

KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

**BARRACK MOUNTAIN  
SUBDIVISION**

CANAAN,  
CONNECTICUT

King's Mark Resource Conservation and Development Area, Inc.

# **BARRACK MOUNTAIN SUBDIVISION**

## **CANAAN, CONNECTICUT**

### **Environmental Review Team Report**

**Prepared by the King's Mark Environmental Review Team  
of the King's Mark Resource Conservation  
and Development Area, Inc.**

**Wallingford, Connecticut**

**for the**

**Canaan Inland Wetlands Commission**

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the Inland Wetlands Commission and the Town. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of the land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

**MARCH 1989**

## ACKNOWLEDGMENTS

The King's Mark Environmental Review Team Coordinator, Nancy Ferlow, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this study:

- \* William Warzecha, Hydrogeologist  
Department of Environmental Protection - Natural Resource Center
- \* Kathy Johnson, District Conservationist  
USDA - Soil Conservation Service
- \* Daniel Mayer, Wetland Specialist  
Department of Environmental Protection - Water Resources Unit
- \* Judy Wilson, Wildlife Biologist  
Department of Environmental Protection - Western District
- \* Nicholas Bellantoni, State Archaeologist  
Connecticut Museum of Natural History
- \* Anthony Sullevin, Planner  
Office of Policy and Management
- \* Harry Siebert, Transportation Planner  
Department of Transportation

I would also like to thank Susan Anderson, Secretary of the King's Mark Environmental Review Team for assisting in the completion of this report.

Finally, special thanks to Mary Maxwell, Mary Lu Sinclair, Louis Timolat and Susan Fitch of the Canaan Inland Wetlands Commission, Faye Lawson of the Canaan Planning and Zoning Commission, Geri Nebor of the Litchfield County Soil and Water Conservation District, Donald Stump, property owner, and John Casey, engineer for the developer, for their cooperation and assistance during this environmental review.

## EXECUTIVE SUMMARY

### Introduction

The Canaan Inland Wetlands Commission has requested that an environmental review be conducted on Barrack Mountain, a 118-acre site proposed for subdivision development. The site is located in central Canaan, south of the Hollenbeck River. Access is provided by Route 126 to the north

The site contains second growth hardwood forest with some open areas. The slopes are very steep in many areas. An old logging road cuts through the north western section of the site. A house, barn and several outbuildings are found on the property. There are several areas of wetlands and 2 small ponds at the base of the slope near Route 126. The Hollenbeck River and its associated wetlands lie across Route 126.

Two preliminary plans have been proposed. The original plan would encompass 20 house lots. A cul-de-sac to serve 12 of the lots is proposed. The other 8 lots will access directly onto Route 126. Four wetland crossings are proposed. The updated plan reduces the number of lots to 14. The proposed cul-de-sac has been removed and the 9 lots on the hillside will have private driveways to Route 126. There are 4 wetland crossings proposed. Both plans would rely upon on-site septic systems and wells.

The review process consisted of four phases: (1) inventory of the site's natural resources; (2) assessment of these resources; (3) identification of resource problem areas; and (4) presentation of planning and land use guidelines. Based on the review process, specific resources, areas of concern, development limitations and development opportunities were identified. The major findings of the ERT are presented below:

### Location and Zoning

The site is bounded by Route 126 and private undeveloped land. The site is located in a 2-acre zone. The vicinity is characterized by single-family houses and agricultural land. The site slopes steeply to very steeply with elevations ranging from 660 to 1180 feet above sea level. Bedrock outcrops were observed on the site.

### Geology

The bedrock types underlying the site have been identified the Dalton Formation, the basal member of the Walloomsac Schist and a subunit of the Stockbridge Formation. These rocks contain gneisses, schists, quartzites and marbles. The bedrock outcrops consist of the gneisses, schists and quartzites.

### Bedrock and Blasting

Bedrock mapping information indicates that bedrock is at or near ground surface at various points around the site. Blasting may be needed to place septic

tanks, driveways and foundations. Any blasting that takes place should be done under the supervision of someone familiar with the latest blasting techniques. Concerns include flyrock, ground vibrations, airblast, dust and gases. A pre-blast survey is recommended for the area.

### Surficial Geology

Based on soils data and deep test hole information, the bedrock is covered by till and stratified drift. Till covers most of the site. The texture is mostly sandy and loose, but there are areas that have a compact zone. The northwest corner is covered by stratified drift.

### Sewage Disposal

The site should be capable of supporting properly located, designed and installed septic systems. The main concerns are steep grades and areas with seasonal high water tables. Septic systems should be located away from steep slopes and drainageways. Care must be taken in areas of steep slopes and permeable soils so that effluent does not break out downhill before receiving adequate treatment. Construction of leaching systems on cut and fill terraces should be avoided. Where seasonal high groundwater tables are present, fill and groundwater control drains may be needed to keep the bottom of the leaching system above the groundwater level.

Some lots may require pumped septic systems. The distribution lines should be protected by cover material deep enough to prevent effluent from freezing in the lines. All lots will require detailed engineered design plans for the proposed systems. Before subdivision approval, all lots should be shown to meet the minimum soil standards in the Public Health Code. The process should be a coordinated effort between the applicant's engineer and the Town sanitarian.

### Water Supply

The underlying bedrock is the likely source of water for the subdivision. Water from any given well is dependent on the number of fractures in the rock that the well intersects. The availability of water from the bedrock should be sufficient for domestic use. Wells should be located on the high sides of lots with proper separating distances from septic systems. Wells should also be separated from water impoundments, watercourses and drains and be protected from erosion and surface runoff. Drilled wells have the greatest level of protection from possible pollution. All wells should be constructed by licensed well drillers and be inspected by the Town sanitarian. The natural quality of the ground water should be good. There may be elevated iron and manganese levels in the schists, quartzites and gneisses which may necessitate appropriate treatment systems. Elevated hardness levels may be found in wells tapping marble. The State or local health department should be contacted regarding water softening devices because they may pollute the groundwater.

## Hydrology

Drainage from the site flows into the Hollenbeck River. Development of the property will cause some increase in runoff. Because the density of the project is low and the drainage area is large, there should be no noticeable impact on the river flow. The project engineer should check post-development runoff conditions as a matter of policy. Also, careful examination of the culverts under Route 126 is warranted. Present plans indicate 10 driveways accessing onto Route 126. Driveways in the eastern part could have problems with icing due to steep slopes and the north aspect of the slope. Icy road conditions were observed on Route 126. It is suggested that the applicant investigate an interior road system with central stormdrainage to alleviate this problem. Also, the road could have a flatter outlet than the driveways. The driveways could be a source of pollution when water flowing during a storm event washes sand, silt and other debris into the Hollenbeck River. A deep cut and blasting would be required for an interior road. Borings should be drilled along the desired road route to determine how much blasting is needed.

The subdivision plan calls for several wetland driveway crossings. All wetland crossings will require a permit by the Inland Wetlands Commission. Crossings should occur where there is the least amount of wetland disturbance. Although undesirable, wetland crossings are feasible, provided they are properly engineered.

## Soil Resources

The soils on-site are mapped in the Litchfield County Soil Survey. A soils report was submitted and implies that a map was prepared. The Town should obtain a copy of this map. The driveways for lots in the northeast corner will cross some wetlands. Some alternatives include eliminating some of the lots and/or combining the driveways for several of the lots to reduce the wetland impacts. The major soil limitations are high water tables, steep slopes and areas that are shallow to bedrock.

There are benefits to each of the plans proposed. The "without road" option would allow construction on less sloping land east of Lot 4 and land disturbance would be phased with each lot developed. The "with road" option would reduce driveway grades, shorten driveways, reduce disturbance to the diversion for Route 126, give the developer responsibility for grading the road and reduce the number of bank cuts for improved sightlines.

A soil erosion and sediment control plan is required for the site before subdivision approval. The E&S plan is critical to protect the wetlands. The major erosion control measures needed are limited vegetation clearing, temporary diversion of water, cut and fill bank stabilization, water runoff control structures for the road and/or driveways and revegetation. The sediment controls are needed for wetlands, drainageways, adjacent property boundaries and Route 126.

## Wetland Considerations

The wetlands found on-site are associated with the watercourses and 2 small ponds. Wetland functions include water conveyance, wildlife habitat, water

renovation, sediment filtration and aesthetics. The wetlands surrounding the eastern pond is within the 100-year floodplain.

Direct impacts to the wetlands include 4 driveway crossings. Impacts from the crossings for Lots 1, 2 and 5 could be reduced if some or all of these driveways were combined. There are no direct wetland impacts on the eastern side of the property, but due to steep slopes, there is significant potential for secondary impacts due to sedimentation and slope destabilization. The Commission should review the plans as proposed. It may be possible to develop a plan with fewer lots and an access road. The sediment and erosion control plan should be carefully examined and monitored.

### Wildlife Considerations

Habitat on the site includes mixed hardwood forests, wetlands, open fields and reverting openings or pasture. The area offers a variety of food and cover to wildlife including deer, grouse, raccoon, fox, coyote, various birds, reptiles and amphibians. The site offers good to excellent wildlife habitat.

Several areas are proposed for open space, including 3 parcels on the north side of Route 126. Trout fishing along the Hollenbeck River may be offered on these parcels. Another parcel offered for open space is located south of Route 126 on the steep slopes behind the proposed development. If the Town does not have interest in administrating the parcel, consideration might be given to the State of Connecticut as a recipient to add to the State Forest.

As with any development, the impact on wildlife habitat will be negative. Wildlife habitat will be broken up and lost with the construction of roads, driveways, walkways, parking areas and homes. Other impacts include the creation of lawns and the presence of humans, traffic, dogs and cats. Development along the Hollenbeck River should be restricted because this is valuable wildlife habitat. Beaver are common in the Robbins Swamp area and may cause problems with their dams. Ravens have been sighted in the Barrack Mountain area. This is the southernmost portion of their range. From a wildlife habitat perspective, large houselots are preferable to many small lots. If large houselots cannot be provided, cluster housing should be considered.

There are many steps that can be taken in order to make the area more suitable for wildlife. These include buffer strips, natural landscaping techniques, maintaining forest wildlife requirements and providing nesting boxes for birds.

### Threatened and Endangered Plant and Animal Species

According to the DEP - Natural Diversity Database there are no Federally listed Endangered Species or Connecticut "Species of Special Concern" on the site. Two "Species of Special Concern" are found near the site, Pontamogeton hillii and Cottus cognatus.

## Archaeological Considerations

A review of the Archaeological Site Files and Maps show no prehistoric occupations within the boundaries of the site. A number of sites have been found along the Hollenbeck River. No cultural material was found during examination of the soil test pits. Due to the proximity of cultural sites along the Hollenbeck River, it is suggested that a professional archaeological reconnaissance survey be conducted in the northwest corner. All feasible efforts should be made to identify and preserve the cultural resources found in the area.

## Planning Considerations

The subdivision appears to be in a desirable location. The main planning problem is vehicular access. The original plan had a road which would require severe cuts and blasting. The updated plan eliminated the road and some of the lots and provided a series of dangerous driveways accessing Route 126. If possible, a narrow drive might serve Lots 7 through 14. If such a road is considered, the Fire Department should be consulted to see what accommodations their equipment would need. A large area to the south of the development may be deeded to the Town. The Town's Attorney should be consulted to review the agreement.

## Traffic Considerations

The steep topography on-site presents difficulties in access design. The "new road" proposal had the benefits of fewer access points and greater storm water management. The "without road" proposal has a greater impact on Route 126. Recommendations include reconsidering the road option and/or improvements on Route 126 to facilitate storm drainage and sightlines from either the driveways or the road. The ConnDOT District 4 office should be contacted early in the final design phase of the project.

## Open Space Considerations

Four parcels are being considered for use as open space. The largest parcel contains the ridge behind the proposed development and is very steep. This parcel is unsuited to development because of soil limitations. It is valuable as open space because it protects the ridgetop and provides wildlife habitat and passive recreation. Two ownership options are being considered: State and Town. The second parcel is north of Route 126 along the floodplain of the Hollenbeck River. This parcel is currently used for agriculture and has high value for farming, wildlife habitat, nature study and passive recreation. The third parcel is north of Route 126 in the floodplain. This parcel has some value as farmland, moderate value for passive recreation and high value as wildlife habitat. The fourth parcel is located north of the Hollenbeck River in the floodplain. The agricultural, wildlife, educational and recreational values of this parcel are high. The 3 northern parcels may either be part of a homeowner's association or given to the State. A conservation easement may be needed for all 4 parcels to protect their open space values and limit the types of activities and land management practices.



## TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
EXECUTIVE SUMMARY	iii
LIST OF APPENDICES	ix
LIST OF FIGURES	x

### INTRODUCTION

Introduction	1
The ERT Process	2

### PHYSICAL CHARACTERISTICS

Location and Zoning	7
Geology	8
Bedrock and Blasting	11
Surficial Geology	11
Sewage Disposal	12
Water Supply	14
Hydrology	16
Soil Resources	18
Soil Descriptions	18
Inland Wetlands	19
Major Soil Limitations	21
"New Road" vs "Without Road" Option	23
Erosion and Sediment Control	24
Summary of Major Points	24

### BIOLOGICAL CONSIDERATIONS

Wetland Considerations	25
Wetland Classification and Function	25
Development Impacts	26
Recommendations and Conclusions	27

Wildlife Considerations	27
Description of Area/Habitats	27
Wildlife Habitat	29
Wetlands	29
Forest	30
Old Field/Pasture	31
Wildlife Resources/Recommendations	33
Threatened and Endangered Plant and Animal Species	36

### ARCHAEOLOGICAL RESOURCES

Archaeological Considerations	38
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### LAND USE AND PLANNING CONSIDERATIONS

Planning Considerations	41
Traffic Considerations	42
Open Space Considerations	43
Parcel A	43
Parcel B	44
Parcel C	46
Parcel D	46
Comments	47

### LIST OF APPENDICES

- Appendix A: Soil Limitations Chart
- Appendix B: Suitable Planting Materials for Wildlife Food and Cover
- Appendix C: Average Daily Traffic

## LIST OF FIGURES

1. Location of Study Site	4
2. Original Site Plan	5
3. Updated Site Plan	6
4. Topography	9
5. Bedrock Geology	10
6. Surficial Geology	13
7. Soils	20
8. Species of Special Concern	37
9. Archaeological Sites	40
10. Open Space Parcels	45

## INTRODUCTION

The Canaan Inland Wetlands Commission has requested that an environmental review be conducted on Barrack Mountain, a 118-acre site proposed for subdivision development. The site is located in central Canaan, south of the Hollenbeck River. Access is provided by Route 126 to the north.

The site contains second growth hardwood forest with some open areas. The slopes are very steep in many areas. An old logging road cuts through the northwest section of the site. A house, barn and several outbuildings are found on the property. There are several areas of wetlands and 2 small ponds at the base of the slope near Route 126. The Hollenbeck River and its associated wetlands lies across Route 126.

Two preliminary plans have been proposed. The original plan would encompass 20 house lots. Each lot will be served by a private driveway. A cul-de-sac to serve 12 of the lots is proposed. The other 8 lots will access directly onto Route 126. Four wetland crossings (Lots 16, 19, 20 and the cul-de-sac) are proposed. The updated plan reduces the number of lots to 14. The proposed cul-de-sac has been removed and the 9 lots on the hillside will have private driveways to Route 126. There are 4 wetland crossings proposed (Lots 1, 2 and 5). Both plans would rely upon on-site septic systems and wells.

The primary goal of this ERT is to inventory the natural resources of the site and provide planning information. Specific objectives include:

- 1) Assess the topographic, hydrologic and geologic characteristics of the site, including the development limitations and opportunities;
- 2) Determine the potential for on-site septic systems and wells;
- 3) Assess the impact of stormwater runoff;
- 4) Determine the suitability of existing soils to support the proposed development;

- 5) Discuss soil erosion and sedimentation concerns;
- 6) Assess the impact of the development on the wetlands and watercourses;
- 7) Assess the impact of the development on the wildlife, including the ravens who may be nesting on the site;
- 8) Discuss the traffic patterns around the site and assess the impact of the new road on Route 126; and
- 9) Assess planning and land use issues.

### THE ERT PROCESS

Through the efforts of the Canaan Inland Wetlands Commission, the developer's representative and the King's Mark ERT, this environmental review and report was prepared for the Town. This report primarily provides a description of on-site natural resources, and presents planning and land use guidelines.

The review process consisted of four phases:

- 1) Inventory of the site's natural resources (collection of data);
- 2) Assessment of these resources (analysis of data);
- 3) Identification of resource problem areas; and
- 4) Presentation of planning and land use guidelines.

The data collection phase involved both literature and field research. The ERT field review took place on February 8, 1989. Field review and inspection of the proposed development site proved to be a most valuable component of this phase. The emphasis of the field review was on the exchange of ideas, concerns or alternatives. Mapped data or technical reports were also perused and specific information concerning the site was collected. Being on-site also allowed Team members to check and confirm mapped information and identify other resources.

Once the Team members had assimilated an adequate data base, it was then necessary to analyze and interpret their findings. The results of this analysis

enabled the Team members to arrive at an informed assessment of the site's natural resource development opportunities and limitations. Individual Team members then prepared and submitted their reports to the ERT Coordinator for compilation into the final ERT report.

Figure 1

LOCATION OF STUDY SITE

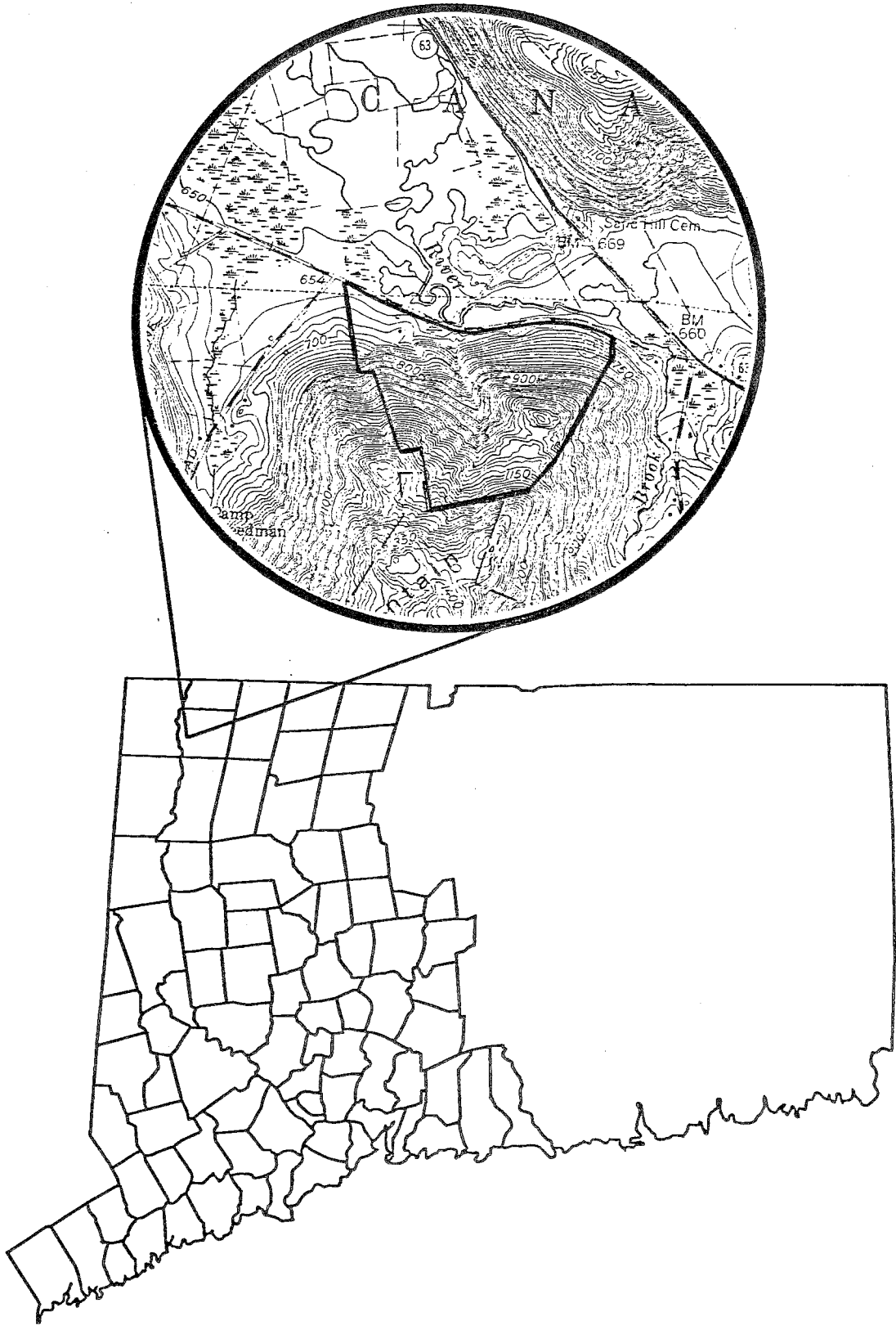



Figure 2

**BARRACK MOUNTAIN  
SUBDIVISION**

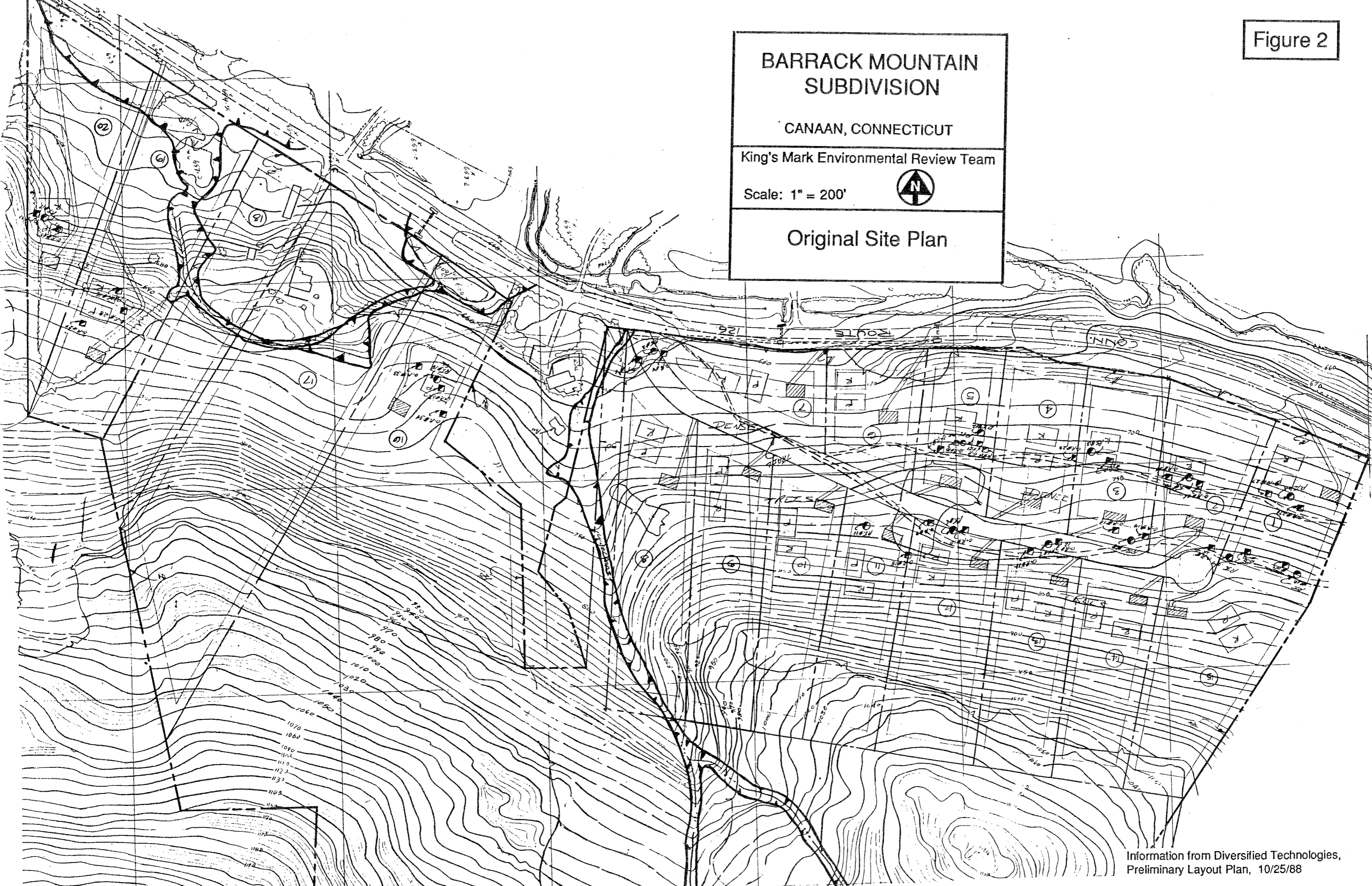
CANAAN, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 200'



**Original Site Plan**



Information from Diversified Technologies,  
Preliminary Layout Plan, 10/25/88




Figure 3

**BARRACK MOUNTAIN  
SUBDIVISION**

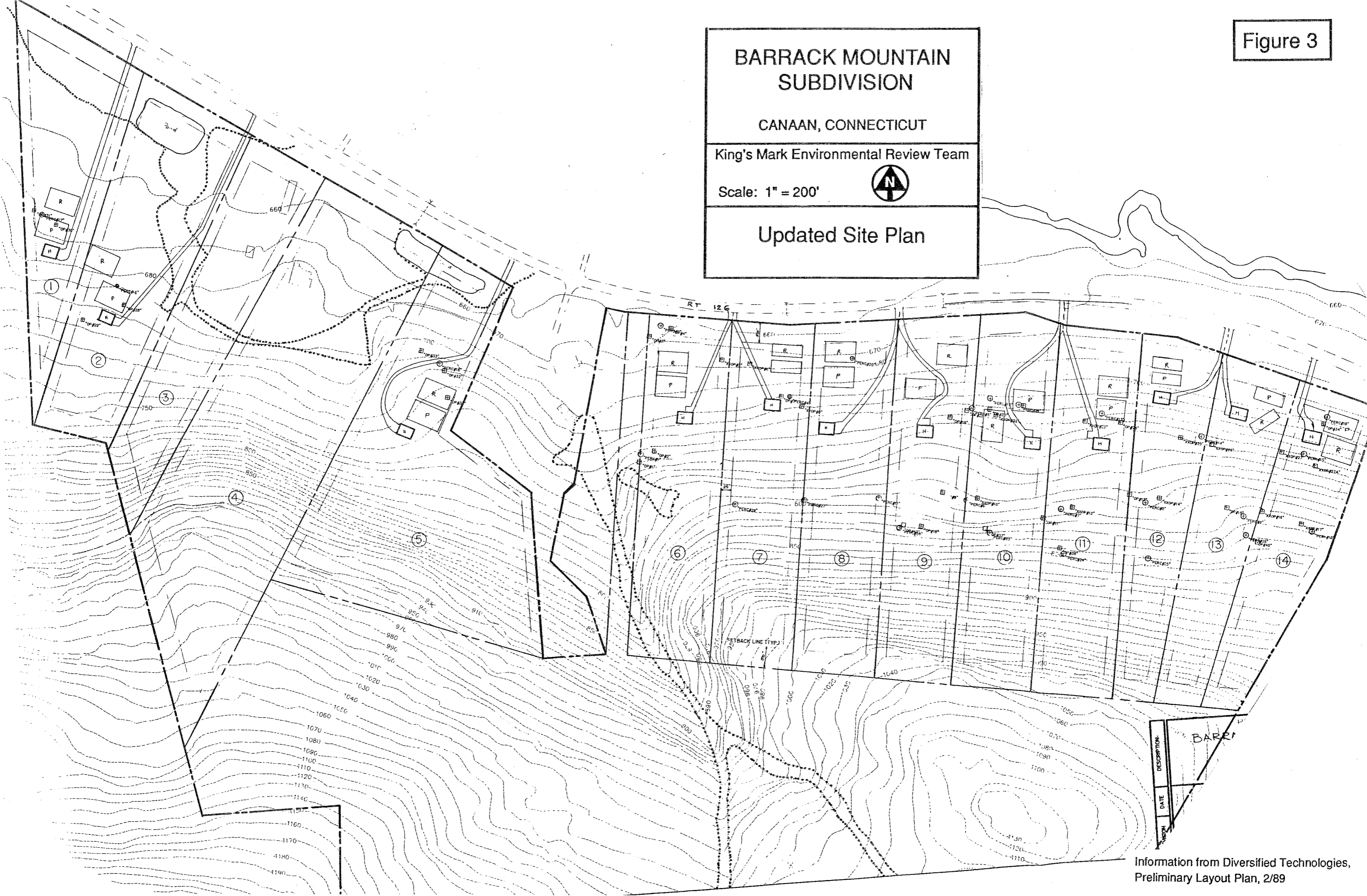
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King's Mark Environmental Review Team

Scale: 1" = 200'



**Updated Site Plan**



REVISION	DATE	DESCRIPTION

Information from Diversified Technologies,  
Preliminary Layout Plan, 2/89

## GEOLOGY

Three basic types of bedrock have been described for the site ( Bedrock Geology of the South Canaan Quadrangle - QR-32, R. M. Gates 1964, 1966-71 and Bedrock Geological Map of Connecticut, J. Rodgers, 1985) (see Figure 5). The bedrock in the southern third of the site is classified as the Dalton Formation, a gray, tan weathering feldspathic (feldspar-rich) quartzite, gneiss and schist. The bedrock in the middle third of the site consists of the basal marble member of Walloomsac Schist. It is described as a dark- to light-colored schistose marble. Finally, the northern third of the site is underlain by a subunit of the Stockbridge Formation. It is described as a white, light-gray dolomite marble and schist.

All of these rocks (gneisses, schists, quartzites and marbles) are metamorphic. This means that the rocks have sustained changes as a result of very high pressures and temperatures within the earth's crust.

The marble rock differs chemically from the schists, gneisses and quartzite. Marble is composed of the mineral dolomite, but it also contains calcium carbonate. The carbonate minerals in the marble are subject to relatively rapid erosion since they are soft minerals, easily dissolved by acidic precipitation and groundwater.

Due to the physical and chemical properties of these component minerals, the marble erodes more rapidly than do the aluminum silicate minerals that make up schists, quartzites and gneisses. As a result, the bedrock outcrops and ledges on the site are made up predominantly of the gneisses, quartzites and schists rather than the relatively soft marbles.

The layering of the platy minerals in the rock (foliation) on the site dips moderately steeply to the north.

The underlying bedrock is likely to be the source of water to drilled wells installed on each lot. Therefore, it will have at least some bearing on water quality

## LOCATION AND ZONING

The site, which is irregularly shaped and about 118 acres in size, is located in central Canaan at the northern edge of Barrack Mountain. The site is bounded on the north by Route 126 and private, undeveloped land on the east, west and south. Except for some open farm fields in the northwest corner, the site is composed of wooded land.

The site is located in a 2-acre zone. Permitted uses of the land include residential lots with minimum lot sizes of 2 acres. Present plans by the developer indicate that proposed homes would be served by either individual or shared driveways which access onto Route 126. A 50-foot right-of-way west of Lot 6 will provide access to the proposed open space area. Each lot would be served by individual on-site septic systems and wells. It is understood that the Canaan Inland Wetlands Commission regulates any activity within 50 feet of regulated wetlands.

The site and vicinity have been used for agricultural and residential purposes. Generally speaking, residential development in low densities characterizes the area. Most of the agricultural fields are located within the Hollenbeck River floodplain north of the site.

The site consists of an area of steep to very steep terrain that slopes towards Route 126 and Hollenbeck River. The slopes on the site face north. Site elevations range from about 1180 feet above mean sea level at the northernmost property line to about 660 feet above mean sea level along Route 126 (see Figure 4). This represents a difference of about 520 feet of relief. The gentlest slopes are located in the open fields at the northwest corner. Numerous bedrock outcrops occur on the steep slopes in the central and southern parts of the site.

Figure 4

# BARRACK MOUNTAIN SUBDIVISION

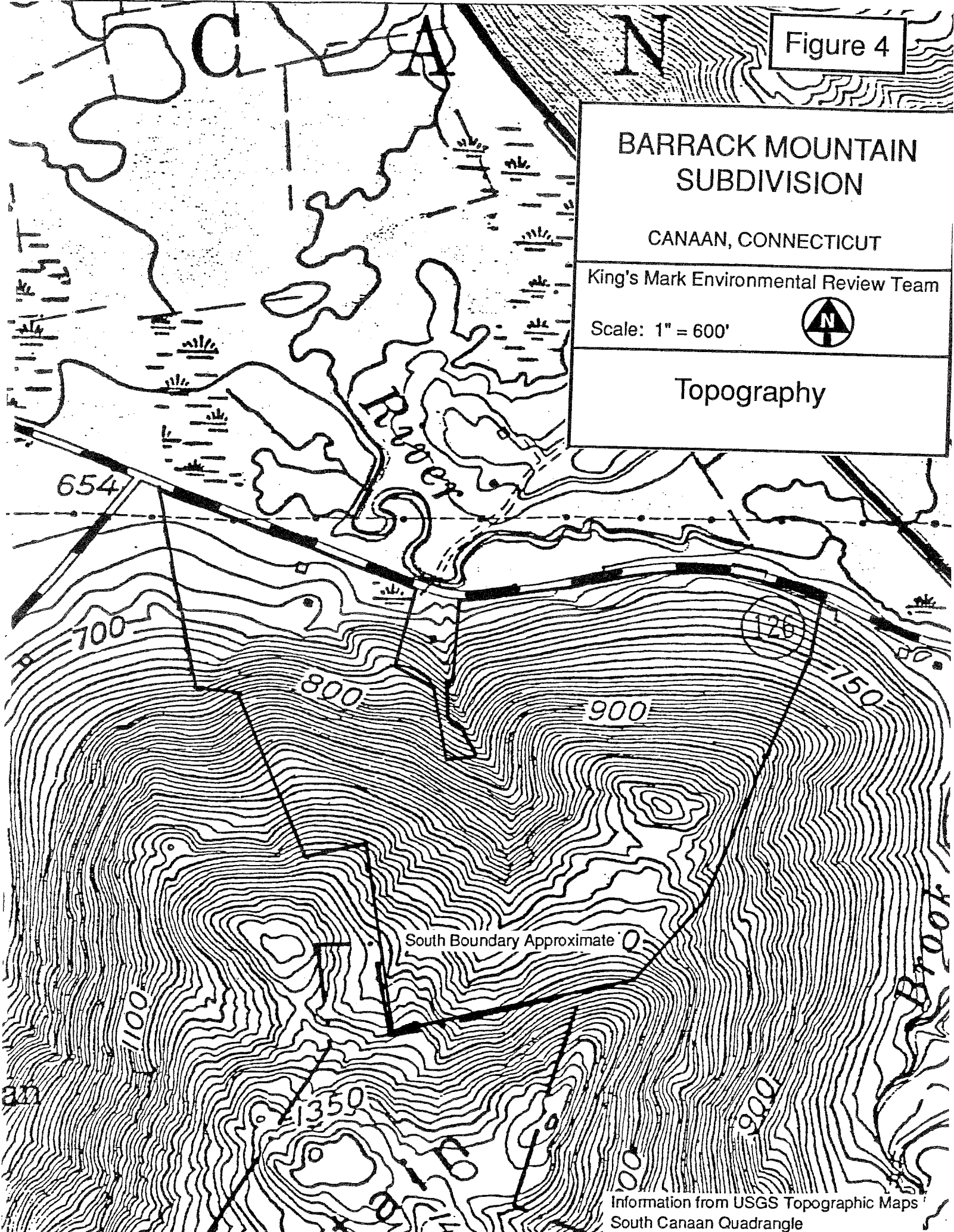
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Scale: 1" = 600'



## Topography



Information from USGS Topographic Maps  
South Canaan Quadrangle

Figure 5

# BARRACK MOUNTAIN SUBDIVISION

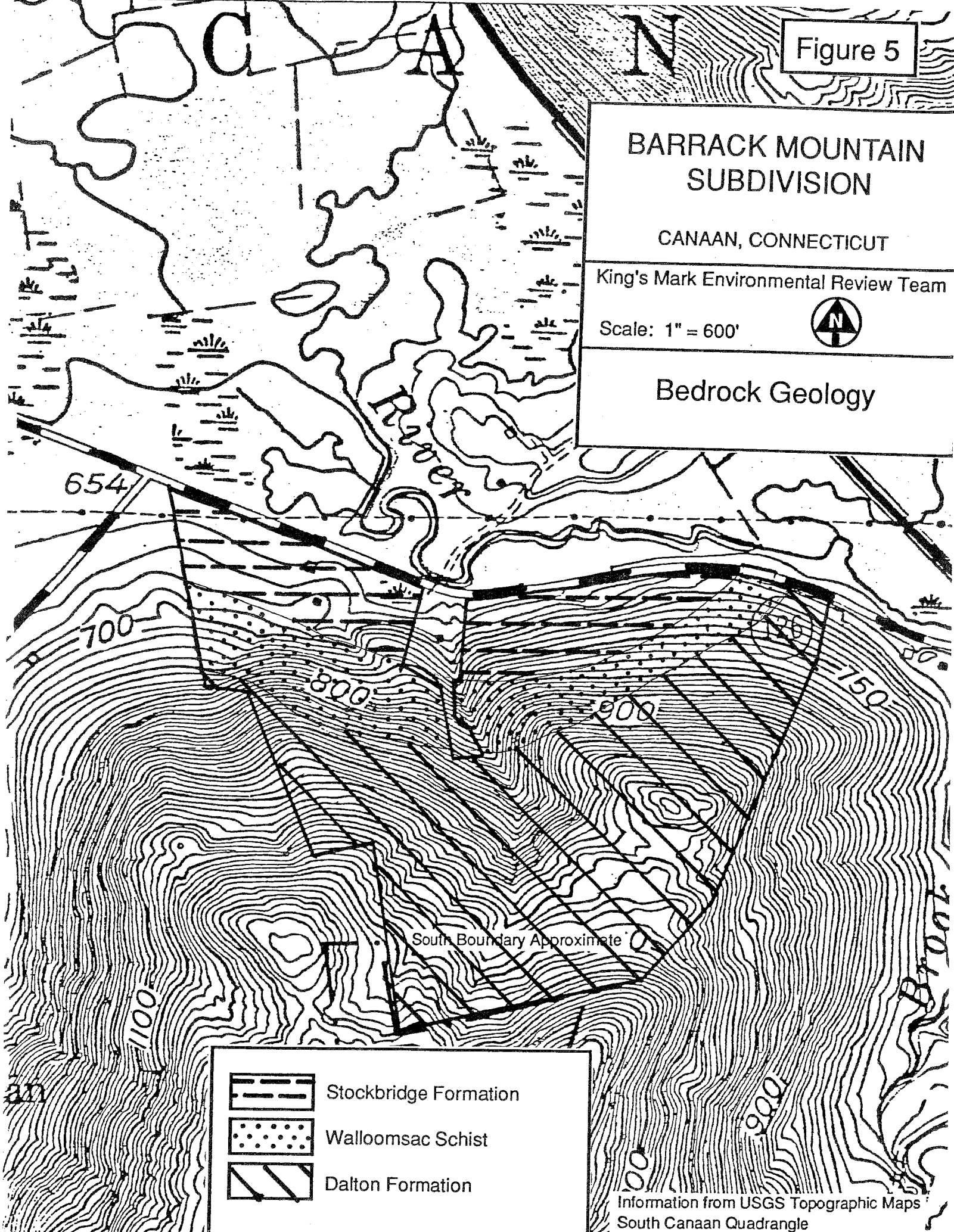
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Scale: 1" = 600'



## Bedrock Geology



	Stockbridge Formation
	Walloomsac Schist
	Dalton Formation

Information from USGS Topographic Maps  
South Canaan Quadrangle

and quantity, especially considering the various types of rocks underlying the site (see Water Supply section).

### BEDROCK AND BLASTING

Bedrock geologic mapping information indicates that bedrock is at or near ground surface at various points throughout the site. This suggests the need for possible blasting, particularly with respect to the placement of septic tanks, roads/driveways and house foundations.

Any blasting that takes place on the site should be done only under the strict supervision of persons familiar with the latest blasting techniques. Only then will the environmental effects of blasting be minimized. For the most part, these concerns include flyrock, ground vibrations, airblast, dust and gases. It is strongly suggested that a pre-blast survey be required in the area. A thorough blasting record should accompany the survey. There are several methods that can be employed which will help reduce the potential environmental effects. These include: (1) blasting to an open face; (2) multiple small-charge blasting and (3) use of millisecond delay between detonations. The method chosen will depend on the blasting requirements of the site.

### SURFICIAL GEOLOGY

Based on soil-mapping data and deep test hole information supplied to Team members, the site contains 2 types of glacial sediments: till and stratified drift (see Figure 6). Till covers most of the site. It consists of ground rock particles and fragments which were deposited directly from glacial ice. The till is made up of varying proportions of sand, silt, gravel, clay and boulders. Particles of different

sizes are generally mixed together in a complex fashion. The texture of the till on the parcel is mostly sandy and loose or moderately loose. Deep test hole information revealed the presence of a silty, compact soil zone in some test pits.

The northwest corner of the site is covered by stratified sands and gravels which were deposited by streams of glacial meltwater in the Hollenbeck River Valley. Several tens of feet of sand and gravel may cover the area.

### SEWAGE DISPOSAL

Based on visual observations, consideration of soil service mapping data and review of soil testing information, the proposed subdivision should be capable of supporting properly located, designed and installed on-site sewage disposal systems.

The main concerns for some of the lots are steepness of slopes (up to 15-35% in places) and areas with seasonal high ground water tables. To reduce and minimize adverse factors, the location of the sewage disposal systems should be in the most favorable area on each lot. Systems should be located away from steep slopes and drainageways. Care must also be taken where soils tend to be quite permeable, particularly if on steep hillsides. Precautions are needed in these areas in order to prevent the possible downhill breakout of sewage effluent before receiving and undergoing adequate treatment and renovation. The construction of leaching systems on terraces made by cutting and filling on slopes is to be avoided. Where seasonal high groundwater conditions are present, the use of select fill material along with the installation of groundwater control drains may be necessary in order to assure that the bottom area of any leaching system will be kept to the minimum required distance above the maximum groundwater level.

Depending on the final layout of the subdivision, some lots may require septic systems which will need to pump effluent to higher elevations on the lot. Because of

Figure 6

# BARRACK MOUNTAIN SUBDIVISION

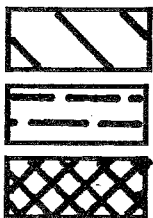
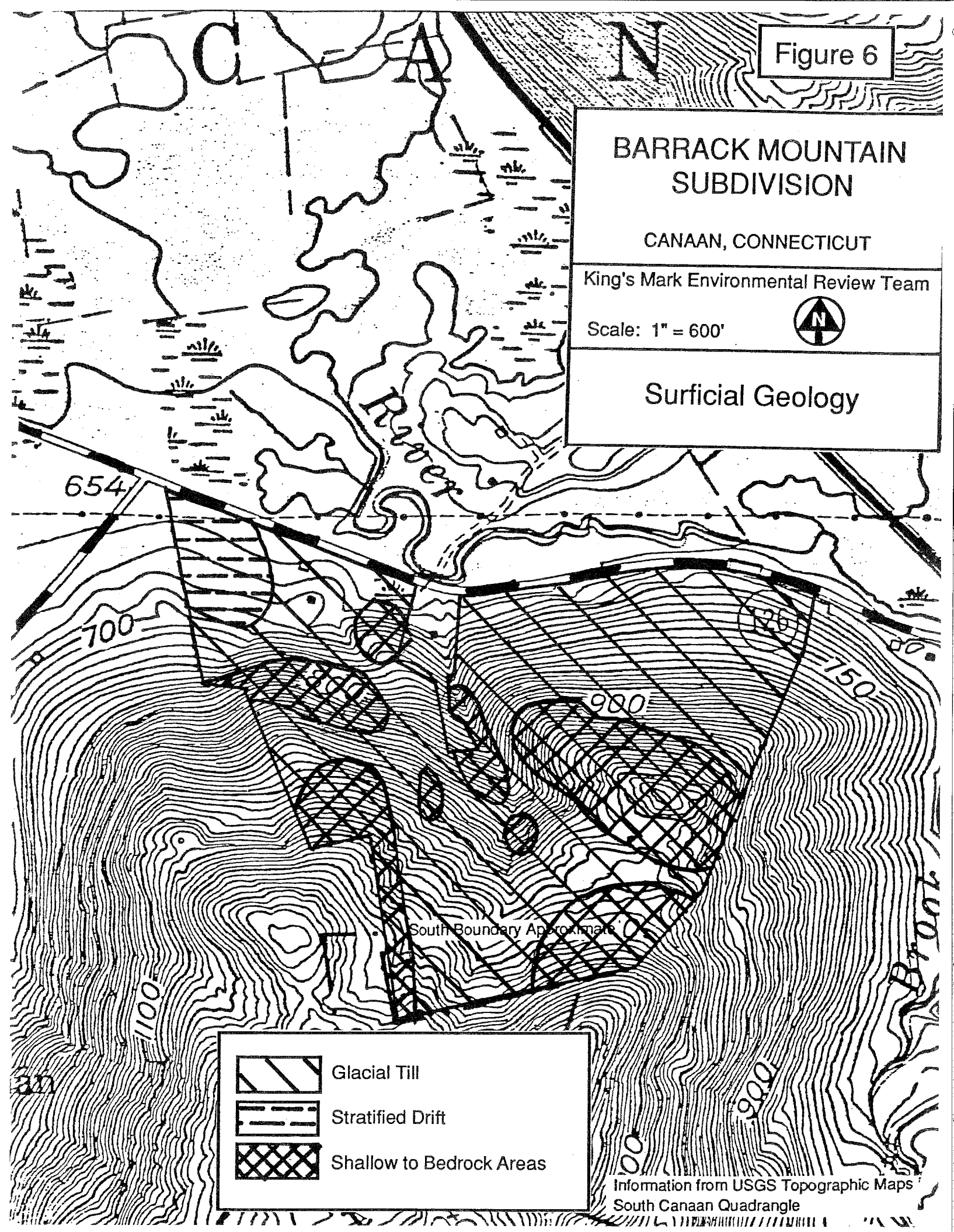
CANAAN, CONNECTICUT

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Scale: 1" = 600'



## Surficial Geology



- Glacial Till
- Stratified Drift
- Shallow to Bedrock Areas

Information from USGS Topographic Maps  
South Canaan Quadrangle



capable of yielding quantities of water adequate for most domestic uses. A yield of 3-5 gallons per minute is generally desired for residential use.

The site lies within the Upper Housatonic River Basin, and, according to Water Resources Bulletin No. 21, 80% of the metamorphic bedrock wells (734 surveyed) had yields of 3 gallons per minute or more.

The presence of a thrust (large, low-angle) fault which bisects the site east/west suggests that at least the upper few hundred feet of the bedrock surface in the area may be fractured and weathered. Fractured and weathered zones in the bedrock provide storage for groundwater which domestic wells will hopefully intersect. Marble rock may contain solution cavities or channels/seams which permit water circulation. For this reason, the carbonate bedrock (marble) tends to be more productive in terms of groundwater yields to wells than the schists, gneisses and quartzite which characterize the region.

In general, private wells should be located on the high side of lots with proper separating distance from on-site sewage disposal systems. Wells must also be properly separated from water impoundments, watercourses and drains and be protected from surface runoff and erosion problems.

Properly constructed drilled wells will generally afford the greatest level of protection against possible sources of pollution. Also, drilled wells usually allow for more flexibility in actual site placement. All wells should be constructed by persons who are state-licensed for drilled wells. The Town sanitarian needs to inspect the proposed well sites and issue a permit for each well in the subdivision. The sanitarian must insure that all sections of the State Public Health Code, State Well Drilling Board Rules and Regulations and local ordinances have been followed.

The natural quality of the water supply should be good. However, there is a chance the underlying bedrock, particularly the schists and gneisses, may be mineralized with iron and/or manganese. If the concentrations of these minerals

are high, the well water may need to be treated with a suitable method of filtration. Bedrock wells tapping marble may be affected by excessive hardness problems, but the use of water softening systems may cause contamination of groundwater because sodium-laden backwash may be discharged to subsurface sewage disposal systems. The State and/or local health department should be contacted regarding the installation of water-softening devices, because they represent a potential threat to groundwater quality and may be illegal.

### HYDROLOGY

The entire parcel drains northward to the Hollenbeck River. At least 3 intermittent streams were seen flowing on the site during the field review. This water is piped under Route 126 and ultimately flows into the Hollenbeck River. At its point of outflow into the Housatonic River, the Hollenbeck River drains an area 42.3 square miles or 27,072 acres. The site represents less than 1% of the total drainage area.

Development of the property as planned will cause some increase in runoff. Because of the low lot density proposed and the large drainage area of Hollenbeck River, there should be no noticeable impact on the river's normal flow rates. As a matter of policy, the project engineer should check post-development runoff conditions versus pre-development runoff conditions for the site. Careful examination of the culverts passing under Route 126 is warranted.

Present plans indicate that at least 10 driveways would need to access onto Route 126. There is a potential problem regarding the driveways which would be constructed in the eastern portions. Because the site's topographic aspect is north and steep slopes and dense forest cover shade much sunlight in the eastern parts, one may expect ice accumulations at the end of driveways during the winter. These

ice patches may be dangerous for the subdivision residents as well as other drivers on Route 126. Icy road conditions on Route 126 were observed during the field review. It is suggested that the applicant investigate the possibility of constructing an interior road to serve the proposed homes in this area (perhaps similar to the preliminary plan). It may be feasible to design a central stormdrainage system for the road and driveways to keep runoff from flowing onto Route 126. Additionally, if the road accessed onto Route 126 at the western parts of the site, a flatter outlet and entrance grade could be accomplished. If driveways are constructed on the steep slopes, it is likely that they would be a source of pollution. Water flowing down the driveways during storm events or snowmelt could wash sand, salt, oils and other debris to Hollenbeck River.

A deep cut would be required for an interior road system serving the eastern parts of the site. Blasting would probably be required, since bedrock is presumed close to the ground surface in this area (see Blasting and Bedrock section). In order to determine the depth of bedrock and the amount of blasting needed, borings should be drilled along the desired road route. Borings will also allow determination of textural and structural aspects of the underlying bedrock. For example, friable slabby rocks, like Walloomsac Formation, will not support steep cuts.

Based on the present plans, it appears that at least 3 driveways will need to cross regulated wetland soils as identified by the applicant's certified soil scientist. In addition, wetlands would need to be crossed to gain access to the open space area. Since wetland areas are considered regulated areas under Chapter 440 of the Connecticut General Statutes, any activity such as filling, grading and/or modification must be approved by the Canaan Inland Wetland Commission. In reviewing a proposal, the Commission will need to determine the impact that the proposed activity will have on the wetlands. If Commission members feel that the regulated area is serving an important hydrologic or ecologic function and that the

impact of the proposed activity will be severe, they may deny the activity altogether, or at least require measures which would minimize the impact.

Considering the distribution of wetlands on the site, the applicant's technical staff should focus on those locations where the least amount of disturbance would occur. Although undesirable, wetland driveway crossings are feasible, provided they are properly engineered. The driveway should be constructed adequately above surface elevation of the wetlands. This will allow for better drainage of the road and decrease the frost heaving potential. All unstable material should be replaced by proper road base fill. Ideally, driveway construction through wetlands should be done at a dry time of year. Wetland fill lines should be clearly shown on the subdivision plan so that areas of disturbance are clearly delineated. Also, the amount of fill material should be determined and made available to Commission members. Finally, culverts should be properly sized and located so that they do not alter the water levels in the wetlands or cause flooding problems.

## SOIL RESOURCES

### Soil Descriptions

The soils on the property are mapped and described in the Soil Survey of Litchfield County, 1970 (see Figure 7). The soils have been further described by Soil Resource Consultants in the report dated June 17, 1988. The report implies that a map was prepared using the map units described in the Soil Resource Consultants report, but this map was not submitted for review. Obtaining a copy of this map should be beneficial to the Town's review of this property. An inland wetland boundary map has been drawn on the subdivision plan.

There are 3 tables in Appendix A which summarize the soils on the property, as shown by the Soil Survey map. Table 1 lists the soil abbreviations and soil names,

Table 2 lists the major soil characteristics which influence construction, and Table 3 is a soil limitation table for development.

The Soil Survey report refers to a Dover soil (DoV) as occurring on the property. This soil abbreviation appears on the 3 tables in Appendix A. This soil name has been recorrelated with the Nellis soil series. The Soil Resource Consultants report uses the Nellis series name where the Soil Survey uses Dover. The soil description is adequate in both reports.

A description of the major soil features and development limitations follows. Where specific lots are mentioned, the "with road" option lot numbers are shown in parentheses.

#### Inland Wetlands

The Lm soil (Limerick silt loam) is an inland wetland soil type. Construction on this soil is regulated by the Inland Wetland and Watercourses Act. There are also some inland wetlands mapped on the subdivision plan in upland areas. The consulting soil scientist should clarify the inland wetland map and certify that the inland wetland boundary being submitted by the applicant is correct. The existing drainageway should be shown between Lots 4 (17) and 5 (16). An erosion and sediment control plan should be provided for certification by the Town and correctly implemented to keep sediment from construction areas out of inland wetlands, ponds and other watercourses. A detailed site grading and drainage plan for all wetland crossings is needed to determine the full impact of each wetland crossing.

The Lm soil is listed as flooding frequently in Table 2. This flooding class reflects the conditions under which the soil was formed. Route 126 could keep this wetland area from flooding currently. This depends on the elevations of road culverts and whether the road itself overtops during flood conditions.

Figure 7

# BARRACK MOUNTAIN SUBDIVISION

CANAAN, CONNECTICUT

King's Mark Environmental Review Team

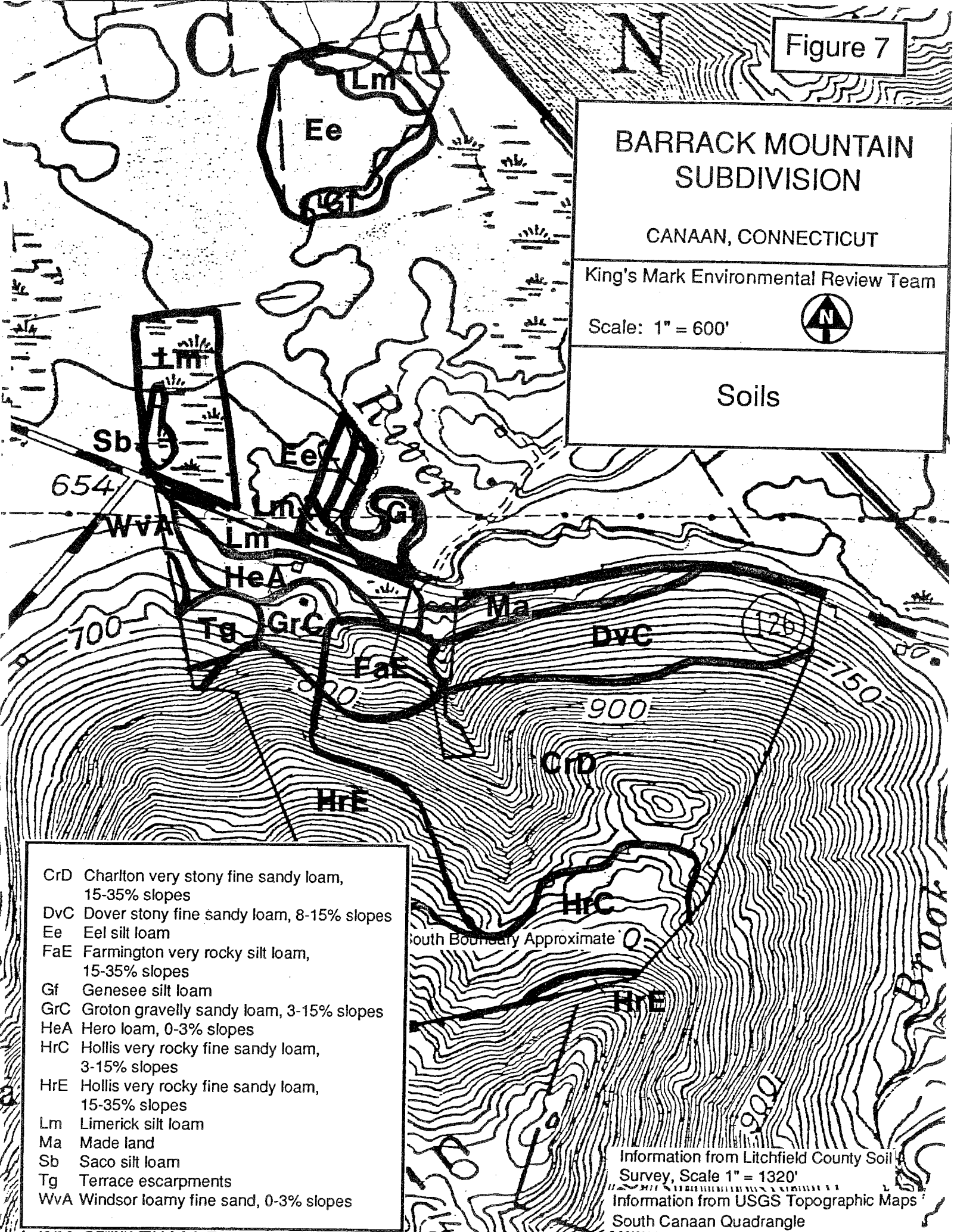
Scale: 1" = 600'



## Soils

- CrD Charlton very stony fine sandy loam, 15-35% slopes
- DvC Dover stony fine sandy loam, 8-15% slopes
- Ee Eel silt loam
- FaE Farmington very rocky silt loam, 15-35% slopes
- Gf Genesee silt loam
- GrC Groton gravelly sandy loam, 3-15% slopes
- HeA Hero loam, 0-3% slopes
- HrC Hollis very rocky fine sandy loam, 3-15% slopes
- HrE Hollis very rocky fine sandy loam, 15-35% slopes
- Lm Limerick silt loam
- Ma Made land
- Sb Saco silt loam
- Tg Terrace escarpments
- WvA Windsor loamy fine sand, 0-3% slopes

Information from Litchfield County Soil Survey, Scale 1" = 1320'  
 Information from USGS Topographic Maps  
 South Canaan Quadrangle



- b) Drainage in any cut slopes to control seepage; and
- c) Footing drains around any basements to try to control wetness.

The inland wetland areas can provide a suitable outlet for subsurface drainage pipes.

2) Steep Slopes - All lots east of Lot 4 (17) have severe limitations for construction due to steep slopes. Driveways with steep grades are likely to be difficult to access when icy. Emergency vehicles may not be able to enter the property due to steepness. Water may erode driveways unless properly managed. Steep cut and fill slopes are probably needed for driveway construction. These may require structural bank stabilization measures. The following measures are recommended due to the steep slopes:

- a) The Planning and Zoning Commission should review the site grading plan for road or driveway construction prior to approval to determine if driveway/road construction is feasible.
- b) An engineer should review the structural bank stabilization measures for the Town.
- c) Septic systems should be designed by qualified engineers.
- d) An E&S plan should be designed and properly implemented.
- e) Driveway grades greater than 15% are not recommended due to limited accessibility and erosion. Dirt or gravel driveways greater than 10% are not recommended due to erosion.
- f) Water control structures are needed on the driveways/roads to prevent erosion, reduce icing problems and keep water and ice off of Route 126.
- g) If driveways are allowed off of Route 126, redesign and reconstruction of the existing water diversion above Route 126 is needed. Shared driveway entrances are beneficial because they reduce the number of steep driveway cuts and the number of cuts through the Route 126 water diversion.
- h) The proposed driveway/road grading plans are needed to determine if cut or fill slopes will interfere with the design and installation of septic systems.
- i) If the "new road" option is chosen, the driveways on Lots 1, 6 and 7 could be designed off the new road rather than Route 126. This should help alleviate water runoff, diversion repair, icing, steep cut

slopes and sight line problems associated with these driveways entering off Route 126.

- 3) Shallow to Bedrock - The Soil Survey map shows soils shallow to bedrock (FaE) in the area of Lots 4 and 5.

The preliminary Sanitary Report, prepared by Diversified Technologies Corp. 2/7/89 describes 3 observation pits on Lot 5. Observation pits #32 ends at 29 inches depth with "very compacted white sand could not dig through," observation pit #33 ends at 38 inches depth with similar material and #34 goes to 90 inches depth with gray fine sand and silt. Extensive on-site testing may be needed on Lots 4 and 5 to locate areas with deep enough soil to install a septic system.

Landscaping can also be extremely difficult on graded slopes in shallow to bedrock areas.

#### "New Road" vs "Without Road" Options

Two conceptual plans were submitted for review (see Figures 2 and 3). While neither of these proposals has enough information to determine feasibility, each proposal has some favorable points. These points are summarized as follows:

- 1) Benefits of "Without Road" Options
  - a) Construction areas for houses and septic fields are on less sloping terrain for lots east of Lot 4.
  - b) Land disturbance would be phased with lot construction. No initial large land disturbance is caused by road construction.
- 2) Benefits of "New Road" Option
  - a) Lots would have wider frontage which could allow reduced driveway grades.
  - b) Shorter driveways are feasible.
  - c) Disturbance to the State's water diversion above Route 126 would be reduced.
  - d) Responsibility for construction of the major raise in grade is controlled by the developer rather than numerous homeowners. This could facilitate Town review and enforcement of many critical phases of the construction.



- e) Bank cuts off Route 126 for improved sight lines could be reduced as could water and ice hazards.

### Erosion and Sediment Control

An E&S plan is required for this site prior to subdivision approval. An E&S plan is critical to protecting any remaining wetlands on-site as well as those off-site. The E&S plan should follow the "Guidelines for Erosion and Sediment Control in Connecticut" revised, 1988. The major erosion control measures needed are: limited vegetation clearing, temporary diversion of water around construction sites, cut and fill bank stabilization, water runoff control structures for the road and driveways and revegetation. The major areas where sediment controls are needed include areas above inland wetlands, drainageways, adjacent property boundaries and Route 126. These sediment controls should be located as close to the eroding areas as is feasible. The Town can submit the E&S plan to the Litchfield County Soil and Water Conservation District for review, if needed.

### Summary of Major Points

The main conceptual recommendations for review of a subdivision on this property are as follows:

- 1) Feasible and prudent alternatives to the proposed wetland disturbances should be evaluated.
- 2) A site grading and drainage plan is needed prior to subdivision plan approval to determine if the lots shown are actually feasible without jeopardizing the safety and health of citizens due to the steep slopes and limited accessibility to lots. This plan is also needed for wetland crossings to determine the extent of the impact on the wetlands.
- 3) An E&S plan is required prior to subdivision approval. This plan is needed to protect the inland wetlands, watercourses and adjacent property owners.

## WETLAND CONSIDERATIONS

### Wetland Classification and Function

The proposal under review is located on the north slope of Barrack Mountain, off Route 126 between Johnson Road and Route 63, in the Town of Canaan. This portion of Barrack Mountain slopes northward and drains across Route 126 into the Hollenbeck River. The majority of the land surrounding this portion of the Hollenbeck River is in agricultural use either as grazing land or secondary crops such as hay. The site contains very steep slopes (3-35%), 2 ponds on its western portion and an intermittent watercourse which roughly divides the site in half. The wetlands are mainly composed of either Limerick silt loam (Lm) or Genesee silt loam (Gf) soils and are generally of good quality. Both of the ponds have been recently created by excavation and have not yet fully revegetated. The watercourse in the central portion of the site is contained within a narrow corridor and terminates at the rear of an existing house lot where it is channeled underground to a culvert under Route 126. As defined by the U.S. Fish and Wildlife Service these wetlands are classified as follows:

- |       |   |
|-------|---|
| POWH  | Palustrine; open water; permanent.  |
| PEMEt | Palustrine; emergent; seasonally saturated; circumneutral water chemistry (ph 7). |

The wetlands serve several functions including water conveyance, wildlife habitat, water renovation, sediment filtration and aesthetics. Additionally, the area surrounding the pond on Lots 4 and 5 is within the 100-year flood zone as defined by the Federal Emergency Management Agency's Flood Insurance Rate Map.

### Development Impacts

There are 4 direct wetland impacts proposed within the application, all of which are driveway crossings. The first crossing is located on Lot 1 (20), on the west portion of the site. This driveway will cross about 200 feet of emergent and scrub/shrub swamp area just to the west of a pond and a patch of Tall Reed. The wetlands in this area are among the highest quality of any of those found on the site, and this crossing would have the greatest adverse impact of all of the proposed crossings. However, the second and third direct impacts, driveway crossings for Lot 2 (19), are located to the east of the same pond, crossing 2 wetlands of relatively low quality resulting in an insignificant impact to the existing wetlands. It would seem both feasible and prudent to modify these proposed crossings and the lot layouts in order to accommodate access to both lots with only 1 crossing of the wetlands. The last crossing is directly to the east of the second pond on proposed Lot 5 (16). This crossing will go through a shrub wetland area and a small drainage ditch and then directly up a very steep slope on highly erodible soil. Due to the steep slope and the erodibility of the soil, the potential for sedimentation problems into the pond is significant and thus not recommended. Again, it may be feasible to use a single crossing (at Lot 2 (19)) with modifications to design and lot layout which will be suitable to serve all 3 of the proposed building lots on the western portion of the property.

With regard to the eastern portion of the property there are no direct wetland impacts proposed. The watercourse located in the central portion of the property will not be disturbed and will be within the boundaries of Lot 6 (8). However, due to the steep slopes (8%-35%) on the eastern lots there is significant potential for secondary impacts to the wetland systems located across Route 126. Such impacts include severe sedimentation into the existing storm drainage systems which serve Route 126 and slope destabilization uphill and adjacent to the road. Additionally, there are

drainage channels which have been created to assist in draining a portion of agricultural land across the road. Sedimentation into the channels could create ponding problems and interfere with the agricultural activities.

### Recommendations and Conclusions

- 1) It is recommended that alternatives to the proposed multiple wetland crossings be examined thoroughly. Feasible and prudent alternatives exist to the proposed access, such as a single multiple access drive through Lot 2 (19) which could serve at least 2 of the 3 lots proposed for the western portion of the site.
- 2) The access drive proposed for Lot 5 (16) is strongly discouraged due to the inherent problems with the steep slopes and erodible soils found on this portion of the site.
- 3) The local Commissions should thoroughly review the plan as proposed due to the potential for serious sedimentation and erosion problems which this site presents. It may be feasible to develop portions of this site with fewer lots and a single access road off of Route 126 with fewer and shorter lot driveways.
- 4) The local Commissions should be sure to closely examine and monitor the sediment and erosion controls which will accompany any proposal on this site. Assistance should be requested from either the Soil Conservation Service or the Water Resources Unit of DEP. Additionally, some form of bonding and a thorough maintenance program should be established to ensure the Town's ability to correct any problems which may occur during development which the applicant can not, or will not, rectify.

### WILDLIFE CONSIDERATIONS

#### Description of Area/Habitats

The site contains 4 parcels separated by Route 126. The largest parcel, which is proposed to be subdivided into houselots, lies south of Route 126. This area contains mixed hardwood forest, open field areas, very overgrown old opening or pasture and several areas of wetlands, some of which are associated with 2 small ponds. A brook runs off of Canaan Mountain and roughly divides this southerly section in half.

After a section of gentler slopes near Route 126, this section slopes steeply up, becoming very steep in some sections.

Approximately 23 acres of land, most of it wetlands, lies across Route 126 and borders the Hollenbeck River. The 3 open space parcels are grouped as a unit (see Open Space Considerations). The brook running off Barrack Mountain crosses under the road and flows into the Hollenbeck River. No development is planned for these areas. Private trout fishing along the Hollenbeck River may be offered.

The surrounding area contains a variety of cover or wildlife habitats. Wildlife habitat is the complex of vegetative and physical characteristics that provide for all the requirements of wildlife, including food, shelter, resting, nesting and escape cover, water and space.

In general, the greater the diversity of habitats in an area, the greater the diversity of wildlife species there will be using an area. The greater the interspersion of these habitat types, the better wildlife in general is able to satisfy its needs in the area.

The site contains good to excellent wildlife habitat, even though it is of relatively small size. The site does offer some diversity of habitats, and it is located in an area that has had little development relative to the rest of Connecticut. The neighboring habitat or adjacent habitat includes farm land, wetland areas collectively known as Robbins Swamp and large areas of forest, some of which are contained in the Barrack Mountain section of Housatonic State Forest. Considering this, the site becomes part of a larger area of good to excellent wildlife habitat.

Although development of a parcel of land this size may seem slight when compared to the large amount of open space land in the Town, the rural character or lack of development augments the value of not only this parcel, but the entire area as well for wildlife.

A variety of wildlife could be expected to utilize the site to serve all their needs while many more would find it a place to meet some requirements. Species which could utilize an area such as this for some or all of their requirements might include deer, ruffed grouse, raccoons, foxes, coyotes, hawks, owls, various other birds such as pine siskins, grosbeaks, juncos, chickadees and various reptiles and amphibians.

### Wildlife Habitat

Wetlands: Most sections of the property contain wetlands. The wetlands occurring on the property south of Route 126 include the 2 small ponds and their associated wetlands, much of which has been converted to lawn. A small area around the perimeter of each pond has some vegetation. There is no emergent vegetation in the ponds. While these wetland areas probably serve the needs of some species of wildlife such as a passing blue heron or mallard, the lack of cover and food and their small size limits their usefulness to wildlife. Some use by reptiles and amphibians probably occurs.

The wetlands on the north side of Route 126 adjacent on the Hollenbeck River are part of a large area of wetlands and serve an important function as wildlife habitat. Otter, beaver, mink, snapping turtles, water snakes, blue herons, various species of waterfowl and birds such as tree swallows, warblers and sparrows could make use of this area. This area, because of its high diversity, provides abundant food and cover for numerous species. Because it is part of a larger highly diverse wetlands, it is all the more valuable to wildlife.

Because wetlands increase the habitat diversity of an area and offer a variety of food and cover to wildlife, they are important areas to preserve and set aside as open space, if possible. Acre for acre, wetlands and their associated riparian zones exceed all other land types in wildlife productivity. In addition to their value as wildlife habitat, wetlands serve other valuable functions including water recharge, sediment filtering, flood storage, etc. For these reasons, the development of, filling in and/or

crossing should be avoided or limited whenever possible. These functions and values mainly apply to the wetlands associated with the Hollenbeck River, and to a lesser extent to the previously disturbed wetland areas that are now lawn.

Forest: Forest covers a major portion of the property. There are hardwood stands, hardwood/softwood stands and softwood or evergreen stands included in the major property area, south of Route 126. Species in the forest include oaks, shagbark hickories, black and white birches, sugar maple, wild cherry, along with many others. Evergreen species include hemlock and white pine. The majority of the forest cover is mature in age.

Mature forested areas provide roosting and nesting places, areas of cover and areas to feed in. Oaks provide acorns for species like deer, squirrel and turkey. Hickories provide additional mast for food. Maple seeds, buds and flowers provide food for many kinds of birds (chickadees, evening, pine and rose-breasted grosbeak, goldfinch and purple finch).

The brook that cascades down through a boulder strewn ravine adds to the value of this area for wildlife. In addition to providing a source of water, it provides additional habitat for mammals, reptiles and amphibians. Reptiles and amphibians may spend all or part of their life cycle here. Therefore, brooks are often used by predators such as raccoons, foxes and mink which sometimes utilize reptiles and amphibians as prey. Some species, especially predators, use brook systems to travel along.

The snag trees (dead trees) on the property provide insects for a variety of wildlife such as woodpeckers, chickadees and other insect eating birds. The den trees (trees with holes) scattered throughout the property, provide cavities for nesting owls, swallows, etc. These cavities also provide denning sites for raccoons, etc.

Stands of pine and hemlock are scattered over the area. Most stands contain mature trees, although younger conifer cover is found near the road. These stands

are important to a variety of wildlife. Some species, such as red squirrel, derive all of their year-round requirements from conifer stands. An even greater array of species utilize conifers as an essential or highly desirable habitat component on a year-round or seasonal basis. Species such as turkey vultures, ruffed grouse, deer, certain raptors and many songbirds use conifers as preferred roosting and/or loafing cover. Some species such as the mourning dove, goshawk, sharp-shinned hawk and robin may frequently use hemlock stands for nesting. Snowshoe hares and ruffed grouse utilize stands of conifer for cover. Conifer seeds are eaten by crossbills, pine grosbeaks and red squirrels. The foraging activity of predators such as the red fox, weasel and coyote in areas of conifer is often increased during winter months because of the intensified use of these areas by wildlife in general. Small patches of evergreen mixed in with the hardwoods are useful as cover and increase the interspersed of habitat types.

Forested areas on-site provide habitat for many species such as red squirrel, squirrels, deer, foxes and various songbirds who might derive all of their needs from this area. For larger ranging species requiring more space and additional habitat variation, this forest provides some of the habitat in conjunction with the large wetlands nearby, farmland and more large contiguous tracts of unbroken forestland.

Parts of the forest have thick understory, especially where the moister soils occur. A thick understory provides cover and nesting sites and can provide food in the form of berries which are produced by various shrubs. A variety of shrubs and trees in the understory provide vertical diversity. In general the greater the vertical diversity, the greater the diversity of bird species there will be using an area.

Old Field/Pasture: Between the currently maintained lawn and the mature forest there lies a zone of reverting vegetation that was once open field or pasture. This area contains a variety of grasses, herbaceous plants, fruiting shrubs, red cedar and saplings that provide a variety of food and cover for many species of wildlife.



The open fields can provide important nesting habitat for ground nesting species like Eastern Meadowlark and the Bobolink. Species like the Eastern bluebird could be expected to nest in areas such as this, if a suitable cavity exists. The bluebird, like many other species of birds, forages on the abundant insects produced in open areas. These open fields also provide habitat for small mammals. Therefore, birds of prey often utilize these areas to hunt.

Whatever type or combination of types of areas are set aside, whether wetlands or forestland, setting aside an "island of open space" surrounded by development is the least desirable for wildlife. The area should have natural travel pathways for wildlife (such as streams, valleys and ridgetops) to enter and exit to other open space areas outside the development. The open space area is more valuable to wildlife if not traversed by roads which may impede the movement of wildlife at times. Setting aside a combination of habitat types in conjunction with wetlands is desirable.

As proposed, approximately 50 acres of the steepest section of the property would be set aside as open space. This area would lie behind the proposed homes and their respective lots. Access would be via Route 126 up an old logging road. This area of property provides an excellent mature mixed hardwood/softwood forested habitat, and the presence of the brook only serves to make it more useful as wildlife habitat.

Certainly, if the Town does not have interest or the resources to administer ownership of this piece of property, consideration should be given to the State of Connecticut as recipients of the property. The area lies very close to a large portion of state forest land, the Barrack Mountain area of the Housatonic State Forest. Thus the land and habitat value would be conserved, and the area open to the same forms of recreation as other sections of undeveloped state forest.

### Wildlife Resources/Recommendations

As with any development, the impact on wildlife habitat in general will be negative. A sizeable area will be broken up and lost with the construction of roads, driveways, walkways, parking areas and homes. Habitat will be lost where cover is cleared for lawns and landscaping. Another impact is the increased human presence, vehicular traffic and a number of free roaming dogs and cats. This could drive the less tolerant species from the site, even in areas where there has been no physical change.

Certain species which are adaptable to man's activities may increase due to his presence and associated nuisances may occur. Typical species which can become a nuisance include pigeons, starlings and raccoons. Here, as in many other developments, deer will probably be a common occurrence in the area and in the backyards of residents. New residents should understand that successfully growing gardens or certain ornamental shrubs may require such precautions as repellents and fencing.

Obviously, development in the land along the Hollenbeck River should be restricted to limit the impact to valuable wetland habitat. Beaver are quite common in the Robbins Swamp area. Beaver take up residence at various places along the Hollenbeck River depending on food availability and other factors. Because of their habits of dam building and because they eat the bark of trees and also use it for building materials, beaver can markedly change the habitat. Although these changes are not always negative from a wildlife habitat standpoint, they can conflict with the intended use man has in an area. Dam building can sometimes cause flooding of low lying areas, damage trees, etc. Beaver trapping, during the regulated beaver trapping season, is used to manage population levels and to reduce nuisance problems.

Reportedly, ravens have been seen in the area of the hillside proposed for development. This is certainly possible because there are several nesting sites in Northwest Connecticut in mountainous or hilly areas. Ravens are a species with a northern range, thus it would be uncommon to see them throughout Connecticut. However, experts believe ravens are naturally extending their range southward. Northern Connecticut, limited to the Northwest corner, is currently the southern tip of their range, as it is for many other species with a northern range. Therefore, a raven could be seen in the Barrack Mountain area, and ravens might at some future time expand their nesting places to other hilly areas if habitat requirements were met.

In a small but heavily developed and populated state like Connecticut, where available habitat continues to decline on a daily basis, it is critical to maintain and enhance existing wildlife habitat where possible.

Large houselots, as proposed in this development, are preferable to many small houselots. Numerous houses set on small lots augment the negative impact to wildlife habitat. For most species, large houselots leave more habitat intact for wildlife to utilize.

In planning and constructing a development there are steps that should be considered in order to help minimize adverse impacts on wildlife.

- 1) Maintain a 100 foot (minimum) wide buffer zone of natural vegetation around all wetland/riparian areas to filter and trap silt and sediments and to provide some habitat for wildlife.
- 2) Utilize natural landscaping techniques (avoiding lawns and chemical runoff) to lessen acreage of habitat lost and possible wetland contamination.
- 3) Stone walls, shrubs and trees should be maintained along field borders.
- 4) Early successional stage vegetation (i.e., field) is an important habitat type and should be maintained if possible.

- 5) During land clearing, care should be taken to maintain certain forest wildlife requirements.
  - a) Encourage mast producing trees (i.e., oak, hickory, beech). A minimum of 5 oaks per acre, 14 inches dbh or greater should remain.
  - b) Leave 5 to 7 snag/den trees per acre, for they are used by birds and mammals for nesting, roosting and feeding.
  - c) Exceptionally tall trees, used by raptors as perching and nesting sites, should be encouraged.
  - d) Trees with vines (i.e., fruit producers) should be encouraged.
  - e) Brush debris from tree clearing should be piled to provide cover for small mammals, birds, amphibians and reptiles.
  - f) Shrubs and trees which produce fruit should be encouraged (or can be planted as part of the landscaping in conjunction with the development) especially those that produce fruit which persists through the winter (winterberry). See Appendix B for a list of suggested shrub and tree species that can be encouraged and/or planted to benefit wildlife.
- 6) Nesting sites can be provided for a great variety of birds with placement of artificial nest boxes.

Large houselots and implementation of the suggested guidelines may help to minimize the adverse impacts to local wildlife populations. Implementation of backyard wildlife habitat management practices should be encouraged. Such activities include providing food, water, cover and nesting areas.

If large houselots cannot be provided, cluster housing should be considered. By clustering the homes together, less land is disturbed and built on, and therefore more remains to be utilized for wildlife habitat.

## THREATENED AND ENDANGERED PLANT AND ANIMAL SPECIES

According to the Natural Diversity Data Base, there are no Federal Endangered and Threatened Species or Connecticut "Species of Special Concern" that occur at the area in question.

Two Connecticut "Species of Special Concern" are, however, known from the general area. The following information is provided for consideration in determining if any proposed activities may adversely affect these species.

Pontamogeton hillii, Hill's Pondweed 1984: This plant is known from this area of the Hollenbeck River. It grows in shallow calcareous water. Refer to Figure 8 for locational information.

Cottus cognatus, Slimy Sculpin 1966: Last collected in 1966, this species is found in clear cold freshwaters of rocky streams and headwaters, particularly those with vegetation. This species is indicative of high water quality.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Figure 8

# BARRACK MOUNTAIN SUBDIVISION

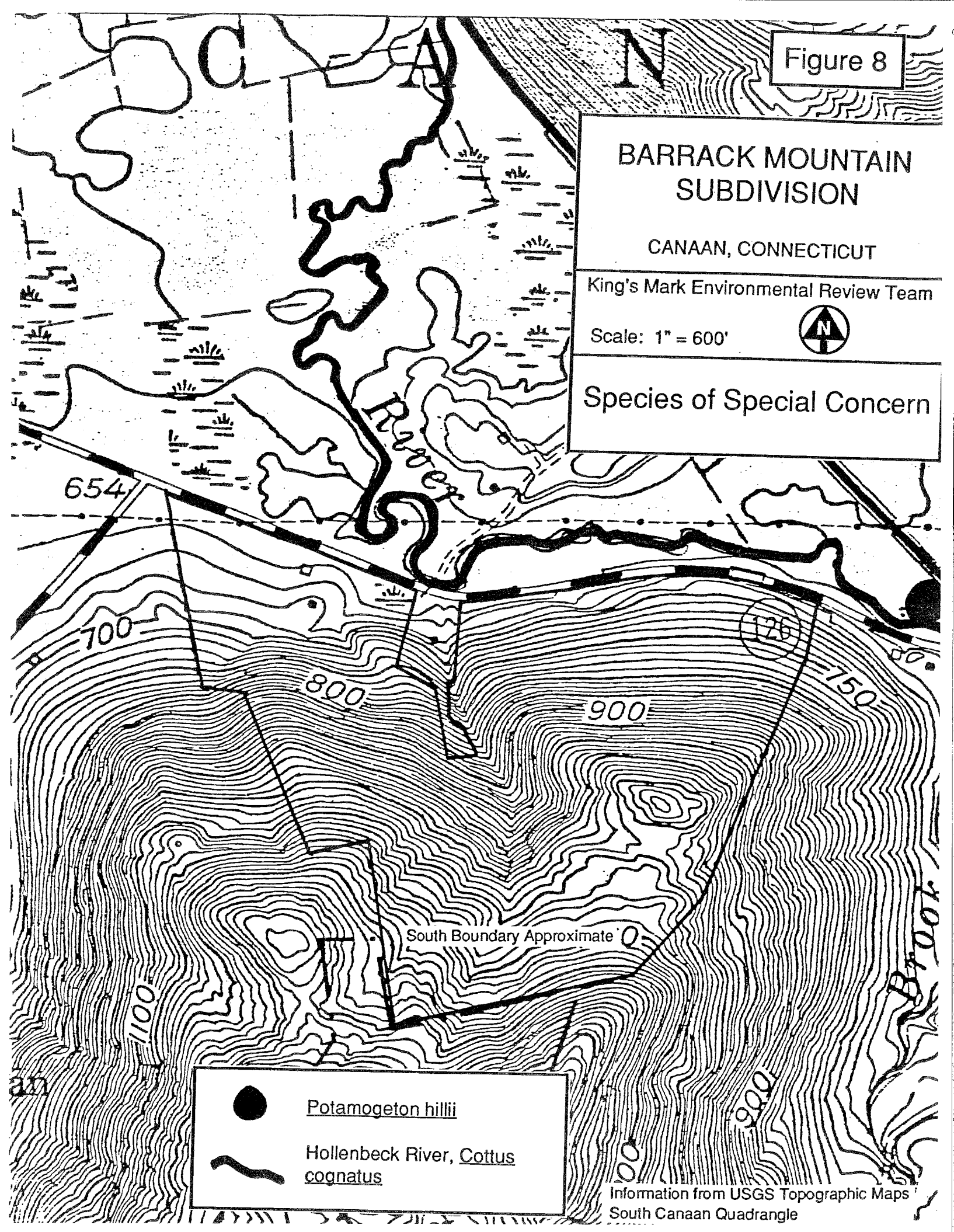
CANAAN, CONNECTICUT



King's Mark Environmental Review Team

Scale: 1" = 600'



Species of Special Concern



-  Potamogeton hillii
-  Hollenbeck River, Cottus cognatus

Information from USGS Topographic Maps  
South Canaan Quadrangle

archaeological reconnaissance survey should be considered for Lots 1 through 5 (see Figure 9) in order to locate and identify all prehistoric and historic resources which might exist in the project area. The steepness of the slope throughout much of the remainder of the property would make locating evidence of prehistoric occupation unlikely. Since building will be restricted to the lower portions of the parcel, sites, if they exist, at higher elevations will not be disturbed. All archaeological studies should be undertaken in accordance with the Connecticut Historical Commission's Environmental Review Primer for Connecticut's Archaeological Resources.

In summary, the project area is located in a critical area of importance to prehistoric Indians. All feasible efforts should be made to identify and ensure the preservation and conservation of the cultural resources in the project area.

Figure 9

# BARRACK MOUNTAIN SUBDIVISION

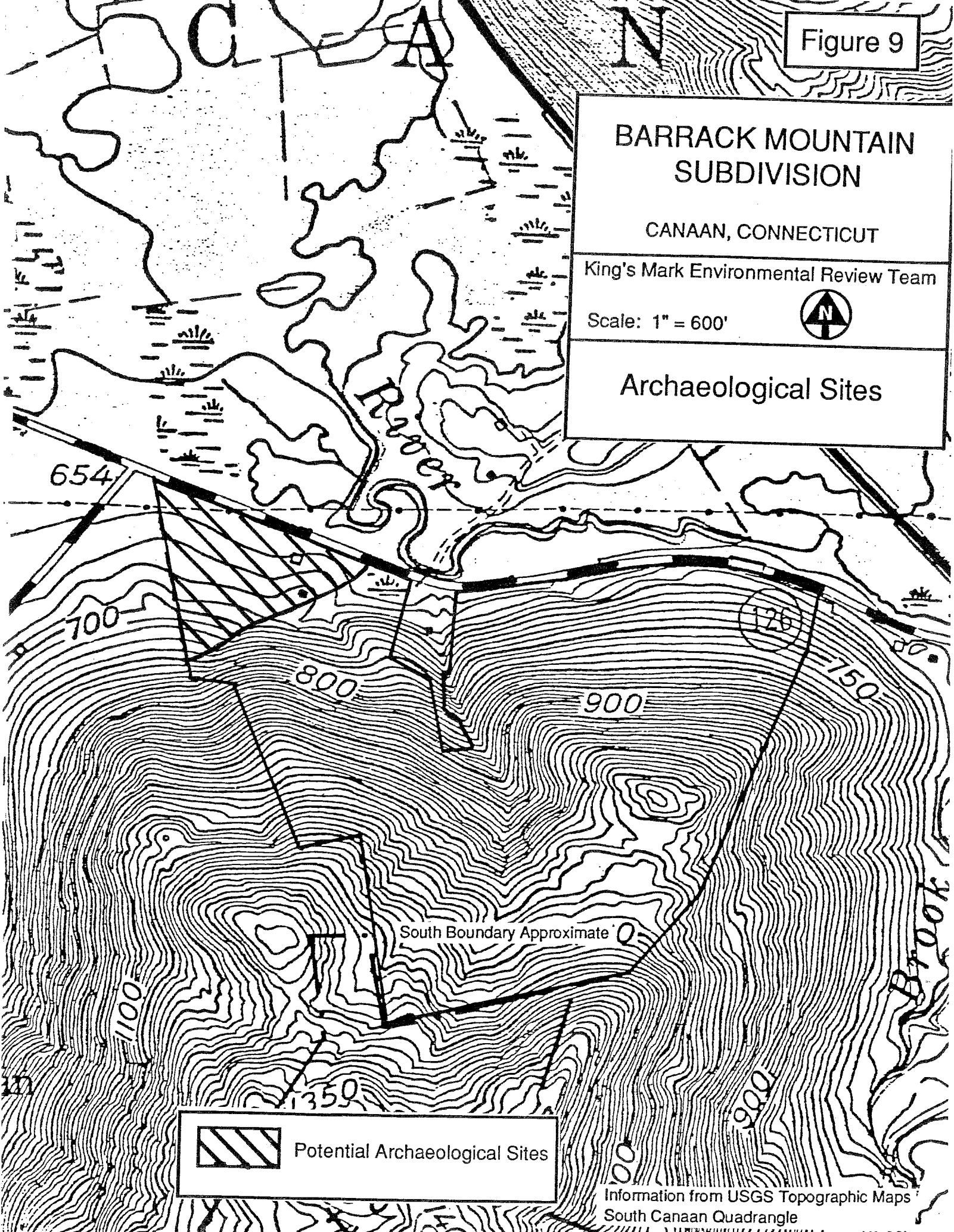
CANAAN, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 600'



## Archaeological Sites



Potential Archaeological Sites

Information from USGS Topographic Maps  
South Canaan Quadrangle



## TRAFFIC CONSIDERATIONS

Appendix C indicates Average Daily Traffic (ADT) on state roads in the area of the proposed development. ADT indicates some traffic growth, but not an unusual increase for a rural Town in Connecticut.

The steep topography on-site presents difficulty in design of the proposed subdivision.

### New Road Proposal

This proposal had up to 20 residential lots with an internal access road and cul-de-sac at the east end of the project. The roadway grade would be steep. The primary benefits include fewer access points on Route 126 and improved surface water management.

### Without Road Proposal

This proposal provides for 14 residential lots with individual lot access to Route 126. This proposal has a greater impact on traffic operations, steep driveways and less control of surface water drainage requiring drainage improvements on the south side of Route 126.

### Recommendations

- 1) A single east-west internal roadway serving the majority of the proposed lots should be reconsidered. This might be accomplished with a sweeping curve from Route 126 to the east-west roadway. A cut will have to be made to construct an east-west road based on the natural topography.
- 2) Individual lots fronting on Route 126 will have excessive cuts to facilitate driveway access with a reasonable grade. Drainage improvements on Route 126 will be required. Sightlines for driveways will be a major consideration.
- 3) Either proposal will require coordination with this Department's District 4 office in Thomaston to determine what permits will be required. This should be accomplished early in the final design phase of the project.

## OPEN SPACE CONSIDERATIONS

Four parcels of land are currently being considered for use as open space in conjunction with the Barrack Mountain Subdivision. These are shown in Figure 10. Property boundaries shown are approximate. These parcels are listed as Parcel A through D and are described below. The soils found on these parcels are described in the soil limitation tables in Appendix A.

### Parcel A

This parcel is shown on both subdivision options submitted for review. It is located on the 118-acre parcel of land proposed for subdivision. Access to the property under both subdivision proposals is via a 50 foot wide strip of land off Route 126. The access is very steep and crosses 2 wetland areas. Access to the property may also be possible through Housatonic State Forest. The land in the parcel is very steep. Two soils mapped in this area are Hollis (HrC and HrE) very rocky fine sandy loam, 3-15% slopes and 15-35% slopes which are shallow to bedrock. The other soil mapped is Charlton (CrD) very stony fine sandy loam, 15-35% slopes.

The land is generally unsuited to development due to its soil conditions. Limited suitable access to equipment makes this property generally unsuited to common forestry practices. If left in open space it has a high value as scenic vista/ridgetop protection. It also has a value for wildlife habitat, nature study and passive recreation.

There are currently two ownership options being considered for this parcel: State or Town. The land is adjacent to Housatonic State Forest and could perhaps be added to this forest area, if accepted by the State. This option would put the burden of management on the State. The Board of Selectmen has shown interest in the parcel as a Town Forest. This option, if accepted, puts the burden of management and overseeing the property on the Town. Both scenarios would remove the land from the

tax rolls. Undeveloped land requires no Town services and therefore is not a burden to the tax payers. It also protects the rural character of the community and enhances the surrounding area. Protection of ridgelines is especially important.

#### Parcel B

This open space parcel is located across Route 126 from the Barrack Mountain Subdivision. It is approximately 3 acres in size and bounded to the north and east by the Hollenbeck River. Access to the property is by frontage on Route 126. The property is adjacent to a State owned wildlife area.

The property is nearly level. The soils on the parcel are Limerick silt loam (Lm), Eel silt pan (Ee), and Genesee silt loam (Gf). These soils are all floodplain soils and are regulated by the Inland Wetlands and Watercourses Act. The Lm soil is also a regulated inland wetlands soil, with a high water table most of the year.

The parcel has a high value as agricultural open space land. The Gf and Ee soils are both rated nationally as Prime Farmland Soils. The Lm soil is rated as a soil with Statewide Importance for agriculture. Soil wetness is a problem on the Lm and Ee soils. Flooding is a problem on all the soils and may cause crop damage.

Soil conditions and State regulations make this land unsuited to development. As a stream corridor, the land has a very high value as wildlife habitat, if left in its natural state or farmed. The property also has a high value for nature study and passive recreation, due to its proximity to the subdivision and access to the Hollenbeck River.

Two potential owners of this open space parcel are being considered. They are the State or a Barrack Mountain Subdivision Homeowner's Association. With the homeowner's association, public access may be limited and the property would remain taxable.

Figure 10

# BARRACK MOUNTAIN SUBDIVISION

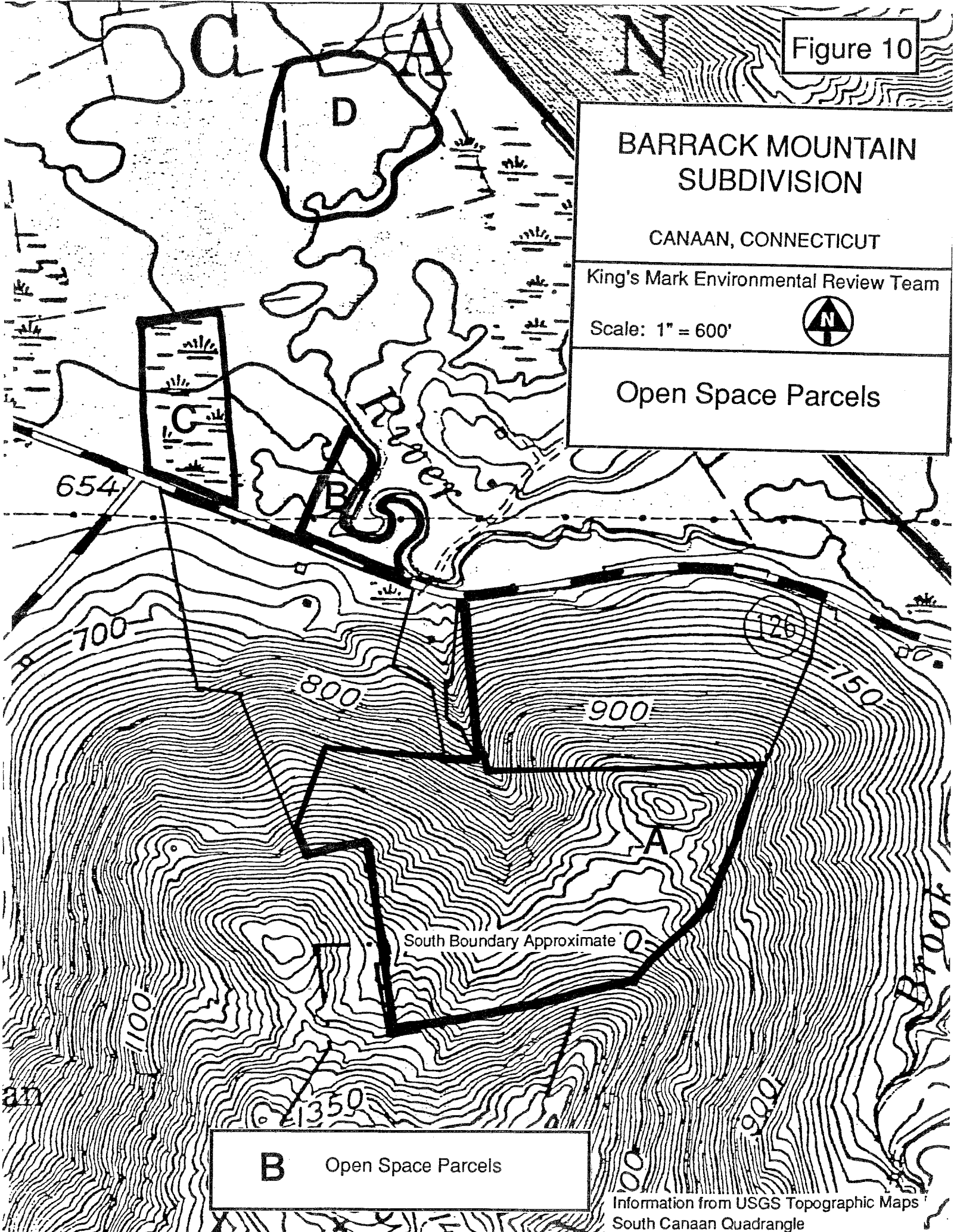
CANAAN, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 600'



Open Space Parcels



**B** Open Space Parcels

Information from USGS Topographic Maps  
South Canaan Quadrangle

The ownership options being considered are State or homeowner's association.

Comments

- 1) The open space parcels tie in very well with other surrounding preserved open space land.
- 2) All 4 parcels being considered for open space have important open space values and are worth preserving.
- 3) A conservation easement may be needed on all 4 parcels to limit the types of activities which can occur and regulate the land management practices. A conservation easement could help protect the open space values of the parcels. On parcels B, C and D the easement would be in addition to regulation by the Inland Wetlands and Watercourses Act. The Litchfield County Soil and Water Conservation District can be contacted for further information on Conservation Easements and other land preservation techniques.

Appendix A: Soil Limitations Chart

**TABLE 1: Soil Symbols and Mapping Unit Names**

Soil Symbol	Soil Mapping Unit Name
CrD	Charlton very stony fine sandy loam, 15-35% slopes
DvC	Dover stony fine sandy loam, 8-15% slopes
Ee	Eel silt loam
FaE	Farmington very rocky silt loam, 15-35% slopes
Gf	Genesee silt loam
GrC	Groton gravelly sandy loam, 3-15% slopes
HeA	Hero loam, 0-3% slopes
HrC	Hollis very rocky fine sandy loam, 3-15% slopes
HrE	Hollis very rocky fine sandy loam, 15-35% slopes
Lm	Limerick silt loam
Ma	Made land
Sb	Saco silt loam
Tg	Terrace escarpments
WvA	Windsor loamy fine sand, 0-3% slopes

TABLE 2: Soil Characteristics Important to Development

Soil Symbol	Permeability (in/hr)	K	Corrosivity to Steel Conc.	Flooding	Water Table Depth (ft.)	Water Table Kind	High Water Months	Depth to Rock (in.)	Frost Action
CrD	0.6-6.0	0.20	low	high	none	>6.0	---	>60	low
DvC	0.6-2.0	0.24	low	low	none	>6.0	---	>60	mod
Ee	0.6-2.0	0.49	mod	low	comm	1.5-2.0	Jan-May	>60	high
FaE	0.6-2.0	0.32	low	mod	none	>6.0	---	10-20	mod
Gf	0.6-2.0	0.49	low	low	comm	3.0-6.0	Nov-May	>60	high
GrC	2.0-20	0.17	low	low	none	>6.0	---	>60	low
HeA	0.6-6.0	0.32	mod	low	none	1.5-2.5	Nov-Apr	>60	high
HrC	0.6-6.0	0.17	low	high	none	>6.0	---	10-20	mod
HrE	0.6-6.0	0.17	low	high	none	>6.0	---	10-20	mod
Lm	0.6-2.0	0.49	high	low	freq	0-1.5	Nov-Jun	>60	high
Ma	---	-0-	---	---	---	---	---	---	---
Sb	0.6-2.0	0.49	low	mod	freq	0-0.5	Sep-Jun	>60	high
Tg	6.0-20	0.2	low	high	none	>6.0	---	>60	low
WvA	>6.0	0.17	low	high	none	>6.0	---	>60	low

---no data available

Flooding Classes

None  
Occasional  
Common  
Frequent

K-Erodibility Factor  
.10 - .24 - Low Erodibility  
.28 - .37 - Medium Erodibility  
.43 - .64 - High Erodibility



Appendix B: Suitable Planting Materials for Wildlife Food and Cover

## SUITABLE PLANTING MATERIALS FOR WILDLIFE FOOD AND COVER

### Herbaceous/Vines

Panicgrass  
Timothy  
Trumpet creeper  
Grape  
Birdsfoot trefoil  
Virginia creeper  
Switchgrass  
Lespedeza  
Bittersweet  
Boston Ivy

### Shrubs

Sumac  
Dogwood  
Elderberry  
Winterberry  
Autumn olive  
Blackberry  
Raspberry  
Honeysuckle  
Cranberrybush

### Small Trees

Hawthorn  
Cherry  
Serviceberry  
Cedar  
Crabapple

## Appendix C: Average Daily Traffic

Average Daily Traffic

<u>Route 7</u>		<u>Route 63</u>		<u>Route 126</u>	
<u>East of Route 63</u>	<u>West of Route 63</u>	<u>North of Route 126</u>	<u>South of Route 126</u>	<u>West of Route 63</u>	<u>West of Route 63</u>
400	2000	950	1600	750	1985
400	2100	1200	2100	1400	1988

## NOTES

# 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, soil scientists, foresters, climatologists, landscape architects, recreational 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 - an 83-town area serving western Connecticut.

As a public service activity, the Team is available to serve towns and/or developers within the King's Mark RC&D Area - free of charge.

## Purpose of the Environmental Review Team

The Environmental Review Team is available to assist towns and/or developers in the review of sites proposed for major land use activities. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreational/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 site and highlighting opportunities and limitations for the proposed land use.

## Requesting an Environmental Review

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the land owner/developer allowing the Team to enter the property for purposes of review and a statement identifying the specific areas of concern the Team should investigate. When this request is approved by the local Soil and Water Conservation District and King's Mark RC&D Executive Committee, the Team will undertake the review. At present, the ERT can undertake approximately two (2) reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or Nancy Ferlow, ERT Coordinator, King's Mark Environmental Review Team, King's Mark RC&D Area, 322 North Main Street, Wallingford, Connecticut 06492. King's Mark ERT phone number is 265-6695.