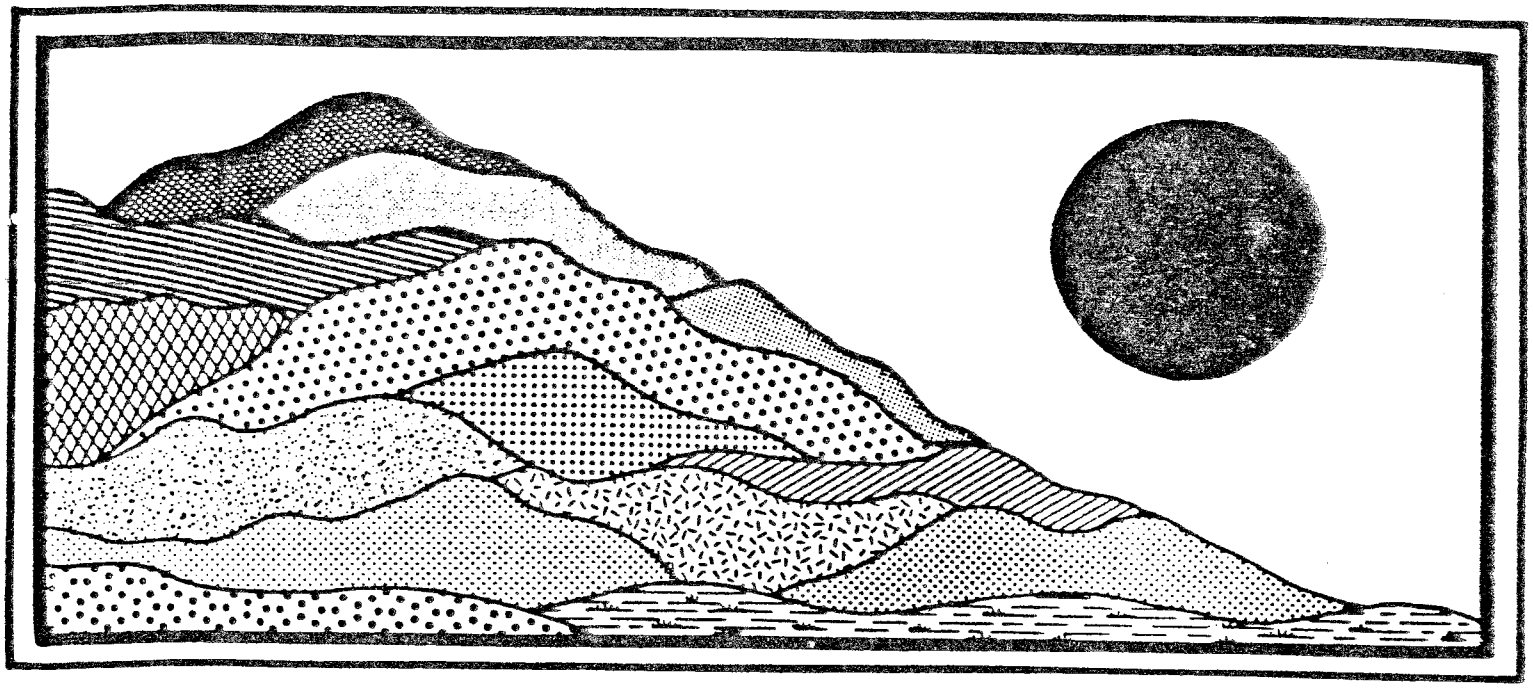
Mountainbrook Heights

Somers, Connecticut

October 1986



ENVIRONMENTAL REVIEW TEAM REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Mountainbrook Heights

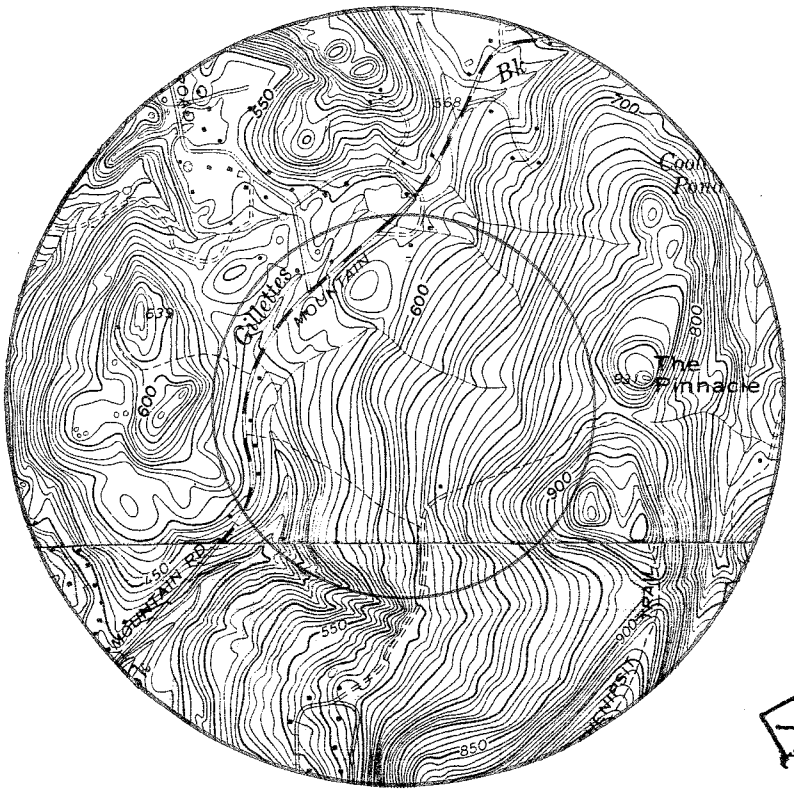
Somers, Connecticut

Review Date: SEPTEMBER 18, 1986

Report Date: OCTOBER 1986

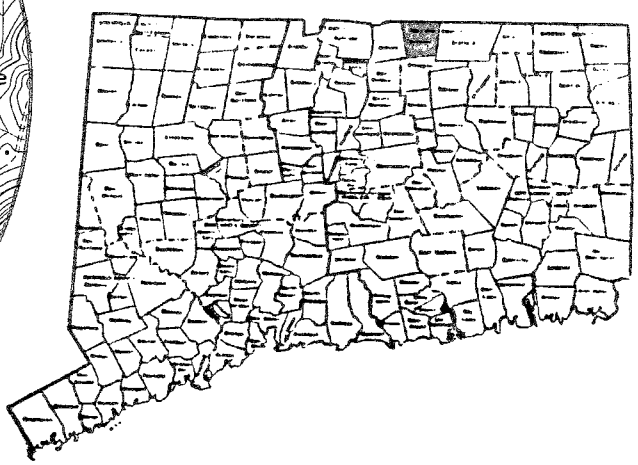
RC&D

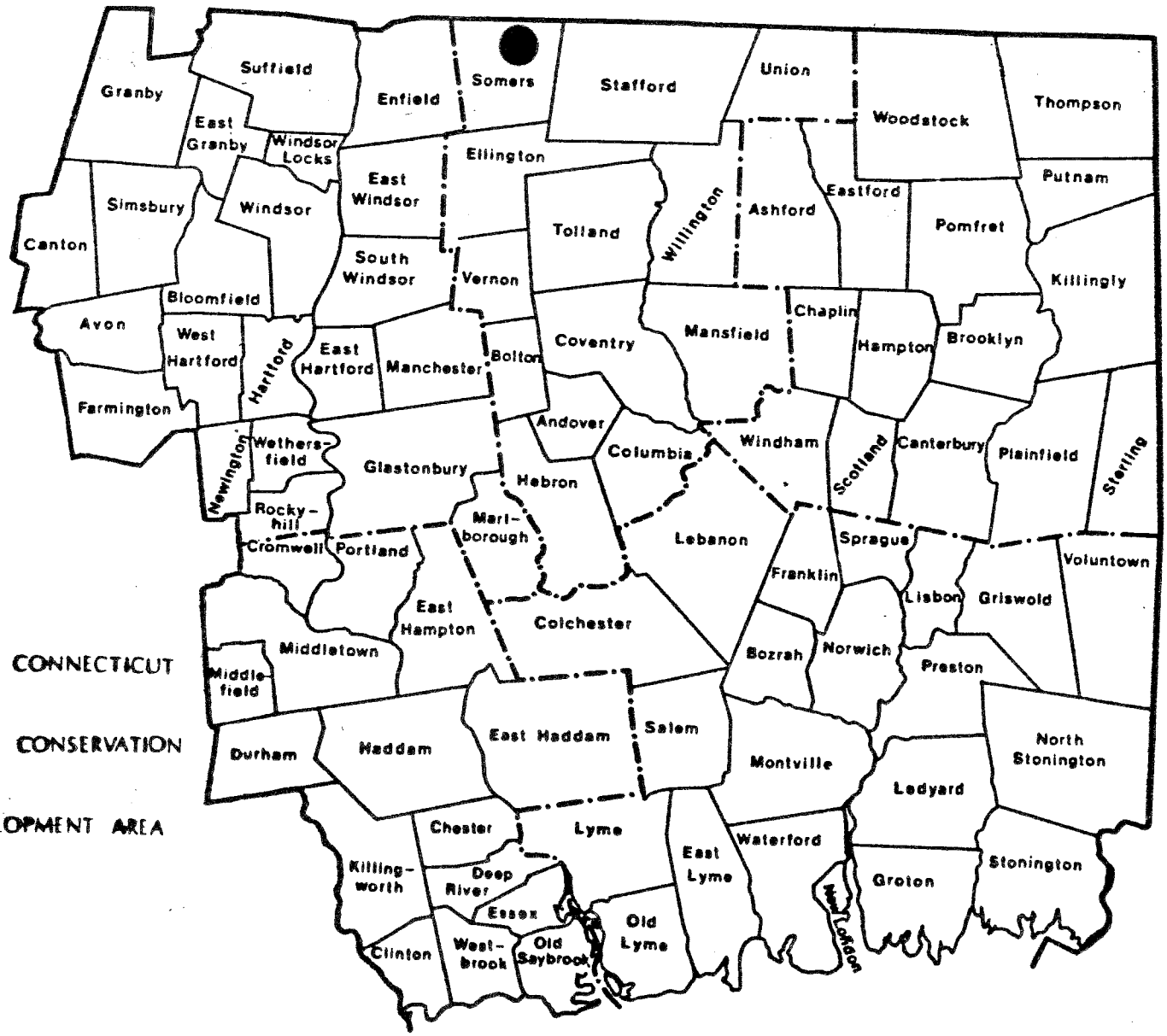
ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234



Site Location

MOUNTAINBROOK HEIGHTS SUBDIVISION
SOMERS, CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT
ON
MOUNTAINBROOK HEIGHTS SUBDIVISION
SOMERS, CONNECTICUT

This report is an outgrowth of a request from Somers Conservation and Inland Wetlands Commission to the Tolland County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, September 18, 1986. Team members participating on this review included:

Joe Neafsey	--District Conservationist - U.S.D.A., Soil Conservation Service
Alfred Roberts	--Soil Resource Specialist - U.S.D.A., Soil Conservation Service
Eric Schluntz	--Fisheries Biologist - Connecticut Department of Environmental Protection
Dwight Southwick	--Civil Engineering - U.S.D.A., Soil Conservation Service
Elaine Sych	--ERT Coordinator - Eastern Connecticut RC&D Area
Bil Warzecha	--Geologist - DEP, Natural Resources Center

Prior to the review day, each team member received a summary of the proposed project, a list of the Town's concerns, two location maps, a soils map and copies of a hydrological study.

During the field review the team members were given topographic map enlargements and site plans.

The Team met with, and were accompanied by the Chairman of the Conservation and Inland Wetlands Commission, the Town Sanitarian, the Developer and his engineer. Following the review, reports from each team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project--all final decisions and conclusions rest with the Town and landowner. 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 developer and the Town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC&D Executive Committee hopes you will find this report of value and assistance in making your decisions on this proposed subdivision.

If you require any additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P. O. Box 198
Brooklyn, CT 06234
(203) 774-1253

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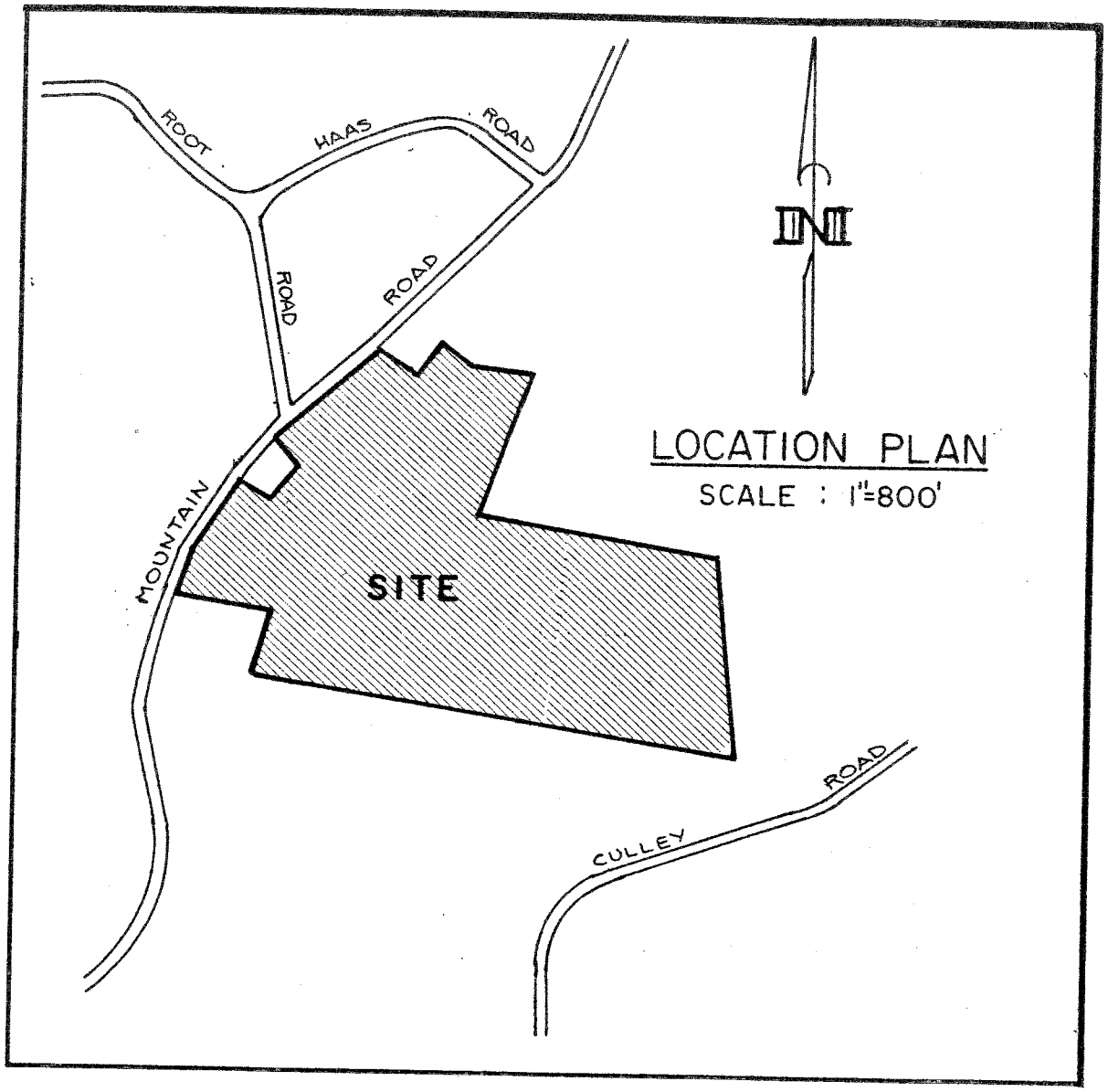
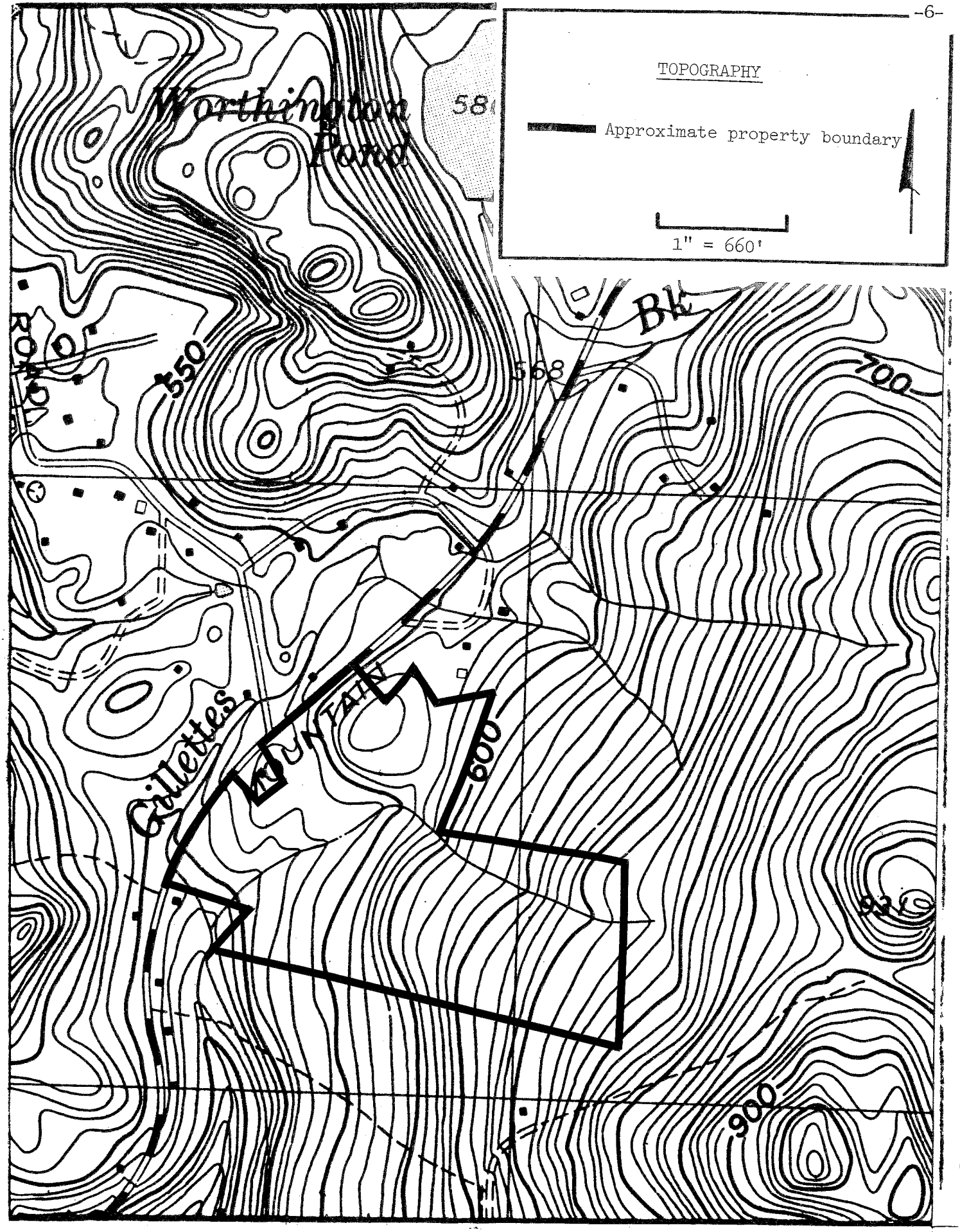

ROOT
HAAS
ROAD
ROAD
ROAD
MOUNTAIN
SITE
CULLEY
ROAD
N
LOCATION PLAN
SCALE : 1"=800'

1. INTRODUCTION

The Conservation and Inland Wetlands Commission has requested Environmental Review Team assistance in reviewing the proposed Mountainbrook Heights subdivision.

The proposed subdivision is located on Mountain Road. It is approximately 60 acres in size and will contain 18 lots. The requesting commission is primarily concerned with storm and surface runoff that will be discharged to Gillettes Brook adjacent to the site. Another area of concern is the wetland road crossing and it's impact.

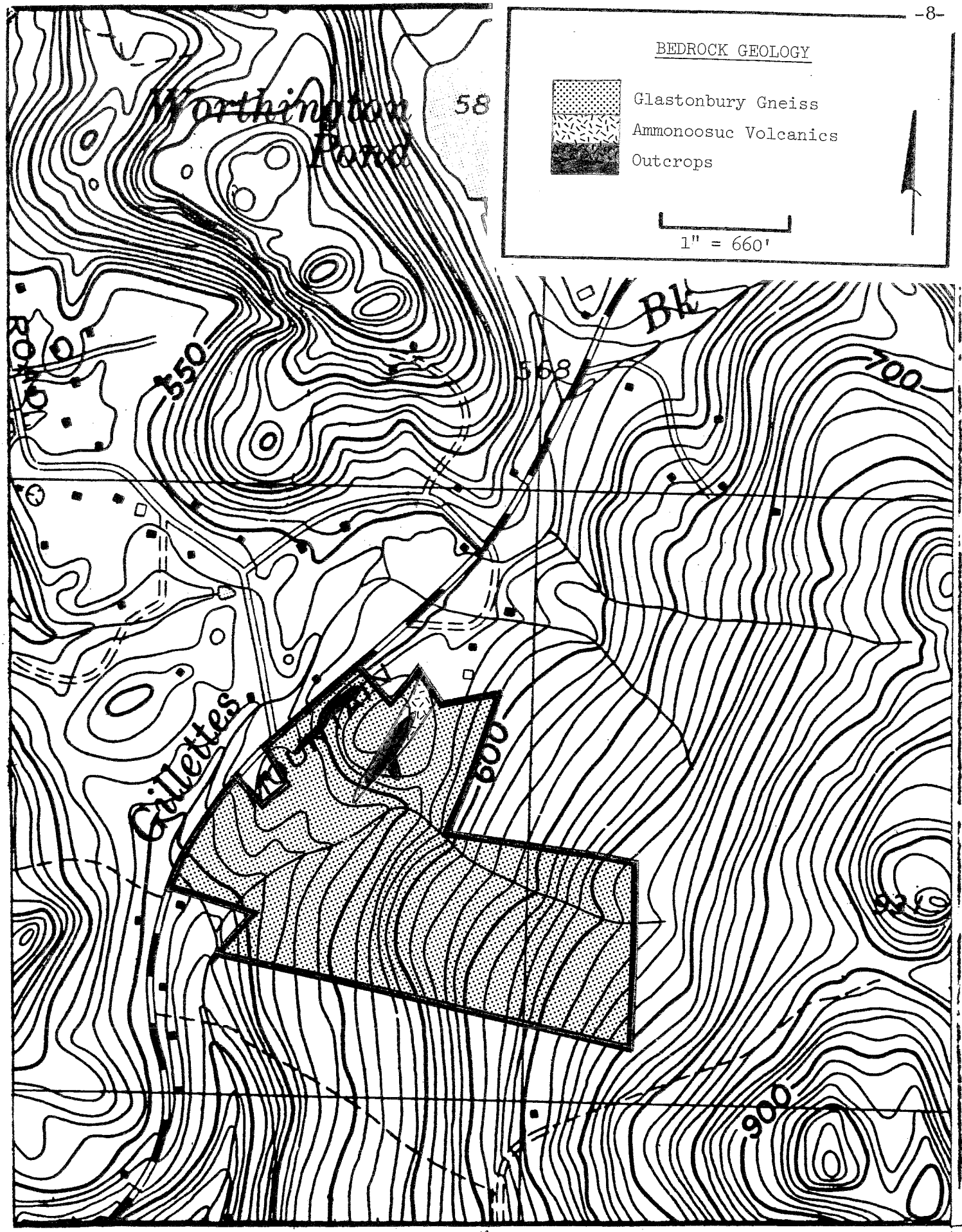
The following sections offer natural resource information about the site, as well as voicing areas of concern and recommendations to mitigate any potential problem areas. The summary briefly highlights the major points, concerns and recommendations.


TOPOGRAPHY
Approximate property boundary
1" = 660'
Worthington Pond
580
568
Blk
700
550
600
900
930
Gillettes
Mountain

2. TOPOGRAPHY AND SETTING

The proposed subdivision, which is located between Mountain Road and "The Pinnacle" in eastern Somers, consists of about 60 acres of mostly wooded land. The route of the proposed road system for the site has already been cleared of vegetation. The site is characterized by moderately steep sloping land in the central and eastern parts. Moderately steep slopes may be a problem in terms of this proposed road and driveway construction, particularly in view of the Town's ten (10) percent slope requirement. A more gentle terrain characterizes the eastern limits of the site. The topography on the site is controlled largely by the underlying bedrock. The major watercourse on the site is Gillettes Brook, which flows for a very short distance through the extreme western parts. As seen on the topographic map, a west flowing tributary bisects the property enroute to Gillettes Brook.

Maximum and minimum elevations are 750 feet and 480 feet above mean sea level.


BEDROCK GEOLOGY
Glastonbury Gneiss
Ammonoosuc Volcanics
Outcrops
1" = 660'
Worthington Pond
58
Rt 10
550
568
Rt
700
Gillettes
600
900

3. GEOLOGY AND GEOLOGIC LIMITATIONS

The proposed subdivision is encompassed by the Hampden topographic quadrangle. A surficial geologic map (GQ-1544, by Carol T. Hildreth and Roger B. Colton) and a bedrock geologic map (GQ-1368, by John D. Peper) have been published for the quadrangle by the U. S. Geological Survey.

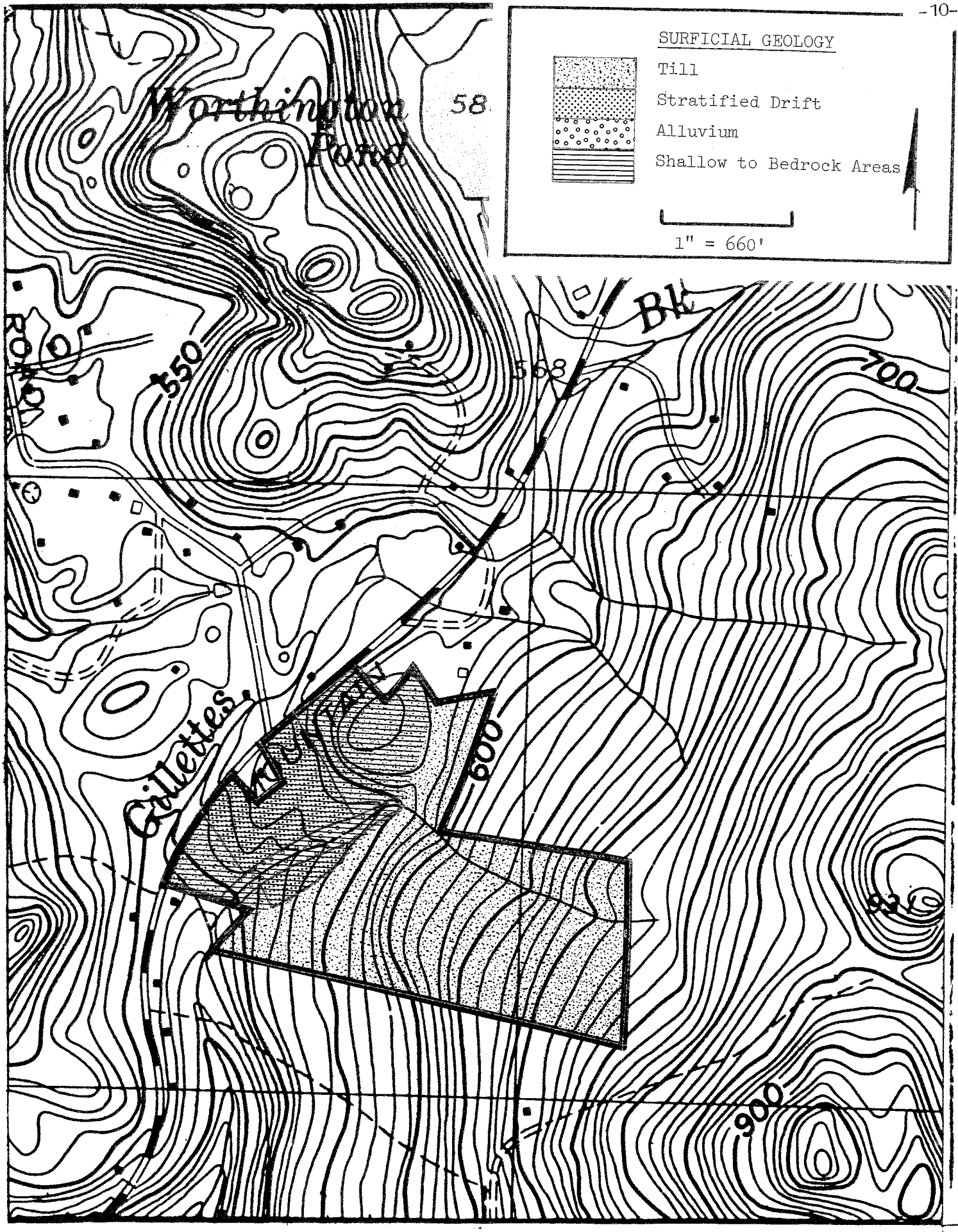
Based on the geologic map cited above and the results of deep test hole information supplied to Team members, bedrock is at or near ground surface throughout the western limits of the parcel.

The bedrock geology for the quadrangle which includes the subject site has been well described by John Peper. Most of the bedrock underlying the site has been identified as Glastonbury Gneiss. It consists mainly of steep, west dipping metamorphic rocks called gneiss. "Gneisses" are metamorphic rocks (rocks geologically altered by great heat and pressure within the earth's crust) which are characterized by banding. The characteristic banding in the rocks is caused by alternating granular light-colored minerals and platy or elongated dark minerals. Major minerals in the rock include plagioclase, quartz and biotite. Where the rock is exposed at the ground surface, it commonly forms smooth rounded outcrops with widely spaced joints (cracks in the rock). The latter geologic term (joints) will probably have some impact on the yield of wells, which will need to tap the underlying rock as a source of domestic water.

It should be pointed out that another type of rock, called the Ammonoosuc Volcanics, forms an inclusion in the Glastonbury Gneiss in the northern part of the site on Lots 3 and 4. It consists mostly of a well-foliated, thinly to thickly layered, dark gray gneiss composed of the minerals plagioclase, quartz, hornblende, and amphibolite (a metamorphic rock composed of minerals of the amphibole group such as hornblende and plagioclase feldspar). According to Peper's report, these rocks owe their origin to volcanism (lava and tuff) which have been subsequently altered by metamorphic processes.

Most of the site is covered by a glacial sediment called till. Till consists of an unconsolidated mixture of rock particles which were plucked or abraded from pre-existing overburden or rock outcrops by glacier ice. Because the ice moved the particles without regard to their sizes or shapes, till textures may be locally quite variable. Two (2) types of till have been identified in Connecticut. One (1) is fairly-loose and medium to coarse grained, while the other is typically finer-grained, crudely layered and compact. The courser, looser till is most common in surface exposures and in shallow to bedrock, but the compact variety may underlie it.

Based on the deep test hole information supplied to Team members, a "compact zone" or "hardpan layer" was encountered in many of the excavations dug throughout the site at depths ranging between 1.5 feet and 3 feet. Because groundwater tends to travel slowly through these "compact" zones, an elevated or perched water table is common in these areas, particularly during the wet


SURFICIAL GEOLOGY
Till
Stratified Drift
Alluvium
Shallow to Bedrock Areas
1" = 660'
Northington Ford
58
Rt 10
550
568
Blk
700
600
900
Gillettes Run

time of year. Percolation tests conducted on the site indicate the relatively slow permeability of these soil zones. Most percolation rates ranged in the area of 11 to 20 minutes per inch.

The presence of soil mottling at relatively shallow depths in almost half of the deep test pits excavated on the site suggest that an elevated water table problem may be moderate to severe on a seasonal basis in area characterized by "compact" till soils. The term mottling, noted above, refers to a reddish-orange or gray (depending upon the drainage and textural characteristics of the soil) staining within the soil. It is generally indicative of a seasonal or perched water table.

Overlying bedrock, and probably a thin layer of till in the western part of the site, is another type of glacial sediment called stratified drift. Approximately 10 acres in the western limits contain a generally light-reddish brown pebble, granule gravel and sand over a light yellowish brown to light gray sand. These materials were deposited by meltwater streams flowing from wasting masses of glacier ice. The deposits are generally layered, but in many places the layering is contorted or disrupted. These features indicate that the sediments were built up against the ice, and that they collapsed when the ice melted away. Some of this material has been mined from the site, probably for road base fill.

The final surficial geologic deposit found on the site is alluvium. Alluvial deposits which consist of light-grayish brown to light-pinkish-brown silt, sand and minor gravel and organic deposits were deposited by post-glacial streams in modern floodplains. These deposits parallel Gillettes Brook and its tributary on the site. Because these areas are subject to flooding during certain storm events, they hold low potential for development and should be avoided.

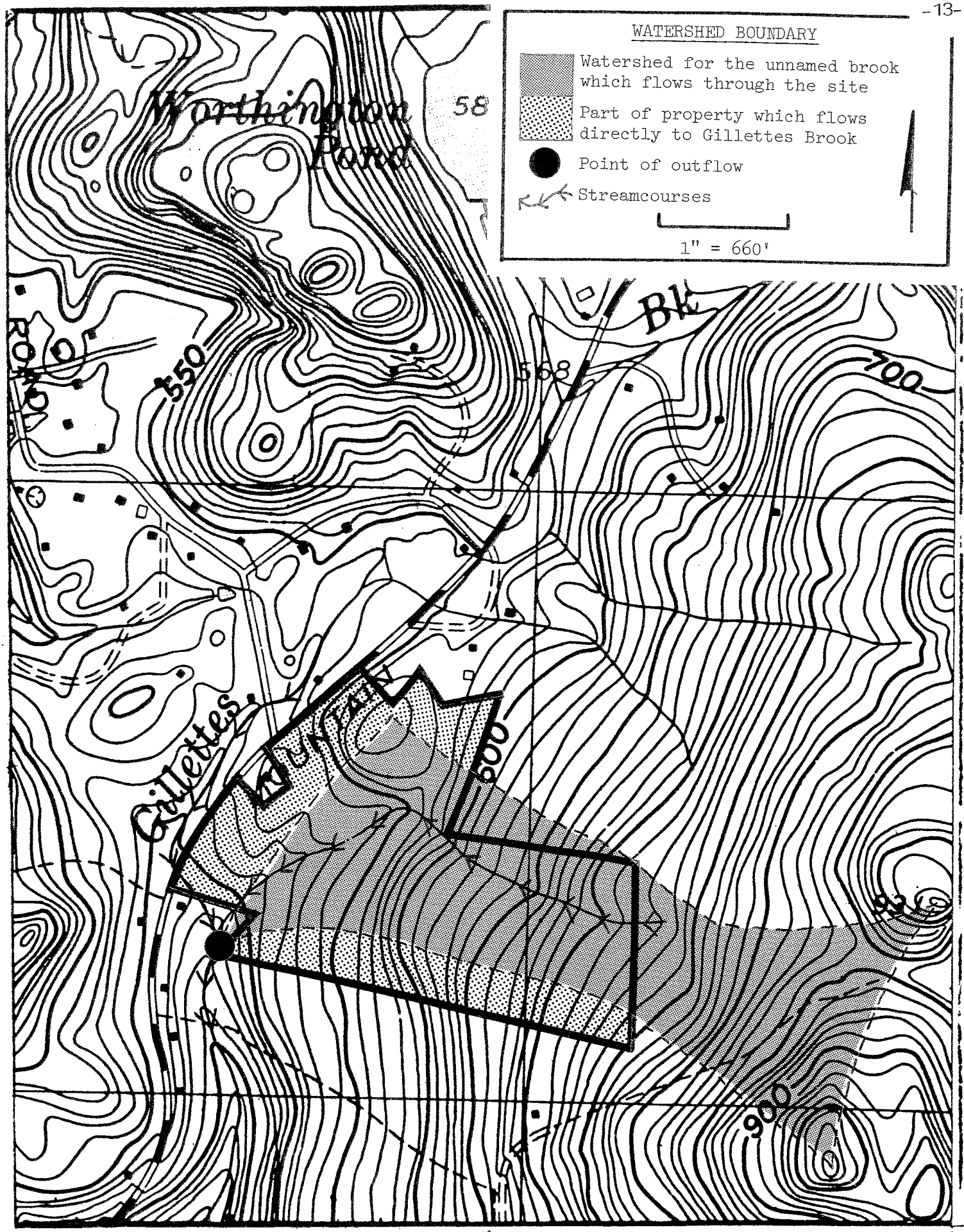
The major geologic limitations on the site appear to be (1) the presence of moderate slopes; (2) the presence of shallow to bedrock soils, mainly in the western parts; and (3) the presence of till-based soils, which may have seasonally elevated water tables and slow percolation rates. One would expect these limitations to weigh heaviest on the ability to provide adequate subsurface sewage disposal systems on each lot. However, according to the Town's Sanitarian, who witnessed the deep test pits excavated throughout the parcel, it appears that the geologic limitation mentioned above can be surmounted provided that septic systems are properly engineered and installed in accordance with the finally approved plan.

In the wetter parts of the site, it is advised that every effort be made to install building footing drains. This will hopefully keep basements from becoming wet, especially during the spring time. Depending on topographic conditions on each lot, it may be possible to connect a building footing drain with a curtain drain. A properly designed and installed curtain drain may be effective in intercepting and diverting groundwater from the areas of a potential leaching system.

Water which is being taken out of the ground via curtain drain/footing drain will need to be discharged to a suitable area or stormwater drainage system.

The site plan distributed to Team members included the wetland boundaries on the site. These boundaries were superimposed on the site plan based on the wetland soils delineated in the Soil Survey for Tolland County. It is understood the sites inland-wetland boundaries will be flagged in detail by a certified soil scientist. Once these boundaries have been established, they should be superimposed onto the subdivision plan.

It appears that there may be a need to cross the "wetland areas" with the proposed access road and/or driveways, depending on ultimate location. All wetland road crossings will need to be properly engineered. The road should be constructed adequately above the surface elevation of the wetlands. This will allow for better drainage of the road and also decrease the frost heaving potential of the road. Road construction through wetlands should preferably be done during the dry time of the year and should include provisions for effective erosion and sediment control. Finally, culverts should be properly sized and located so as not to alter the water levels in accompanying wetlands and cause flooding problems.


WATERSHED BOUNDARY
Watershed for the unnamed brook which flows through the site
Part of property which flows directly to Gillettes Brook
Point of outflow
Streamcourses
1" = 660'
Worthington Pond
58
ROAD
550
568
Bk
700
Gillettes
600
900

4. HYDROLOGY

Surface runoff from the site flows downslope to Gillettes Brook, which traverses the western most tip of the site (area of site to be conveyed to Stanley Mulak, et al). Gillettes Brook ultimately discharges into the Scantic River.

A westerly flowing intermittent streamcourse bisects the parcel enroute to Gillettes Brook. It orginates just east of the rear property line.

According to the proposed Water Quality Classification map the surface water quality of Gillettes Brook and its tributary on the site have been classified as A. An 'A' classification means that it may be suitable for drinking water supply (Class A); may be suitable for all other water uses including swimming, shellfish resource; character uniformly excellent; may be subject to absolute restrictions on the discharge of pollutants. As a result, every effort should be made to maintain the high water quality of these streamcourses during and following development of the sites.

Based on present plans, road drainage emanating from the western parts of the site will be artifically collected in catch basins and routed via storm drainage easements on lot 16, 17 and 18, ultimately discharging to Gillettes Brook. Road drainage arising from the central eastern parts of the site will be piped to a storm drainage easement on lots 5 and 15, which includes the major intermittent stream that flows through the site. Water in this drainage system will also discharge into the drainage system mentioned earlier. It should be pointed out that this will be the area of the site's major wetland crossing. Finally, road drainage emanating from the short cul-de-sac off the interior road system will be piped to the storm drainage easement between lots 13 and 14. The outlet point for this drainage system will be discharged south of the outlet point noted above.

Development of the property as planned would be expected to affect the hydrology of Gillettes Brook and its tributary (on the site) at least some. This would mainly arise from the proposed storm drainage system for the site and the creation of impervious surfaces created by roof tops, paved driveways and patios.

Based on the project engineer's hydrological analysis, which was supplied to Team members, it appears that "the proposed subdivision will not create any significant adverse affects to Gillettes Brook or existing downstream conditions" in terms of flooding. However, as a safeguard, it is recommended that downstream culverts be closely examined. The hydrological analysis was computed for the fifty (50) year storm event which has a two percent (2%) chance of occurring during a given year. To the best of the Team's knowledge, computations for other storm events, in particular, the more common storm events such as the 2-year and 10-year storm events were not computed. It strongly is recommended that these more common storm events also be analyzed in terms of the proposed subdivision and submitted for reveiw by the Town engineer.

Another concern associated with increased runoff from developed sites is the possibility for erosion and siltation problems. Because of the moderately steep slopes characterizing the site, it is most important that the proposed erosion and sediment plans be closely followed and regularly inspected once installed. Also, because of the moderately steep road grades anticipated, there is strong likelihood that roads will need to be sanded heavily during winter months. As a result there is a good chance that road sand will accumulate in the proposed sediment basins/stilling basins on the site. Therefore, it is recommended that sediment which accumulates in the basins be removed periodically. Also, streets should be sweeped in early spring and catch basins maintained.

5. SOILS

Included in this section are detailed soil map unit names. Map symbols used are those that appear in the published soil survey, however, soil map unit names reflect current concepts and interpretations. In some cases, map units are combined or they were renamed. Also included is a revised soil map to show the approximate boundaries of soils over this parcel.

The attached revised soil map will indicate approximate areas of various soils over this parcel. Wetlands are confined near and around the tributaries that flow into Gillettes Brook. Most of these wet areas were flagged in the field, however, there are wetland areas not flagged along two (2) tributaries which flow to the west and dissect Lot Number 5. These areas should be flagged and indicated on the plot plan map presented to the Town for approval. There are also indications of runoff waters from the northeast, which flow along a stone wall and down a fairly steep grade onto Lots 5 and 6 where it finally dissipates near the primary and reserve area for the septic system of Lot 6. This water will need to be diverted or controlled in order to avoid downslope erosion during and after construction.

The main soil limitations on this site are steep slopes and shallow depths to bedrock. Slopes are as steep as twenty percent (20%) in the northern area of Lot 5. Lots 6, 7, 11, and 15 have slopes of fifteen percent (15%) and greater. Lots 8, 9, 10, and 12 have slopes averaging ten percent (10%). Ledge or bedrock is included to some degree in all soil areas mapped at this site, particularly in the areas of Lots 1, 2, 3, and 4. Strict adherence to an erosion and sediment control plan will be needed to control erosion during construction.

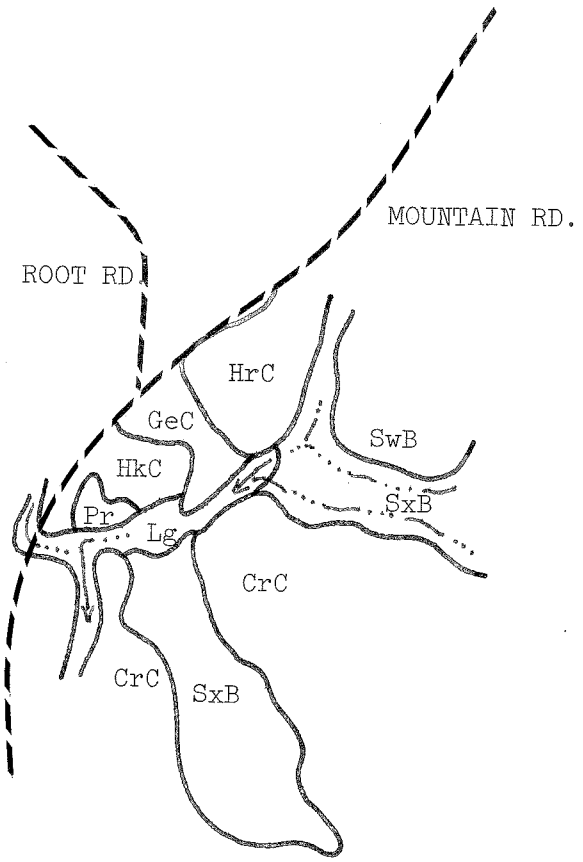
List of soil map symbols with their current interpretive name follows:

MAP SYMBOL	SOIL NAME
CrC, GeC--	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony
HkC --	Hinckley gravelly sandy loam, 3 to 15 percent slopes
HrC --	Charlton-Hollis complex, 3 to 15 percent slopes, very rocky
Le, Lg --	Ridgebury, Leicester, and Whitman fine sandy loams, extremely stony
Pr --	Pits, gravel
SwB --	Sutton fine sandy loam, 2 to 8 percent slopes, very stony
SxB --	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony

United States Department of Agriculture
Soil Conservation Service

Tolland County USDA-SCS
24 Hyde Avenue
Rockville, CT 06066
875-3881

Scale 1:12000



*Wetlands are along intermittent streams in area mapped SxB. These area can be delineated on-site, but cannot be shown on a map of this scale.

Detailed Soil Map Unit Descriptions

CrC, GeC - Canton and Charlton soils, 3 to 15 percent slopes, extremely stony - This mapping unit consists of gently sloping to sloping, well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are oval or irregular in shape. Slopes are mostly smooth and convex and are 100 to 600 feet long. Stones cover 8 to 25 percent of the surface. About 45 percent of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas of this unit consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam 21 inches thick. The substratum is pale brown gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam and sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are areas of somewhat excessively drained Gloucester and Hollis soils, well drained Paxton soils, and moderately well drained Sutton soils. Also included are a few nearly level areas and a few areas that have a compact substratum at a depth of 40 to 50 inches. Site specific investigations are needed to determine the extent of the included soils.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderate or moderately rapid. Both soils have moderate available water capacity and medium to rapid runoff.

Slope is the main limitation of these soils for community development, especially for onsite septic systems. Slopes of excavations in these soils are unstable. The stones on the surface hinder landscaping.

HkC - Hinckley gravelly sandy loam, 3 to 15 percent slopes. This is a gently sloping to sloping, excessively drained soil on terraces of stream valleys and on glacial outwash plains. The areas of this soil are oval or irregular in shape. Slopes are convex or undulating and are mostly less than 200 feet long.

Typically, the surface layer is very dark grayish brown gravelly sandy loam 2 inches thick. The subsoil is dark yellowish brown, yellowish brown, and brownish yellow gravelly sandy loam and gravelly loamy sand 16 inches thick. The substratum is pale yellow gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils; somewhat excessively drained Merrimac soils; well drained Agawam soils; and moderately well drained Sudbury soils.

The water table in this Hinckley soil is commonly below a depth of 6 feet. The available water capacity is low. Runoff is rapid. This soil has rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum.

This soil is generally suited to community development, but the rapid permeability imposes a hazard of groundwater pollution in areas used for septic tanks. The slopes in some excavated areas are unstable.

HrC - Charlton-Hollis complex, 3 to 15 percent slopes, very rocky - This complex consists of gently sloping to sloping, somewhat excessively drained and well drained soils on hills and ridges of glacial till uplands. The areas of this unit are mostly irregular in shape. Slopes are mostly complex and are 100 to 200 feet long. Stones cover 1 to 8 percent of the surface.

This unit is about 55 percent Charlton soils, 20 percent Hollis soils, 15 percent other soils, and 10 percent exposed bedrock. The Charlton and Hollis soils are in such a complex pattern that it was not practical to map them separately.

Typically, the Charlton soils have a thick, fine sandy loam topsoil and subsoil over a sandy loam substratum. The soils are commonly deeper than 60 inches.

The Hollis soils have fine sandy loam topsoil and subsoil from 10 to 20 inches thick over hard, unweathered schist bedrock.

Included with these soils in mapping are small areas of well drained Canton and Paxton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester soils. Also included are small areas with bedrock at a depth of 20 to 40 inches.

The water table of these soils is commonly at a depth of more than 6 feet. The available water capacity is moderate in the Charlton soils and very low or low in the Hollis soils. Both soils have moderate or moderately rapid permeability and medium to rapid runoff.

The areas of exposed rock and the depth to bedrock in the Hollis soils limit the use of these areas for community development, especially as a building site or as a site for onsite septic systems. The stones on the surface restrict landscaping.

Le, Lg - Ridgebury, Leicester, and Whitman soils, extremely stony - This mapping unit consists of nearly level, poorly drained, and very poorly drained soils in depressions and drainageways of glacial till uplands. The areas are mostly long and narrow or irregular in shape. Slopes range from 0 to 3 percent and are mainly 100 to 300 feet long. Stones cover 8 to 25 percent of the surface. About 40 percent of this unit is Ridgebury soils, 25 percent is Leicester soils, 15 percent is Whitman soils, and 10 percent is other soils. Some areas of this unit will consist of one of these soils, and other areas will consist of two or three. The soils of this unit were mapped together because they have no significant differences in use and management.

The Ridgebury soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate to moderately rapid in the surface layer and the subsoil and slow to very slow in the substratum. Runoff is slow. The Ridgebury soils have a moderate available water capacity.

The Leicester soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate or moderately rapid throughout. Runoff is slow. The Leicester soils have a moderate available water capacity.

The Whitman soils have a seasonal high water table at or near the surface from fall through spring. The permeability of the soils is moderate or moderately rapid in the surface layer and subsoil and slow to very slow in the substratum. Runoff is slow. The Whitman soils have a moderate available water capacity.

The high water table and slow to very slow permeability are major limitations of the soils of these areas for community development. Steep slopes of excavations in these soils slump when saturated. The stones on the surface restrict landscaping, and lawns are soggy most of the year.

SwB - Sutton fine sandy loam, 2 to 8 percent slopes, very stony - This nearly level to gently sloping moderately well drained soil is on upland glacial till plains, hills, and ridges. Stones and boulders cover 1 to 8 percent of the surface. Areas are dominantly irregular in shape.

Typically, this Sutton soil has a very dark grayish brown, fine sandy loam surface layer 4 inches thick. The subsoil is yellowish brown, dark yellowish brown, and dark brown, mottled

fine sandy loam and sandy loam 29 inches thick. The substratum is olive brown, mottled sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton and Charlton soils; moderately well drained Woodbridge soils; and poorly drained Leicester soils. Included areas make up about 10 percent of this map unit.

The Sutton soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is slow or medium. Sutton soil warms up and dries out slowly in the spring.

The major limiting factor for community development is the seasonal high water table. Onsite septic systems need special design and installation to prevent effluent from seeping to the surface. Foundation drains help to prevent wet basements. Lawns are wet and soggy in the fall and spring. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins to help control erosion during construction.

SxB - Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony - This nearly level to gently sloping, moderately well drained soil is on upland glacial till plains, hills, and ridges. Stones and boulders cover 8 to 25 percent of the surface. Areas are dominantly irregular in shape.

Typically, this Sutton soil has a very dark grayish brown, fine sandy loam surface layer 4 inches thick. The subsoil is yellowish brown, dark yellowish brown, and dark brown, mottled fine sandy loam and sandy loam 29 inches thick. The substratum is olive brown, mottled sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton and Charlton soils; moderately well drained Woodbridge soils; and poorly drained Leicester soils. Included areas make up about 10 percent of this map unit.

The Sutton soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is slow or medium. Sutton soil warms up and dries out slowly in the spring.

The major limiting factor for community development is the seasonal high water table. Onsite septic systems need special design and installation to prevent effluent from seeping to the surface. Foundation drains help to prevent wet basements. Stones and boulders need to be removed for landscaping. Quickly

establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

Pr - Pr-Pits, gravel. This unit consists of regularly shaped areas that have been excavated for sand and gravel. The areas are mostly on outwash plains and terraces of stream valleys. Slopes mainly range from 0 to 25 percent but are steeper on escarpments along the edge of the pit.

Included with this unit in mapping are small intermingled areas of Udorthents, excessively drained Hinckley and Windsor soils, somewhat excessively drained Merrimac and Gloucester soils, and moderately well drained Ninigret and Sudbury soils. Included areas make up about 20 percent of the unit.

The water table in this unit is commonly below a depth of 60 inches, but in a few places it is near the surface. A few areas adjacent to streams are subject to flooding. The permeability of this unit is rapid or very rapid.

Areas of this unit require on-site investigation and evaluation to determine the suitability for most uses.

6. EROSION AND SEDIMENT CONTROL

The site was inspected and plan maps and calculations were reviewed.

Comments are:

1. The site is very steep with extensive road cuts and fills and extensive site preparation required for house construction including steep driveways. The potential for soil erosion and off-site sedimentation is high.

2. The soil erosion and sediment control plan that was submitted is not adequate for protecting the site and for preventing off-site damages to Gillettes Brook and areas downstream.

3. A detailed soil erosion and sediment control plan should be developed. The plan should include a permanent sediment basin to remove sand, silt and debris from stormwater prior to discharge into Gillettes Brook. The conventional measures proposed (silt fence and hay bale silt barriers) will not function adequately on this site as the velocities and volumes will destroy the barriers during the first substantial rainfall.

4. The reach of Gillettes Brook from the site to the Turnpike Road culvert was inspected. The stream has many pools and riffle areas and a small waterfall and splash basin. The stream probably supports a native brook trout population. Presently the water quality appears to be good to excellent and the stream is free of road sand and debris deposits. The feeder stream from the proposed development does contain silt and sand from the recently cleared road right-of-ways and at the junction of the feeder with Gillettes Brook, a small delta of sand is forming. This situation will worsen if construction and land disturbing activities proceed without adequate soil erosion and sediment controls.

5. The stream bed is armored with boulders and large rocks. Streambank erosion from peak flow increases should not be a problem.

6. The sediment basin should be designed according to the standard found in the Connecticut Guidelines for Soil Erosion and Sediment Control (1985) page 8-43.

7. The District would appreciate the opportunity to review the revised plans for adequacy prior to final approval to ensure adequacy of the proposed measures.

8. The Team Soil Resource Specialist discusses wetland verification in his report on soils.

9. The Team Engineering Specialist and the District Conservationist both see the need for a permanent sediment basin to protect Gillettes Brook from siltation during the construction phase and subsequent siltation from road sand and debris generated by the road network. The basin will also provide a certain amount of stormwater detention capacity for storms less than ten (10) year frequency.

7. ENGINEERING CONCERNS

The peak discharge at the road culvert between Lots 5 and 15 increases about twenty-five percent (25%) for the after-development. Since this culvert discharges into an existing stream, the impact may not be great in terms of flooding since there are no small culverts and homes in the floodplain. However, the before-peak discharge for the 50-year storm produces a velocity of about ten (10) feet per second in the stream on Lot 17, and the after-develop velocity would be about eleven (11) feet per second or an increase of only one (1) foot per second, which should not be a serious concern if the existing stream is stable now.

On sheet two (2) of the hydrological analysis, the engineer quotes from a USGS urban study project that, if the drainage area (storm sewered) divided by the total drainage area is less than or equal to thirty-five percent (35%), there is an insignificant impact on the watershed. The ERT Engineer is not sure how the project was run or what kind of impact they are talking about, but the reasoning by Reino Hyppa Associates, that is used concerning this watershed, is false.

Some buildings are shown with the first floor about fourteen (14) feet above natural ground, and others are shown about fourteen (14) feet below natural ground. There will be considerable excavation and fill, and much chance for sediment to be washed downhill. Contours are shown around some foundations, but many contours are not shown. Some look like the primary septic system may be encroached upon if the fill is continued on a 2:1 or 3:1 slope.

Many driveways are over 150 feet long and will discharge water onto the road. The developer should consider putting the catchbasins closer to the ends of some of the driveways.

Hay bales or silt fence on the cut or fill slopes should be installed to direct water onto the road or onto undisturbed areas.

There is no construction entrance shown on the Sediment and Erosion Control Plan.

8. WATER SUPPLY

All lots in the proposed subdivision would be served by individual on-site wells, which will tap the underlying metamorphic rock. Most lots are greater than one (1) acre in size, which should allow for some flexibility in locating wells. In order to avoid the chance for material interference between pumping wells, it is recommended that wells be separated as far apart as possible.

Wells should be drilled and located to the high side of lots properly separated from sewage disposal systems or other potential sources of pollution, as provided by the Public Health Code, Connecticut Well Drilling Board and local regulations. Potential well sites on moderately sloping areas may be difficult to reach with the drilling rig. As a result, there may be a need to prepare an area (build a road) to a potential well site.

Drilled wells that are properly cased and sealed into underlying rock will generally afford the most protection from possible sources of pollution and usually have a reliable yield, especially during seasonal dry periods. Although the yield of a rock well is normally not very high, they generally produce sufficient quantity to meet the domestic needs of single family houses. This is mainly due to generally small fractures, joints and seams in the rock, which are widely separated.

A review of several well completion reports for wells along Mountain Road revealed yields ranging between five (5) and eight (8) gallons, inclusive, at depths ranging from 124 feet to 200 feet. Based on Connecticut Water Resources Bulletin #24, the yields of wells tapping the underlying bedrock generally decrease with depth mainly due to fewer fractures in the bedrock. Wells of very low yield can be helped in providing sufficient water during periods of peak usage by providing a larger pressure/storage tank. The natural quality of water in the bedrock should be good. Certain chemicals, such as iron and manganese may be elevated in the water.

According to the Department of Environmental Protection's proposed Water Quality Classification map for the Upper Connecticut River Basin (January 1, 1986), groundwater beneath the site is classified as GA. This means that groundwater is suitable for private drinking water supplies without treatment.

9. FISH RESOURCES

The proposed subdivision is located adjacent to Gillettes Brook. An intermittent stream drains much of the proposed subdivision before emptying into Gillettes Brook.

Gillettes Brook is a high quality trout stream. The stream has a bottom consisting mostly of gravel, rubble and ledge; and supports populations of brook trout and dace. The State supplements the wild trout population with an annual stocking of yearling brook trout. The intermittent stream supports no fish life.

From the fisheries standpoint, the major concern with this development is stream degradation caused by erosion and sedimentation. Silt accumulation reduces the streams ability to hold larger trout and to produce insects that the trout depend on for food. Thus, it is important that the drainage and erosion/sedimentation control measures be implemented and properly maintained to prevent excessive sediment loads from entering Gillettes Brook, via the intermittent stream or directly.

10. SUMMARY

NOTE: This is a brief summary of the major points, concerns and recommendations of the Team. You are strongly urged to read the entire report and to refer back to specific sections in order to obtain all the information about a certain topic.

GEOLOGY AND GEOLOGIC LIMITATIONS

--The major geologic limitations on the site appear to be (1) the presence of moderate slopes, (2) the presence of shallow to bedrock soils, mainly in the western parts and (3) the presence of till-based soils, which may have seasonally elevated water tables and slow percolation rates.

--With regard to on-site subsurface sewage disposal systems, it appears that the limitations mentioned above can be surmounted provided that they are properly engineered and installed.

--In the wetter parts of the site, it is advised that every effort be made to install building footing drains.

--All wetland road crossings will need to be properly engineered. Road construction through wetlands should preferably be done during the dry time of year, and should include provisions for effective erosion and sediment control.

--Culverts should be properly sized and located so as not to alter the water levels in accompanying wetlands and cause flooding problems.

HYDROLOGY

Gillettes Brook and its tributary on the site have been classified as "A", which means that it may be suitable for drinking water supply, etc. As a result, every effort should be made to maintain the high water quality of these streamcourses during and following development of the site.

--It is strongly recommended that 2-year and 10-year storm events be analyzed in terms of the proposed subdivision and submitted for review by the Town engineer.

--As a safeguard it is recommended that downstream culverts be closely examined even though it appears from the project engineer's hydrological analysis that there will be no significant adverse affects to Gillettes Brook or existing downstream conditions.

SOILS

--A revised soil map has been drawn to show the approximate boundaries of soils over this parcel.

--Most of the wetlands were flagged in the field, however, there are wetland areas not flagged along two (2) tributaries which flow to the west and dissect Lot Number 5. These areas should be flagged and indicated on the plot plan map.

--There are indications of runoff waters from the northeast which flow along a stone wall and down a fairly steep grade onto Lots 5 and 6 where it finally dissipates near the primary and reserve area for the septic system of Lot 6. This water will need to be diverted or controlled in order to avoid downslope erosion during and after construction.

--The main soil limitations on this site are steep slopes (10-20%), and shallow depths to bedrock. Strict adherence to an erosion and sediment control plan will be needed to control erosion during construction.

EROSION AND SEDIMENT CONTROL

--The soil erosion and sediment control plan that was submitted is not adequate for protecting the site and for preventing off-site damages to Gillettes Brook and areas downstream.

--A detailed soil erosion and sediment control plan should be developed, and should include a permanent sediment basin to remove sand, silt and debris from stormwater prior to discharge to Gillettes Brook.

--The feeder stream from the proposed development does contain silt and sand from the recently cleared road right-of-ways and a small delta of sand is forming at it's junction with Gillettes Brook. This situation will worsen if construction and land disturbing activities proceed without adequate soil erosion and sediment control measures.

--The District would like the opportunity to review revised plans for adequacy prior to final approval.

ENGINEERING CONCERNS

--There is no construction entrance shown on the Erosion and Sediment Control Plan.

--Hay bales or silt fence on the cut or fill slopes should be installed to direct water onto the road or undisturbed areas.

--The developer should consider putting the catchbasins closer to the ends of some of the driveways.

--There will be considerable excavation and fill to construct some of the homes and this could lead to sediment being washed downhill.

--Contours are shown around some foundations, but many contours are not shown.

--Some lots look like the primary septic systems may be encroached upon if fill is continued on a 2:1 or 3:1 slope.

--The peak discharge at the road culvert between Lots 5 and 15 increases about 25% after development. Since this culvert discharges into an existing stream, the impact may not be great in terms of flooding since there are no small culverts and homes in the floodplain.

WATER SUPPLY

--Potential well sites on moderately sloping areas may be difficult to reach with a drilling rig. As a result, it may be necessary to prepare an area (build a road) to a potential well site.

--According to the DEP's proposed Water Quality Classification map for the Upper Connecticut River Basin, the groundwater beneath the site is classified GA, which means it is suitable for private drinking water supplies without treatment.

FISH RESOURCES

--Gillettes Brook is a high quality trout stream that the State supplements with an annual stocking of yearling brook trout.

--It is important that the drainage and erosion/sedimentation control measures be implemented and properly maintained to prevent excessive sediment loads from entering Gillettes Brook either directly or via intermittent streamcourses.

About The Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area--an 86 town area.

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, a statement identifying the specific areas of concern the Team should address, and the time available for completion of the ERT study. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Elaine A. Sych (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.