

KING'S MARK ENVIRONMENTAL REVIEW TEAM



REPORT FOR

**BROOKWOODS  
SUBDIVISION**

HARWINTON,  
CONNECTICUT

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

# **BROOKWOODS SUBDIVISION**

## **HARWINTON, 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

Harwinton 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
- \* Alan Page, Soil 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
- \* Richard Lynn, Planner  
Litchfield Hills Council of Governments

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 Robert Ferrarresso of the Harwinton Inland Wetlands Commission, Bill Bennett, volunteer for the Soil Conservation Service, and Arthur Howland, engineer for the developer, for their cooperation and assistance during this environmental review.

## EXECUTIVE SUMMARY

### Introduction

The Harwinton Inland Wetlands Commission has requested that an environmental review be conducted on Brookwoods, a 25.55-acre site proposed for subdivision development. The site is located in northcentral Harwinton, east of the East Branch Leadmine Brook. It contains second growth hardwood forest with some open areas, small brooks and several large areas of wetlands. The wetland area of Leadmine Brook abuts the site and the 500-year floodplain covers the westernmost section of the site. A driveway for the house to the west of the site runs through proposed Lots 3 and 4.

The proposed subdivision would encompass 7 house lots, ranging in size from 2.0 acres to 5.0 acres. Each lot will be served by a private driveway. Four wetland crossings (Lots 3, 5, 6 and 7) are proposed. The existing driveway would be abandoned and a new drive constructed on the eastern border of the property. This will create another wetland crossing. The subdivision 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:

### Setting, Zoning and Land Use

The site is bounded by Leadmine Brook Road, North Road, the floodplain of East Branch Leadmine Brook and private undeveloped land. The vicinity is characterized by single-family houses and some agricultural land. The property is located in a potential water supply reservoir watershed. Zoning for the site is 87,000 square feet minimum density or approximately 2 acres.

### Topography

The site slopes gently with elevations ranging from 790 to 870 feet above sea level. Bedrock was not observed on the site, but surface boulders were common.

### Geology

The bedrock that underlies the site has been identified as a subunit of the Hartland Formation Unit II. Deep test holes indicate that the bedrock is below 7 feet in most cases. Mapping indicated that the depth to bedrock ranges from less than 10 feet to less than 39 feet. Covering the bedrock is glacial till in the east and stratified drift in the west. The texture of the till ranges from very stony and loose to silty and very stony. The silty variety has a shallow compact zone which results in high water tables, mottling and slow percolation. These characteristics can hinder on-site

sewage disposal and driveway construction. There is also the potential for wet basements. Engineered septic systems and footing drains can help alleviate these problems. The stratified drift deposits are mostly gravel. Some have been mined in the past. These deposits are noted for rapid percolation rates.

### 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. The subdivision should only cause minor changes in the bedrock aquifer. The recharge rate should be more than adequate to balance the water demand. The spacing of 200 feet between wells should minimize the chances for mutual interference. The initial quality of the ground water should be good. There may be elevated iron and manganese levels which may necessitate appropriate treatment systems. The site is located in a potential public water supply watershed. Since leakage from underground fuel storage tanks is a frequent source of contamination, it is suggested that tanks be put in basements or concrete vaults.

### Sewage Disposal

Soil testing has been done by the applicant. Correspondence with the Torrington Area Health District indicates that most septic systems will require special design and that houses on 3 lots should be restricted to 3 bedrooms. The presence of seasonally high water tables is a major concern. Groundwater control methods will be needed to insure that the high water table does not interfere with septic system functions. Special care needs to be taken with lots in sandy and gravelly soil. If percolation rates are rapid, the separating distances between wells and septic systems need to be doubled. Before approval of the subdivision, each lot should be in compliance with the State Public Code and Technical Standards.

### Hydrology

Drainage from the site flows into East Branch Leadmine Brook. Because the density of the project is low, no interior roads are proposed and the proximity of the site to the floodplain, increases in runoff should not be significant. The floodplain and the wetland pockets on the site should have ample storage capabilities for post-development runoff increases from the subdivision.

The subdivision plan calls for 4 wetland driveway crossings plus some potential infringement from grading another driveway and the relocation of the driveway for the property to the west. The relocated driveway will cross a Zone B area (500-year floodplain). This area has natural flood detention capabilities and filling might diminish these. Also, if the driveway is inundated during a flood event, emergency access may be cut off. All wetland crossings will require a permit by the Inland Wetlands Commission. The following information should be provided to aid the Commission in its decision: (1) amount of fill to be placed on regulated soil; (2) the extent of fill lines; (3) type of fill material to be used; and (4) the texture of the wetland soils and whether or not they will need to be removed and replaced. Wetland

crossings are feasible provided they are properly engineered. If the crossings are permitted, work should be done during the dry time of the year to reduce erosion and sedimentation. Also, if zoning permits, some wetland impacts could be reduced if the driveways for Lots 6 and 7 were combined.

### Soil Resources

The soils on the site consist of CrC, Lg, MyB, PeC, Rg, Sf, Tg, TwB, Wl and WzC soil mapping units.

### Erosion and Sediment Control

The soil erosion and sediment control plan appears adequate. Additional suggestions include using silt fence instead of haybales, maintaining the controls until all construction activities in the area are completed and the disturbed area has been stabilized, including silt fence on both sides of the driveway crossings, establishing the 100-year floodplain for driveway consideration, providing seeding information on the plans and installing and maintaining controls properly. Construction activities on steep slopes and near wetlands must be carefully monitored and adjustments made, if necessary, to protect the resources from erosion or sediment damage.

### Wetland Considerations

The majority of wetlands found on the site are associated with drainage swales and watercourses. Wetland functions include drainage and water conveyance, wildlife habitat, water renovation and aesthetics. The wetlands associated with the East Branch Leadmine Brook provide flood storage.

Due to the small number of lots proposed, relatively large lot size and the lack of an internal road system, many of the impacts to wetlands have been reduced. Direct impacts to the wetlands include 4 driveway crossings. Impacts from the crossings of Lots 6 and 7 could be reduced if these driveways were combined. These crossings have been designed to minimize the wetland impacts. The relocated driveway is of concern. This will be an additional wetland crossing and should be included as part of the application. The Wetlands Commission should consider this proposal in light of prudent and feasible alternatives.

Suggestions for reducing the wetland impacts include considering a dual access driveway for Lots 6 and 7, having the final septic system designs reviewed by the Torrington Area Health District, evaluating the relocated driveway with the subdivision application and establishing a comprehensive sediment and erosion control plan.

### Wildlife Considerations

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

the site is small, its proximity to the wetlands of East Branch Leadmine Brook provides the diversity of habitat needed by wildlife. The site offers good to excellent wildlife habitat.

The intermittent presence of beaver in East Branch Leadmine Brook may cause flooding in the area. Beaver trapping is used to manage population levels and reduce nuisance problems.

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. Large house lots are preferable to many small lots. Deed restrictions prohibiting the use of or change of wetlands should be considered. Using the wetlands for pasturing animals, lawns or gardens should be restricted.

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. The wetlands associated with East Branch Leadmine Brook are identified as a Natural Areas Inventory site. Being listed as a NAI site does not impart any restrictions or provide legal protection; it identifies areas that should receive consideration before any proposed development is approved.

#### Planning Considerations

The site is located in a country residence zone. The surrounding land is zoned for town or country residential development. Surrounding land uses include undeveloped woodland, wetlands and residences. The project appears to be compatible with existing and proposed land uses in the area. The State Policies Plan for the Conservation and Development of Connecticut, 1987-1992 identifies the area as "conservation area" because it is located within a potential public water supply watershed. The project appears to be consistent with the state plan, the Litchfield Hills CEO preliminary housing policy and the zoning regulations of Harwinton provided care is taken to minimize wetland disturbance and protect water quality on the site. Harwinton's subdivision regulations provide for the reservation of land for open space, parks and playgrounds. The project has no reserved land. The Planning and Zoning Commission may or may not determine that an open space set aside is desirable for this project.

The proposed subdivision can be expected to add 70 vehicle trips to the surrounding roadways on an average weekday. North Road and Leadmine Brook Road are in good condition and should accommodate the traffic generated by the

project. Sightlines from the project appear adequate except for Lot 6 which may require tree pruning and brush removal.



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# INTRODUCTION



## INTRODUCTION

The Harwinton Inland Wetlands Commission has requested that an environmental review be conducted on Brookwoods, a 25.55-acre site proposed for subdivision development. The site is located in northcentral Harwinton, east of the East Branch Leadmine Brook. Access is provided by North Road to the east and Leadmine Brook Road to the north.

The site contains second growth hardwood forest with some open areas. Many small brooks and several large areas of wetlands run through the property. The large wetland area of Leadmine Brook abuts the site to the west. The 500-year floodplain for Leadmine Brook covers the westernmost section of the site. Leadmine Brook is prone to flooding. A driveway for the house to the west of the site runs through proposed Lots 3 and 4.

The proposed subdivision would encompass 7 house lots, ranging in size from 2.0 acres to 5.0 acres. Each lot will be served by a private driveway. Four wetland crossings (Lots 3, 5, 6 and 7) are proposed. The existing driveway would be abandoned, and a new drive constructed on the eastern border of the property. This will create another wetland crossing. The subdivision 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 hydrological and geological characteristics of the site, including geological development limitations and opportunities;
- 2) Determine the potential for the development to lead to further flooding in Leadmine Brook;
- 3) Determine the suitability of existing soils to support the proposed development;
- 4) Discuss soil erosion and sedimentation concerns;

- 5) Assess the impact of the development on the wetlands and watercourses;
- 6) Assess the impact of the development on the water quality of Leadmine Brook; and
- 7) Assess planning and land use issues.

### THE ERT PROCESS

Through the efforts of the Harwinton 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 1, 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

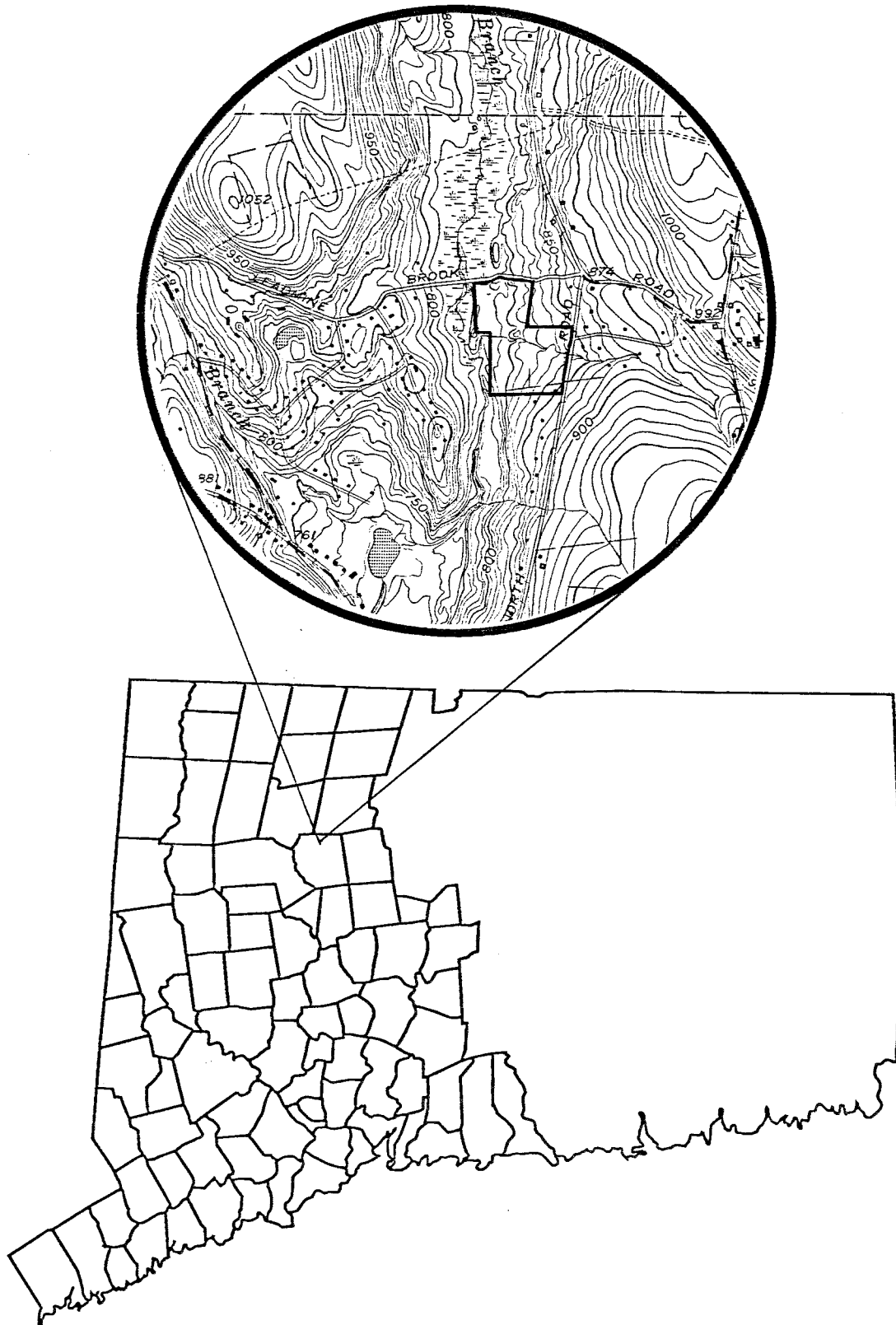
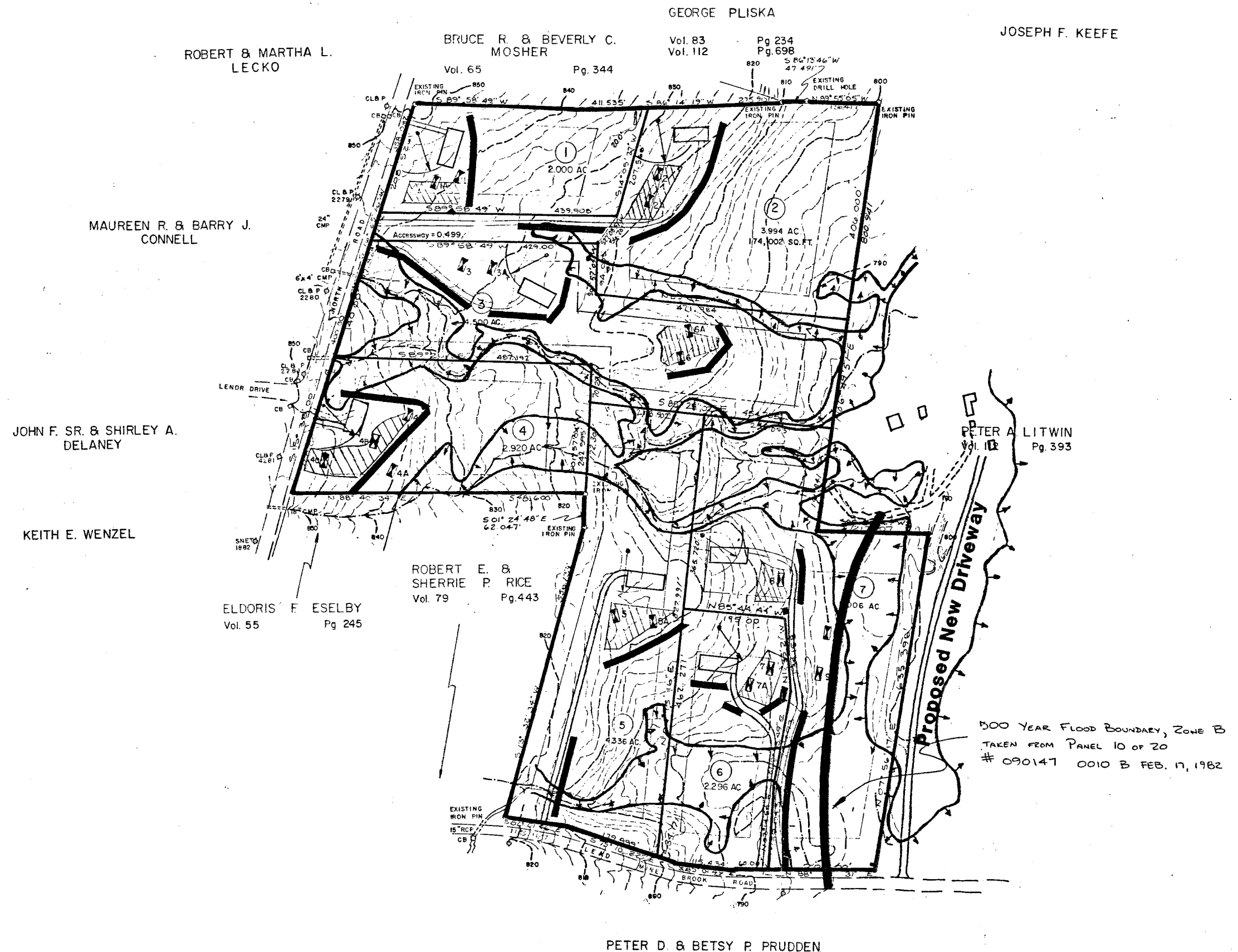


Figure 2



**BROOKWOODS  
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HARWINTON, CONNECTICUT

King's Mark Environmental Review Team

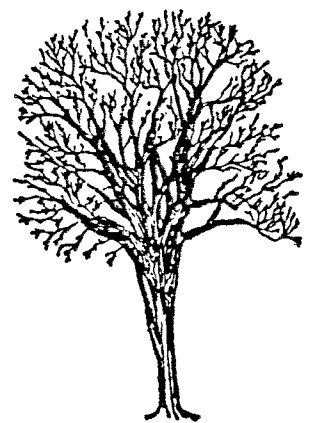
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**Proposed Site Plan**

Information from Arthur Howland, L.S., P.E.,  
Site Development Plan



## PHYSICAL CHARACTERISTICS



## SETTING, ZONING AND LAND USE

The site, 25.55 acres in size, is located in northern Harwinton near the New Hartford border. It is bounded on the north by Leadmine Brook Road, on the east by North Road, on the west by East Branch Leadmine Brook and its accompanying floodplain and on the south by private, undeveloped land. A gravel-based driveway, which serves an abutting property owner on the west and which presently traverses parts of proposed Lots 3 and 4, will be relocated west of the proposed Lot 7. The site is located in an area designated as potential water supply reservoir watershed lands by the Inter-Agency Water Resources Planning Board.

The site and vicinity is characterized by single-family homes. In addition, scattered agricultural fields are found in the surrounding area. Based on information supplied to Team members, the site is located in a zone which permits residential development at a minimum density of 87,000 square feet or approximately 2.0 acres. The site design concept is one of wooded house lots served by individual well and septic systems.

## TOPOGRAPHY

The site slopes gently from North Road to East Branch Leadmine Brook. Site elevations range from about 870 feet above mean sea level at the northeast corner of the property to about 790 feet above mean sea level along East Branch Leadmine Brook (see Figure 3). Bedrock exposures were not observed during the field review. Surface boulders are common throughout the site.

## GEOLOGY

Based on visual observations made during the field review and published geologic reports, the bedrock surface is not well exposed on the site. According to map QR-25 (Geologic Map of the Torrington Quadrangle Connecticut, by C.W. Martin, 1965-67) which encompasses the site, bedrock underlying the site has been classified as a subunit of Hartland Formation Unit II (see Figure 4).

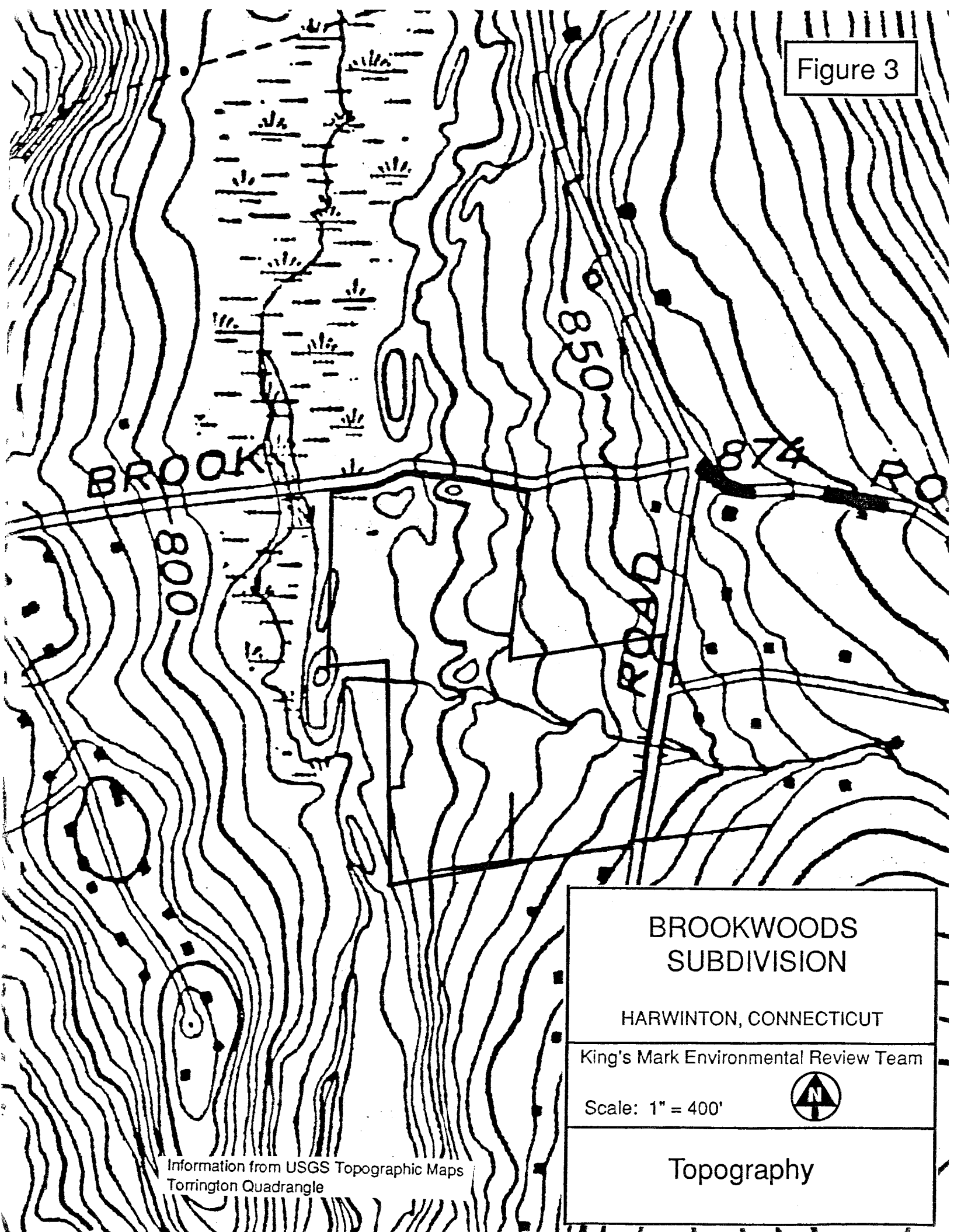
The rock unit is described as a medium-grained schist whose major minerals include muscovite, biotite and plagioclase. Schists are crystalline, metamorphic rocks which have been geologically altered by great heat and pressure within the earth's crust. The rocks underlying the parcel have undergone deformation (metamorphism) one or more times during the period following their deposition as deep ocean sediments. The stresses of deformation caused the alignment of platy, flaky and elongate minerals into thin sheets or bands. Where the alignment has resulted in a slabby rock (i.e., one that parts relatively easily along the surface of mineral alignment or foliation planes), the rock is termed a "schist."

Deep test hole information compiled for the exploration of subsurface sewage disposal indicates that depths of 84 inches or 7 feet were obtained in most holes. Depth to the bedrock surface is shallowest at the eastern limits of the site where it probably does not exceed 10 feet. It is deepest (39 feet or less) at the northwest corner of the site.

The underlying bedrock will serve as the principal aquifer for domestic water supplies on each lot. Since public water is not available in Town, all of the proposed lots will need to rely on drilled wells, cased with steel pipe and completed as open-bore holes into the underlying bedrock. (See Water Supply Section).

Two types of glacial sediments occur on the site: till and stratified drift. The eastern parts of the site are covered by glacial till (see Figure 5). Till is a poorly sorted

Figure 3



BROOKWOODS  
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HARWINTON, CONNECTICUT

King's Mark Environmental Review Team

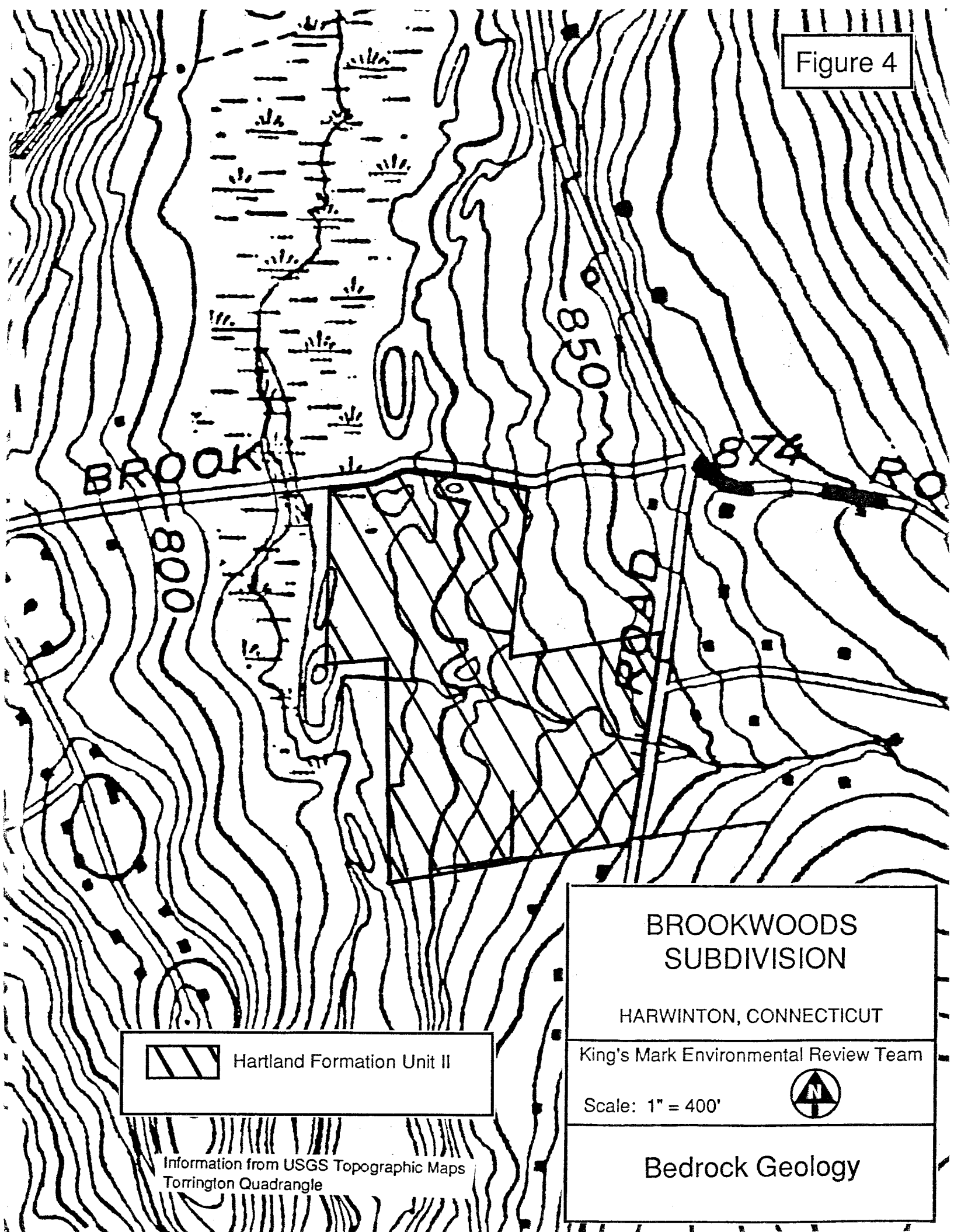
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Topography

Information from USGS Topographic Maps  
Torrington Quadrangle

Figure 4




 Hartland Formation Unit II

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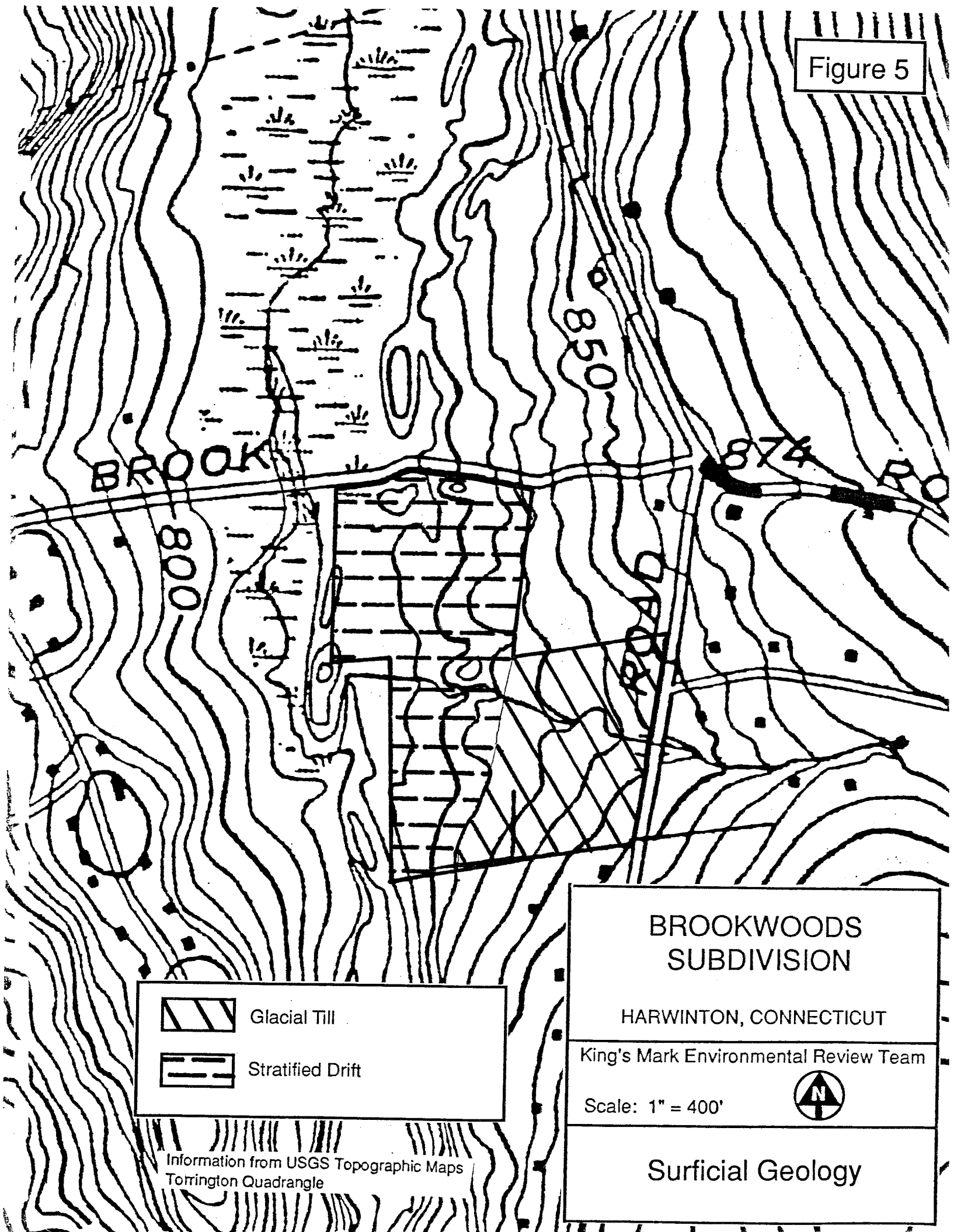
King's Mark Environmental Review Team


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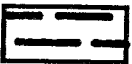
Bedrock Geology

Information from USGS Topographic Maps  
Torrington Quadrangle

Figure 5



 Glacial Till

 Stratified Drift


Information from USGS Topographic Maps  
Torrington Quadrangle

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Scale: 1" = 400'



Surficial Geology

mixture of rock fragments and particles deposited directly by glacier ice. Rock fragments and particles found in the soil were derived from surrounding schists and gneisses.

Based on soil mapping data for the area, the texture of the till covering the site ranges from sandy, very stony and loose in the northwest corner of the site to a silty, very stony variety at the southwest corner. The latter variety of till is characterized by a relatively shallow compact soil zone. The presence of this compact soil zone usually results in seasonally high water tables, soil mottling (an indicator of high groundwater tables) and moderately slow to slow percolation. Deep test hole data verifies that the till covering the site includes one or more of these characteristics. Without proper planning and engineering, the seasonally high water table can be a major hindrance in terms of on-site sewage disposal and road and driveway construction, especially in cut areas. Also there is the potential for wet basements. Consideration should be given to installing building footing drains on those lots characterized by seasonally high water tables. Footing drains should keep basements dry.

The western parts of the site are covered by stratified sands and gravels. The stratified drift deposits are mostly pebble-gravel sized. They were laid down by glacial meltwater streams in the East Branch Leadmine Brook Valley. The deposits have been mined in a couple of areas. The remains of the mined areas are visible on the site. Due to the highly permeable nature of the sand and gravel in these areas, it is expected that these deposits are characterized by rapid percolation rates. The exact thickness of the stratified drift on the site is unknown, but it probably does not exceed 39 feet.

Regulated wetland soils have been mapped on the site by a certified soil scientist. The wetlands which occur on Lots 2 through 7 generally parallel the west-flowing streamcourses on the site and East Branch Leadmine Brook.

## WATER SUPPLY

Based on the hydrogeologic setting and water supply in the vicinity of the site, the proposed subdivision will likely be served by individual wells that tap the underlying bedrock. Wells drilled in bedrock generally supply small (3-5 gallons per minute) but reliable yields of groundwater. Because the yield of a given well depends upon the number and size of water-bearing fractures that it intersects and because the distribution of the fractures is highly irregular, there is no practical way of predicting the yield of a well in a specific location, before drilling the well. Experience has shown that most water-bearing fractures occur in the top few hundred feet of the bedrock surface.

Based on the low density of houses proposed and 87,000 square foot minimum building lot size, the proposed subdivision should cause minor changes in recharge to the bedrock aquifer. Since no interior road system is proposed, there will be a relatively small increase in impervious surfaces.

Using some basic assumptions, the Team's geologist evaluated available recharge and predicted water use of the subdivision to estimate the potential impact on the bedrock aquifer. Specifically, recharge calculations show that the amount of water available to the site each day is about 15,179 gallons. This is based on groundwater recharge amounts of 8 inches per year for an upland, mostly till-covered site and parcel size of 25.55 pervious acres, allowing for infiltration. Predicted water use at the site is estimated at 2,100 gallons per day. This is based on a 75 gallons per day per capita water usage. An assumption of 4 persons per single-family residence was used.

Based on these figures, it is estimated that the planned subdivision will receive about 7 times the recharge as is necessary to balance water demand. In addition, induced recharge by properly renovated septic system effluent (about 95%) plays



important role in the groundwater budget. This stresses the need for properly designed and installed septic systems.

It must be kept in mind that the computations in the preceding paragraphs assume the underlying bedrock is fractured and is capable of transmitting usable amounts of water to the proposed wells. This cannot be determined exactly without first drilling the well(s).

The present lot layout should allow for a spacing of about 200 feet between domestic wells in the proposed subdivision. This will provide about 1 acre of direct discharge to each well, which should help to minimize the chances for mutual interference between pumping wells. The latter assumes the fractures in the underlying bedrock are saturated and capable of yielding water to a well.

In the Lower Housatonic River basin (in which the site lies), 68 domestic wells tapping crystalline bedrock (schist) were surveyed from Connecticut Water Resources Bulletin No. 19. Of these, approximately 90% yielded about 1 gallon per minute or more, 64% yielded 3 gallons per minute or more and 10% yielded 11.5 gallons per minute or more. In general, 3 gallons per minute is usually enough water for domestic purposes.

Each well should ideally be located on a relatively high portion of the lot, properly separated from the sewage disposal system or any other potential pollutant (e.g., fuel oil storage tank, etc.) and in a direction opposite the expected direction of groundwater movement. They should all be cased with steel pipe into the underlying bedrock. In order to provide adequate protection of the quality of bedrock water, all wells will need to be properly installed in accordance with all applicable State Public Health Code and Connecticut Well Drilling Board regulations. In addition, the Health District sanitarian will need to inspect and approve well locations.

The natural quality of groundwater should be satisfactory. However, the bedrock beneath the site may have elevated amounts of iron and/or manganese

minerals, which could lower the overall quality. There are suitable treatment filters available to ameliorate these potential water quality concerns.

Groundwater in the area is classified by the Department of Environmental Protection (DEP) as GAA, which means that it is presumed suitable for direct human consumption without treatment.

Since the site is located within the drainage area of a potential public water supply watershed and since leakage from underground fuel storage tanks is a frequent cause of groundwater contamination in the State, it is recommended that residential underground fuel storage tanks be prohibited on the site. Alternatives for fuel storage include putting the tanks in basements or concrete vaults.

### SEWAGE DISPOSAL

Soil and percolation testing have been conducted on each lot by the applicant's engineer. According to deep test hole data in written correspondence from the Torrington Area Health District which covers Harwinton, subsurface sewage disposal systems can be installed on each lot, although most lots will require specially designed (engineered) septic systems. Additionally, the report indicates that because of limited available land for subsurface sewage disposal due to wetland setback requirements, houses on 3 lots should be restricted to 3 bedrooms.

With regard to subsurface sewage disposal on the site, the presence of a seasonally high water table is a major concern. The presence of a seasonally high water table will necessitate the use of curtain drains and/or full systems to insure that groundwater does not rise up and interfere with the proper functioning of septic systems. The type of groundwater control method used must be determined by the soil condition and topography of each individual lot. Also, special care needs to be taken for the installation of septic systems in the sandy and gravelly soil in the

western parts. As noted earlier, these soils are characterized by rapid permeability. If percolation rates are faster than 1 minute per inch, the separating distance between wells and septic systems will need to be at least doubled.

To conclude, it appears that all lots can support on-site septic systems. The subdivision plans should not be approved until it is shown that each lot can support a septic system in compliance with the State Public Code and Technical Standards as determined by the Torrington Area Health District.

### HYDROLOGY

The entire site lies within the drainage area of East Branch Leadmine Brook. At its point of outflow to West Branch Leadmine Brook near Harwinton Center, East Branch Leadmine Brook drains 2.97 square miles or about 1901 acres. Surface runoff on the site drains either directly to East Branch Leadmine Brook and its accompanying floodplain or one of several west flowing streamcourses on the site which ultimately flow into East Branch Leadmine Brook.

Because the density of homes proposed is low, no interior road system is proposed and the site is in close proximity to the East Branch Leadmine Brook floodplain, the increase in post-development runoff should not be significant. The broad, flat floodplain west of the site as well as the wetland pockets on the site should have ample natural storage capabilities for handling post-development runoff increases from the subdivision. For these reasons on-site detention basin(s) will probably not be necessary, unless Town regulations require them or there are existing flooding problems downstream.

The proposed subdivision calls for four wetland driveway crossings on Lots 3, 5, 6 and 7. Additionally, it appears that grading for the driveway serving Lot 2 may also infringe upon wetlands. An existing driveway serving a residence west of the site,

which presently traverses Lot 4, will be relocated west of the proposed Lot 7 via Leadmine Brook Road. According to the Flood Insurance Rate Map for Harwinton (February 17, 1982), the latter driveway would have to traverse a Zone B area. Zone B areas are defined as those areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than 1 foot or where the contributing drainage area is less than 1 square mile; or areas protected by levees from the base flood. As such, the Zone B area has natural flood detention capabilities. Filling in that area for the driveway will take away the existing flood detention capabilities of floodplain. Also, if the driveway is inundated during a flood event, vehicular traffic (i.e., emergency vehicles, etc.) may be cut off to the house. Town officials need to study this proposed crossing very carefully from a hydrologic and safety standpoint.

All wetland driveway crossings will require a permit and ultimate approval by the Harwinton Inland Wetlands Commission. In reviewing a proposal, the Commission needs to determine the impact that the proposed activity will have on the wetlands. If the Commission determines that the wetland is serving an important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether, or at least require measures that would minimize the impacts. The following information should be supplied to Commission members on the site plan for each wetland driveway crossing: (1) amount of fill to be placed on regulated soil; (2) the extent of fill lines; (3) type of fill material to be used; and (4) the texture of the wetland soils and whether or not they will need to be removed and replaced. This information will help Commission members greatly in their decision making process.

Wetland road crossings are feasible, provided they are properly engineered. Provisions should be made for removing unstable material beneath the roadbed, backfilling with a permeable road base fill material and installing properly sized

culverts as necessary. When crossing any wetland, the roads should be at least 1.5 feet and preferably 2 feet above the surface elevation of wetlands. This will allow for better drainage and will decrease the frost heaving potential of the roads. All work should be done during the dry time of the year. Provisions should include an effective erosion and sediment control plan.

If wetland crossings are permitted, every effort should be made to restrict the crossing activity to the dry time of year, when water tables are low. This should minimize the chance for erosion and sedimentation problems. Also, if local zoning permits, the potentially adverse impacts to wetlands in the area of Lots 6 and 7 could be reduced by combining the 2 driveways.

### SOIL RESOURCES

The soils within the proposed Brookwoods Subdivision include CrC, Lg, MyB, PeC, Rg, Sf, Tg, TwB, Wl and WzC soil mapping units (see Figure 6). These soils are described below:

- 1) Ridgebury (Rg), Scarboro (Sf), Leicester, Ridgebury and Whitman (Lg) and Walpole (Wl) are inland wetland soils. Flooding and wetness are the most limiting features of these soils for development.
- 2) Charlton (CrC) soil is a deep, well drained soil. Permeability is moderate to moderately rapid in the surface layer and subsoil. Runoff is a hazard on this soil and unprotected areas are subject to erosion. Slope is the most limiting feature of this soil for development.
- 3) Merrimac (MyB) soil is a somewhat excessively drained soil. Permeability is rapid and the available moisture capacity is moderately low. Poor filtration and the "caving" (instability) of cut slopes are the most limiting features of this soil for development.
- 4) Paxton (PeC) soil is well drained, with a dense layer (hardpan) at about 24 inches in depth. This hardpan can cause engineering limitations on septic system design and cause a slow percolation rate. Cut slopes in this soil are likely to have seeps flowing out during wet periods and subsurface drainage may be required.

- 5) Terrace escarpments (Tg) consist of gravelly and sandy material that has slopes exceeding 15 percent. Runoff is rapid and some areas are eroded. Poor filtration and the "caving" of cut slopes are the most limiting features of this soil for development.
- 6) Tisbury and Sudbury (TwB) soil is a moderately well drained soil. These soils have medium surface runoff and, unless protected, are subject to water erosion. Wetness, poor filtration, and the "caving" of cut slopes are the most limiting features of this soil for development.
- 7) Woodbridge (WzC) soil is moderately well drained, with a dense layer (hardpan) at about 24 inches in depth. This hardpan can cause engineering limitations on septic system design and cause a slow percolation rate. Cut slopes in this soil are likely to have seeps flowing out during wet periods and subsurface drainage may be required.

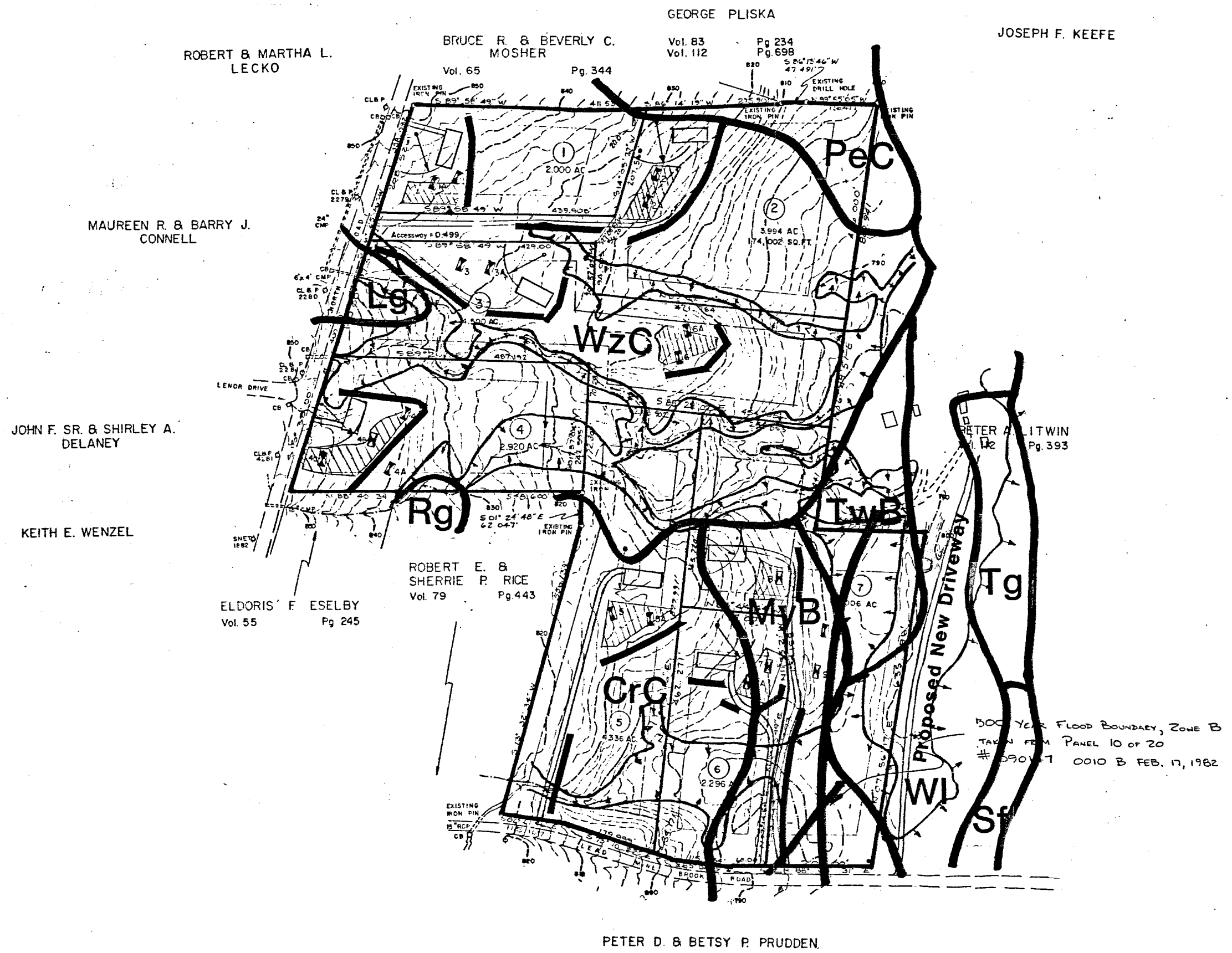
These soil mapping units are further described in the Soil Survey of Litchfield County (1970). Tables 1, 2, and 3 in Appendix A summarize the soil conditions on-site.

### EROSION AND SEDIMENT CONTROL

The following comments and recommendations refer to the soil erosion and sediment (E&S) control plan for this proposed subdivision dated March 1988; revised July and October 1988.

- 1) Wetlands
  - a) Use silt fencing, rather than haybales, as the primary sediment barrier adjacent to and within wetlands.
  - b) Retain and maintain silt fencing, adjacent to and within wetlands, until all construction activities in these areas are completed and the disturbance has been stabilized.
  - c) Include silt fencing along both sides of proposed driveways crossing wetlands.

Figure 6



- CrC - Charlton very stony fine sandy loam, 3-15% slopes
- Lg - Leicester, Ridgebury and Whitman very stony fine sandy loams
- MyB - Merrimac sandy loam, 3-8% slopes
- PeC - Paxton very stony fine sandy loam, 3-15% slopes
- Rg - Ridgebury stony fine sandy loam
- Sf - Scarboro loamy fine sand
- Tg - Terrace escarpments
- TwB - Tisbury and Sudbury soils, 3-8% slopes
- WI - Walpole and Raynham soils
- WzC - Woodbridge very stony fine sandy loam, 0-3% slopes

## BROOKWOODS SUBDIVISION

HARWINTON, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 200'



Soils

Information from the Litchfield County Soil Survey, Scale: 1"=1320'

Information from Arthur Howland, L.S., P.E., Site Development Plan

- d) The proposed driveway adjacent to lot number 7, but outside the proposed subdivision, is totally within the 500-year flood boundary associated with Leadmine Brook. According to the definition of Zone B of the flood insurance rate map for Harwinton, certain areas within this 500-year flood boundary may also be subject to 100-year flooding. It is recommended that further research be conducted to establish previous 100-year flooding levels (if available) for consideration of, but not limited to, road construction.
- 2) Provide specific seeding information such as, but not limited to, seeding dates, seed mixture, etc., directly on the plan. The recommended seeding dates for establishing permanent vegetative cover include:

April 15 through June 15 and  
August 15 through September 15.
- 3) The key to successful E&S control is proper installation and maintenance. This is extremely important when considering the existing and potential erosion hazards associated with steep slopes and wetlands protection.
- 4) The soil limitations which are identified do not preclude development. They do, however, indicate the need for precise planning and careful review of proposed project components. In some cases the cost may greatly exceed the benefits.

### Summary

The proposed activities associated with Brookwoods Subdivision should not adversely impact the soil resources, provided that the management recommendations are considered and incorporated within the planning process and compliance is achieved on the ground.

The soil erosion and sediment control plan is basically adequate. Additional recommendations are provided. However, construction activities on steep slopes or adjacent to wetlands must be carefully monitored and adjustments made, if necessary, to protect the resources from erosion or sediment damage.



# BIOLOGICAL RESOURCES



## WETLAND CONSIDERATIONS

### Wetland Classification and Function

The subdivision proposal consists of a 7-lot subdivision for single-family residential homes. The lots will be accessed from North Road and Leadmine Brook Road by single lot driveways; there will be no internal roadways for the subdivision. All of the wetlands found on site are Leicester, Ridgebury, Whitman extremely stony fine sandy loams, on gentle slopes, and are associated with the drainage swales and watercourses found on site. As defined by the U.S. Fish and Wildlife Service these wetlands are classified as follows:

- PFO1E Palustrine; forested; broad leaved deciduous; seasonally saturated.
- POWH Palustrine; open water; permanent.
- PFO/SS1E Palustrine; forested; scrub/shrub; broad leaved deciduous; seasonally saturated.
- PEME Palustrine; emergent; seasonally saturated.

The primary function of all of the wetlands on site is drainage and water conveyance, but they also provide habitat area, some water renovation and aesthetic functions. There is no functional flood storage area found on site, with the possible exception of the area along the northwest border of the property. This portion of the property is directly adjacent to the East Branch Leadmine Brook and its associated wetland system, and contains a portion of the 500-year flood boundary as defined by the Federal Emergency Management Agency's (FEMA), Flood Insurance Rate Map. Additionally, a small excavated pond site is located in this area, but its storage capacity is limited and would be of little to no consequence during a storm event of any significance.

### Development Impacts

Due to the small number of lots proposed, their size (2-5 acres) and the fact that there will not be an internal road system accessing the lots, much of the potential for significant impacts to the wetlands has been reduced and/or eliminated. The application materials indicate that there will be three areas of direct impact to the wetlands. The first is located along the driveway accessing Lot 2, and would result in limited filling of a transitional area at the upper reaches of a drainage swale. This encroachment would be insignificant, for it would not result in any disturbance to the function of this wetland finger. The second area of direct impact is a watercourse crossing of the driveway accessing Lot 5 from Leadmine Brook Road. This crossing is at a very narrow point along the watercourse corridor and generally runs parallel to the contours on both sides of the crossing, thereby reducing the potential of sedimentation into the watercourse. The last area of direct wetland impact is associated with two adjacent driveway crossings, accessing Lots 6 and 7 from Leadmine Brook Road. This is the largest impact proposed, but could be reduced if the applicant were to seek a waiver to the planning and zoning restrictions on dual access driveways. Again, these crossings are located along a relatively narrow section of the stream corridor which will reduce the area of impact.

Lastly, there is the issue of relocating the existing driveway which presently crosses the proposal site, from North Road, and accesses the property to the west of Lots 3 and 7, adjacent to the brook. Reference was made to eliminating the existing driveway and creating a new access drive off of Leadmine Brook Road, just to the west of Lot 7. This proposed relocation is within the boundaries of the 500-year flood plain of the FEMA flood insurance rate map, and would require an additional crossing of a watercourse and its associated wetlands. Since any relocation of the existing driveway will result in unavoidable wetland impacts and since the proposed project will be the cause of this relocation and subsequent impacts, it is

recommended that the Wetland Commission require the applicant to address this issue within the context of this application and not allow the issues to be separated. If the Commission allows these issues to be separated it may, in effect, eliminate possible alternatives to the relocation issue. With respect to the proposed relocation site for the driveway, the additional wetland impacts should be closely examined by the commission in light of feasible and prudent alternatives.

#### Recommendations and Conclusions

- 1) There are three direct wetland encroachments and/or impacts proposed within the application, all as a result of driveway access. The proposed driveways for Lots 2 and 5 will not create any significant impacts, providing that best management practices are used during construction activities and banks are stabilized as soon as possible after the completion of the work. The access proposed for Lots 6 and 7 should consider the use of a dual access driveway and seek a waiver to any planning and zoning requirements which may inhibit the use of such an alternative.
- 2) Due to the size of the lots, setbacks for septic systems and the lack of any internal roadways, the potential impacts to the wetland systems have been greatly reduced. Additionally, the luxury of space on the lots makes the potential for impacts due to septic system failure less likely, but the final septic designs should be reviewed by the Town Engineer or the Torrington Area Health District.
- 3) The local commissions should include the issue of relocating the existing driveway to the property west of Lots 3 and 7 within the subdivision application. In order to evaluate, and have available, all feasible and prudent alternatives, no permit should be issued until a solution to this matter is decided upon.
- 4) A comprehensive maintenance plan should be established for the sediment and erosion controls to be installed on site. The local commissions should consider using some form of bonding program with regard to maintaining proper upkeep of these controls, if they do not already have one in place. Further information regarding bonding is available through the DEP's Water Resource Unit at 566-7280.

## WILDLIFE CONSIDERATIONS

### Description of Area/Habitats

The area proposed for development contains a variety of wildlife habitats. Many small brooks and several large areas of wetlands run through the property. The site also contains mature hardwood forest with some conifer mixed in and some open/reverting areas.

Wildlife habitat is the complex of vegetative and physical characteristics that provide for all the requirements of wildlife. This includes 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 interspersation of these habitat types, the better wildlife in general is able to satisfy its needs in a small area.

The area contains good to excellent wildlife habitat, even though it is of relatively small size. The area does offer some diversity of habitats, and the wetlands and proximity of the site to the wetland system of Leadmine Brook only enhances the value of this area to wildlife.

A variety of wildlife could utilize this area 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 include deer, ruffed grouse, raccoons, foxes, coyotes, hawks, owls, various other birds like pine siskins, grosbeaks, juncos, chickadees and various reptiles and amphibians.

### Wildlife Habitat

Wetlands: 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 wetlands should be avoided or limited whenever possible.

Forest/Openings/Reverting Openings: Mature forested areas provide roosting and nesting places, areas of cover and areas to feed in. Reverting openings provide a diversity of vegetation types, thus providing a variety of food in the form of browse, berries and catkins, cover and nesting areas. Open areas provide nesting sites for birds requiring grassy cover, and insect production is higher here producing more food for birds.

#### 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 to wildlife 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.

Large houselots (5 acres or more) are preferable to many small houselots. Numerous houses set on small lots augment the negative impact to wildlife habitat. Large houselots leave more habitat in tact for wildlife to utilize.

Another consideration at this site is the intermittent presence of beaver in Leadmine Brook. Beaver dams in the brook may cause lowland flooding of the adjacent wetland. The presence of their dams may augment or limit other natural flooding depending on the location of the site in question. Beaver trapping, during the regulated beaver trapping season, is used to manage population levels and to reduce nuisance problems.

Not only should the disturbance to wetlands be minimized before development, but afterwards as well. Post-development homeowner activity in the wetlands should be avoided. If possible, through a conservation easement or deed restriction, such activities as pasturing animals in a wetland or filling in for extra lawn and/or garden should be restricted.

Wetland areas are limited in quantity in the state and continue to decrease on an almost daily basis, another important factor in considering their preservation. Their value increases as the quantity of the resource diminishes. A buffer of at least 100 feet is recommended around any wetland to preserve its value and use by wildlife.

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 where possible existing wildlife habitat.

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 as 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 could 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 for, cluster housing should be considered. By clustering the homes together, less land is distributed 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 or adjacent to the area in question.

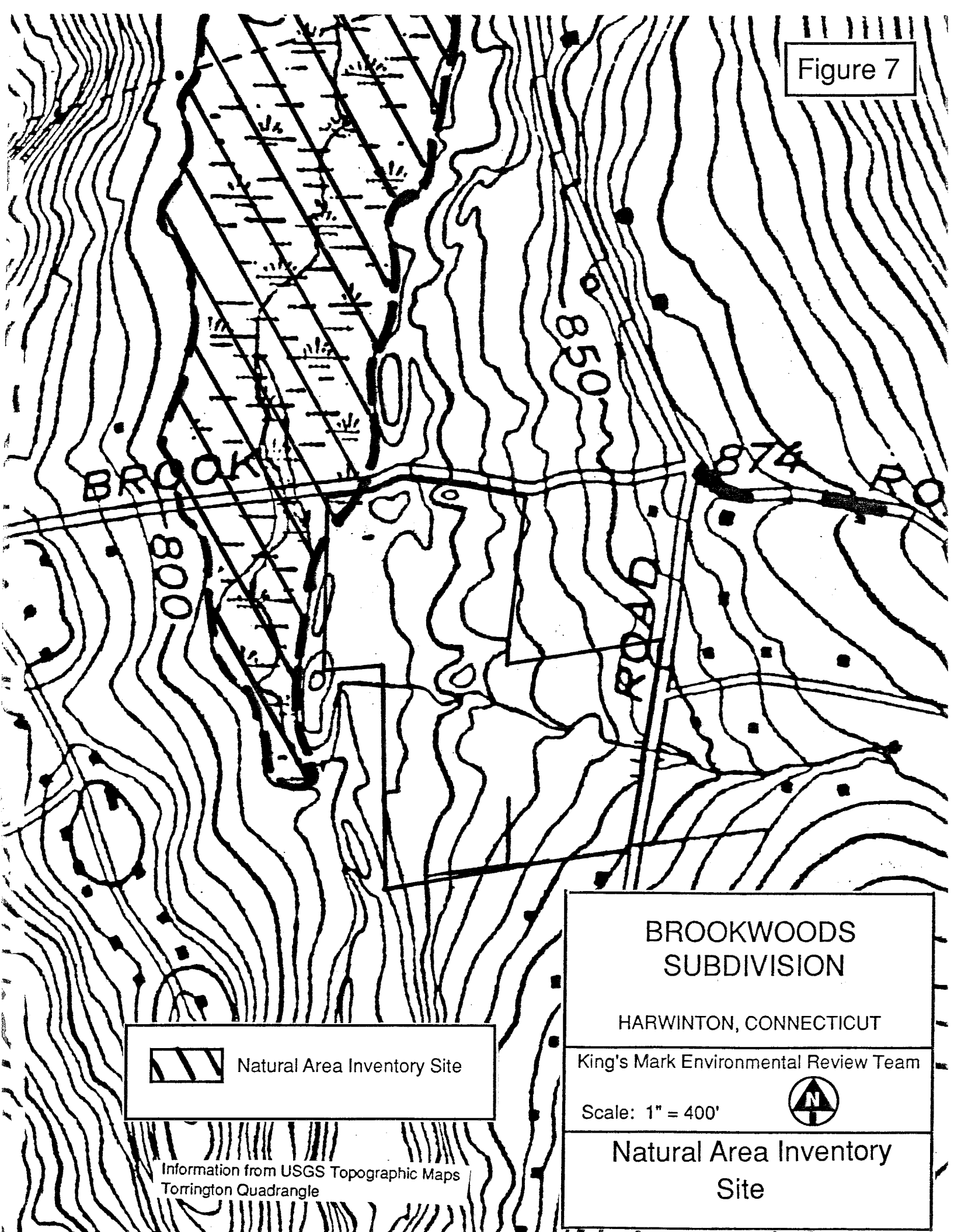
The area identified in Figure 7 is a Natural Areas Inventory site. In 1972 the Connecticut Forest and Park Association, Inc. prepared a Natural Area Inventory



which included 459 sites. These were nominated as significant sites for one or more of the following attributes: geologic, hydrologic, biologic, archaeologic, cultural, aesthetic, research/educational. Being listed as a NAI site does not impart any restrictions or provide legal protection; it identifies areas that should receive consideration before any proposed development is approved. The following was excerpted from the 1972 NAI file: "Hooper Meadow Swamp is an area of swampy grassland forming a water meadow. ...To the east is posted as a wildlife sanctuary." It mentions that the area is used for grazing. There is no additional information at this time.

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 7



Natural Area Inventory Site

Information from USGS Topographic Maps  
Torrington Quadrangle

# BROOKWOODS SUBDIVISION

HARWINTON, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 400'



## Natural Area Inventory Site

# LAND USE AND PLANNING CONSIDERATIONS



## PLANNING AND LAND USE CONSIDERATIONS

The subject site is located in a country residential zone where the minimum lot area is 87,000 square feet. Land to the north, east and south of the site is also zoned country residential while land to the west of Leadmine Brook (East Branch) is zoned Town Residential where the minimum lot area is 65,000 square feet.

The land surrounding the subject site is either undeveloped woodland or consists of large lot residential development. The project appears to be consistent and compatible with existing and proposed land uses in the site vicinity.

The State Policies Plan for the Conservation and Development of Connecticut, 1987-1992 is a statement of the growth, resource management and public investment policies of the State. The Plan was prepared by the Office of Policy and Management and adopted by the Connecticut General Assembly in 1987. The objective of the Plan is to give a balanced response to human, environmental and economic needs in a manner which best suits the future of Connecticut. Regional planning organizations in the State have been encouraged by OPM to foster implementation of the Plan at the local level.

According to the Locational Guide Map which accompanies the State Plan, the subject site has been classified as a "conservation area." The State action strategy for conservation areas is to "Plan and Manage for the long term public benefit the land contributing to the State's need for food, fiber, water and other resources, open space, recreation and environmental quality and insure that changes in use are compatible with the identified conservation values." The subject site has been classified as a conservation area since it is located within a potential public water supply watershed. The proposed project appears to be compatible with the goals and objectives articulated in the State Plan for this area of Harwinton, provided suitable

controls to protect water quality are developed and implemented with project construction.

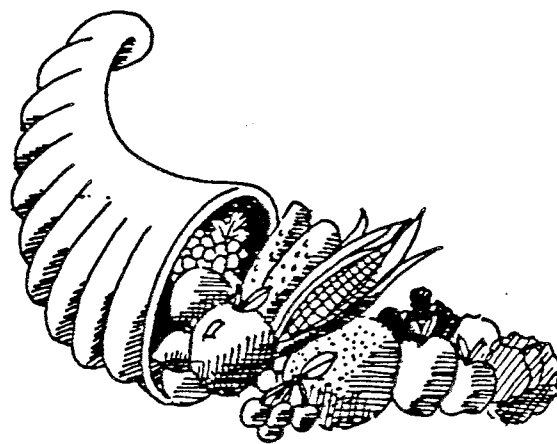
The Litchfield Hills Council of Elected Officials (LHCEO) is the official regional planning organization for the 11-Town Litchfield Hills Region which includes the Town of Harwinton. The LHCEO has adopted a preliminary housing policy which identifies broad goals and policies to guide future housing development in the area. The proposed project appears to be consistent with the housing goals established by the LHCEO provided care is taken to minimize disturbance of wetlands during project construction. LHCEO discourages residential development on wetlands, floodplains, steep slopes and other areas which for environmental reasons are unsuitable for housing.

In general, the project appears to be well designed with evidence of attempts to minimize potential adverse environmental impacts. It should be noted that Harwinton's subdivision regulations provide for the reservation of "not more than 10% of the total area of the subdivision" for open spaces, parks and playgrounds. The project does not now provide for such reserved land. Due to the comparatively small scale of the project (i.e., 7 lots) and the large lots involved, the Planning Commission may or may not determine that an open space set-aside is desirable for this project.

Based on the frequently used standard of 10 vehicular trips per day for each single-family detached dwelling unit, the proposed 7-lot subdivision can be expected to add 70 vehicular trips to the surrounding roadways on an average weekday. North Road and Leadmine Brook Road were observed to be in good condition the day of the field review and should accommodate the traffic generated by the project easily. Sight lines from each of the proposed driveways appear adequate where they intersected with the local roadways with the possible exception of the driveway serving Lot 6. Tree pruning and brush removal to the east of this driveway, along

Leadmine Brook Road, will be necessary to ensure safe and adequate egress from this point.

# APPENDICIES



## Appendix A: Soil Limitations Chart



TABLE 1: Soil Symbols and Mapping Unit Names

Soil Symbol	Soil Mapping Unit Name
CrC	Charlton very stony fine sandy loam, 3-15% slopes
Lg	Leicester, Ridgebury and Whitman very stony fine sandy loams
MyB	Merrimac sandy loam, 3-8% slopes
PeC	Paxton very stony fine sandy loam, 3-15% slopes
Rg	Ridgebury stony fine sandy loam
Sf	Scarboro loamy fine sand
Tg	Terrace escarpments
TwB	Tisbury and Sudbury soils, 3-8% slopes
Wl	Walpole and Raynham soils
WzC	Woodbridge very stony fine sandy loam, 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
CrC	0.6-6.0	0.2	low	high	none	>6.0	---	---	>60	low
Lg	0.6-6.0	0.2	low	high	none	0-1.5	apparent	Nov-May	>60	high
MyB	2.0-6.0	0.24	low	high	none	>6.0	---	---	>60	low
PeC	0.6-6.0	0.2	low	mod	none	1.5-2.5	perched	Feb-Apr	>60	mod
Rg	0.6-6.0	0.2	high	high	none	0-1.5	perched	Nov-May	>60	high
Sf	6.0-20	0.17	high	high	none	+1-1.0	apparent	Jan-Dec	>60	high
Tg	6.0-20	0.2	low	high	none	>6.0	---	---	>60	low
TwB	0.6-2.0	0.49	low	mod	none	1.5-2.5	apparent	Nov-Apr	>60	high
Wl	2.0-6.0	0.2	low	mod	none	0-1.0	apparent	Nov-May	>60	high
WzC	0.6-2.0	0.2	low	mod	none	1.5-2.5	perched	Nov-May	>60	high

K-Erodibility Factor	Flooding Classes	---
.10 - .24 - Low Erodibility	None	no data available
.28 - .37 - Medium Erodibility	Occasional	
.43 - .64 - High Erodibility	Common	
	Frequent	

TABLE 3: Major Soil Limitations for Development

Soil Symbol	Septic Systems	Excavations	Dwellings	Basements	Commercial	Roads	Lawns	Fill	Ponds
CrC	B-9	B-9	B-9	B-9	C-9	B-9	B-9,16	A	C-11
Lg	C-2	C-2	C-2	C-2	C-2	C-2,8	C-2	C-2	B-18
MyB	C-3	C-5	A	A	B-9	A	A	A	C-11
PeC	C-6	B-2,9,13	B-2,9	B-2,9	C-9	B-2,8,9	B-9-16	A	C-11
Rg	C-6,2	C-2	C-2	C-2	C-2	C-2,8	C-2	C-2	C-11
Sf	C-4,3	C-5,14,4	C-4	C-4	C-4	C-4,8	C-4	C-2	C-11
Tg	C-3	C-5	A	A	A	A	B-22	A	C-5
TwB	C-2,3	C-5,2	B-2	C-2	B-2,9	C-8	B-2	B-2	C-11
Wl	C-2,3	C-5,2	C-2	C-2	C-2	C-2,8	C-2	C-2	B-5,11
WzC	C-2,6	C-2	B-2,9	C-2	C-9	C-8	B-16,2,9	B-2	C-5
									C-11

Degree of Limitations:

A - Soil properties and site features are generally favorable for indicated use and limitations are easily overcome.

B - Soil properties are not favorable for indicated use and special planning, design or maintenance is needed.

C - Soil properties or site features are so unfavorable to overcome that special design, increases in costs and possible increased maintenance are required.

Types of Limitations:

1 Seepage	2 Wetness	3 Poor Filtration	4 Ponding	5 Banks Cave
6 Slow Perc	7 Flooding	8 Frost Action	9 Slope	10 Low Strength
11 No Water	12 Subsites	13 Dense Layer	14 Humus	15 Shallow Depth
16.Lrg.Stone	17 Sm.Stones	18 Slow Refill	19 Piping	20 Dam Seepage
21 Erosion	22 Droughty	23 Area Reclaim		

## 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

## 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.