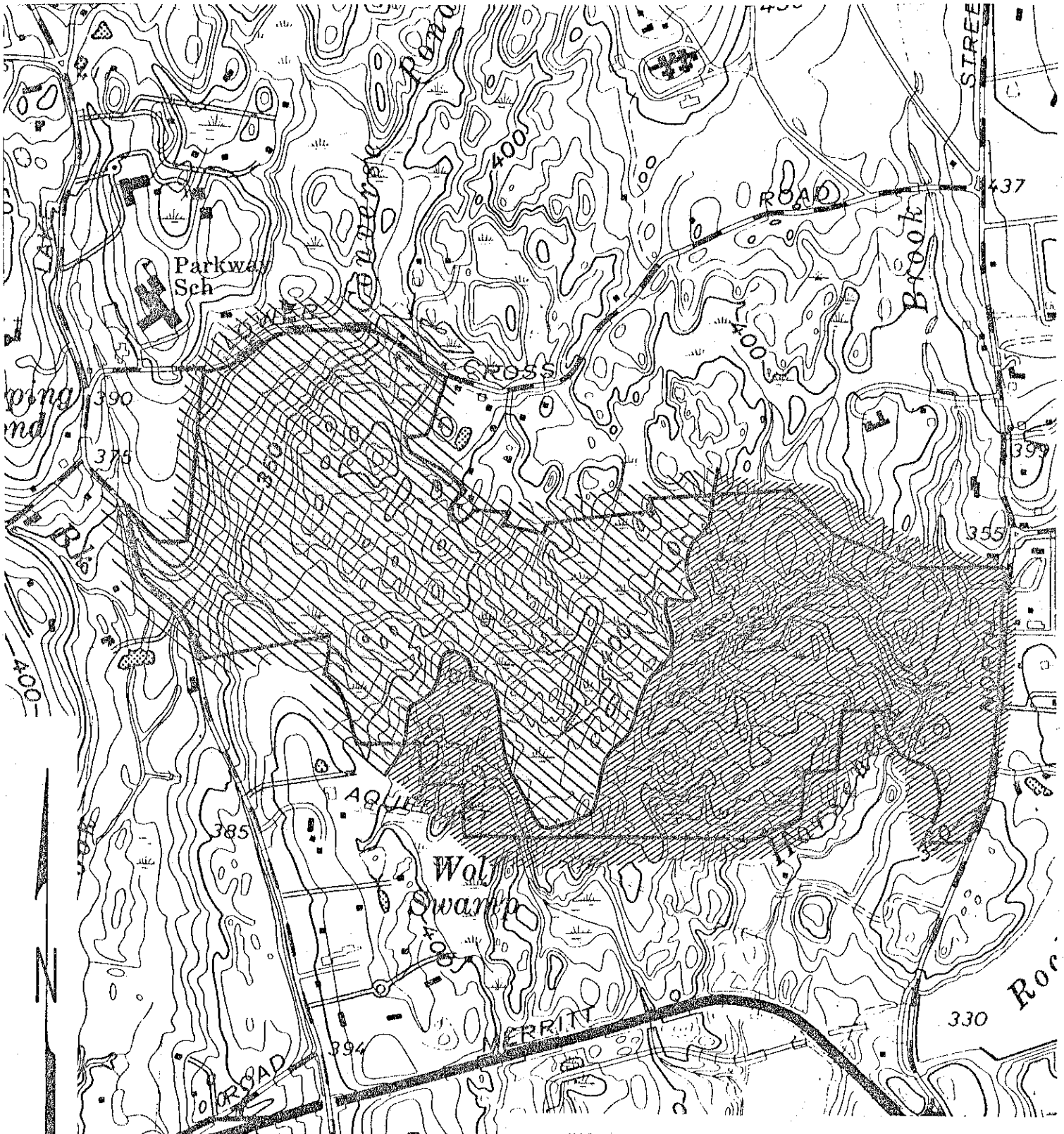
The Babcock Property is completely forested. Six general vegetation types are present within this tract. These include upland mixed hardwoods, ± 200 acres; hardwood swamp, ± 41 acres; Oak ridge, ± 26 acres; bottomland mixed hardwoods, ± 18 acres; open swamp, ± 10 acres; and open field, ± 1 acre. A brief description of these vegetation types is offered in the Vegetation Type Description Chart which is presented at the end of this section of the report. Information on the herbaceous wild flowers and weed species present on the property is lacking due to the time of year of the ERT's field investigation. For a detailed and more indepth description of present and historic vegetative conditions, the following documents should be reviewed:

Niering, W.A. and F. E. Egler, 1966. The Natural Area of the Audubon Center of Greenwich. State Geological and Natural History Survey of Connecticut, Bull. #2.

Barske, Phillip, 1972. An Overview of the Current Ecological Status of the Converse - Horseneck Brook Subbasin - Greenwich, Ct. Prepared for the Town of Greenwich.

FIGURE 7.

DRAINAGE AREAS



The location of the various vegetation types are depicted in Figure 8. Vegetation type boundaries and acreages are only approximate. In some places, the vegetation types gradually grade into one another, causing wide transition zones where tree species dominant in one type are present in the other. These conditions cause difficulty in mapping. In other areas, transition zones are almost non-existent and mapping is greatly simplified. These areas are, however, in the minority.

AESTHETICS AND PRESERVATION

All of the vegetation types present on this property are interesting and valuable. The degree of value is determined in many cases by the point of view of the observer.

When looking for potential timber product productivity, the upland and bottomland mixed hardwood areas (vegetation types A and D) have high value.

From an aesthetic point of view, large healthy trees, variety of vegetation, flowering shrub species and evergreens have high value.

Looking at wildlife habitat, variety in and between vegetation types has high value along with the wetland areas, openings and the edges between vegetation types.

From a bird watchers point of view, places such as the bottomland mixed hardwood area with its dense growth of barberry is valuable because it provides cover, food and nesting areas for many species of birds.

Once again value is greatly determined by perspective. The entire tract's vegetation has value. No rare or endangered species were observed during the ERT field investigation, however spring and summer field observations should be made to determine whether or not rare or endangered herbaceous species exist on this property.

LIMITING CONDITIONS

The high water table and saturated soils present in the hardwood swamp (Type B) and open swamp (Type E) limit vegetative growth to species that are able to tolerate excessive moisture conditions. The red maple and occasional white ash and yellow birch that are able to survive in the hardwood swamp areas are generally slow growing, shallow rooted and of poor quality. The high water table is more critical in the open swamp areas where no tree species are able to survive at present. These areas have little value for timber production, however their value as wildlife habitat is high.

The rocky, shallow to bedrock soils located over the ridge tops and knolls (oak ridge type C) throughout this property are excessively drained and have restricted moisture reserves. These conditions become critical limiting factors for vegetation during the spring rapid growth season. At this time the vegetative demand for water exceeds the supply, and as a result, many of the trees that can survive under these conditions do not grow fast and are stunted and malformed in appearance.

POTENTIAL HAZARDS

Windthrow is a severe hazard in both the oak ridge area (vegetation type C) and the hardwood swamp area (vegetation type B).

The soils in the oak ridge area are shallow to bedrock resulting in tree root systems of limited depths. The windthrow hazard is lessened where the underlying bedrock is highly fractured, because tree roots are able to penetrate deeper and become more securely anchored.

The windthrow hazard is also high in the hardwood swamp areas where tree root depth is restricted by the permanently saturated soils. Areas in the hardwood swamps where trees are crowded and rely on each other for stability are very susceptible to windthrow and top breakage. Linear openings which allow wind to pass through rather than over these areas should be avoided if possible.

Dead trees along recreational trails may become a hazard to area users. These trees, especially in areas where soils are saturated or shallow to bedrock, should be removed to lower the potential of injury to trail users. Trails should be inspected annually to identify and remove hazards.

Evidence of gypsy moth infestation is apparent throughout this entire tract. Egg masses were observed in large numbers on trees in both stand types A and C. Both of these stands are currently under environmental stress. The trees in Stand A are stressed because they are becoming crowded, those in Stand C because of a lack of adequate moisture. Under these conditions the trees are very susceptible to damage caused by gypsy moth defoliation. It is possible for two successive defoliations to severely stress trees, allowing secondary insect and disease infestation to cause mortality. A thinning in Stand A which reduces crowding and eventually allows trees to become healthier and more vigorous should lessen the chance of widespread mortality started by gypsy moth infestations.

The forest fire potential is high over this entire tract. There is a large build up of fuel in the more remote central region of this property. Hiking trails pass through this area along which numerous camp fire sites were observed. At present, there is no vehicular access into the interior of this tract. A fire protection road constructed into the interior of this property would serve for fire protection, emergency access, recreation, and if wide enough and seeded to grasses, wildlife habitat. Federal cost sharing may be available if the road meets or exceeds certain specifications.

SUGGESTED MANAGEMENT TECHNIQUES

The trees in both Stand A (upland mixed hardwoods) and Stand B (bottomland mixed hardwoods) are declining in health and vigor as a result of crowding. Throughout these stands, this crowding has caused mortality in pole and sawtimber size trees. In some parts of the stands the overstory is closing up and only a limited amount of sunlight is reaching the shrub layer and forest floor. Many shrubs which have high food and cover value for wildlife are being shaded out of existance by the closing canopy. As a result, wildlife use of these areas will decline over time if no management practices are implemented to open up the canopy.

Uneven aged management resulting in a healthy forest made up of a variety of tree species in all size classes would probably provide the greatest aesthetic appeal and best wildlife habitat over an extended period of time for this property.

To reach the goal of an uneven-aged forest, some forest management practices would be advisable.

A harvest of about one-third of the total volume in both large and small trees in the operable parts of Stands A and B, leaving the highest quality, healthiest trees in the residual stands would improve the condition of the vegetation on this property. These thinnings would reduce the competition between trees for space, sunlight, water and nutrients, which would in time increase the health, vigor and stability of residual trees.

The increased sunlight reaching the forest floor after the harvests should stimulate the growth of shrubs and herbaceous vegetation. This will substantially improve food and cover for wildlife. The additional sunlight will also improve flowering of the dogwood, mountain laurel, shadbush and azalea; thus increasing the aesthetics of the area. These harvests could also remove the trees that are along the trail systems which are a potential hazard to trail users. If fuelwood is salvaged from the tops, the visual impact of the harvests will be minimized.

The initial improvement harvests could be implemented on tracts of about 35 acres, every other year until all areas in need of thinnings have received them. Harvesting in this manner will provide high quality wildlife habitat over an extended period of time, slowly improve the overall condition of the vegetation on the property, and minimize negative aesthetic impact.

Stands once treated with the initial improvement harvests would benefit from inspection by a public service forester or private consultant forester every 10 years, and probably benefit from cutting a size range of trees within intervals of twenty five years.

If management of part or all of this tract is desired for multiple uses such as wildlife, recreation and the production of timber or fuelwood, a public service forester or consultant forester should be contacted. They could give advice on the preparation of an indepth management plan and also help to lay out the multiple use fire access road.

Revenues from the improvement cuts could be used for improvements to the property, such as the fire access road, parking facilities, and trail maintenance.

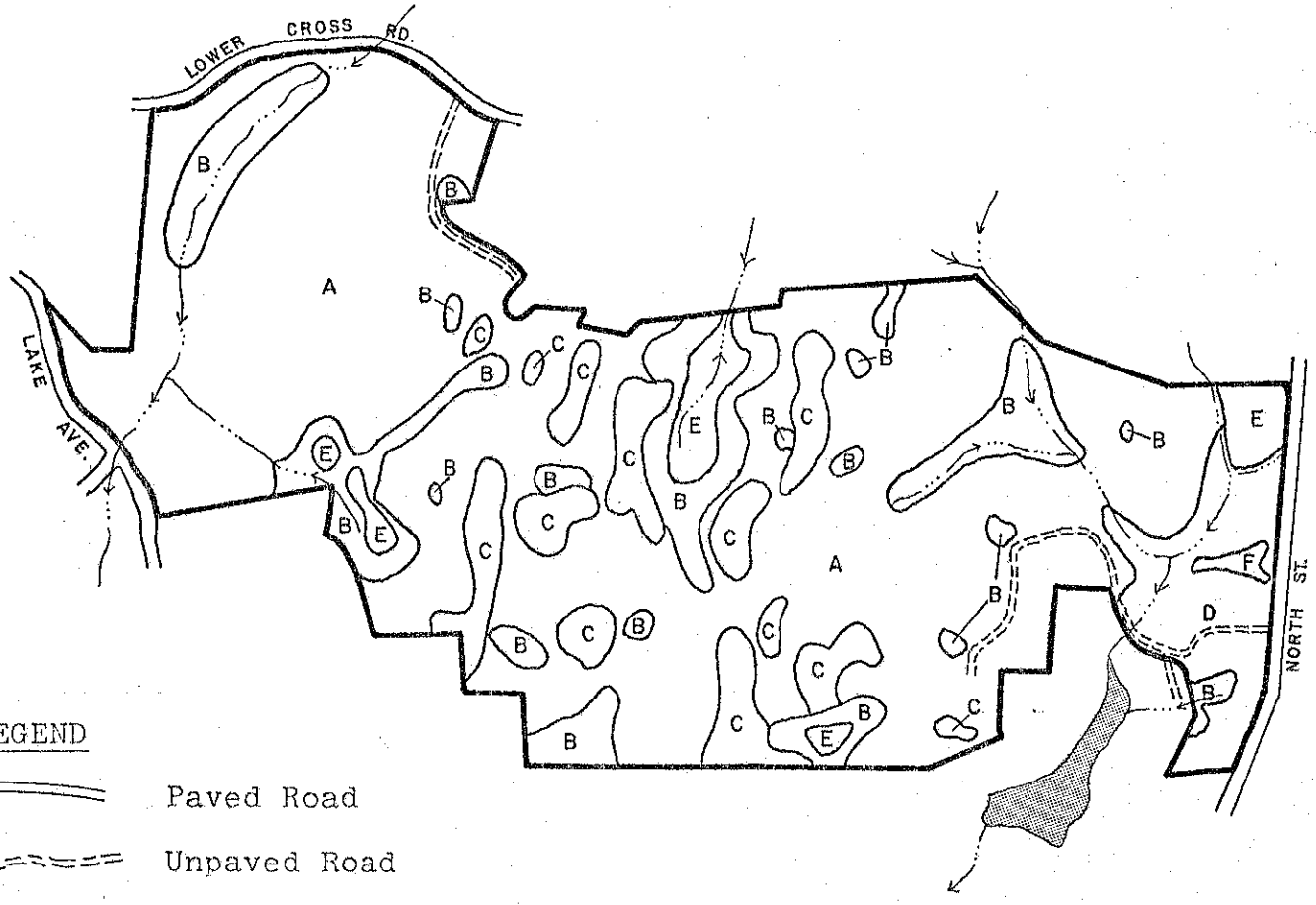
PORTIONS OF THE SITE WITH HIGHEST VALUE FOR CONSERVATION AND NATURE STUDY

Perhaps the entire central portion of this tract offers the highest potential for conservation and nature study. There are a wide variety of vegetation types present in this area. These include upland mixed hardwoods, oak ridge hardwoods, hardwood swamp and open swamp, along with the transition zones between them. The great variety of plant communities and quick changes in topography have high aesthetic appeal and high value for environmental education. This portion of the site also offers a wide variety of wildlife habitat types, all in close proximity to one another.

It would also be desirable from a natural resource standpoint to preserve all wetlands and streambelt corridors on the property.

FIGURE 8.

VEGETATION TYPE MAP



LEGEND

- Paved Road
- Unpaved Road
- Property Boundary
- Stream
- Pond

VEGETATION TYPES

Type A	Upland mixed hardwoods	200±Acres
Type B	Hardwood swamp	41± Acres
Type C	Oak ridge	26± Acres
Type D	Bottom land mixed hardwoods	18± Acres
Type E	Open swamp	10± Acres
Type F	Open field	1± Acre

N

SCALE: 1" = 1000'

0 1/4 1/2 mile

0 1000' 2000' 3000'

VEGETATION TYPE DESCRIPTIONS (Refer to Figure 8.)

STAND TYPE	APPROX. ACRES	*MAIN STAND SIZE CLASS	STOCKING LEVEL	MAIN STAND QUALITY	MAJOR COMPONENTS OF: OVERSTORY	UNDERSTORY	GROUND COVER
A. Upland Mixed Hardwoods	200	Pole to saw-timber size. Two-aged: approximately 120 years old and 50-70 years old	Fully stocked. Trees are becoming crowded.	Medium Trees are not growing vigorously.	Red oak, black oak, white oak, shagbark hickory, pig-nut hickory, black birch and red maple with occasional american beech, sugar maple and tulip tree.	Hardwood tree seedlings, maple leaved viburnum, mountain laurel, flow-ering dogwood, witch hazel, azalea, bar-berry, sassafras, bluebeech, shad-bush.	Huckleberry, low bush blue-berry, poison ivy, club moss, Christmas fern.
B Hardwood Swamp	41	Pole-size	Variable from under-stocked to overstocked.	Poor	Red maple in clumps are dominant with occasional black gum, white ash and yellow birch.	Sweet pepper-bush, highbush blueberry, spice bush, swamp azalea, nannyberry and winterberry.	Skunk cabbage, tussock sedge, sphagnum moss, sensitive fern and cinnamon fern.
C Oak Ridge	26	Pole to saw-timber size	Variable from under-stocked to fully stocked.	Poor Many trees are malformed due to environ-mental stresses. Many trees have been damaged by adverse weather conditions. Substantial mortality.	Chestnut oak, white oak, black oak, scarlet oak with occasional red maple, american beech, black birch and hickory.	Mountain laurel, highbush blue-berry, scattered sassafras, shad-bush, and green-brier.	Huckleberry, lowbush blue-berry, wild raspberry, grasses, sedges, rock polypody, Christmas fern.

CONTINUED

VEGETATION TYPE DESCRIPTION (Refer to Figure 8.)

STAND TYPE	APPROX. ACRES	*MAIN STAND SIZE CLASS	STOCKING LEVEL	MAIN STAND QUALITY	MAJOR COMPONENTS OF: OVERSTORY	UNDERSTORY	GROUND COVER
D Bottom Land Mixed Hardwoods	18	Pole to saw-timber size	Fully stocked. Trees becoming crowded.	Medium Trees are beginning to decline in health and vigor.	White ash, red maple, tulip tree, yellow birch, red oak, sugar maple and black birch with a black locust patch near North Street.	Maple-leaved viburnum, silky dogwood, flowering dogwood, witch hazel, spice bush, winged euonymus with dense patches of barberry, multiflora rose, Japanese honeysuckle, oriental bittersweet, tartarian honeysuckle, privet and greenbrier.	Club moss, stripped pipsisawa, hay scented fern, cinnamon fern and american holly.
E Open Swamp	10	Seedling size	Understocked	Poor Most trees extremely damaged or dead.	Only scattered red maple.	Button bush, highbush blueberry, sweet pepperbush, greenbrier.	Tussock sedge, dodder, sphagnum moss and cinnamon ferns. Drier areas have assorted sedges and grasses.
F Open Field	1	Pole	Understocked	Poor	Remnant apple trees and flowering dogwood.	Multiflora rose, tartarian honeysuckle, raspberry.	Grasses, dewberry.

* Seedling size - Trees less than 1 inch in diameter at 4½ feet above the ground (d.b.h.)
Sapling size - Trees 1 to 5 inches in d.b.h.
Pole size - Trees 5 to 11 inches in d.b.h.
Sawtimber size- Trees 11 inches and greater in d.b.h.

G. FISHERIES

Small sections of Horseneck Brook and Converse Pond Brook are located within the Babcock Property. Both streams support a wide variety of fish species, including American eel, native brook trout, red fin pickerel, blacknose dace, cutlips minnow, common shiner, fallfish, bluntnose minnow, creek chub, white sucker and tessellated darter. Stonerollers and pearl dace which, in Connecticut, have only been found in the adjacent Byram River watershed, could eventually spread to Horseneck and Converse Pond Brooks.

Because of the diversity of fish species present in the Brooks, they should be protected from all future development and left in a natural condition. A naturally vegetated stream belt of 50-100 feet should be maintained along both sides of the Brooks within the Babcock Property to assist in the protection of these watercourses.

III. ENVIRONMENTAL IMPACT OF PUBLIC SAFETY CENTER

A. Water Resources and DEP Permit Requirements

The Water Compliance Unit of the Department of Environmental Protection is charged with the issuance of wastewater discharge permits. Under Section 25-54i of Chapter 474a of the General Statutes, "no person shall after May 1, 1967 and no municipality shall, after April 10, 1973, initiate, create or originate any new discharge of water, substance or material into the waters of the State without first obtaining a permit for such discharge from the Commissioner." For this particular proposal, wastewater discharge permits must be obtained for the sanitary sewage, the equipment cleanup washwaters, the wastewaters from the fire tower training sessions, and, because of the location of the site in a drinking water supply watershed, for stormwaters which might adversely affect the reservoir water quality.

When the DEP feels that it has a complete application, a tentative determination is issued to the applicant indicating the DEP's proposal to issue or deny a discharge permit at a public hearing scheduled by the DEP. Public notice of the forthcoming hearing is made in the local newspaper by the DEP and a hearing examiner is assigned to hear the application and render a decision for the DEP Commissioner's final review.

The issuance of permits from the Water Compliance Unit must also agree with the policies set forth in the Connecticut Water Quality Standards and Classification (WQS). This program now classifies all surface waters in the State and sets minimum quality criteria for the various classes of water, and will, with the next updating, include groundwater classification policies. These classifications include a non-degradation policy which prohibits the lowering in class of a surface water unless it can be demonstrated to the DEP Commissioner that a lowering in classification is justifiable as a result of necessary economic or social development and unless it will not interfere with assigned uses made of that water.

All streams in the vicinity of the Babcock property are either Class AA - tributary to a drinking water supply, or Class A which denotes a clean stream that can accept only minor cooling waters and other clean water discharges. The WQS do not define what is "minor" cooling water or what constitutes "clean" water. These decisions are made by the DEP taking other water quality criteria into consideration.

Discussions with representatives of the Town of Greenwich regarding this proposal, and analysis of existing information, have indicated the following:

a. The sanitary sewage from the fire station would be discharged to either a conventional subsurface disposal system or, in the event that the site is not suitable for such a system, a holding tank. The town of Greenwich has recently performed site testing including deep test holes and percolation tests which indicate to them that a subsurface disposal system could meet state requirements and function properly on the site. The discharge of strictly sanitary sewage to the groundwater on this site could be permitted by the DEP subject to public hearing and approval of plans and specifications.

b. There appears to be no other acceptable method of disposal of apparatus and equipment washwater besides hauling it from the site. This washwater could contain trace concentrations of oil, gasoline, or solvents; the latter contaminant being present in many commercial automotive cleaning agents. For this reason, the washwaters could not be discharged to either surface or groundwaters, due to the threat of contamination of waters conveyed to Putnam Lake.

The Town of Greenwich has tentatively proposed to wash all apparatus inside the fire station and to collect wash waters in a holding tank for subsequent transport to the Greenwich Sewage Treatment Facility. The DEP would require that both an approval of plans and specifications, and a permit be obtained for any holding tank and waste hauling operation.

c. There will be a third type of wastewater to dispose of from the fire training tower area. This waste will consist of the waters which fall within the tower area during the sessions of equipment use training and fire fighting practice. This wastewater is of an undefined character and represents an unknown source of contamination to the waters of the state. It has tentatively been proposed by the Town to use clean water only in this area and to collect only that water which falls within a sloped area on the pad surrounding the tower. Any overspray which falls outside of the pad or on portions of the pad which are a certain distance from the tower, would not be collected and would runoff to the storm drainage system. In their tentative plans, the Town has proposed to provide both settling and skimming for the collected tower water to remove any settleable or floating particles. This treated water would then need to be disposed of.

The Department of Environmental Protection has expressed its concern for the quality of this wastewater due to limited experience with waters of this type. Management and supervision deficiencies could arise in the future when utilization of the training tower is made by those groups not completely familiar with all the restrictions of the towers use. To attempt to assure the DEP that this water would be clean, the Town has proposed many restrictions on the materials to be burned in the tower as well as prohibition of anything but clean water to extinguish fires. If these restrictions were strictly adhered to, it is possible that the water could be considered "clean" enough to allow discharge to a Class A stream.

The DEP is concerned that at times, there could be inadequate supervision of the training tower operation and that materials would be burned that could cause contamination of the water used to extinguish the flames or that materials such as chemical foams might be used to control training fires. It would take only a very small quantity of kerosene or other chemical to cause undesirable concentrations in the discharge water.

The Town has tentatively proposed to pump the treated tower water to Rockwood Lake Brook which flows out of Rockwood Lake Reservoir. This is a Class A stream which administratively could receive a clean water

discharge; however, this stream is very small and, until the DEP receives detailed information, there is a strong tendency to doubt whether this wastewater could always be classified as "clean" water. A visual inspection of Rockwood Lake Brook indicates that it may have no flow at all in late summer. There still remains the option of collecting this water in a holding tank for treatment and/or disposal off site. Again, this would require that a permit be obtained.

d. Stormwater runoff from the roof area of the fire station and from the parking lot does not appear to pose a threat to the quality of water in Putnam Lake and probably could be permitted by the DEP with stipulation that no washing of apparatus be conducted outside. Nevertheless, to achieve the ultimate in site runoff control, this water too could be collected and removed from the site.

Overall, the Babcock property presents some difficulties with regard to obtaining water discharge permits. These difficulties are directly related to the proximity of the site to a drinking water supply, the absence of sanitary sewers in the area, and the inability to properly define and anticipate the character of the fire training wastewaters.

B. Soils

From a soils standpoint, no significant soil limitations were noted that would limit the site in supporting the proposed structures and satellite facilities. It would be wise, however, to conduct a deep pit inspection in the proposed location of the ten thousand gallon storage tank associated with the training facility.

The soils at this site can be easily eroded if not properly protected during construction. With implementation of the proposed project, it is recommended that an erosion and sediment control plan for the entire development process be prepared and followed. Erosion and sediment control practices are described in the "Erosion and Sediment Control Handbook -- Connecticut" (U.S.D.A. Soil Conservation Service, 1976). Additional assistance in the preparation and review of erosion and sediment control plans is available from the Fairfield County Conservation District.

It is not possible to make specific recommendations for Erosion and Sediment Control measures until detailed development plans have been prepared. However, the following ten points are considered essential:

1. Land disturbance will be kept to a minimum; restabilization will be scheduled as soon as practicable.
2. Hay bale filters will be installed at all culvert outlets and along the toe of all critical cut and fill slopes.
3. Culvert discharge areas will be protected with rip-rap channels, energy dissipators will be provided as necessary.
4. Catch basins will be protected with hay bale filters throughout the construction period and until all disturbed areas are throughly stabilized.
5. All Erosion and Sediment Control measures will be installed prior to construction whenever possible.

6. All Erosion and Sediment Control measures will be constructed in accordance with the standards and specifications of the Erosion and Sediment Control Handbook (U.S.D.A. Soil Conservation Service, 1976).
7. All control measures will be maintained in effective condition throughout the construction period.
8. Additional control measures will be installed during the construction period if necessary or required.
9. Sediment removed from control structures will be disposed of in a manner which is consistent with the intent of the plan.
10. Responsibility must be assigned for implementing this Erosion and Sediment Control Plan. This responsibility includes the installation and maintenance of control measures, informing all parties engaged on the construction site of the requirements and objectives of the plan, and notifying the Planning and Zoning office of the Erosion and Sediment Control Plan if the title to the land is ever transfered.

C. Vegetation

The impact of the proposed public safety center on vegetation over the entire site will be minimal. The initial clearing of the 2-3 acres needed for the construction of the facility will perhaps cause the largest single impact. This clearing operation will remove between 17 and 21 cords of fuelwood per acre. Prompt revegetation and proper landscaping will help to reduce the negative aesthetic impact caused by the initial vegetation removal.

Other impacts on vegetation caused by the safety center operation will be minimal as long as certain precautions are taken in the areas of 1) waste water disposal and 2) the material used, frequency and timing of practice burns.

Waste water contaminated with heavy metals, phytotoxins, or deicing salts should not be discharged into areas where such discharges may result in damage or death to susceptible species of vegetation. Susceptability of vegetation to damage will depend on the sensitivity of vegetation, the type of contaminant, its toxicity and concentration, and the frequency and duration of discharge. Disposal of the contaminated waste water off site will eliminate potential impacts on vegetation.

Practice burns, providing they do not release sulfur dioxide, hydrogen floride and the photochemical oxidants (ozone and peroxyacetyl nitrate) into the atmosphere, should have little negative impact on area vegetation[1]. The smoke released during practice burns, if of plant material origin, should have little negative effect on area vegetation. The vegetation in this area has evolved and coexisted with forest fires and the smoke produced by them for thousands of years.

The smoke released by burning material of non-plant origin may however be toxic to some species of plants. Only those materials which do not produce products toxic to plants or animals when burned should be used.

1 Rich, S. 1971. Effects of Trees and Forests In Reducing Air Pollution, p 29-33. Trees and Forests in an Urbanizing Environment. Cooperative Extension Service. University of Massachusetts. U.S.D.A. P.R.D. series #17.

D. Climatology

GENERAL CLIMATOLOGY OF AREA:

The Babcock Property is located in the transition area between the Coastal Plain and Southwest Hills area of Connecticut. Therefore, its climate is primarily influenced by the proximity of Long Island Sound but it also shows some of the more extreme characteristics of the inland hills. When low pressure weather systems bring southerly air flow from the Sound, the area experiences humid maritime conditions. When high pressure systems prevail, the area experiences relatively cool dry weather which is the prevailing fall season condition. The site is located close enough to the Sound to experience some effects of the land-sea breeze in the summer and fall months. The land-sea breeze during this period will cause some shift in wind direction at the site. The proximity of the heavily trafficked Merritt Parkway to the site results in higher concentrations of air pollution during periods of southerly air flow (summer and fall seasons and generally day time periods).

Below are some climatological characteristics of the area.

Annual average mean temp -	51° F
Annual average heating degree days -	5800
Annual average precipitation -	46 inches
Mean seasonal snowfall -	33 inches

The development of the site will not have a detectable affect on the overall climate and the climate will not be limiting to the development of the site.

AIR POLLUTION CONSIDERATIONS:

If burning is scheduled by the three day weather forecasts, it can be restricted to periods when the air pollution level in the area is normal or better and the smoke plumes emmitted from training exercises in the fire training center should not add significantly to air pollution levels. Also burning should be conducted during the daylight hours if possible since nighttime inversions form on almost all "fair" weather nights. On these nights, the smoke plume would remain at ground level and probably drift southward (down hill) across the Merritt Parkway.

Noise levels should not be a problem except during periods when sirens and alarms are sounding. Surrounding vegetation will have little effect on noises at these sound frequencies. Earth or stone walls or berms between the source and houses located near the source would decrease the sound pressure levels reaching the houses considerably.

It should be noted that sudden intermittant noises are often much more disturbing to wildlife (i.e. deer) than loud constant noise in an area (i.e. such as that from an Interstate Highway). This is a trade off that would have to be made for any noise sensitive wildlife that are nearby.

ENERGY CONSERVATION CONSIDERATIONS:

Solar radiation at the site is sufficient for space and hot water heating (in adequately designed buildings) most of the year. Generally there will be only one or two periods, of about a week each, during the winter when supplemental heat would be required. The average amounts of radiation for collection (by a south facing "flat plate" collector at a 35% slope angle) vary from 500 calories per square centimeter a day in mid July to 235 calories in mid December.

When the final plans are formulated, it is suggested that for the purpose of solar access, buildings be oriented on the property so that their long access is East - West and that no vegetation shades them from the south. Also, for the purposes of winter air infiltration control, either present vegetation or new conifer planting should be arranged to act as a wind barrier around the North and West sides of all the buildings except the smoke house/fire training tower facility. This facility should be as exposed as possible to aid in smoke dispersion.

E. Additional Considerations

FLOODING POTENTIAL

North (upstream) of the discharge point of the Converse Pond Brook aqueduct, Horseneck Brook has a drainage area of approximately 800 acres. The proposed public-safety center would involve a development of only 3 acres of this watershed, much less than one percent. Hence, no appreciable impact on peak flows during flooding periods along Horseneck Brook should occur. Flooding limits for the theoretical 100-year flood along the brook in the vicinity of the site are shown on a plan prepared by the Greenwich Department of Public Works. The parcel to be developed is no closer than approximately 150 feet from the flood margin, and the flood elevation would be about 12 feet below the basement floor of the fire station. These separating distances should provide ample protection from brook flooding.

FISHERIES IMPACT

As proposed, the public safety center should have a negligible impact on the fisheries of Horseneck Brook and Converse Pond Brook. Some siltation problems could occur in the small pond directly downstream from the Babcock property on Horseneck Brook during construction of the facilities. However, if standard safeguards are taken, the facilities should have little impact upon the pond, both while they are being constructed and when they are in operation.

OTHER

. With implementation of the project, existing vegetative cover between the septic system sites and the wetland should be substantially reinforced by underplanting or by partial conversion to grass to increase the opportunity for nutrient utilization.

. Since there is no guarantee that contaminated water will not reach beyond the tower pad, through accidental misdirection of a charged hose, a rupture of a hose, or wind caused drift, precautions should be considered to accommodate discharges beyond the curbed and fenced area.

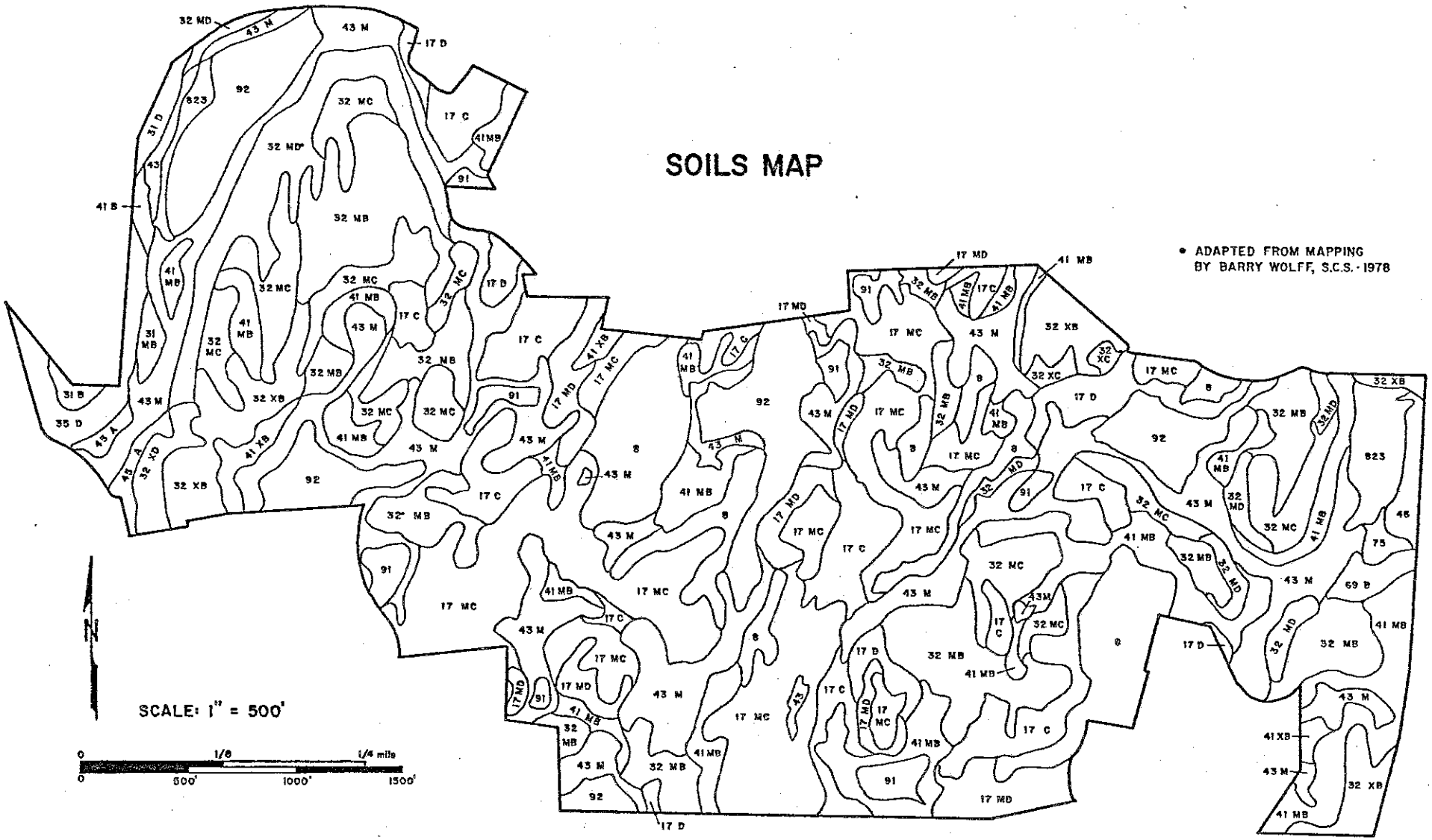
One possibility would be to convert all areas within range of the highest pressure line to be used, plus an additional safety margin, to grass. This would provide maximum absorption and stabilization. In addition, a low earth berm could be constructed along the edge of the grassed area to prevent surface runoff into the wetlands.

. Consideration should be given to limiting potentially harmful activities that could be generated by the nature of the proposed facility. Of primary importance would be crowd activities that could shock load the septic system.

* * * * *

APPENDIX

SOILS MAP



SCALE: 1" = 500'

0 1/8 1/4 miles

0 500' 1000' 1500'

* ADAPTED FROM MAPPING BY BARRY WOLFF, S.C.S. - 1978

SOILS LIMITATION CHART
BUILDING SITE DEVELOPMENT

MAP SYMBOL	SOIL NAME	BUILDINGS W/ BASEMENTS		SEPTIC ABSORBTION FIELDS		ROADS OR DRIVEWAYS		LANDSCAPING	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
8	Rockland	Severe	Slope, Depth to rock, Large stones	Severe	Slope, Depth to rock, Large stones	Severe	Slope, Depth to rock	Severe	Slope, Depth to rock, Large stones
17C	Hollis-Charlton rocky complex 3-15% slopes								
	Hollis	Severe	Depth to rock	Severe	Depth to rock	Severe	Depth to rock	Severe	Depth to rock
	Charlton	Moderate	Large stones, slope	Moderate	Large stones	Moderate	Slope	Moderate	Large stones
17D	Hollis-Charlton rocky complex 15-35% slopes								
	Hollis	Severe	Slope, Depth to rock	Severe	Slope, Depth to rock	Severe	Slope, Depth to rock	Severe	Slope, Depth to rock
	Charlton	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
17MC	Hollis extremely rocky fine sandy loam, 3-15% slopes	Severe	Depth to rock, large stones	Severe	Depth to rock, large stones	Severe	Depth to rock	Severe	Depth to rock, large stones
17MD	Hollis extremely rocky fine sandy loam, 15-35% slopes	Severe	Slope, Depth to rock, large stones	Severe	Slope, Depth to rock, large stones	Severe	Slope, Depth to rock	Severe	Slope, Depth to rock, large stones
31B	Woodbridge fine sandy loam, 3-8% slopes	Severe	Frost action	Severe	Percs slowly	Severe	Frost action	Slight	
31D	Woodbridge fine sandy loam, 15-20% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope

CONTINUED NEXT PAGE

MAP SYMBOL	SOIL NAME	BUILDINGS W/ BASEMENTS		SEPTIC ABSORBTION FIELDS		ROADS OR DRIVEWAYS		LANDSCAPING	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
31MB	Woodbridge very stony fine sandy loam, 3-15% slopes	Severe	Wet	Severe	Percs slowly	Severe	Frost action	Moderate	Large stone
32XB	Charlton stony fine sandy loam, 3-8% slopes	Moderate	Large stones	Moderate	Large stones	Slight	--	Moderate	Large stones
32XC	Charlton stony fine sandy loam, 8-15% slopes	Moderate	Large stones	Moderate	Large stones, Slope	Moderate	Slope	Moderate	Large stones, Slope
32XD	Charlton stony fine sandy loam, 15-35% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
32MB	Charlton very stony fine sandy loam, 3-8% slopes	Moderate	Large stones	Moderate	Large stones	Slight	--	Moderate	Large stones
32MC	Charlton very stony fine sandy loam, 8-15% slopes	Moderate	Large stones, Slope	Moderate	Large stones	Moderate	Slope	Moderate	Large stones
32MD	Charlton very stony fine sandy loam, 15-35% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
35D	Paxton fine sandy loam, 15-15% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
41B	Sutton fine sandy loam, 3-8% slopes	Moderate	Wetness	Severe	Wetness	Moderate	Frost action	Slight	--
41XB	Sutton stony fine sandy loam, 3-8% slopes	Moderate	Wetness	Severe	Wetness	Moderate	Frost action	Slight	--
41MB	Sutton very stony fine sandy loam, 3-15% slopes	Severe	Wetness	Severe	Wetness	Moderate	Slope, Frost action	Moderate	Slope, Large stones
43	Leicester fine sandy loam	Severe	Wetness	Severe	Wetness	Severe	Wetness, Frost action	Severe	Wetness

CONTINUED NEXT PAGE

MAP SYMBOL	SOIL NAME	BUILDINGS W/ BASEMENTS		SEPTIC ABSORBTION FIELDS		ROADS OR DRIVEWAYS		LANDSCAPING	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
43M	Leicester, Ridgebury & Whitman very stony fine sandy loam								
	Leicester	Severe	Wetness	Severe	Wetness	Severe	Wetness, Frost action	Severe	Wetness
	Ridgebury	Severe	Wetness	Severe	Wetness Percs slowly	Severe	Wetness, Frost action	Severe	Wetness
	Whitman	Severe	Wetness	Severe	Percs slowly, Wetness	Severe	Wetness, Frost action	Severe	Large stones, Wetness
45A	Tisbury silt loam, 0-3% slopes	Severe	Wetness	Severe	Wetness	Severe	Frost action	Slight	--
46	Walpole loam	Severe	Wetness	Severe	Wetness	Severe	Wetness, Frost action	Severe	Wetness
69B	Agwam fine sandy loam, 0-3% slopes	Slight	--	Slight	--	Slight	--	Slight	--
75	Scarboro loamy fine sand	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
91	Muck, shallow	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
92	Muck	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
823	Saco silt loam	Severe	Floods, Wetness, Frost action	Severe	Floods, Wetness	Severe	Floods, Wetness, Frost action	Severe	Floods, Wetness

SOILS LIMITATION CHART - RECREATIONAL DEVELOPMENT

MAP SYMBOL	SOIL NAME	CAMP		PICNIC		PLAYGROUND		PATHS & TRAILS	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
8	Rockland	Severe	Slope, Large stones	Severe	Slope, Large stones	Severe	Depth to rock, lg. stones	Moderate	Slope, Large stones
17C	Hollis-Charlton rocky complex, 3-15% slopes Hollis	Moderate	Slope, Large stones	Moderate	Slope	Severe	Slope, Depth to rock, Large stones	Moderate	Large stones
	Charlton	Moderate	Slope, Large stones	Moderate	Slope	Moderate	Large stones, Slope	Moderate	Large stones
17D	Hollis-Charlton rocky complex, 15-35% slopes Hollis	Severe	Slope	Severe	Slope	Severe	Slope, Depth to rock, Large stones	Moderate	Slope, Large stones
	Charlton	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
17MC	Hollis extremely rocky fine sandy loam, 3-15% slopes	Severe	Large stones	Moderate	Large stones	Severe	Slope, Depth to rock, Large stones	Severe	Large stones
17MD	Hollis extremely rocky fine sandy loam, 15-35% slopes	Severe	Slope, Large stones	Moderate	Slope, Large stones	Severe	Slope, Depth to rock, Large stones	Severe	Slope, Large stones
31B	Woodbridge fine sandy loam, 3-8% slopes	Moderate	Percs slowly	Slight		Moderate	Percs slowly	Slight	

MAP SYMBOL	SOIL NAME	CAMP		PICNIC		PLAYGROUND		PATHS & TRAILS	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
31D	Woodbridge fine sandy loam, 15-20% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Moderate	Slope
31MB	Woodbridge very stony fine sandy loam, 3-15% slopes	Moderate	Percs slowly	Moderate	Slope	Severe	Slope	Moderate	Large stones
32XB	Charlton stony fine sandy loam, 3-8% slopes	Moderate	Large stones	Slight	--	Moderate	Large stones, Slope	Moderate	Large stones
32XC	Charlton stony fine sandy loam, 8-15% slopes	Moderate	Large stones, Slope	Moderate	Slope	Severe	Slope	Moderate	Large stones
32XD	Charlton stony fine sandy loam, 15-35% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Moderate	Slope
32MB	Charlton very stony fine sandy loam, 3-8% slopes	Moderate	Large stones	Slight	--	Moderate	Large stones, Slope	Moderate	Large stones
32MC	Charlton very stony fine sandy loam, 8-15% slopes	Moderate	Large stones, Slope	Moderate	Slope	Severe	Slope	Moderate	Large stones
32MD	Charlton verystony fine sandy loam, 15-35% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
35D	Paxton fine sandy loam, 15-25% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Moderate	Slope
41B	Sutton fine sandy loam, 3-8% slopes	Moderate	Wetness	Slight	--	Moderate	Slope, Wetness	Slight	--
41XB	Sutton stony fine sandy loam, 3-8% slopes	Moderate	Wetness	Slight	--	Moderate	Slope, Wetness	Slight	--
41MB	Sutton very stony fine sandy loam, 3-15% slopes	Moderate	Slope, Large stones	Moderate	Slope	Severe	Slope	Moderate	Slope

MAP SYMBOL	SOIL NAME	CAMP		PICNIC		PLAYGROUND		PATHS & TRAILS	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
43	Leicester fine sandy loam	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
43M	Leicester, Ridgebury & Whitman very stony fine sandy loam								
	Leicester	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
	Ridgebury	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
	Whitman	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
45A	Tisbury silt loam, 0-3% slopes	Slight	--	Slight	--	Moderate	Wetness	Slight	--
46	Walpole loam	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
69B	Agwam fine sandy loam, 0-3% slopes	Slight	--	Slight	--	Slight	--	Slight	--
75	Scarboro loamy fine sand	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
91	Muck, shallow	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
92	Muck	Severe	Wetness	Severe	Wetness	Severe	Wetness	Severe	Wetness
823	Saco silt loam	Severe	Floods, Wetness	Severe	Floods	Severe	Floods, Wetness	Severe	Wetness

EXPLANATION OF RATING SYSTEM:

1. SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.
2. MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
3. SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

NUMERICAL LISTING OF SOILS AND NATURAL SOIL GROUP ASSOCIATIONS

Natural Soil Group A

Soil Number	Soil Name
45A	Tisbury silt loam, 0 to 3% slopes
46	Walpole loam
91	Muck, shallow
75	Scarboro fine sandy loam
69B	Agawam fine sandy loam

Natural Soil Group B

32XB	Charlton stony fine sandy loam, 3 to 8% slopes
32XC	Charlton stony fine sandy loam, 8 to 15% slopes
32XD	Charlton stony fine sandy loam, 15 to 35% slopes
32MB	Charlton very stony fine sandy loam, 3 to 8% slopes
32MC	Charlton very stony fine sandy loam, 8 to 15% slopes
32MD	Charlton very stony fine sandy loam, 15 to 35% slopes
41B	Sutton fine sandy loam, 3 to 8% slopes
41XB	Sutton stony fine sandy loam, 3 to 8% slopes
41MB	Sutton very stony fine sandy loam,
43	Leicester fine sandy loam
43M	Leicester, Ridgebury and Whitman very stony fine sandy loam.

Natural Soil Group C

35D	Paxton fine sandy loam, 15 to 25% slopes
31B	Woodbridge fine sandy loam, 3 to 8% slopes
31D	Woodbridge fine sandy loam, 15 to 20% slopes
31MB	Woodbridge very stony fine sandy loam, 3 to 15% slopes

Natural Soil Group D

17C	Hollis-Charlton rocky complex, 3 to 15% slopes
17D	Hollis-Charlton rocky complex, 15 to 35% slopes
17MC	Hollis extremely rocky fine sandy loam, 3 to 15% slopes
17MD	Hollis extremely rocky fine sandy loam, 15 to 35% slopes
8	Rockland

Natural Soil Group E

823	Saco Silt loam
92	Muck

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.