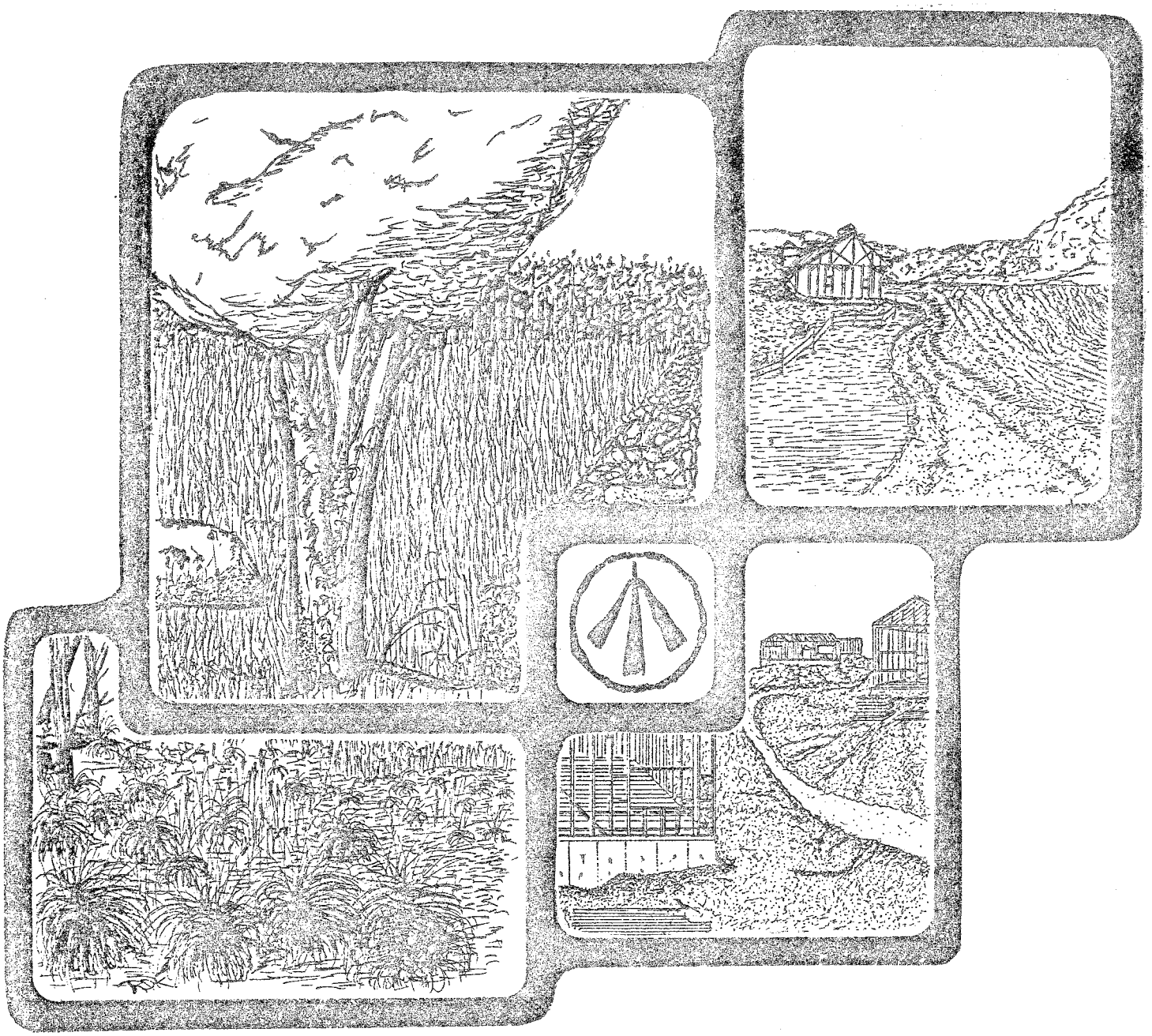
ENVIRONMENTAL REVIEW TEAM REPORT



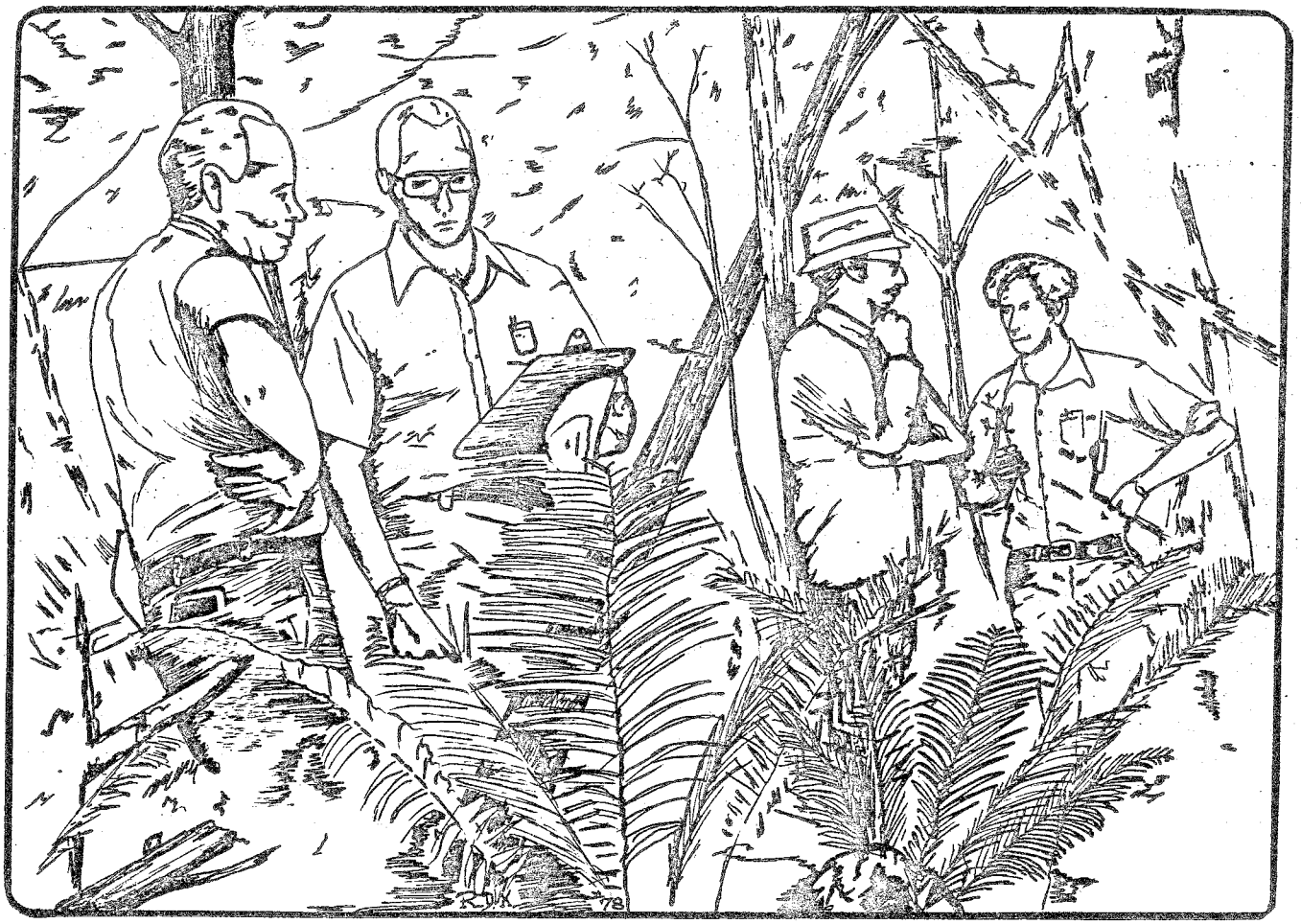
LITCHFIELD HILLS RESIDENTIAL COMMUNITY
LITCHFIELD, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

ON

LITCHFIELD HILLS RESIDENTIAL COMMUNITY
LITCHFIELD, CONNECTICUT



DECEMBER 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
AMERICAN INDIAN ARCHAEOLOGICAL INSTITUTE

x x x x x x

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KING'S MARK RESOURCE CONSERVATION AND DEVELOPMENT AREA

Victor Allan, Chairman, Executive Committee
Stephen Driver, ERT Committee Chairman
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Staff Administration Provided By

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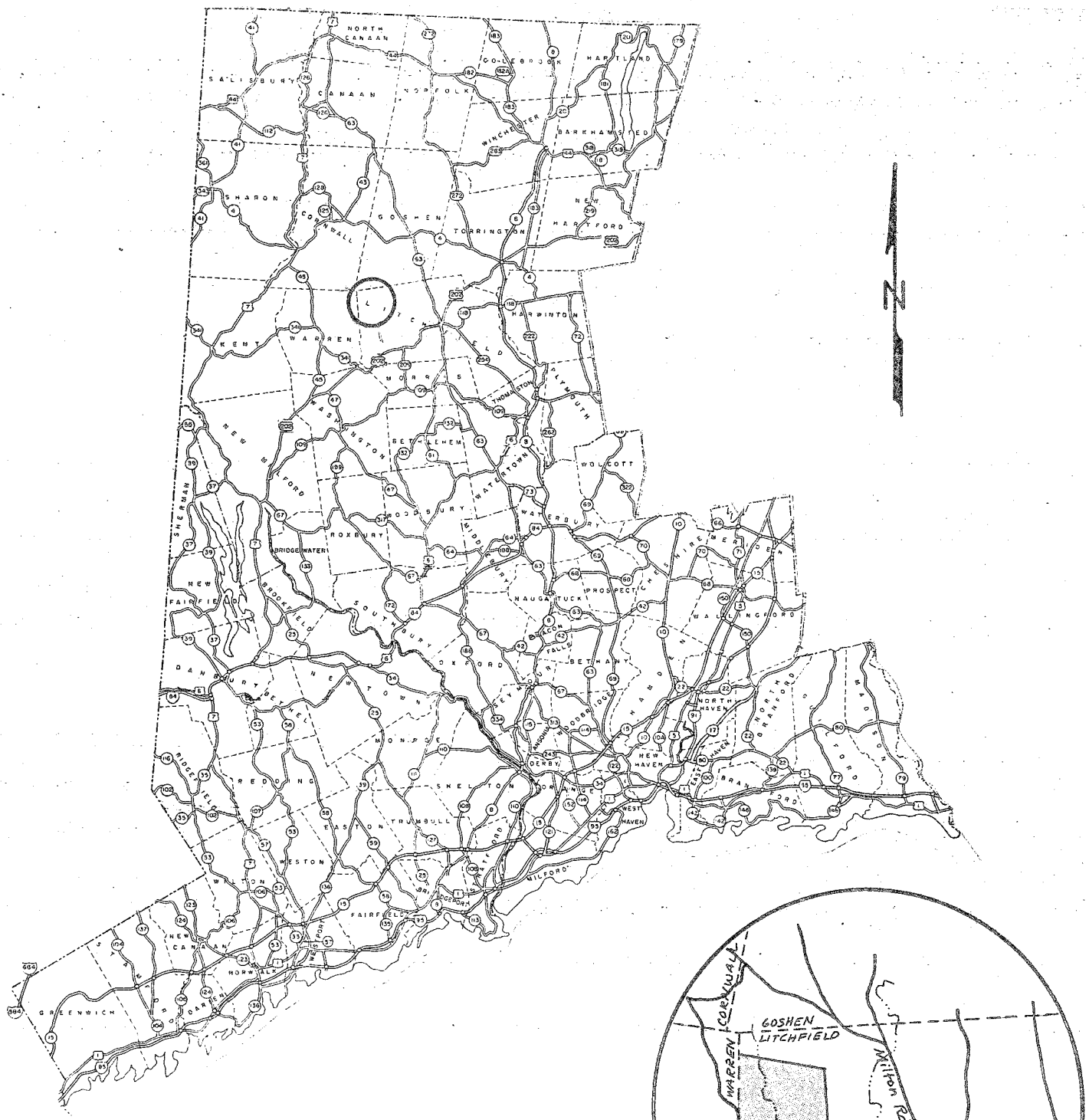
Leicester H. Handsfield, Chairman
Charles A. Boster, Director
Richard Lynn, ERT Coordinator
Rebecca West, ERT Cartographer
Irene Nadig, Secretary
Brenda Lloyd, Secretary

TABLE OF CONTENTS

LIST OF FIGURES

LOCATION OF STUDY SITE

LITCHFIELD HILLS RESIDENTIAL COMMUNITY
LITCHFIELD, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
LITCHFIELD HILLS RESIDENTIAL COMMUNITY
LITCHFIELD, CT.

I. INTRODUCTION

The Litchfield Planning and Zoning Commission is presently considering a preliminary application for a proposed residential development. The proposed project is known as "Litchfield Hills - A Residential Community".

The "Litchfield Hills" site is ± 265 acres in size and located in the northwestern corner of town. Blue Swamp Road abuts the southern and western borders of the property. The site is undeveloped, mostly wooded, and characterized by an extensive wetland/stream corridor in the central portion of the property. As shown in Figure 1, the land rises steeply to the east and west of this corridor to two fairly level plateaus. The eastern most plateau slopes down again in the eastern quarter of the property to another wetland area.

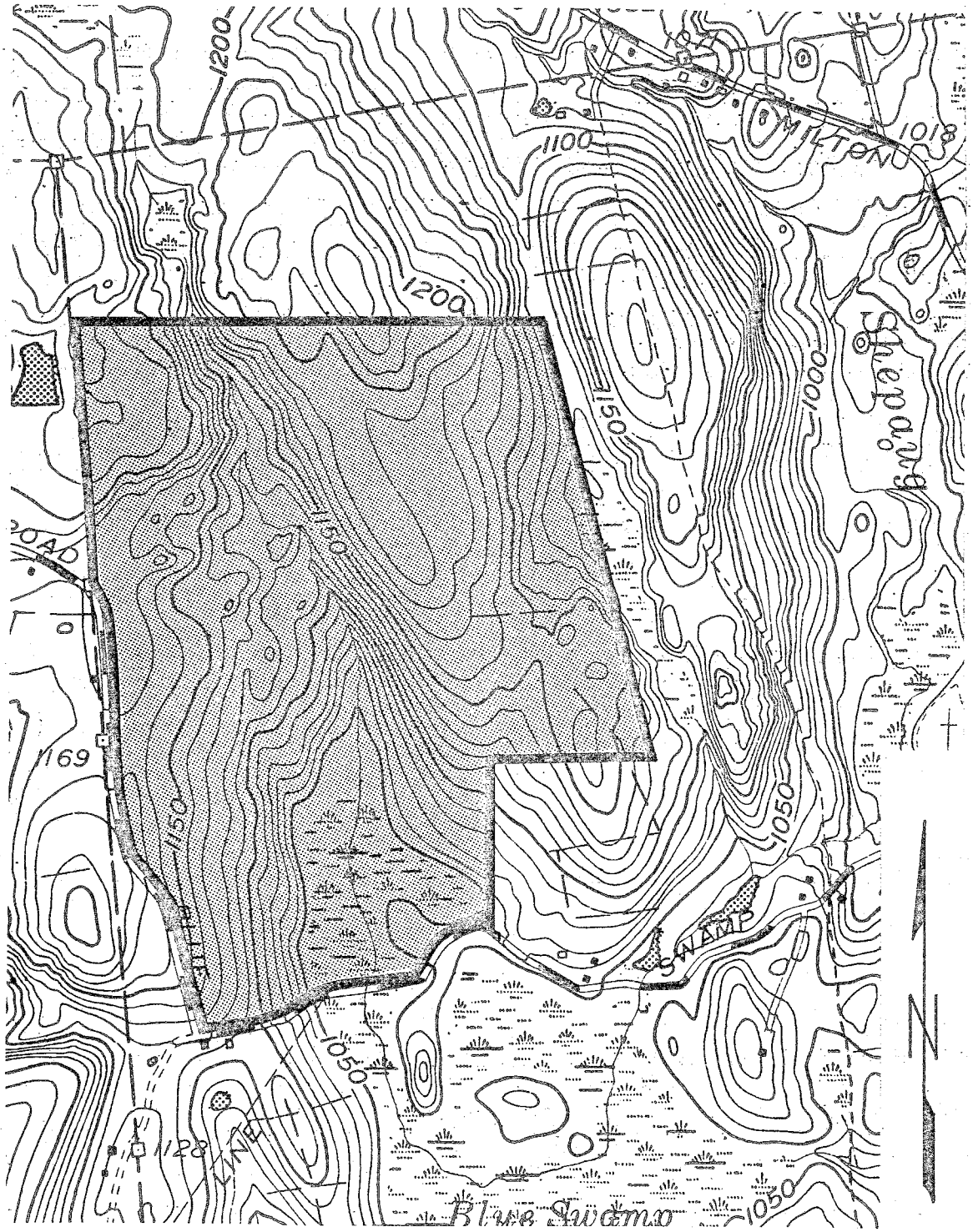
The western half of the property is zoned R-60; the eastern half R-40. Under this zoning, a maximum of 242 single family homes could possibly be built on the property. The Litchfield Hills developer has proposed a re-zoning of the subject property to allow a planned residential community to "take advantage of the benefits of cluster development" and "preserve the site's integrity". According to the applicant, the proposed zone change could entail the creation of a new zoning category in town or could utilize the existing RMF-160 zone in town. The RMF-160 zone allows for up to 8 dwelling units per 40,000 square feet. This zoning could conceivably allow up to 2300 garden apartment units on the property. The Litchfield Hills developer has indicated, however, that he will propose an overall site density no greater than that presently permitted under existing zoning, with a mix of single family detached and townhouse units. The area would be served by on-site wells and subsurface sewage disposal facilities.

The proposed project is in the preliminary planning stages. To date, the developer has prepared a conceptual master plan for the site, plus an illustrative site plan for the proposed first phase of the development. The first phase would consist of 20 two and three bedroom townhouses clustered in groups of 3 and 4 units on 40 acres (2 acres/dwelling unit gross density). An open space area would also be set aside for future recreational use under the first phase proposal. Figure 2 presents a simplified site plan of the development proposal.

The Litchfield Planning and Zoning Commission requested the assistance of the King's Mark Environmental Review Team to help the Town in analyzing the development proposal. Specifically, the Team was asked to identify the natural resource base of the site, to comment on the suitability of the land for the proposed project, and to provide an objective evaluation of the potential development impact. Of major concern to the Planning and Zoning Commission is the desirability of the proposed re-zoning.

FIGURE 1.

TOPOGRAPHIC MAP



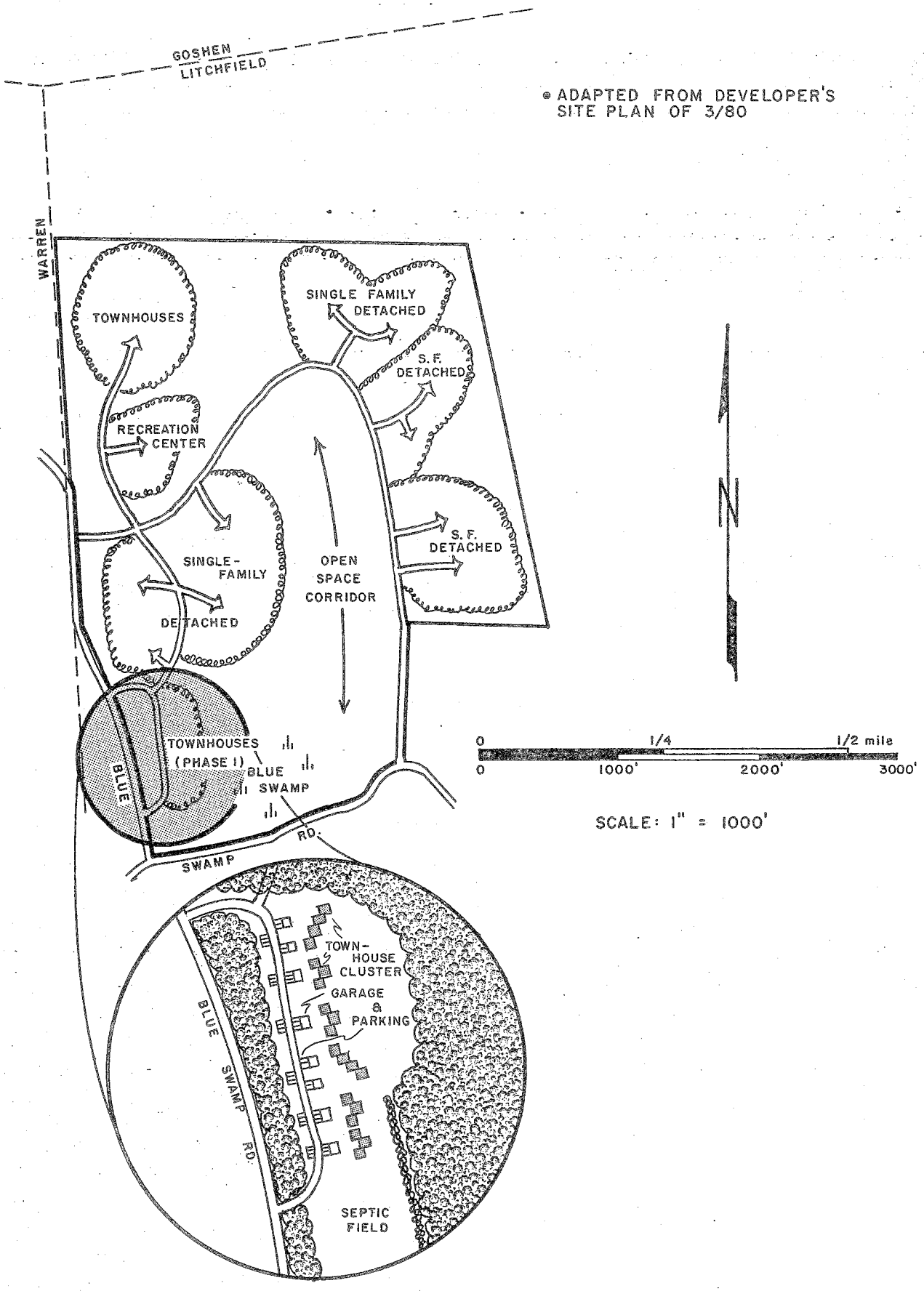
0 1/4 1/2 mile

0 1000' 2000' 3000'

SCALE: 1" = 1000'

FIGURE 2.

SIMPLIFIED SITE PLAN



The ERT met and field reviewed the site on July 23, 1980. Team members for this review consisted of the following:

Art Cross	District Conservationist	U.S.D.A. Soil Conservation Service
Steve Jackson	Wildlife Biologist	State Department of Environmental Protection
Larry Johnson	Community Affairs Planner	State Office of Policy and Management
Rick Lynn	ERT Coordinator	King's Mark Environmental Review Team
Bob Orciari	Fishery Biologist	State Department of Environmental Protection
Rob Rocks	Forester	State Department of Environmental Protection
Frank Schaub	Sanitary Engineer	State Department of Health
Carl Stamm	Recreation Specialist	State Department of Environmental Protection
Mike Zizka	Geohydrologist	State 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 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. 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 and developer. It is hoped the information contained in this report will assist the Town of Litchfield and the landowner/developer 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. SUMMARY

1) Development of the site as planned will lead to increases in runoff. Preliminary projections indicate that peak flow increases may be moderate in size; consideration should therefore be given to some means of runoff retention and flow reduction in project design.

2) It is probable that the proposed project can be adequately served by bedrock-based wells.

3) According to USDA Soil Conservation Service mapping, the majority of the subject site is underlain by soils which present severe limitations for urban development (i.e. septic systems, homesites, roads and driveways, and landscaping). Although a severe rating does not necessarily preclude development, it does indicate that costly and extensive measures will probably be required to overcome the limiting conditions. Major limiting factors on this site include wetland soils, shallow to bedrock areas, hardpan soils, and steep slopes.

4) To minimize the amount of soil erosion and sedimentation both during and after construction, it will be important that a detailed erosion and sediment control plan be prepared prior to final approval of any of the development plans. Detailed designs and a time table for installation should be included as part of the Plan.

5) Due to soil limitations, it does not appear feasible to construct a number of community subsurface sewage disposal systems to service the proposed cluster developments. It would be preferable to construct a number of smaller subsurface sewage disposal systems throughout the entire site and therefore broaden the application area rather than concentrating sewage in a limited area. From the standpoint of subsurface sewage disposal, then, cluster development at this site does not appear to provide any significant benefit.

6) The Litchfield Hills tract consists of eight vegetation types. Many of the large healthy trees and flowering shrubs present within this tract have high aesthetic value and should be retained. Portions of this tract would benefit by receiving a commercial harvest. Cluster development of this site will allow future forest management of the open space areas.

7) Wildlife habitat value is high for the Litchfield Hills tract. Although the proposed project will have a negative impact on wildlife, the impact will be less than would result from a conventional scheme of one or two acre lots at the same density.

8) The perennial stream within the subject property does not represent a significant fisheries resource, but does have value in providing clean water to the Shepaug River.

9) The recreational use potential of the proposed open space and recreation areas is very limited due to difficult soil and topographic conditions.

10) It appears that the proposed project is generally in conformance with advisory state and local plans.

11) Significant portions of the Litchfield Hills site are considered unbuildable. In the opinion of the Team Planner, any cluster provision permitted the developer should be given to allow him flexibility in using his good development areas rather than to increase the number of units allowed on the property.

III. GEOLOGY

The site is located in an area encompassed by the Cornwall topographic quadrangle. A bedrock geologic map of the quadrangle has been prepared by R. M. Gates and published by the Connecticut Geological and Natural History Survey (Quadrangle Report No. 11). The surficial geology of the quadrangle was mapped by C. R. Warren and R. B. Colton and has been published by the U.S. Geological Survey (Map GQ-1148).

Most of the bedrock cropping out on and underlying the site is part of the Waramaug Formation. This formation consists of two interlayered gneisses, one of which is made up largely of quartz, feldspar, and biotite, and the other of which contains abundant sillimanite and garnet in addition to the minerals already named. The second gneiss may also be distinguished by a nubby, corrugated, or ribbed weathered surface. Both gneisses are rusty-weathering. The term "gneiss" indicates that the rocks contain thin layers of platy, flaky, or elongate minerals that alternate with bands or layers of more rounded grains. A narrow section of the site along the western boundary contains granitic rocks, which are composed of quartz, microcline, plagioclase, and mica. Small bedrock outcrops are scattered throughout the northwestern and southeastern portions of the property, indicating that the overburden is thin in these areas. Figure 3 shows the bedrock distribution on the site.

Glacial sediment overlies bedrock in most areas. This sediment, called till, is composed of nonsorted clay, silt, sand, gravel, and boulders which were transported by and deposited directly from glacier ice. In some places, a loose, relatively sandy till may be underlain by a tightly compact, relatively silty till. Although thin in some sections of the site, as described above, the till may be as much as 20 feet thick in the southwestern portion. In Blue Swamp, till or bedrock is overlain by accumulations of sand, silt, clay, and partly decomposed organic materials. The thickness of the swamp sediment is not known but it is probably at least 10 feet. Figure 4 presents a map of the surficial geology of the site.

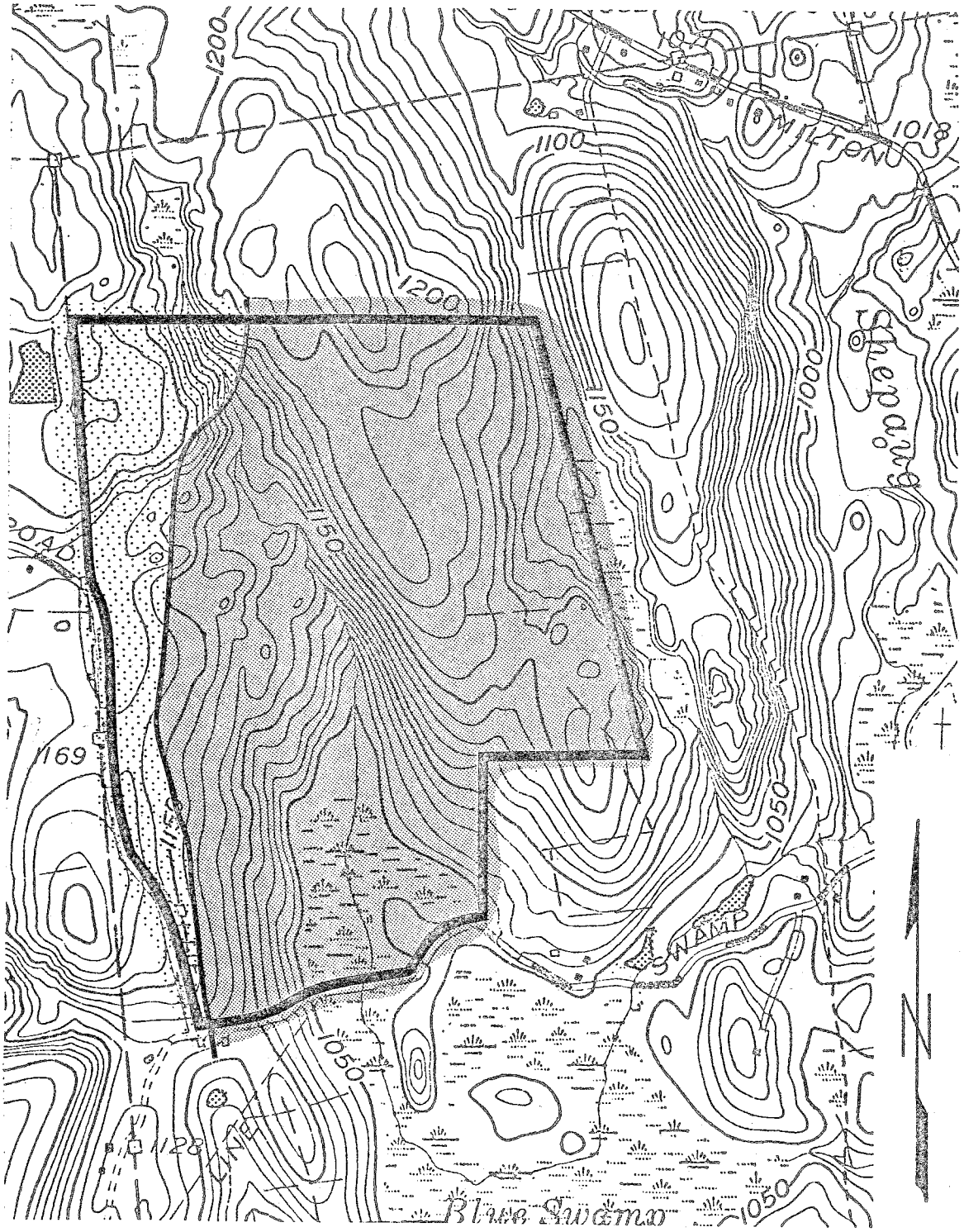
IV. HYDROLOGY

Roughly three-fourths of the site drains into the northern extension of Blue Swamp, a wetland which covers approximately 100 acres. The northeastern section of the property drains into a narrow wetland at the eastern boundary. The outlet streams from both wetlands meet at a pond just north of Blue Swamp Road and 1500 feet east of the site. The outlet from the pond flows eastward, entering Shepaug River within approximately 1000 feet.

It is clear from the size of Blue Swamp that it serves an important flood-storage function. Peak flows during a 100-year storm event may be reduced by as much as a third, and during a 10-year storm by as much as one half, because of the swamp. In addition, the swamp acts as a sediment trap for materials generated by erosion in its 520-acre watershed. These important hydrologic functions indicate the desirability of preserving the wetland. The narrow swamp at the eastern boundary of the site serves a smaller watershed, but has the same essential hydrologic values as Blue Swamp. It, too, should be kept free from encroachment.

FIGURE 3.

BEDROCK GEOLOGY (ADAPTED FROM CONN. GEOL. & NATL. HIST. SURV. QUAD. RPT. NO. 11)



EXPLANATION

GRANITE

WARAMAUG FORMATION

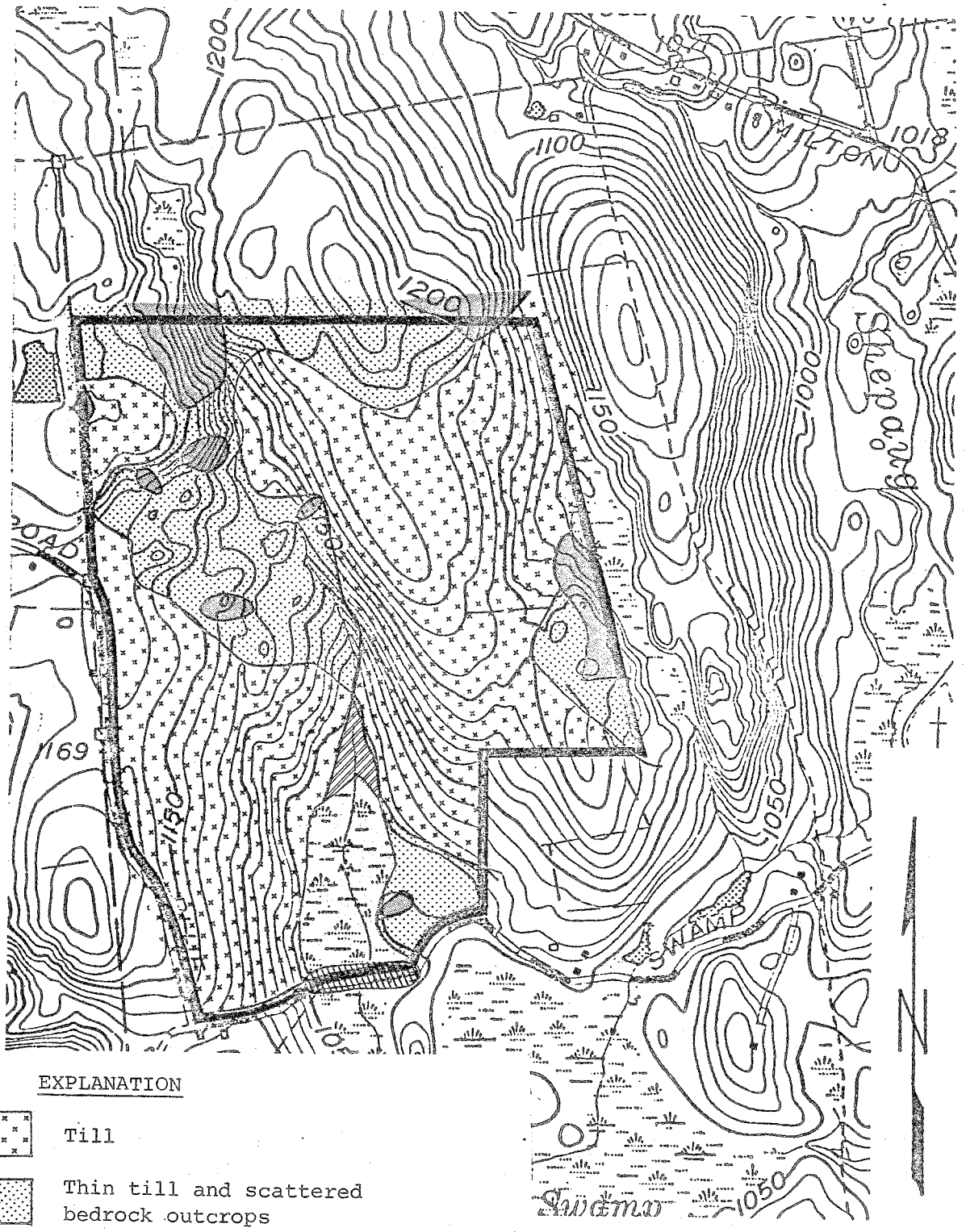
0 1/4 1/2 mile

0 1000' 2000' 3000'

SCALE: 1" = 1000'

FIGURE 4.

SURFICIAL GEOLOGY (ADAPTED FROM U.S.G.S. MAP GQ-1148)



EXPLANATION

- Till
- Thin till and scattered bedrock outcrops
- Areas of extensive bedrock outcrops and very thin till
- Recent floodplain sediments (alluvium). Mostly sand and silt.
- Swamp sediments
- Artificial fill

0 1/4 1/2 mile
0 1000' 2000' 3000'

SCALE: 1" = 1000'

Development of the site as planned will lead to increases in runoff. The increases will be the result of the covering of pervious soils by impervious roofs, driveways, roads, etc., and the removal of vegetation from the developed areas. It is possible to estimate the magnitude of the increases by any one of several standard methods. The Team generally uses the SCS runoff curve-number method as described in "Flood Flow Formulas for Connecticut", a technical paper prepared by Paul Biscuti of the Water Resources Unit of DEP. It should be noted that the actual values for peak flows derived from the various methods may be quite different. The Team does not regard its estimates as necessarily superior to those derived by other formulas; rather, it suggests that its results be considered as more representative of the anticipated percentage increases in peak flows than of precise peak flow values.

It was somewhat difficult to apply the SCS curve-number method to this development proposal because, with the exception of Phase I, few details were available about number of units, etc. The Team therefore made several assumptions: first, that the bordered subareas shown on the simplified site plan (see Figure 2) were indicative of the true total area that development would involve; second, that the northern townhouse cluster would be similar to the Phase I cluster; third, that the density of the single-family detached homes would be one home per three-fourths of an acre. Any differences from these assumptions or any increases or decreases in developed areas would result in changes in the estimates.

Peak flows were estimated for the flow from Blue Swamp under Blue Swamp Road and also for the flow from the swamp at the eastern boundary of the site where that flow enters a pond near Blue Swamp Road. The drainage areas for the two flow points are shown in Figure 5. Estimates were made for the 10-year, 25-year, 50-year, and 100-year storm events. These events have probabilities of 10 percent, 4 percent, 2 percent, and 1 percent, respectively, of occurring in any given year. The estimates are shown below. All flows are given in cubic feet per second (cfs).

Drainage Point 1

	10-year	25-year	50-year	100-year
Peak flows before development	161 cfs	294 cfs	438 cfs	706 cfs
Peak flows after development	220 cfs	358 cfs	519 cfs	807 cfs
Percent increases	37%	22%	16%	14%

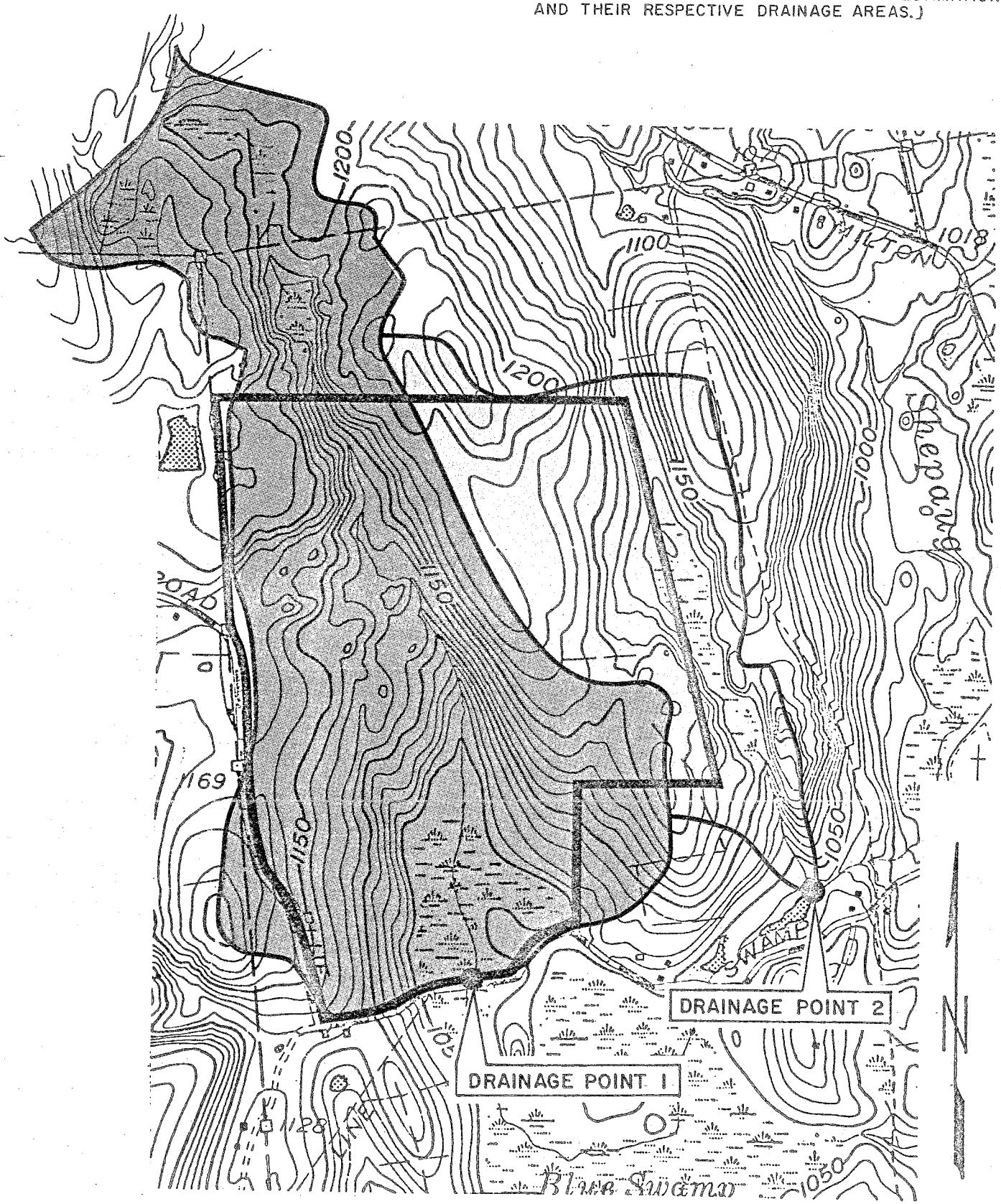
Drainage Point 2

	10-year	25-year	50-year	100-year
Peak flows before development	89 cfs	163 cfs	239 cfs	373 cfs
Peak flows after development	126 cfs	217 cfs	307 cfs	456 cfs
Percent increase	42%	33%	28%	22%

FIGURE 5.

DRAINAGE ANALYSIS MAP

(DRAINAGE POINTS USED IN PEAK-FLOW ESTIMATIONS, AND THEIR RESPECTIVE DRAINAGE AREAS.)



0 1/4 1/2 mile

0 1000' 2000' 3000'

SCALE: 1" = 1000'

The anticipated peak-flow increases are moderate in size. Consideration should therefore be given to some means of runoff retention and flow reduction. The developer has suggested the establishment of runoff-retention ponds, one of which would be located near the point where Blue Swamp Road curves into the town of Warren. Considering the topography in that area, it seems clear that very little of the site's runoff could be channeled through a pond at that location, and the pond would therefore have little effectiveness. A better location would be the upstream portion of Blue Swamp. At present, a small artificial impoundment is situated along the brook just north of the swamp. The impoundment was not examined by the Team during the field review of the site and it is therefore not clear whether the impoundment could be used in conjunction with a runoff-retention plan. The developer may, however, wish to examine this possibility.

Blue Swamp itself would be the most natural basin to use in flood control, particularly since any rises of the water level in the swamp during flood stages would not affect the proposed residences in the subdivision. In addition, Blue Swamp is the only basin that could receive all of the runoff from the western section of the development without employing a complex drainage-detouring scheme. The major potential drawback of using the swamp in this manner is that flow controls would need to be established at Blue Swamp Road. For example, if the town wishes to limit cross-road discharges to the present peak flow rates during a 25-year storm, thereby preventing post-development flow increases for any larger storms, the culvert system could have to be sized appropriately to realize that limit. The technical and economic feasibility of replacing the existing Blue Swamp Road culvert system, if need be, is not known. It is possible, however, that the present system already establishes an acceptable limit on flow rates. Again, these possibilities may merit a study by the developer and the town. Certainly, if the peak flows across Blue Swamp Road are already sufficiently limited, the expenses of development would be greatly minimized since no permanent retention structure would be needed for the western section of the site.

Regardless of how the peak-flow question is resolved, additional consideration should be given to sedimentation. The runoff increases resulting from development may generate a considerable volume of additional sediment, much of which could be carried into the swamp. Such indirect filling of the wetland would mean a loss of both storage space and wildlife habitat. Strict attention to an erosion-control plan is suggested to prevent these types of harm. It may be possible to tie in the impoundment north of the swamp with a sediment - management program.

Although the discussion above has focused on Blue Swamp and the portion of the development plan that would affect it, much the same considerations apply to the wetland and development plan in the eastern section of the site. In this area, however, a new artificial runoff-retention/sediment-storage pond may be the only practical method of control. There are no existing culvert controls at the outlet of this wetland so that the peak flow increases from development would be passed downstream unless an on-site runoff-control measure is employed. The most suitable location for a pond would be in the swale at the center of the eastern boundary of the site.

V. WATER SUPPLY

The proposed residential community would be served by on-site wells. The only suitable aquifer on the site appears to be bedrock. The till overburden is generally too thin and too slowly permeable to provide a reliable, adequate water supply.

Bedrock transmits water by means of a network of fractures. The yield of any well tapping bedrock therefore depends upon the number and size of water-bearing fractures that are intersected. Because the distribution of fractures in the local bedrock is irregular, it is virtually impossible to predict the yield of a well drilled in a specific location. An unproductive well may be encountered within 50 feet of a highly productive well. On the basis of studies, however, it is possible to assess the probability of achieving a given yield with a bedrock well. Studies of bedrock-based wells were made for the upper Housatonic River Valley, with results being reported in Connecticut Water Resources Bulletin No. 19. Of the wells studies that were based in bedrock of a type similar to that underlying the Litchfield Hills site, approximately 90 percent yielded 2 gallons per minute (gpm) or more; approximately 65 percent yielded 5 gpm or more; and only about 15 percent yielded 20 gpm or more. Small yields are clearly relatively easy to obtain, while moderate or large yields are comparatively rare. Nevertheless, yields of only 2-3 gpm are usually satisfactory to serve the needs of an average family.

In the multi-family clusters, approximately 20 units each would be provided. Assuming an average residency rate of 3 persons per cluster, the total maximum occupancy of a cluster would be 60 persons. In general, each person would require about 60 gallons per day to serve his or her individual needs. This would result in a total daily demand of 3600 gallons. A community well yielding only 3 gpm, continuously pumped, could more than meet this demand. However, storage tanks will probably be needed since the peak demand at any one time will undoubtedly greatly exceed 3 gpm.

Depending upon the lot sizes of the single-family residences, it may be more practical to provide individual wells for these homes. This would simplify maintenance in the sense that, should any supply problems be experienced, no questions would be asked about whose responsibility it is to correct them. The responsibility would lie with each homeowner to maintain his or her own supply. On the other hand, if the lot sizes are small (less than 40,000 square feet), there would be an increased potential for interference among wells. In this case, the best compromise might be to provide one well for each group of two or three homes, thus maintaining adequate separation distances among the wells.

The natural quality of the groundwater may be only moderate. Connecticut Water Resources Bulletin No. 21 shows that this part of Litchfield is in an area wherein excessive concentrations of iron and manganese have been common. Filters would be needed to correct this problem if it is encountered. The minerals may not present health problems, but they may produce yellowish-brown, reddish-brown, or black stains in fixtures or in the wash.

VI. SOILS

A Soils Map of the Litchfield Hills site is presented in the Appendix of this report. The Appendix also contains a Soils Limitation Chart which identifies limiting factors for various land uses on individual soil types. By

comparing the Soils Map with the Soils Limitation Chart, one can gain an appreciation of the suitability of the various soils for alternate land uses.

Figure 6 identifies those soils on the property presenting severe and moderate to severe limitations for urban uses. Urban uses include septic systems, dwellings with basements, roads or driveways, and landscaping. A severe limitation does not necessarily mean that the soil cannot be developed for urban uses; it does mean that the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

A. SOIL AREAS WITH SEVERE LIMITATIONS FOR URBAN DEVELOPMENT

Of the ±265 acres on the site, ± 150 acres have soil areas with severe limitations for urban uses.

The severe soil limitations are within three soil types:

1. Soils with a water table at or near the ground surface most of the year (wetland soils).
The proposed simplified site plan indicates that the only activity within the wetland soils would be 3 road or drive crossings. Two of these crossings would involve the headlands of intermittent streams with very small drainage areas. The other crossing would be of a perennial tributary of the E. Branch, Shepaug River. The land forms at this crossing site are such that with proper design and construction, minimal effects on the stream and wetland should occur.

2. Shallow to bedrock soils.
The proposed simplified site plan indicates that all but 2 of 7 general development areas would be located partly within shallow to bedrock soils. For septic systems, there may be occasional pockets of deeper soils. Only be detailed examination can the location and extent of these pockets be determined.

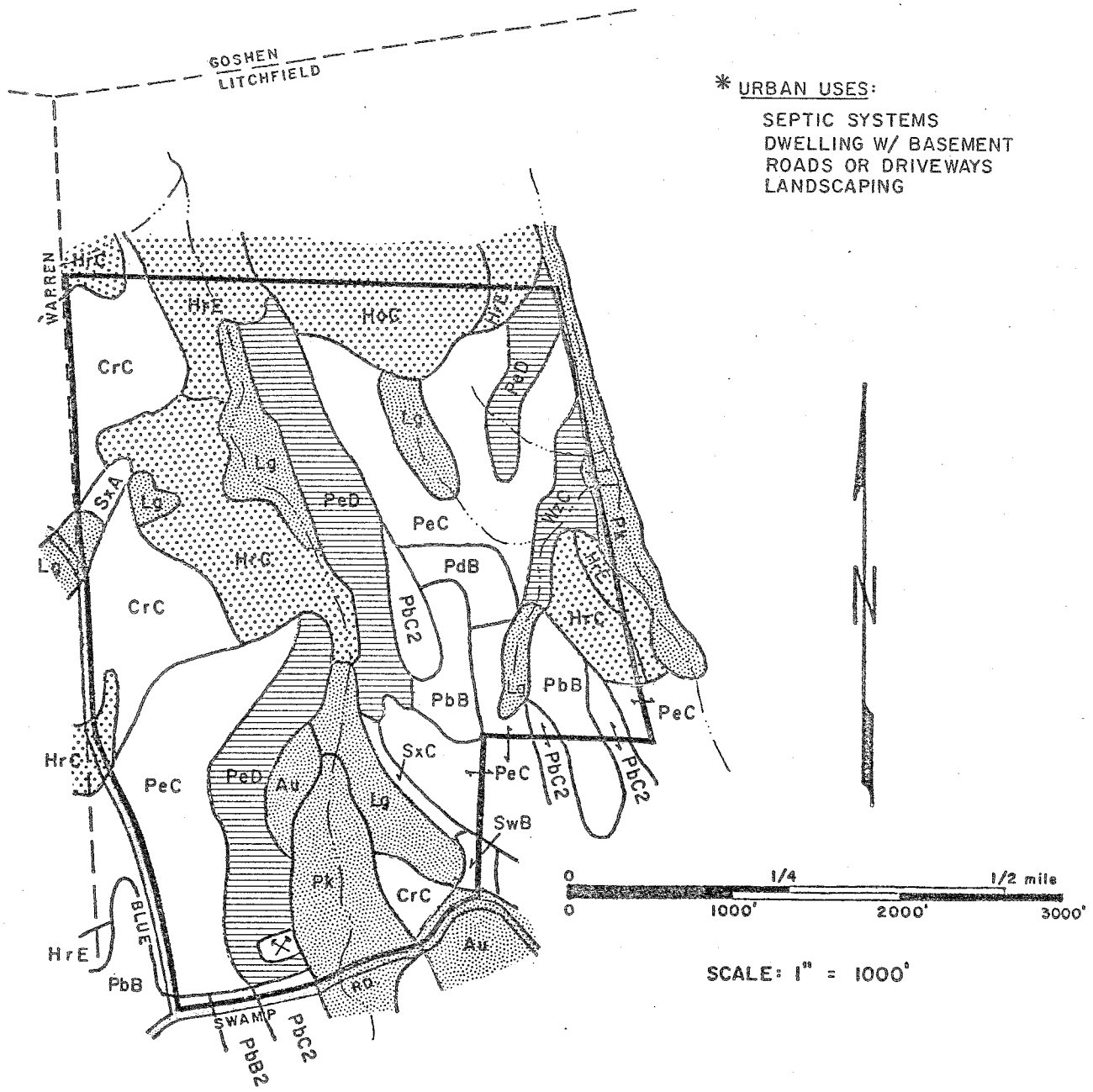
The major management practices to oversome soil limitations for septic systems are:
   a. Control housing density
   b. Addition of fill if no deep pockets of adequate size are found
   c. Enlarge leaching areas
   d. Land shaping and stone removal
   e. Serial tile distribution

For dwellings with basements and roads, blasting is commonly necessary. For landscaping, where bedrock is at or near the ground surface, it is generally best to leave natural vegetation undisturbed.

3. Hardpan soils, with either slopes over 15% or with seasonal high water table (in addition to slow percolation).
The great majority of soil areas with hardpan and slopes over 15% are indicated as "open space". The proposed single family detached units just above Phase I townhouses and in the northeast corner of the site would be partially located on the slopes over 15% with hardpan soils. If these soil areas are developed, costly measures will be required to overcome the severe limitations imposed by the steep slopes and hardpan.

FIGURE 6.

SOIL AREAS WITH SEVERE LIMITATIONS FOR URBAN USES *



* ADAPTED FROM LITCHFIELD COUNTY SOIL SURVEY, U.S.D.A. - S.C.S.

A small area (±2 acres) in the southeasternmost "single family detached" section is indicated to be within a hardpan soil with a seasonal high water table (Woodbridge very stony fine sandy loam, 3-15% slopes). Any septic system that will function satisfactorily will be very difficult to design and install. Drainage and/or filling will necessary for most urban uses if this soil area is developed.

B. SOIL AREAS WITH MODERATE TO SEVERE LIMITATIONS FOR URBAN USES

The remaining ±115 acres (areas not screened in Figure 6) have soils with moderate to severe limitations for urban uses.

The limiting factors are as follows.
For septic systems: Of these ±115 acres, one soil area of ± 28 acres (located northerly along the Warren townline and mapped as Charlton very stony fine sandy loam, 3-15% slopes) has a moderate limitation for septic systems.
Management practices to overcome the moderate soil limitations are:
a. Enlarge leaching area
b. Avoid construction when wet
c. On slopes 8-15%, use serial tile distribution.
Approximately 87 acres of the ±115 acres are Paxton soils with a hardpan on slopes less than 15%. The soils are all rated as having severe limitations for septic systems.
Management practices to overcome soil limitations are:
1. Restricted percolation testing (i.e. test when water tables are highest and moisture contents are greatest).
2. Use of Interceptor drains over hardpan.
3. Large field, sand filter or mound system.
4. Avoid construction when wet.
5. On slopes 8-15%, serial tile distribution.

For dwellings with or without basements, roads and landscaping:
The major limitation for the Charlton very stony fine sandy loam, 3-15% slope is that costly stone removal is required.
For the Paxton soils on slopes less than 15%, footing drains are needed to prevent seepage into basements. For roads and drives, the hazard of frost heaving because of water accumulation above the hardpan and soil slippage requires special consideration. Installation of subsurface drains may be neccessary in road cut areas.

C. EROSION AND SEDIMENT CONTROL

It will be important that a detailed erosion and sediment control plan be prepared prior to final approval of any of the development phases. This will assist in minimizing the amount of soil erosion and sedimentation both during and after construction. Detailed designs and a time table for installation should be included as part of the plan.

The following comments are offered for consideration in developing the plan:

- Plan for a minimum amount of earthen disturbances.
- Have all disturbed areas stabilized with permanent or temporary seedings prior to October 15.

- Seed mixes, seeding rates, and timetable for vegetative measures should be specified.

- Haybales and perhaps structural measures should be utilized to minimize erosion and sediment runoff at each construction site. Sediment basins, if appropriately located, will help to control sediment runoff not controlled at the construction site from flowing down stream.

- Maintenance and replacement procedures for erosion and sediment controls are important and can be assured of attention if stipulated on the plan.

D. PRIME AND IMPORTANT FARMLAND

The total "prime and important farmland" acreage on this site is ± 10 acres; potential loss to other land uses is not considered significant.

VII. SEPTIC SYSTEMS

The Litchfield Hills parcel lies within a public water supply watershed and therefore subsurface sewage disposal and storm drainage systems would have to be carefully constructed in order to avoid adversely affecting ground and surface water supplies.

The property is presently zoned for 1 and 1.5 acre residential lots. The developer has proposed adjoining town house residences in 2 areas of the parcel; the remaining 5 or 6 residential areas would be detached single family residences clustered around dead end streets. Cluster development typically reduces overall site development costs and is desirable in some instances when specific areas of suitable soil are located and used for disposal of sewage from the residential units. A review of soil data provided from the Litchfield County soil survey map indicates that on site sewage disposal would be difficult throughout most of the site due to the slow seeping soils, shallow depths to bedrock, seasonally high ground water table and moderately steep slopes. Due to these soil limitations, it does not appear feasible to construct a number of community subsurface sewage disposal systems serving the proposed cluster developments. Typically, subsurface sewage disposal systems constructed in Charlton and Paxton soils should be kept relatively shallow in the original soil and be spread parallel across the contours to maximize effluent application across the more permeable upper soil layers. Ground water intercepting drains may also be required where the compact glacial till is observed at depths of 4 feet or less. There would be no advantage to combining a number of residential septic systems into a singular large system; this in fact could cause hydraulic problems with ground water mounding.

Phase I of the proposed development includes approximately 20 - 2 and 3 bedroom town houses located in the southwest corner of the property. Deep test pits and percolation tests have been performed within the proposed leaching area and have identified one of the most suitable areas for installation of septic systems on the parcel. It has not been determined at this time whether the 20 proposed town house dwelling units will be served by individual subsurface sewage disposal systems or a number of community subsurface sewage disposal systems located in the identified leaching area south of the proposed residential development.

From the limited data provided, it is somewhat unclear as to whether or not single family detached residences will be laid out on individual lots with each lot being self sufficient with respect to sewage disposal and water supply. It is assumed the two town house developments would require community ownership of the sewage disposal systems and the property associated with the condominium. Considering the possibility of a community water supply serving the entire residential development, it would still be reasonable to require approximately 3/4 of an acre for each of the single family detached residences with the provision that each of the smaller sized lots be tested and found suitable for installation of septic systems. This assumption is based upon the requirement for leaching systems to be constructed with the use of fill material to elevate trench bottoms sufficiently above hardpan soils; and to permit the installation of ground water intercepting drains sufficiently separated from proposed leaching systems while still maintaining adequate separating distances from leaching systems and curtain or ground water intercepting drains on adjacent property. Storm drainage facilities constructed in the road should be designed to accommodate ground water control systems and should be extended to all properties in high ground water areas. Construction of either individual subsurface sewage disposal systems or community septic systems for the proposed town house developments might be difficult in that the cluster development would group the houses relatively close to each other and the soils may require application of effluent over a large area, perhaps not adjacent to the residences. This would require long sewer lines to carry effluent generated in a central area to adjacent sites tested and found to be suitable.

Due to the hydraulic limitations of the soils on this site and the potential for seasonally high ground water, it would be preferable to construct a number of smaller subsurface sewage disposal systems throughout the entire site and therefore broaden the application area rather than concentrate sewage in limited areas for ultimate disposal. The soil maps indicate that there are no large or continuous well drained soils within the site which would facilitate a community sewage disposal system. It is most probable that the majority of sewage disposal systems would have to be designed by a professional engineer licensed in the State of Connecticut due to the soils and high ground water limitations.

One other area which should be clarified is the operation and maintenance of either single family subsurface sewage disposal systems located on common land owned by others or the operation and maintenance of small community subsurface sewage disposal systems serving several residences. In addition to Public Health Code requirements as outlined in Section 19-13-B20c, the Department of Environmental Protection's Water Compliance Section also requires that community subsurface sewage disposal systems serving more than 1 residence be approved by that agency.

At this time, there is relatively little information available to make a determination as to whether or not it is feasible to develop the Phase I town houses. Although cluster development could conceivably reduce site development and road costs, it appears it would not provide any significant benefit for on site sewage disposal due to the uniformity of marginal soils for construction of on-site sewage disposal systems. The State Dept. of Health Services is available for further review as additional soil test data and preliminary plans become available. Such review would be coordinated with representatives of the Torrington Area Health District.

VIII. VEGETATION

The tract proposed for development into the "Litchfield Hills Residential Community" may be divided into eight vegetation types. These include three mixed hardwood stands totaling 186± acres; a northern hardwood stand, 27± acres; a series of hardwood swamps totaling 16± acres; an open swamp 16± acres; a hemlock stand, 15± acres and an open field approximately 5 acres in size. (See Vegetation Type Map and Vegetation Type Descriptions).

Many of the large healthy trees and flowering shrubs present within this tract have high aesthetic value and should be retained. The large open swamp provides many species of wildlife with high quality habitat. Windthrow is a potential hazard in the hardwood swamp and hemlock stand that may be intensified if development occurs in these areas. Care should be taken not to change drainage patterns in such a way that water ponds over tree and shrub roots and causes mortality. Portions of this tract would benefit by receiving a commercial harvest. Designation of large areas of open space will allow future forest management.

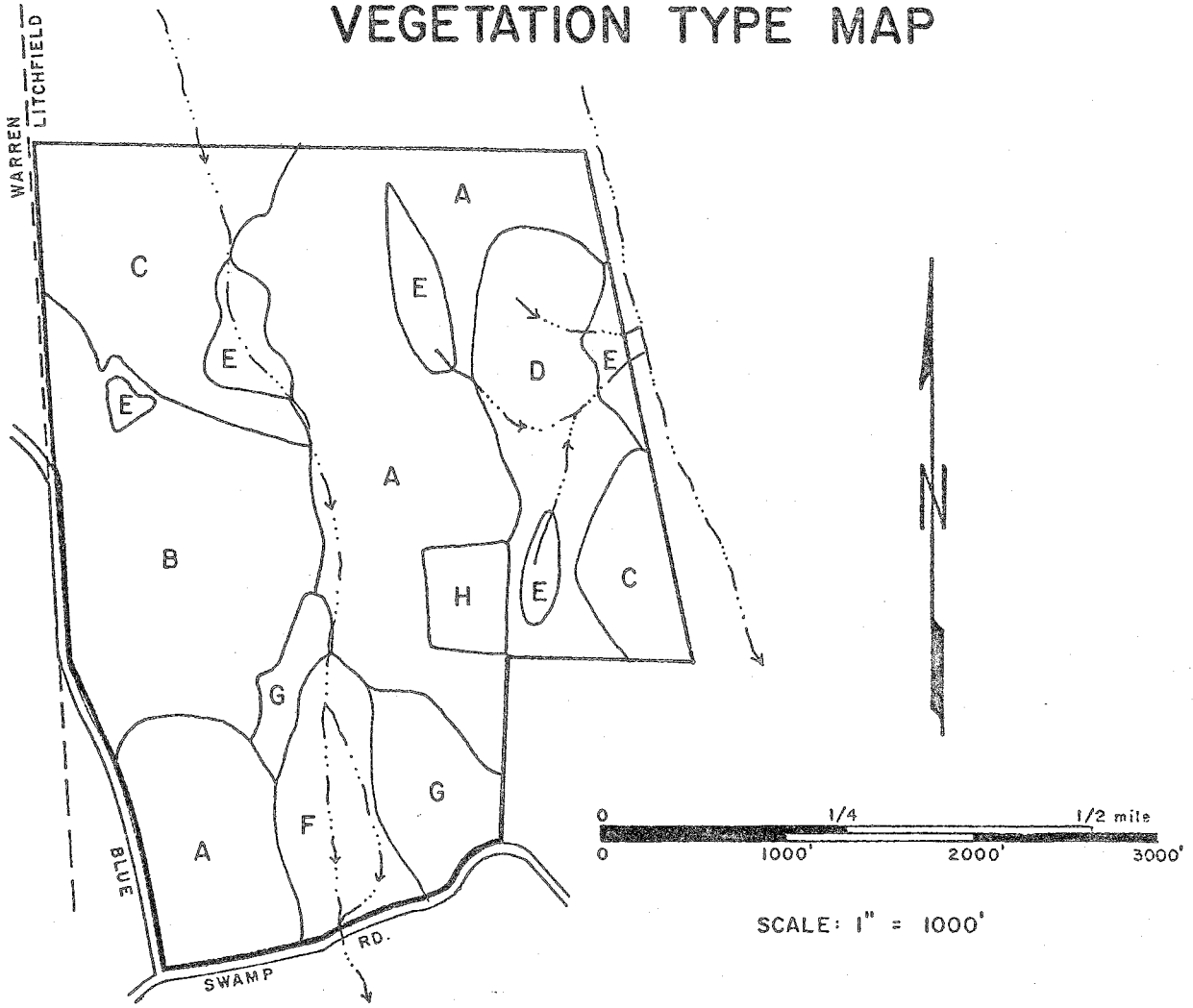
A. VEGETATION TYPE DESCRIPTIONS (refer to Figure 7)

TYPE A. Mixed Hardwoods. This 92± acre fully-stocked stand is made up of pole to sawtimber-size sugar maple, white oak, red oak, shagbark hickory, white ash and black cherry which are becoming crowded. Occasional sawtimber-size eastern white pine and eastern hemlock are also present. Sections of this stand have recently had some trees removed. The thinning in this stand was not wide spread enough to be significant. The understory is dominated by sugar maple seedlings, witch hazel, blue beech and hemlock seedlings. Grasses, huckleberry, christmas fern, evergreen wood fern and club moss form this stand's ground cover.

TYPE B. Mixed Hardwoods. This 53± acre stand has recently been harvested of the majority of its sawtimber size trees. The trees remaining are pole and small sawtimber-size red oak, black oak, black birch, paper birch and american beech. Areas with larger trees were cut more heavily than those with smaller trees, as a result stocking levels are quite variable. Most areas, however, are at the low end of fully stocked, the trees in these areas will improve in health and vigor over time. Mountain laurel forms a dense understory throughout much of this stand. Where mountain laurel is not quite as thick, witch-hazel, oak seedlings and american chestnut sprouts are prevalent. Ground cover is composed of grasses, christmas fern and hayscented fern.

FIGURE 7.

VEGETATION TYPE MAP



LEGEND

- ROAD
- PROPERTY BOUNDARY
- VEGETATION TYPE BOUNDARY
- STREAM
- TOWN BOUNDARY

VEGETATION TYPE DESCRIPTIONS*

TYPE A Mixed hardwoods. 92± acres, fully-stocked pole to sawtimber-size.

TYPE B Mixed hardwoods. 53± acres, logged area, stocking-levels variable. Pole and small sawtimber-size.

TYPE C Mixed hardwoods. 41± acres. Fully-stocked pole to small sawtimber-size.

TYPE D Northern hardwoods. 27± acres. 2-aged fully-stocked, sapling and sawtimber size.

TYPE E Hardwood swamp. 16± acres, fully to over-stocked sapling to pole size.

TYPE F Open swamp. 16± acres.

TYPE G Hemlock. 15± acres over-stocked, pole to sawtimber.

TYPE H Open field. 5± acres.

*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 = trees 11 inches and greater in d.b.h.

TYPE C. Mixed Hardwoods. Pole with occasional small sawtimber-size white oak, black oak, black birch, red maple, american beech and scattered white pine are present in this 41± acre fully-stocked stand. The trees in this stand are relatively healthy. Dense mountain laurel dominates the understory vegetation in this area. The dense growth of mountain laurel excludes most ground cover vegetation from this area, however in places where the sun can reach the forest floor, bracken fern and grasses have become established.

TYPE D. Northern Hardwoods. This 27± acre two-aged, fully-stocked stand is made up of sapling and sawtimber-size sugar maple, red maple, shagbark hickory, black birch, yellow birch and occasional eastern hemlock. Some of the largest trees have been removed in a recent partial thinning. Hardwood tree seedlings and patches of mountain laurel are present in the understory. Ground cover vegetation is made up of grasses, club moss, bracken fern, maiden hair fern and evergreen wood fern.

TYPE E. Hardwood Swamp. Five hardwood swamp areas which total approximately 16± acres are found within this tract. Sapling to pole size red maple dominate these areas, however, occasional yellow birch and white ash are also present. The stocking levels in these stands are quite variable, ranging from understocked to over-stocked. Tree quality is generally poor. The understory is dominated by dense patches of spice bush with deciduous holly intermixed. Cinnamon fern, evergreen wood fern, maiden hair fern, sensitive fern, sedges, skunk cabbage and sphagnum moss form the ground cover in these stands.

TYPE F. Open Swamp. Cattail, swamp loose-strife, common reed and tussock sedge are dominant in this 16± acre open swamp. Grasses, sedges, goldenrod, skunk cabbage and sphagnum moss are also present along with scattered red maple seedlings growing on the drier hummocks.

TYPE G. Hemlock. This 15± acre over-stocked stand is made up of pole to sawtimber-size eastern hemlock along with scattered pole-size black birch, black cherry, yellow birch, eastern white pine, black oak and red oak. Sapling size hemlock and a few patches of mountain laurel are present in the understory. Ground cover vegetation is composed of canada mayflower, christmas fern, and club moss.

TYPE H. Openfield. This 5± acre open field is vegetated with grasses, goldenrod, milkweed, black-eyed-susan, cow vetch, cleavers, sensitive fern and raspberry. Hardwood tree seedlings including sugar maple and red maple have just started to become established in this field.

B. AESTHETICS AND PRESERVATION

Many of the large healthy trees which are scattered throughout this property (especially in Vegetation Types A, B, D, and G) have aesthetic and shade value. These large trees should be retained to the greatest extent possible. Recent research has shown that trees on a house lot may enhance the value of that lot by as much as twenty percent.

Trees are very sensitive to the condition of the soil within the entire area under their crowns. Development practices near trees such as excavating, filling and grading for construction of roadways and buildings may disturb the balance between soil aeration, soil moisture level and soil composition. These disturbances may cause a decline in tree health and vigor, potentially resulting in tree mortality within three to five years. Mechanical injury to trees

may cause the same results. Dead trees reduce the aesthetic quality of an area and may become hazardous and expensive to remove if near roadways, buildings or utility lines.

Care should be taken during the construction period not to disturb the trees that are to be retained. Special care should be taken near hemlock trees because of their shallow root system. In general, healthy and high vigor trees should be favored over unhealthy trees because they are usually more resistant to the environmental stresses brought about by construction.

Where feasible, trees should be saved in small groups or "islands". This practice lowers the possibility of soil disturbance and mechanical injury. Individual trees and "islands" of trees should be temporarily, but clearly marked so they may be avoided during construction.

The flowering shrubs, including mountain laurel which are present in vegetation types B, C, D and G have the potential to have high value for aesthetics, and therefore should be retained at least in patches throughout the property. The flowering of these shrubs may be stimulated by allowing direct sunlight to reach them. This may be accomplished by complete or partial removal of the overstory trees over these shrubs.

Vegetation type F, the open swamp, has high value for wildlife habitat. This area because of its dense herbaceous vegetation and partially open water provides food, cover, water and breeding areas for many species of song birds, small mammals and water fowl.

C. LIMITING CONDITIONS

The saturated soils present in vegetation type E (hardwood swamp) and vegetation type F (open swamp) limit vegetation to species which are tolerant of excessive moisture conditions. The red maple which are able to survive in the hardwood swamp area are slow growing and in poor condition. Where standing water is present for most of the year, as in the open swamp, tree species are unable to become established in significant numbers.

Windthrow is a potential hazard in all of the hardwood swamp areas (vegetation type E.). The saturated soils in these areas limit the depth of tree roots, as a result trees are unable to become securely anchored and are highly susceptible to windthrow. Trees which are tall and crowded, and rely on each other for stability, have a greater potential for windthrow and top breakage than less crowded trees. Linear openings which allow wind to pass through rather than over these areas, will increase the windthrow hazard. Openings and clearings in and along side these wetlands should be avoided to the greatest extent possible.

The hemlock present in vegetation type G., because of their shallow and sensitive root systems, are very susceptible not only to windthrow but also to damage caused by changes in micro-climate brought about by clearing for construction. Sudden exposure to direct sunlight and the increased soil temperatures which accompany clearing operations may injure or cause mortality in the newly exposed hemlock trees.

The open swamp (vegetation type F) and also the hardwood swamp areas (vegetation type E) have the ability to retain and slow the release of peak water flows. Filling in, or destroying these areas in any other way, may create water problems such as flooding down stream. Alterations in wetland areas which permanently raise the water table, such as blocking or restricting natural drainage and stream flows, may eventually have a negative impact on vegetation in these areas. Raising the water table may drown roots causing wide spread mortality in the trees, shrubs and herbaceous vegetation which are now present. Over time, vegetation will become established which is able to adapt to the new water table condition. These changes, however, may significantly alter the appearance and character of these wetlands. As a result, care should be taken to avoid any alterations of normal drainage patterns that will cause water to pond over roots.

D. TREE UTILIZATION AND SUGGESTED MANAGEMENT PRACTICES

As each phase of the proposed project is implemented, trees cleared for the construction of roads, buildings and septic systems, should be utilized as either sawtimber or fuelwood.

The trees in vegetation type A (mixed hardwoods) and in vegetation type G (hemlock) are becoming crowded and beginning to decline in health and vigor. As the crowded condition intensifies the trees will become more susceptible to weather, disease, and insect damage. A commercial thinning (intermediate harvest) removing one third of the trees in the overstory, will help to reduce the crowded condition, eventually improving the health, vigor and stability of residual trees. These thinnings should be focused on removing the poorest quality trees, including trees with broken tops, excessively small crowns, and trees which are directly competing with high quality,healthy trees. Ideally the thinnings proposed should take place several years prior to development. This time allows the forest to heal and the trees to respond by improved growth. The aesthetics of an area can be improved greatly if the tops left behind after a harvest are removed and utilized as fuelwood. A consultant forester should be contacted to mark the trees to be removed and oversee the operation, should these thinnings be agreed to. Income from these thinnings will more than cover consultant fees.

The opportunities for continual forest management are much greater for cluster type development than for conventional residential development.

Cluster development usually allows for large acreages of community or town owned open space; conventional residential development does not.

The large open space areas which are set aside for recreational purposes lend themselves well to initial vegetation management, follow up evaluation, and future management. Conventional residential development allows, at best, a single shot of forest management prior to actual subdivision. Any future vegetation management is left up to individual lot owners.

Woodland clearing if not executed properly has the potential to lower water quality. This is primarily through soil disturbances resulting in stream sedimentation and the raising of water temperature caused by the removal of trees shading the stream.

The actual cutting of trees causes no erosion or sedimentation. The soil disturbances associated with the transportation of felled trees does, however, have the potential to degrade water quality by stimulating erosion and sedimentation.

Perhaps the best way to reduce the chances of degrading water quality during the development of this tract is to:

1. Provide adequate buffer strips along stream sides where understory and ground cover vegetation is undisturbed and crown cover is not reduced below 50%. The width of these buffer strips depends upon the slope steepness and soil erodability, but is generally at least 50 to 100 feet.

2. Avoid complete clearing of vegetation on steep slopes where soils are highly erodible.

3. Revegetate cleared and graded areas with sod as soon as possible.

4. Implement adequate erosion controls, including sediment and silt traps in critical or problem areas.

IX. WILDLIFE HABITAT

Three habitat types are present on this property. These include:

Wetlands, which are primarily an upstream extension of Blue Swamp. This area has excellent marsh vegetation due to the past activities of beaver in the area. The area has good potential for waterfowl and furbearers.

Open Fields are limited on the property, however, substantial acreages are nearby. This in combination with woodlands in the area make it an excellent deer habitat. The old fields with brush and barberry are providing good cover.

Woodland consists primarily of cut over forests of maple, ash, and birch with patches of hemlock and oak. Mountain Laurel is quite common in thick patches. Deer and snowshoe hare should do well here. Deer signs are quite common throughout the area and deer are controlling understory vegetation to some extent.

WILDLIFE IMPACT

The combination of the above three habitat types makes for excellent wildlife habitat for deer, snowshoe hare, raccoon, muskrat, beaver, a variety of waterfowl, small mammals, and birds. Residential development in this area will negatively impact wildlife habitat value in direct proportion to the intensity of development. That is, the more densely this area is developed, the more wildlife will be driven from the area.

Cluster development offers opportunities for the preservation of wildlife habitat. By grouping houses together, large, undisturbed tracts can remain as open space. These "natural areas" can be managed for timber production, wildlife habitat, and passive recreational use. If the proposed project is approved, consideration should be given to administrating the open space as one unit to allow for effective management.

From a wildlife perspective, cluster development is superior to conventional developemnt (i.e. 1 acre or 2 acre house lots), providing density is not significantly increased. Not only is wildlife habitat perserved, but wildlife management is made easier. For example, conventional development on one or two acre lots would surely create a conflict between homeowners and the local deer population. Shrubbery around houses, gardens, orchards etc. would be damaged by deer with few opportunities for control (e.g. firearms would not be appropriate; fencing is unsightly and expensive). With cluster development, hunting could be permitted in the open space area to keep the local deer population under control.

To conclude, the proposed project will have a negative impact on wildlife. From a wildlife standpoint, no development would be preferable,or else development at very low density (10+ acres per lot). However, in the opinion of the Team's wildlife biologist, the proposed cluster development, if coupled with forest and wildlife management, is preferable to a conventional development scheme of one and two acre lots at the same density.

X. FISHERIES

One small permanent stream is present on the proposed Litchfield Hills Residential Community property. The unnamed stream flows through the Blue Swamp, which is partially located in the southern portion of the property. Below the property, the stream continues to flow through the remainder of Blue Swamp, before entering the Shepaug River. Although the swamp portion of the stream would have good water quality, it has poor physical characteristics for supporting fish life. Tannic and humic acids derived from decaying vegetation in Blue Swamp may depress the ph level of the stream water below the tolerance limits of most fish species. Decaying vegetation could cause oxygen to be depleted from the rather stagnant waters of the stream during warm summer nights. Also during the summer, water temperatures of the stream could become excessive for several species of fish. Finally, food production for fish would be low, due to the stream's organic/silt bottom. Therefore, it is unlikely that the swamp portion of the stream is permanently inhabited by any resident fish species. Even temporary residents would be limited, since movement of fish from the Shepaug River into the Litchfield Hills property would be restricted by the small size of the stream and by the fairly long distance between the river and property.

The length of stream above Blue Swamp may be suitable for some species of fish, such as blacknose dace and tessellated darters. However, this section is small and would have no direct sport fisheries value.

The stream within the subject property does have some indirect value as a fisheries resource, since it supplies the Shepaug River with clean water. The Shepaug River, which is stocked by the Connecticut Department of Environmental Protection, provides an excellent trout fishery and should be protected against environmental disturbances. Since Blue Swamp will absorb most sheet runoff from paved areas and will trap most silt and nutrients, development of Litchfield Hills Residential Community should not have an adverse effect on the Shepaug River.

XI. RECREATION

Most of the open space designated under the proposed plan is either steeply sloping land or wetland. The recreational use potential of such land is very limited. Only a few forms of passive recreation are feasible (e.g. hiking, birdwatching). Much of the land designated for open space is not even suitable for the establishment of a trail system. In short, although the proposed open space will preserve to an extent the "naturalness" of the area, it offers very little in terms of recreational development possibilities.

The area proposed for a "recreation center" under the conceptional development plan (See Figure 2) is underlain by difficult soils according to SCS Soils Mapping. The area appears to be underlain primarily by moderately sloping shallow to bedrock soils, and wetland soils. Prior to find subdivision designs, soil tests should be conducted in this area to determine the suitability of the land for recreational development.

XII. PLANNING CONSIDERATIONS

CONSISTENCY OF PROPOSED PROJECT WITH EXISTING PLANS

A review of the "State of Connecticut Conservation and Development Policies Plan, 1979-1982 (February, 1979 edition) "indicates that the proposed development lies in two land use designations, "Conservation" and "Preservation." That portion of the site occupied by Blue Swamp and related wetlands is designated for preservation. The State Action Strategy for this category is to advocate protection by public or quasi-public agencies, and to avoid structural developments not consistent with preservation. The rest of the site has been designated for conservation, and the State Action Strategy for these areas is to "plan and manage for the long term public benefit the lands contributing to the state's need for food, fiber, water and other resources, open space, recreation and environmental quality, and insure that changes in use are compatible with the identified conservation values."

One of the reasons for this conservation designation is the location of the proposed site within the watershed of the Shepaug Reservoir, which is designated as class A, suitable for drinking water supply, in "Connecticut Water Quality Standards & Classifications." There is no apparent conflict with the proposed use of preservation area, since the project would protect the swamp and wetland portion of the site. Development in the conservation area, however, should be kept at densities consistent with long-term dependence on on-site sewer and water systems and the preservation of class A water quality.

Litchfield's Plan of Development, prepared in 1967 by Brown, Donald and Donald, indicates that Blue Swamp is a proposed conservation area and that the rest of the site is proposed for development at low densities averaging one family per acre. Blue Swamp Road is a proposed collector. At the present time half of the site is zoned R-60 and half is zoned R-40. Based upon the foregoing, it would appear that the project is generally in conformance with advisory state and local plans.

TRAFFIC AND CIRCULATION

No attempt was made to evaluate the traffic capacity or limitation of Blue Swamp Road or any connecting roads. The Inventory and Forecasting unit of the Connecticut Department of Transportation suggested that the road system capacity would be 2000 vehicles per hour (both directions combined) reduced by factors for sight distance, curves, width, intersection characteristics and truck traffic. Trip generation for the project according to current planning standards, would be 10.0 trips per day from single-family housing, 6.1 trips from apartments and 5.1 trips from condominiums. This would be trips per unit, counting each passage into and out of the project as a separate trip. Although it is unlikely that this one project would exceed local road capacities, additional similar developments could combine their effects to produce this result. If large development projects are to be allowed, the Town should consider an engineering evaluation of the local road system capacity. The only apparent problem with regards to this project is that the western most access, north of the "phase one proposal", lies directly opposite the only home on that section of the road. Consideration should be given to relocating this access road.

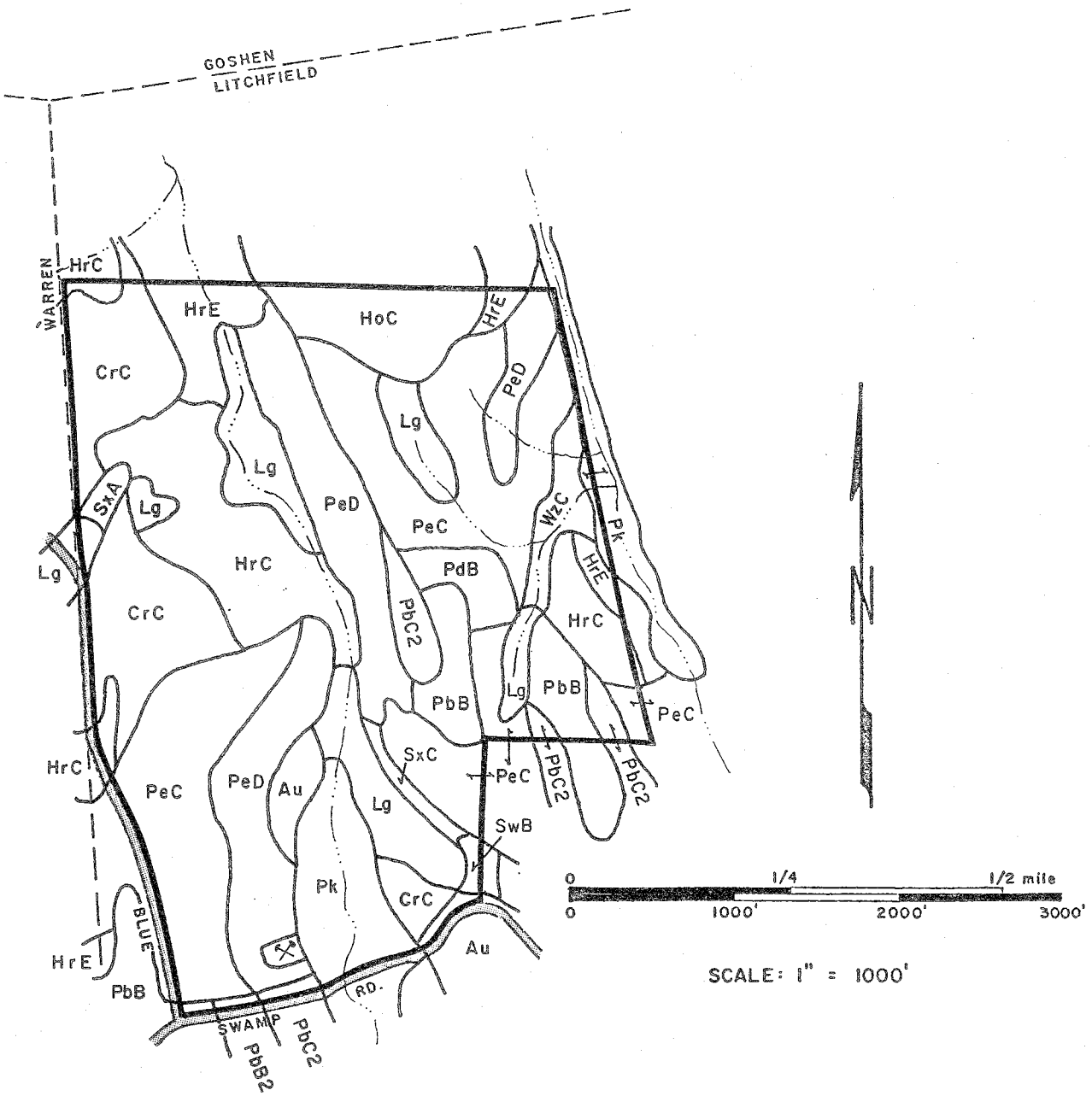
CLUSTERING

The soils and topographic information, in conjunction with the field inspection, suggest that the central portion of the site is essentially unbuildable, while the east and west sections contain areas of more suitable land. Assuming that about 172 acres of the site might be considered buildable, the guideline of 1 family per acre would suggest that a maximum of 172 units might be allowed on the site. Given the soil and terrain characteristics of the site and its location in a public water supply watershed, any cluster provisions permitted the developer should be given to allow him flexibility in using his good development areas rather than to increase the number of units allowed on the property.

* * * * * * * * *

APPENDIX

SOILS MAP



SCALE: 1" = 1000'

● ADAPTED FROM LITCHFIELD COUNTY
SOIL SURVEY, U.S.D.A. – S.C.S.

SOILS LIMITATION CHART - LITCHFIELD RESIDENTIAL COMMUNITY

MAP SYMBOL	SOIL NAME	SEPTIC SYSTEMS	DWELLING W/ BASEMENT	ROADS OR DRIVEWAYS	LANDSCAPING
Au	Au Gres loamy fine sand	Severe; wetness, poor filter	Severe; wetness	Severe wetness, frost action	Severe; Wetness
CrC	Charlton very stony fine sandy loam, 3 - 15% slopes	Moderate; large stones	Moderate; large stones	Moderate; slope	Moderate; large stones
HoC	Hollis rocky fine sandy loam, 3 - 15% slopes	Severe; depth to rock	Severe; depth to rock	Severe; depth to rock	Severe; depth to rock
HrC	Hollis very rocky fine sandy loam, 3 - 15% slopes	Severe; depth to rock	Severe; depth to rock	Severe; depth to rock	Severe; depth to rock
HrE	Hollis very rocky fine sandy loam, 15 - 35% slopes	Severe; slope, depth to rock	Severe; slope, depth to rock	Severe; slope, depth to rock	Severe; slope, depth to rock
Lg	Leicester, Ridgebury, and Whitman very stony sandy loams	Severe; wetness	Severe; wetness	Severe; wetness, frost action	Severe; wetness
PbB	Paxton fine sandy loam, 3 - 8% slopes	Severe; percs slowly	Moderate; wetness	Moderate; frost action, wetness	Slight
PbB2	Paxton fine sandy loam 3 - 8% slopes, eroded	Severe; percs slowly	Moderate; wetness	Moderate; frost action, wetness	Slight
PbC2	Paxton fine sandy loam 8 - 15% slopes, eroded	Severe; slope, percs slowly	Moderate slope, wetness	Moderate slope, frost action, wetness	Moderate slope
PdB	Paxton stony fine sandy loam, 3 - 8% slopes	Severe; percs slowly	Moderate; wet, large stones	Moderate; frost action, wetness	Moderate; large stones
PeC	Paxton very stony fine sandy loam, 3 - 15% slopes	Severe; percs slowly	Moderate; wet, large stones	Moderate; frost action, wetness	Moderate; large stones
PeD	Paxton very stony fine sandy loam, 15 - 35% slopes	Severe; slope, percs slowly	Severe; slope	Severe; slope	Severe; slope

MAP SYMBOL	SOIL NAME	SEPTIC SYSTEMS	DWELLING W/ BASEMENT	ROADS OR DRIVEWAYS	LANDSCAPING
Pk	Peat and Muck	Severe; wetness	Severe; wetness, low stability	Severe; wetness low stability	Severe; excess humus wetness
SwB	Sutton stony fine sandy loam, 3 - 8% slopes	Severe; wetness	Severe; wetness	Moderate; frost action	Moderate; large stones
SxA	Sutton very stony fine sandy loam, 0 - 3% slopes	Severe; wetness, large stones	Severe; wetness, large stones	Moderate; frost action, large stones	Moderate; large stones
SxC	Sutton very stony fine sandy loam, 3 - 15% slopes	Severe; wetness, larges stones	Severe; large stones, wetness	Moderate; large stones slope, frost action	Severe; large stones
WzC	Woodbridge very stony fine sandy loam, 3 - 15% slopes	Severe; percs slowly, wetness	Severe; wetness	Severe; frost action	Moderate; wetness, large stones

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.

NOTE: Limitation Ratings Based Upon U.S.D.A. Soil Conservation Service Criteria.

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.