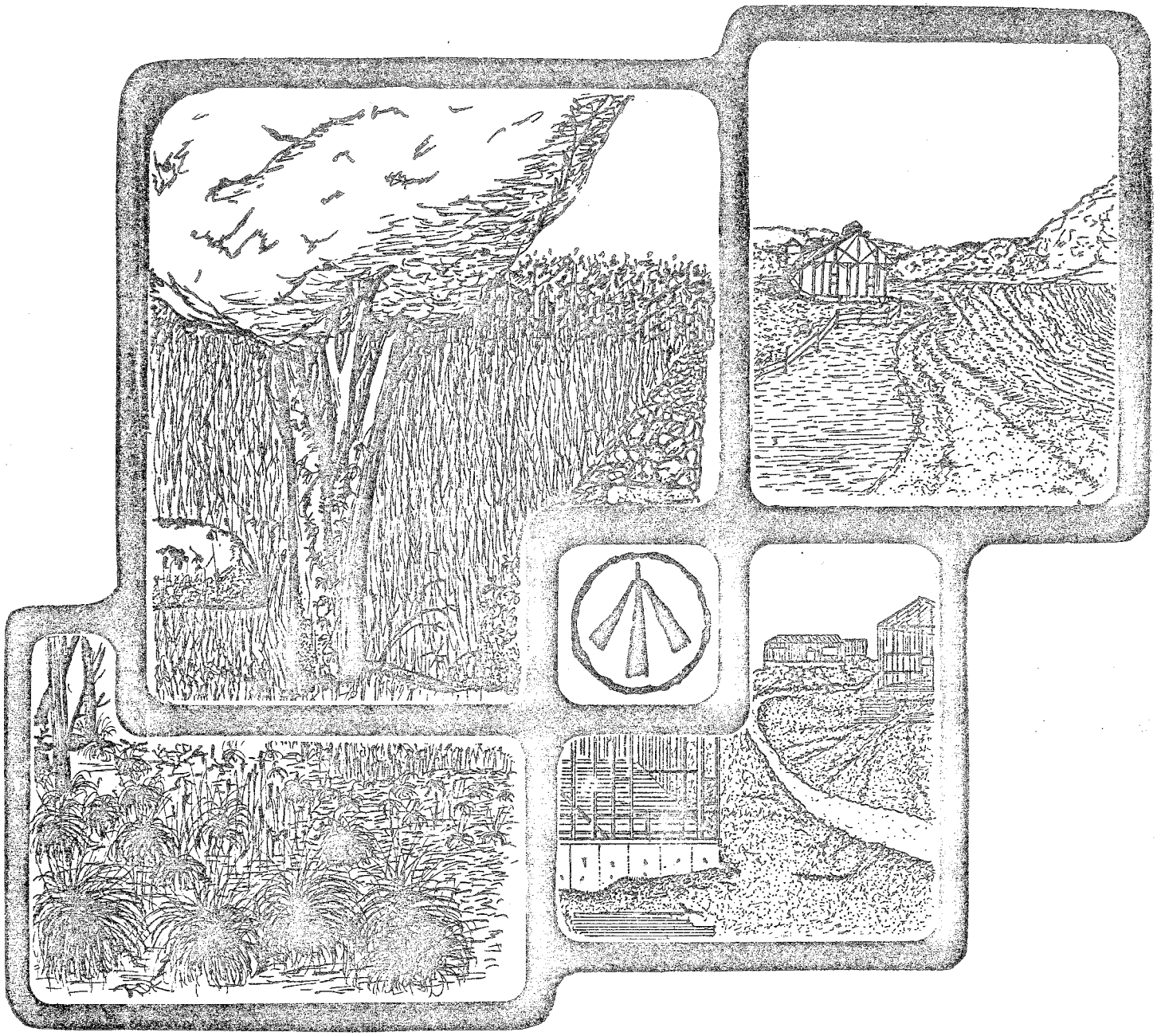
ENVIRONMENTAL REVIEW TEAM REPORT



OXFORD FELLS - 1982
MADISON, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION & DEVELOPMENT AREA

KING'S MARK
ENVIRONMENTAL REVIEW TEAM REPORT

OXFORD FELLS - 1982
MADISON, CONNECTICUT

APRIL 1982

King's Mark Resource Conservation and Development Area
Environmental Review Team
Sackett Hill Road
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
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
Central Naugatuck Valley Regional Planning Agency
Housatonic Valley Council of Elected Officials
Southwestern Regional Planning Agency
Greater Bridgeport Regional Planning Agency
Regional Planning Agency of South Central Connecticut
Central Connecticut Regional Planning Agency
Capitol Regional Council of Governments
American Indian Archaeological Institute
Housatonic Valley Association

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FUNDING PROVIDED BY
State of Connecticut

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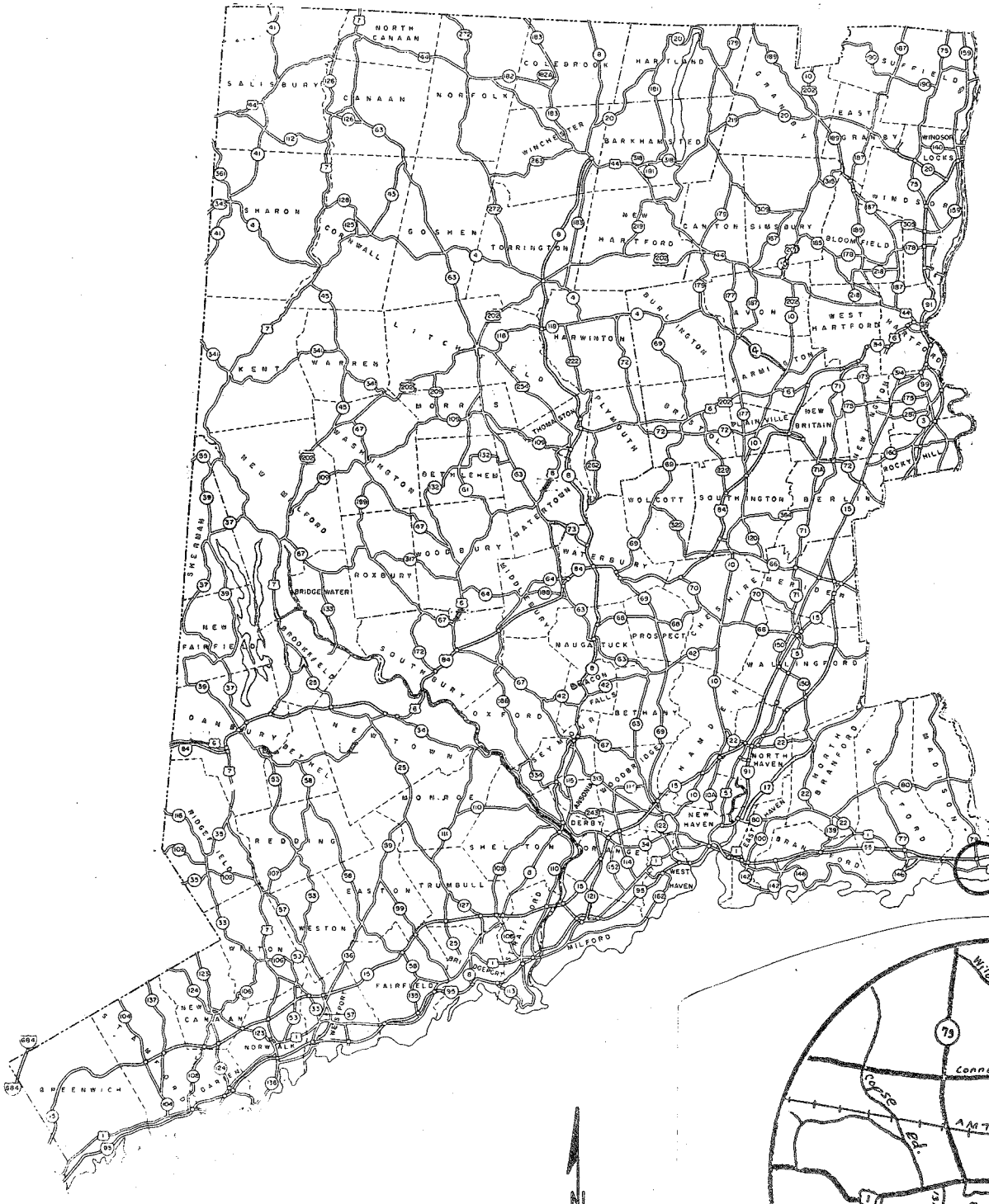
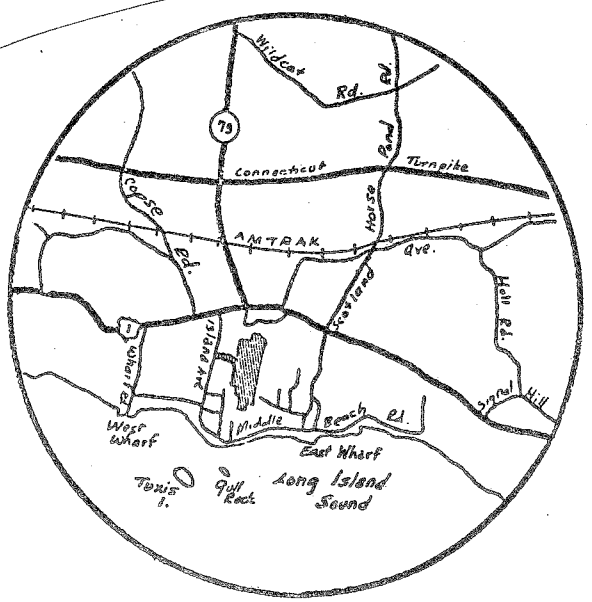
OXFORD FELLS - 1982
MADISON, CONNECTICUT





SCALE: 1" = 10 miles

10 0 5 10 miles

ENVIRONMENTAL REVIEW TEAM REPORT
ON
OXFORD FELLS, 1982
MADISON, CT

I. INTRODUCTION

The Madison Planning and Zoning Commission is presently considering a request to develop 17 residential units on 29 acres of land in the southern portion of town. The project is called Oxford Fells. Figure 1 shows the general location and topography of the site. Figure 2 shows the general lay-out of the proposed project. As shown in Figure 2, the project calls for the 17 units arranged in a cluster, with a total of 33 bedrooms. The units are to be serviced by on-site subsurface sewage disposal facilities and a public water supply. A retention basin is proposed to control stormwater runoff.

The King's Mark Environmental Review Team was requested to assist the Madision Planning & Zoning Commission in evaluating the proposed project. Major concerns raised by the Commission included the adequacy of the proposed erosion and sediment control measures, the impact of the project on local hydrology, and the suitability of proposed plans for stormwater control and sewage disposal.

The King's Mark Executive Committee considered the town's request, and approved the project for review by the Team.

The ERT met and field reviewed the site on August 26, 1981. Team members for this review consisted of the following:

Brian Curtis.....	Sanitary Engineer.....	Conn. Dept. of Environmental Protection
Frank Indorf.....	District Conservationist...	U.S.D.A. Soil Conservation Service
George Oickle.....	Planner.....	Conn. Housing Authority
Mike Zizka.....	Geohydrologist.....	Conn. Dept. of Environmental Protection

It should be noted that the ERT prepared a report on a previous development proposal for the Oxford Fells Property in March of 1980. The 1980 report presents a resource inventory of the property and discusses soil types, vegetation, geology, hydrology, and the general suitability of the site for development. The data and analysis presented in the 1980 report is not repeated herein; instead, this report focuses on the specific concerns raised by the Madison Planning & Zoning Commission with regard to the current development proposal.

FIGURE I.

TOPOGRAPHIC MAP

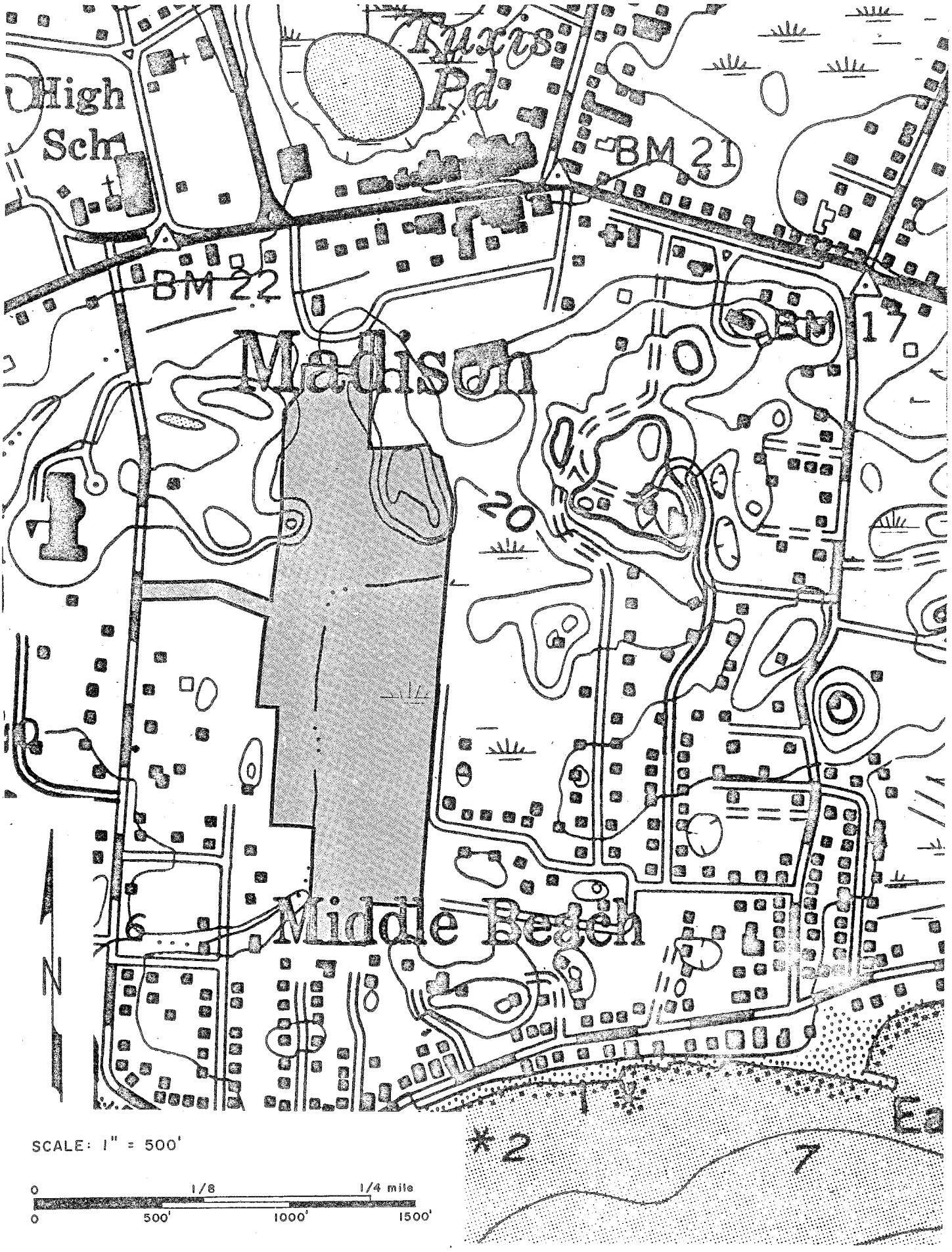
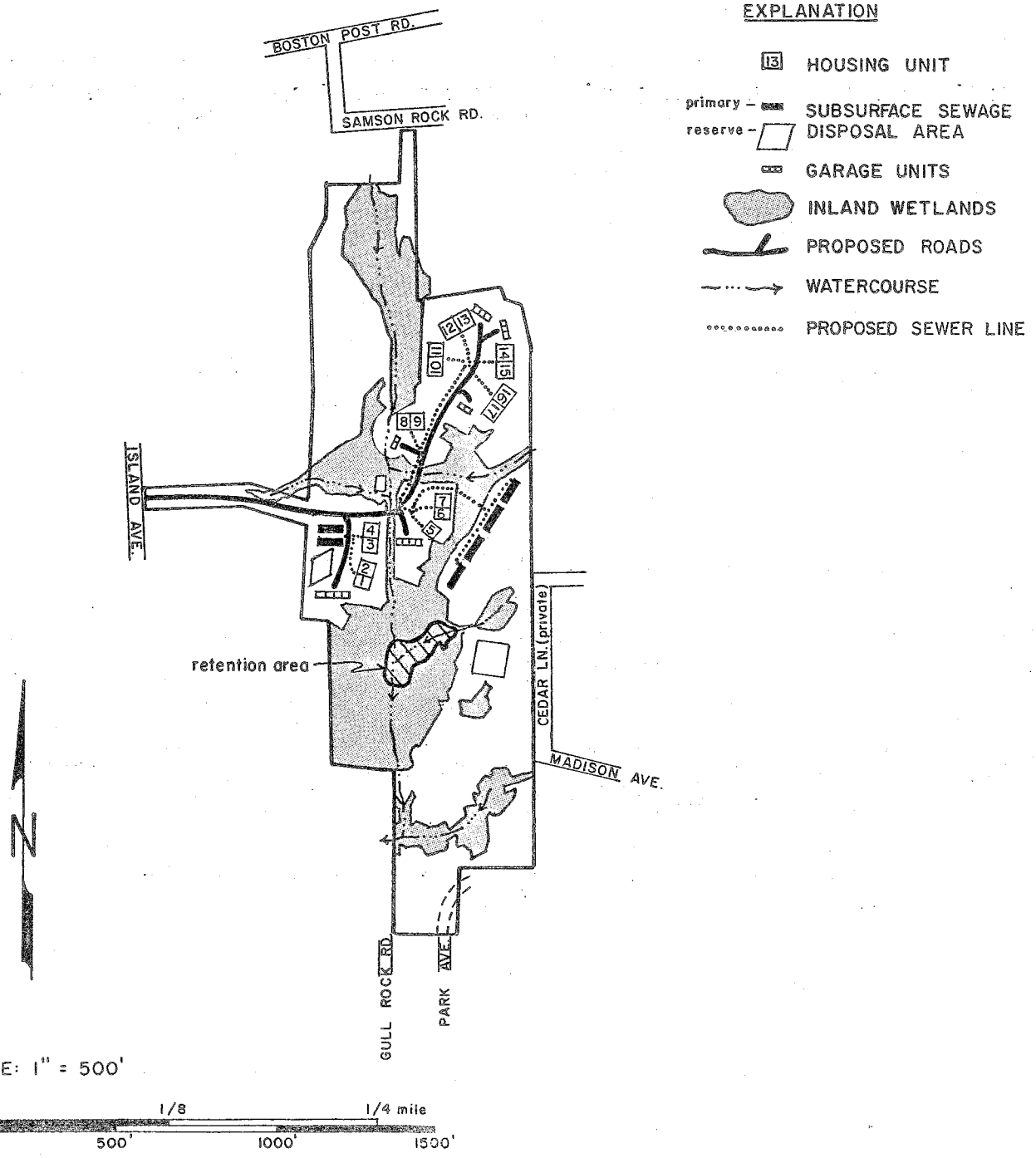


FIGURE 2.

SIMPLIFIED SITE PLAN *

* ADAPTED FROM DEVELOPER'S SITE PLAN OF 2/18/82



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 the developer. It is hoped the information contained in this report will assist the Town of Madision 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, Sackett Hill Road, Warren, Connecticut 06754.

* * * * *

II. GEOLOGY

Since the initial 1980 review of the Oxford Fells property, 32 test holes were dug on the site. These holes tend to confirm the previous geological report. Except for the areas of shallow till and bedrock in the northeastern and northwestern corners of the parcel, most of the site is covered by relatively fine-grained outwash. The test-hole reports generally describe the outwash as "silty sand" or "sandy silt", but a few holes encountered coarse sand or gravel. Most of the holes dug in the outwash were at least 7 feet deep. Bedrock was encountered at 6.5 feet in two holes along the western boundary of the property, just south of the access strip.

III. HYDROLOGY

The revised plan calls for the development of 17 condominiums, which would be served by on-site subsurface sewage disposal facilities and a public water supply. Thirteen units, housed in seven buildings, will be served by a community septic system; the other four units, housed in two buildings, will be served by two smaller systems.

The existing drainage pattern of the site was described in the initial ERT report. A watershed of about 75 acres drains through the property. Frequent flooding and ponding problems have been reported for areas downstream from the site. The town expressed concern as to the potential aggravation of these problems by the proposed development.

The developers have provided the Team with runoff and flow calculations based on the Soil Conservation Service runoff curve-number method. The Team has reviewed these calculations and generally concur with them, with one correction noted further below.

The changes in land use on the site will cause increases in runoff volumes, and will cause peak flows to increase in the through-flowing streams unless mitigating measures are employed. For the watershed as a whole, the runoff increases would range from about 16 percent for a 2-year storm to about 7 percent for a 100-year storm. Peak outflows from the site would increase by about 21 percent for a 2-year storm to about 11 percent for a 100-year storm. Although these percentages are significant, they are relatively low compared to those that might be expected from some "standard" subdivision of a parcel of this size.

The developers have proposed to create berms and storage areas along two watercourses in the southern part of the site. All of the runoff that passes through the site, including runoff produced on about 50 acres of land outside the parcel, is directed out of the site by way of these two stream courses. The berms would have pipe outlets that would limit the maximum flows from the property for storms of certain magnitudes. Excess water would be stored behind the berms up to a total volume of about three acre feet.

The smaller the sizes of the outlet pipes, the smaller would be the magnitude of the storm event for which the storage areas could totally retain the excess water. For instance, if a pipe size were used that allowed outflows no greater than the present 2 year peak flows along the metered watercouses, the storage areas would begin to fill during any storm larger than a 2 year storm.

Their full storage capacity might be reached during a 5-year storm. On the other hand, if larger pipe sizes were used that would pass all flows up to the present 5-year peaks, the storage areas might serve to retain the excess water from storms of up to a 10-year event.

Previous visits to the site and consultations with both the developers and town officials have indicated that flooding problems in the area downstream of Oxford Fells have been caused in large part by the inadequacies of the existing storm drainage system. Difficulties in the system include the flat grade, obstructions to pipes, and an outfall at the Madison Beach Club that is submerged at least part of the time. These inadequacies have caused flooding to occur frequently on some properties.

The developers reportedly discussed several types of runoff retention systems with the town engineer before settling on the present proposal. Since flooding has been reported to be a frequent problem in the area, the developers have chosen to use small outlet-pipe sizes that will maintain flow at rates that are lower than the existing 2 year peak flows. As stated above, this means that retention will be completely effective only for storms that are of lesser magnitude than would be the case if larger pipe sizes were used. Here, the developers have concluded that the system will be completely effective for retaining the excess waters of storms whose frequencies range from about once in two years to about once in five years. For larger storms, retention will be only partially effective. The March, 1982 Retention Areas Design Calculations prepared by the site engineer originally estimated flows and storage based on a berm elevation of 10.5 feet. However, the spillway elevation is actually planned to be 10.0 feet. This means that storage will be totally effective only for storms up to 5-year frequencies, and not 10-year frequencies as stated in the calculations. The 10.0 foot elevation reportedly was chosen to prevent backwater problems from arising in the low areas upstream from the site.

Taking everything into consideration, the Team believes that the presently proposed runoff control system is very reasonable. Since frequent flooding occurs in the area downstream from the property, it makes sense to design the retention system to address those smaller but more frequent flows. Moreover, the development proposed is at a modest scale in relation to the total size of the parcel. The drainage system would merely extend the natural flood-storage function of the wetlands without causing an unnecessary disruption except in the immediate vicinity of the berms. The developer should assure, however, that the outlet pipes are placed no higher than the existing land surface in order to prevent permanent backups of water behind the berms. Such permanent change could alter the present ecology of the wetlands. Finally, to the extent that the local flooding problems are caused by an inadequate off-site artificial drainage system, it seems unfair to penalize the Oxford Fells landowners for additional modest discharges that might otherwise not warrant such elaborate controls. The Team suggests only that the developers check again to determine whether, in fact, there might be a way to increase the effective storage capacity of their system in order to control peak flows for storms of greater than the 5-year storm.

IV. Erosion and Sediment Control

The suitability of the soils on this site for residential development is discussed in the 1980 ERT report on Oxford Fells. As discussed in that report, conservation measures are needed to prevent excessive runoff, erosion, and siltation.

The applicant has listed several sedimentation and erosion control measures on the "Site Grading Plan" for the project. These control measures are considered by the ERT to be satisfactory for minimizing the erosion and sedimentation generated by the project. Consideration should be given to the following for possible improvement of the plan however:

1) Identify permanent grass mixtures to be used, lime and fertilizer application rates, and planting dates on the Erosion Control Plan.

2) Consider the use of temporary vegetation where appropriate (topsoil stockpiles, certain cut and fill slopes).

3) Silt fences are more effective than haybale erosion barriers and should be considered for possible use at this site. Consideration should also be given to employing temporary "runoff control" diversions along some slopes.

4) Install slotted pipe (or cracked joints) in storm drainage systems to pick up groundwater and reduce hydrostatic pressure beneath roads and buildings to relieve frost heaving.

5) Some of the proposed "leak off" areas outlet onto fill slopes which are highly susceptible to erosion. Consideration should be given to rip-rapping or paving these "leak offs" all the way down to the natural ground.

6) In some of the smaller drainage areas where no rip-rapping is proposed, consideration should be given to the use of jute mesh netting to control erosion.

7) It should be recognized that several thousand cubic yards of fill will be needed to construct this project. The town should be sure that local roads in the area can stand up to the heavy trucks and traffic associated with the transport of this fill.

8) The proposed road network is laid out well and the drainage appears adequate. Consideration might be given to lessening the road grade in the northeast corner of the site from the present 9-10% to no more than 8% by the use of additional fill material.

Additional technical assistance on these matters is available through the New Haven County Conservation District (269-7509).

V. Subsurface Sewage Disposal

The general suitability of the soils on this site for subsurface sewage disposal is discussed in the 1980 ERT report.

Under the current proposal, a community septic system is planned. As the DEP Water Compliance Unit will be acting on a permit application for this system, comments in this report are limited to the Department's permit process and requirements rather than the suitability of the site for the proposed design.

Administrative Requirements

Under current laws and regulations the design of subsurface sewage disposal systems for the Oxford Fells project will fall under the requirements of the local and State Departments of Health, pursuant to the Public Health Code, and the requirements of the Department of Environmental Protection. A State Discharge Permit will be required from the Department of Environmental Protection pursuant to Section 25-54i of the General Statutes due to the fact that a "community sewerage system" has been proposed.

The use of a community sewerage system will require that the Madison Water Pollution Control Authority either own and operate the system OR ensure the effective management of the system (7-246(b) C.G.S.). Public Act 81-331 establishes a means by which the Madison WPCA may choose to ensure the effective management of a community system not owned and operated by the municipality.

Technical Requirements

The creation of any discharge to the waters of the State must be consistent with Connecticut's Water Quality Standards and Criteria. As such, the following design criteria must be satisfied prior to receiving a favorable review from the Department of Environmental Protection.

1) The proposed site must have adequate land area to accommodate a leachfield system sized based upon long term acceptance rates of settled sewage across a mature biological growth layer at the systems stone-soil interface. Sizing by this method combined with proper removal of accumulated solids and septic tanks should allow the leachfield system to operate for an indefinite time period.

2) It must be demonstrated that soils beneath and surrounding the leachfield area have adequate hydraulic capacity to transmit design sewage flows within the soil profile for an adequate distance to provide renovation of the effluent.

3) Finally, a pollutant analysis must be performed to demonstrate that by the time the effluent eventually flows underground into any surface waters or across any property lines that it will be renovated in quality to drinking water standards and have phosphates removed.

Permit Process

Assuming these criteria can be met the Department of Environmental Protection would take a permit application to a public notice in a local newspaper or hold a public hearing on the application. If this resulted in a favorable ruling, the Water Compliance staff of DEP would be authroized to review and approve detailed construction plans and specifications. Prior to actual approval of plans and authorizing construction of the system the DEP would hold the project pending receipt of documentation from the town that it will ensure effective management of the community system.

Final approval will require construction supervision by a professional engineer and the preparation of as-built drawings to verify construction according to design.

Once as-built drawings have been approved, a State Discharge Permit would be issued to operate the system. This Permit would require mandatory pumping of septic tanks on an appropriate schedule, monitoring the water use, and inspections and maintenance of pumping facilities. Reporting of all operation and maintenance requirements are made annually to the DEP and the local health department.

VI. ADDITIONAL PLANNING CONSIDERATIONS

The proposed project meets all the general criteria, policies, character and development densities recommended in the Madison Town Plan and Alternate Housing Study as well as the most recent regional and State Plans.

The site is located south of the town center and within walking distance of a variety of neighborhood stores and offices. The proximity of these Main Street commercial facilities would be mutually supportive of this housing proposal. The single family residential land use in areas to the east, south and west of the site would also be compatible with this development in the opinion of the Team Planner.

Housing and demographic experts note that ever-smaller household sizes, together with land, energy and other costs, are encouraging smaller housing units. The Madison "Alternate Housing Study Committee" in 1980 suggested clustering and planned unit development as an alternative to single family detached subdivisions. The Committee said in its report that such housing becomes more necessary because "remaining land areas of Madison upon which such developments could be built have generally less ideal land and soil engineering situations than many areas already developed. The possible sanitation and siting problems should be given great consideration to avoid costly errors". Oxford Fells, as noted in the ERT's 1980 report, is a good example of such a sensitive and difficult site.

The 1980 ERT report on Oxford Fells states on page 32: "...10 single family dewlling units off of Island Avenue should result in perhaps 90-100 (about 5%) additional vehicle trips per day..." It can be concluded that the current proposal should likewise have a negligible impact on existing traffic conditions.

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.