

Environmental Review Team Report

# Walnut Farms Drive

Farmington, Connecticut

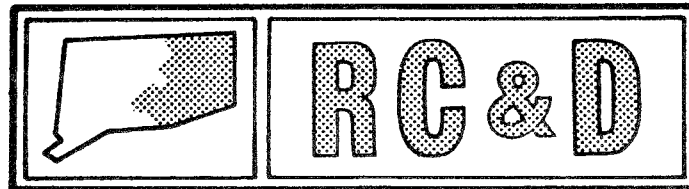


EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team  
Report

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Farmington, Connecticut

April 1984

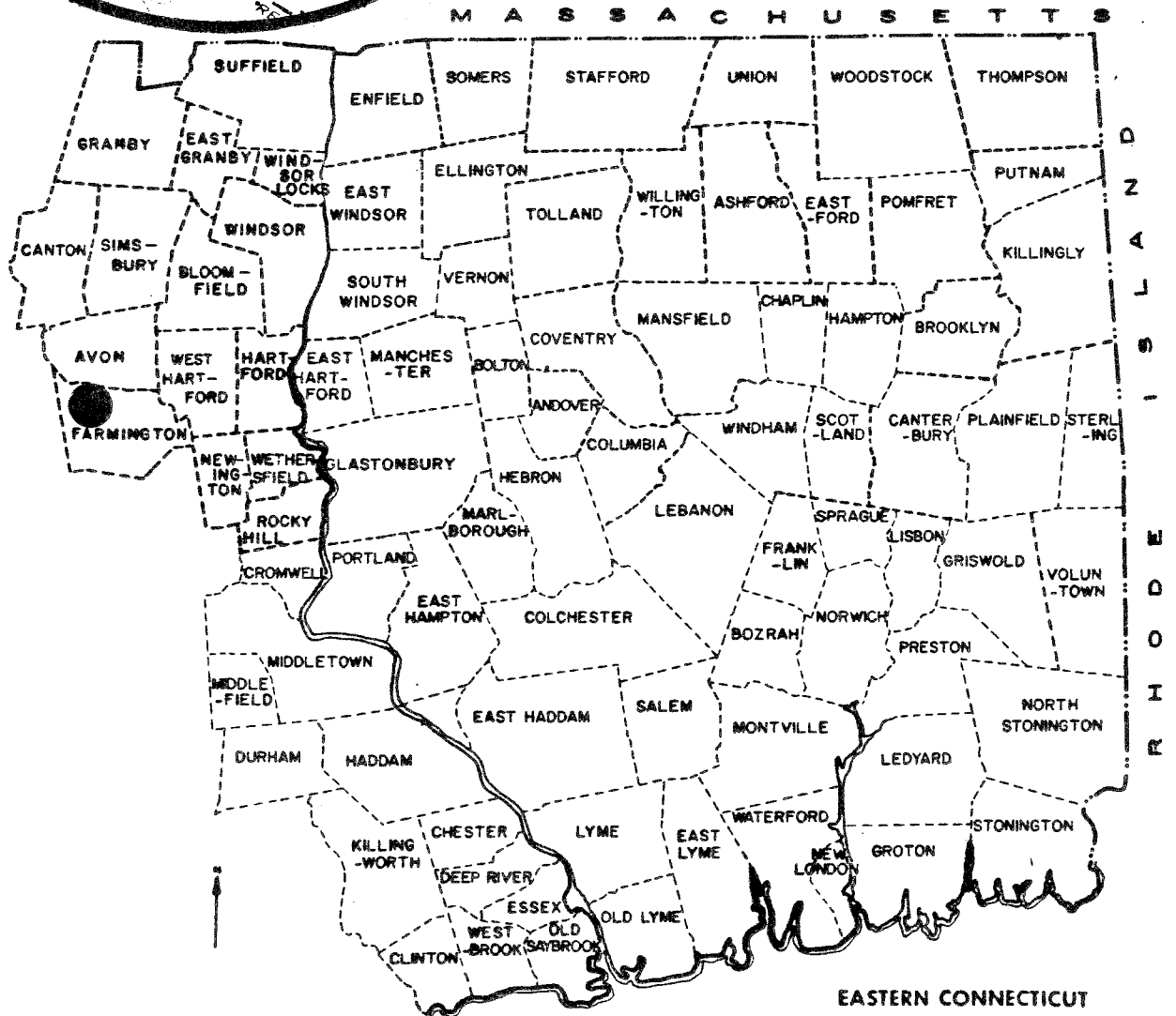
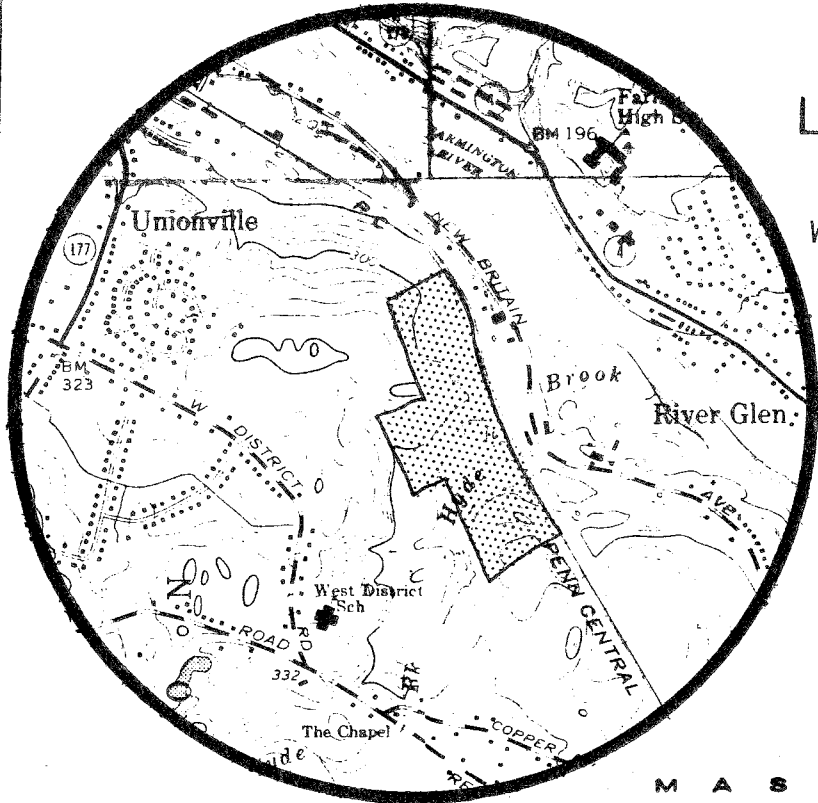


Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team  
PO Box 198  
Brooklyn, Connecticut 06234

# Location of Study Site

WALNUT FARMS DRIVE CLUSTER DEVELOPMENT  
FARMINGTON, CONNECTICUT



EASTERN CONNECTICUT  
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT  
ON  
WALNUT FARMS CLUSTER DEVELOPMENT  
FARMINGTON, CONNECTICUT

This report is an outgrowth of a request from the Farmington Planning and Zoning Commission, to the Hartford 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 as a project measure. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist of the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). Reproductions of the soil survey map as well as a topographic map of the site were distributed to all ERT participants prior to their field review of the site.

The ERT that field-checked the site consisted of the following personnel: Bill Warzecha, Geologist, State Department of Environmental Protection (DEP); Tom Nosal, Engineer, DEP; Rob Cochran, Soil Conservationist, SCS; Chris Singley, Planner, Capital Region Council of Governments (CRCOG); Bill Taylor, Transportation Planner, CRCOG; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

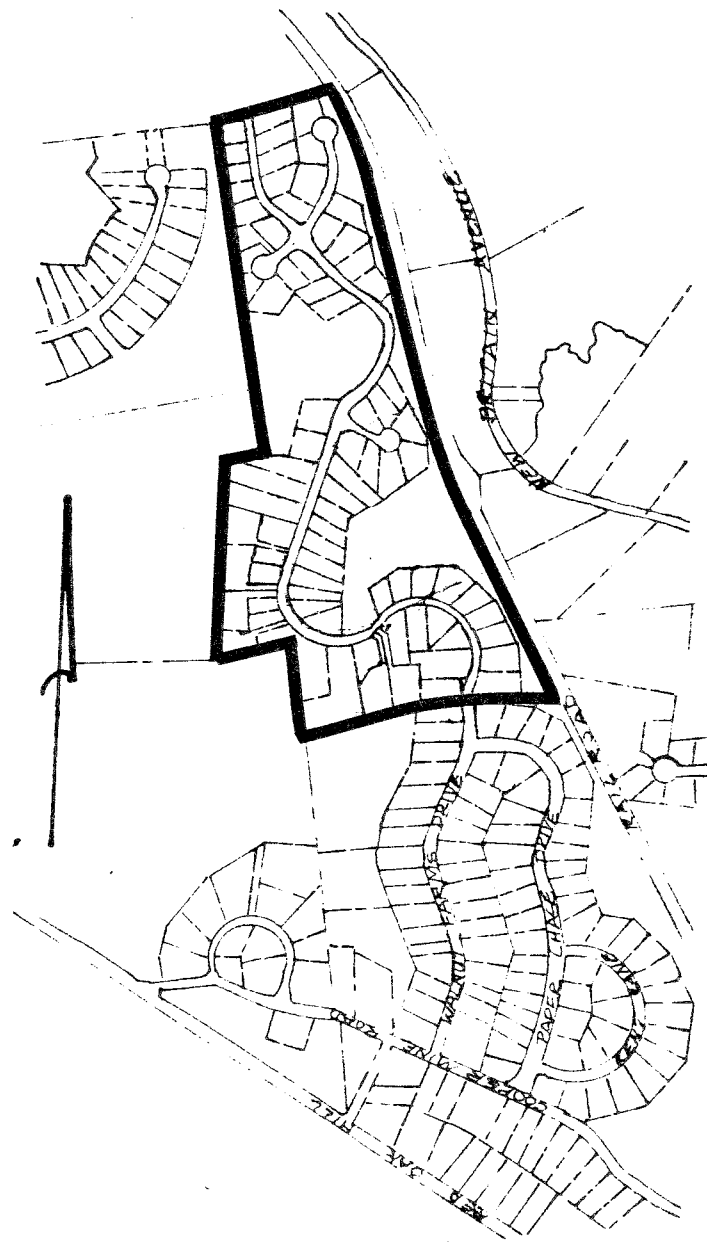
The Team met and field-checked the site on Wednesday, March 7, 1984. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

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 developer and the Town of Farmington. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Route 205, Brooklyn, CT 06234, 774-1253.

# Preliminary Site Plan



## INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed cluster development in the Town of Farmington. The site is approximately 66 acres in size and is generally located west of the railroad right-of-way and north of Red Oak Hill Road. Walnut Farms Drive will extend north through the project site. The development is being proposed by G.P.M. Builders, Inc. and preliminary plans have been prepared by Hodge Engineering Associates.

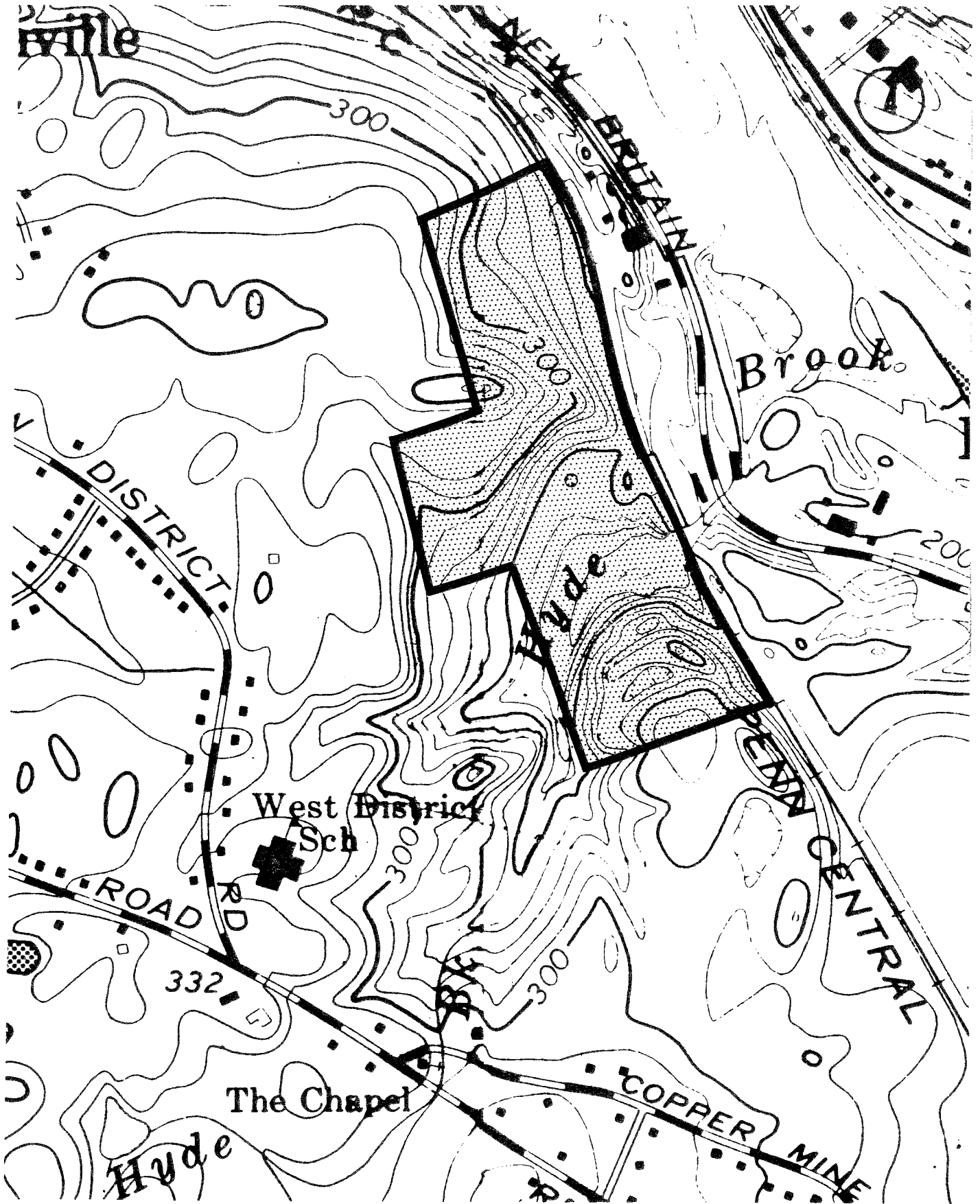
Preliminary plans show 78 lots, ranging from 15,800 square feet to 42,800 square feet in size. Two open space areas are also incorporated into the plan. The site is served by municipal sewer and water lines. As mentioned above, Walnut Farms Drive will be extended through the site, three short "spur" roads ending in cul-de-sacs will provide additional access to interior lots. The area is currently zoned R-30 (single family residential, 30,000 square foot lots). A zoning change will be necessary for development of this proposal as planned.

The site has extremely steep topography and some regulated wetlands areas. Walnut Farms Drive is planned to extend through this rough terrain. Soils on the site are predominantly droughty and subject to erosion.

The Team is concerned with the effect of this proposed development on the natural resource base of this site. Although many severe limitations to development can be overcome with appropriate engineering techniques, these measures can become costly, making a project financially unfeasible for a developer. Limitations to development of this site are due primarily, to steep slopes, soil droughtiness and susceptibility to erosion and wetland areas. Development of the site as planned will cause significant increases in storm water runoff, as highly pervious surfaces will be replaced with impervious surfaces. Team members' concerns are discussed in detail in the following sections of this report.

# Topography

— Site Boundary



## ENVIRONMENTAL ASSESSMENT

### TOPOGRAPHY

The subject site consists of an irregularly shaped parcel of land, approximately 66 acres in size, which is located in west central Farmington. It is generally situated west of the Farmington River, north of Red Oak Hill Road and east-southeast of Westview Terrace. Hyde Brook crosses the south central part of the property. As indicated by the topographic map, the topography of the parcel is diverse and varies from steep to gently rolling in areas. The land surface rises steeply, south of Hyde Brook, to the top of what appears to be an esker. An "esker" is a glacial feature which consists of a relatively long, low and narrow mound of earth. It is commonly composed of moderately well stratified sand and gravel. Eskers were formed when sand and gravel was deposited (1) by a subglacial (formed or accumulated in or by the bottom portion of a glacier) stream flowing between ice walls or (2) in an ice tunnel of the retreating glacier and was subsequently left behind when the ice melted. Slopes are also steep in the north central parts of the site. Maximum and minimum elevations on the property are 360 feet and 220 feet above mean sea level, respectively.

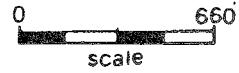
### GEOLOGY

The site is primarily located in the New Britain topographic quadrangle, however, approximately 10 acres in the western section of the site are located in the Bristol topographic quadrangle. A bedrock geology (GQ-494) and surficial geology (GQ-119) map by Howard E. Simpson for the New Britain quadrangle has been published by the U.S. Geological Survey (USGS). Only the surficial geologic map (GQ-145), by Howard E. Simpson, has been published for the Bristol quadrangle. The bedrock geologic map has not been published to date. However, there is preliminary information, available for review purposes at the Department of Environmental Protection's Natural Resource Center in Hartford. All of the maps mentioned above are available for purchase at the Natural Resources Center.




No bedrock outcrops were visible on the site the day of the review. Based on map GQ-494 and preliminary bedrock geologic information for the Bristol quadrangle, bedrock underlying the site has been classified as New Haven Arkose. The rock consists of a coarse, pale-reddish-brown to grayish-red micaceous (mica-rich) arkose, interbedded locally with layers of shale siltstone and fine-grained feldspathic (feldspar-rich) clayey sandstone. The term "arkose" refers to the sedimentary mineralogy of the rocks. They contain high percentages of the minerals feldspar and quartz. These rocks were formed by the cementation of sand, silt, and pebbles, which were deposited in streams and lakes approximately 200 million years ago. Depth to bedrock ranges from a few feet below ground surface in the



# Surficial Geology



## EXPLANATION

-  Ice Contact Stratified Drift
-  Swamp Sediments
-  Till Deposits (adapted from the Soil Survey for Hartford County, Ct)

area designated as HeC (Hollis soils) on the accompanying soils map to probably not more than 40 feet below ground surface in the east central sections of the site.

On most of the site, the bedrock is overlain by ice contact stratified drift. The term "stratified drift" refers to the typically well-layered sediments that were deposited by glacial meltwater streams. Sand and gravel are the main components of stratified drift. "Ice-contact" means that the sediments were deposited on, under, or adjacent to wasting blocks of glacier ice. Low topographic depressions in the southern parts of the property probably resulted when buried ice blocks covered with sediment melted, causing the sediments to collapse into irregular basins.

The total depth of ore stratified drift to bedrock is probably less than 40 feet in most places: the thickest deposits are likely to occur in the east central sections of the property while the thinnest are likely to occur in the area designated as HsC (Hollis soils) on the accompanying soils map. The sides of excavated areas in the MgC, Tg and HfC soils found on the site may become unstable. Therefore, consideration should be given to using trench shields to protect workers from possible "cutback cave-ins" in areas where trenches are over 5 feet in depth (i.e., sewer, electric, and water lines, etc.).

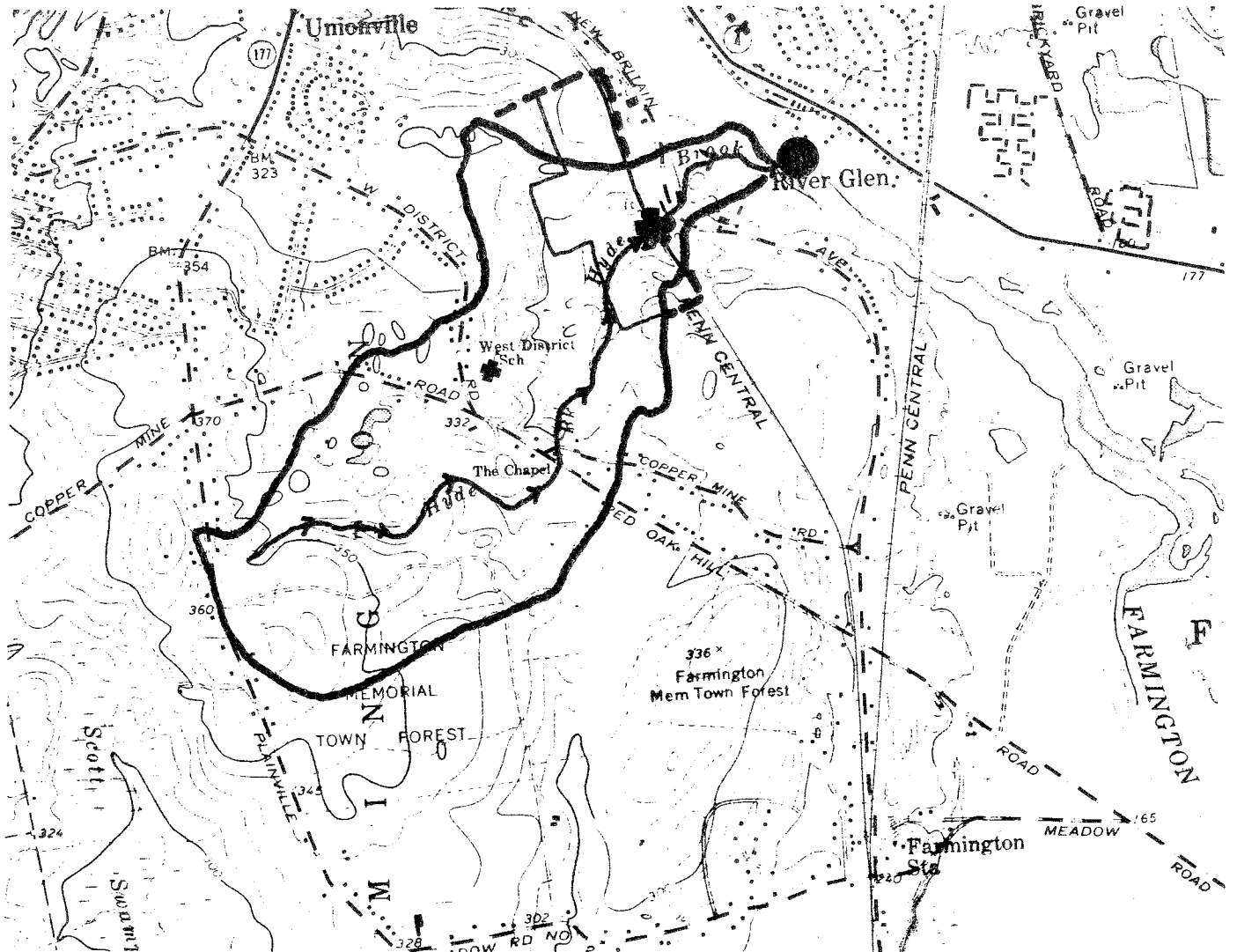
Another type of glacial sediment found on the site is till. Small areas of this material are found in the eastern and western limits of the site. It is indicated on the soils map as CrD (Charlton soils) and HsC (Hollis soils). Till is a nonsorted, nonstratified glacial sediment which contains rock particles ranging in size from clay to boulders and ranging in shape from rounded to angular to flat. The rock particles composing the till were accumulated by the glacier as it expanded southward through New England, scraping, chipping and gouging the preexisting soil and bedrock surfaces. The till was then redeposited on the freshly scoured landscape, either by being plastered against the surface from underneath the ice or by being let down gently from within the ice as it stagnated during a stage of glacial retreat. Thicknesses of the till found on this site are probably less than 10 feet.

Overlying the stratified drift, primarily along Hyde Brook in the central parts of the site, are sediments called "swamp deposits." "Swamp deposits" consist of fine grained, organic materials interbedded with layers of sand, silt and clays. These deposits are designated by the symbol WcA (Walpole soils) on the soils map. The site plan distributed to Team members indicates that most of this area is proposed open space. Disturbance of wetland areas should be discouraged because of their hydrological values (i.e., providing flood storage, sediment control, and pollution control) and ecological values (i.e., providing habitat for waterfowl and other wildlife).






## HYDROLOGY

Approximately 42 acres in the central part of the parcel lies in the watershed of Hyde Brook, which bisects the property. Although  $\pm 16$  acres in the northern section and  $\pm 3$  acres in the southern section do not lie within the watershed of Hyde Brook, it appears, based on visual inspection of the site that surface flow in these areas has been intercepted by the construction of a ditch on the west

# Drainage Areas



## EXPLANATION

-  Watershed of Hyde Brook
-  Design Point
-  Hyde Brook watershed, including the northern and southern parts of the parcel.
-  Design Point ( at inlet to culvert passing under the railroad in the east central part of the property)
-  Watercourses showing direction of flow

side of the railroad bed. As a result, surface water flows from these areas appear to be directed into the watershed of Hyde Brook. The size of the Hyde Brook watershed, the outlet for the pond, including the northern and southern portions of the property lying outside of it is approximately 475 acres. A  $\pm 1$  acre pond, which is an impoundment of Hyde Brook, is located in the east central portion of the site. According to the site plans, stormwater will be artificially collected and dispersed into this area. The outlet for the pond is controlled by a weir. From the outlet point, Hyde Brook flows eastward, ultimately discharging into the Farmington River. Hyde Brook also passes through a culvert under New Britain Avenue.

Development of the 65-acre parcel as planned can be expected to increase the amount of runoff from the site for a given rainfall amount and to thereby increase peak flows into the proposed detention area (pond) in the eastern limits of the site and ultimately to Hyde Brook. These increases would be caused by removal of vegetation, compaction of soil during the construction phase, and creation of impervious surfaces such as roofs, driveways, and roads.

An estimate may be made of the runoff change likely to occur on the site from the proposed land use modification. A simplification of Technical Release No. 55 of the Soil Conservation Service provides a technique which may be used in formulating the estimate. This method involves the determination of runoff curve numbers, which relate the amount of precipitation to amounts of runoff. It is estimated that development would increase the curve number of the property by 17 (from 33 to 50). Under these conditions, runoff depth for a 25-year storm event would increase from .1 inches to .9 inches (an increase of 800%). This increase is significant and underscores the importance of judicious stormwater management on the site. As mentioned earlier, increased runoff on the site is mainly due to the creation of impervious surfaces such as roads, roof tops, driveways, etc. over otherwise highly permeable soils, i.e., sand and gravel, as well as from the compaction of soils and removal of vegetation.

Prior to approval of the proposed development, it is recommended that the applicant be required to submit detailed hydrological information on pre- and post-development runoff volumes and peak flows from the property. Estimates should be provided for a 10, 25, 50, and 100 year design storm. In addition, detailed design specifications for the proposed detention pond(s) should be submitted for review along with the hydrological information. The detention pond may also serve as a sediment retention function. If so, measures should be taken to remove the sediment periodically, since a build up of the the material can diminish the runoff storage capacity of the pond. Also, the project engineer should take a close look at the culverts passing under the railroad bed and New Britain Avenue to determine if they can handle post-development flows from the site.

Where slopes are steep, i.e., south central and central portions of the site, severe problems of erosion and gulying may occur unless adequate measures are taken. Therefore, it is recommended that a judicious soil erosion and sediment control plan be incorporated with stormwater management plans for the site.

## SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320 feet/inch scale to 660 feet/inch, the soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitation chart indicates the probable limitations for each of the soils for on-site sewerage, buildings with basements, buildings without basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication Soil Survey, Hartford County Connecticut, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soils Groups for Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

The soils as mapped on the Hartford County Soil Survey are:

CrD - Charlton very stony fine sandy loam, 15 to 35 percent slopes. Charlton series consists of very deep, well drained soils formed in friable or firm glacial till on uplands. They are nearly level to very steep soils on till plains and hills. Slopes range from 0 to 45 percent. Depth to the high water table is usually greater than 6 feet. Bedrock is at a depth greater than 5 feet.

MgC - Manchester gravelly sandy loam, 3 to 15 percent slopes. The Manchester series consists of deep excessively drained soils on terraces. They are underlain by stratified sand and gravel. They are nearly level or undulating to sloping soils on outwash terraces. Depth to the water table is greater than 6 feet and to bedrock greater than 5 feet.

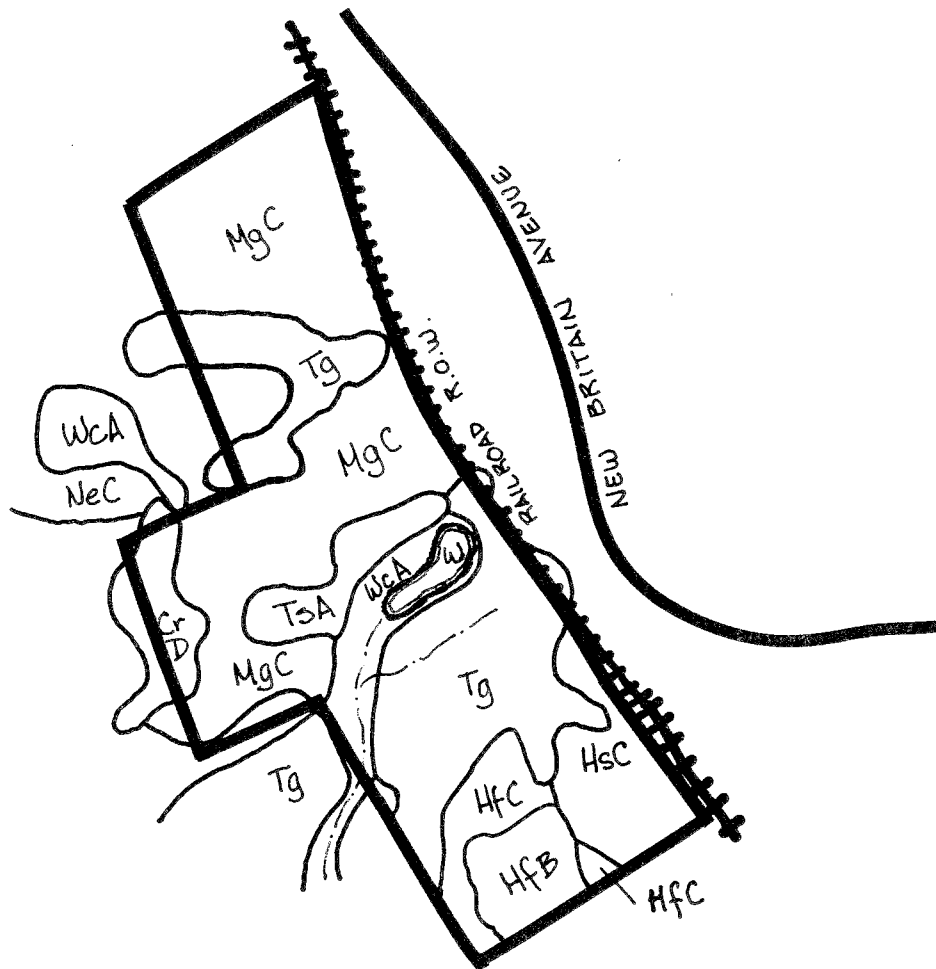
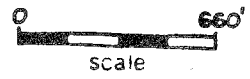
Tg - Terrace escarpments sand and gravel. This land type consists of soils on steep slopes formed from glacial lakebed or glacial meltwaters. They are usually sand and gravel. The slopes are greater than 15 percent and 100 to several hundred feet wide.

TsA - Tisbury fine sandy loam, 0 to 3 percent slopes. The Tisbury series consists of deep, moderately well drained soils on terraces. These nearly level and gently sloping soils formed in silty deposits over sand and gravel. The water table is at a depth of 1.5 to 3.0 feet during the months of November to April. Depth to bedrock is greater than 5 feet. Slopes range from 0 to 8 percent.

WcA - Walpole loam, 0 to 3 percent slopes. The Walpole series consists of deep, poorly drained soils formed in glacial drift. They are nearly level to gently sloping soils in low lying wet areas on terraces. Depth to the water table ranges from 0 to 1.0 feet. Slopes are generally less than 3 percent, but some are as much as 8 percent. Bedrock is usually at a depth greater than 5 feet.

The MgC soils are droughty soils and establishing vegetation on steep slopes must be carefully done, using materials which are drought-tolerant. A long, steep slope is planned where the main road will be cutting through approximately stations 28 to 33. If access were made available from New Britain Avenue, this area could

# Soils



possibly be avoided and left in its natural condition. During the field review, it was mentioned that access could be obtained off New Britain Avenue. The southern part of the development could stop at a cul-de-sac at lot 27. The access road would then turn north from lot 28. However, during the review it was also mentioned that for fire access the development road should continue through this steep sloping area along with construction of the access road from New Britain Avenue. If the main road is constructed through this steep sloping area, vegetation should be established as soon as final grading of the slope is completed. The slope should be limed, fertilized, seeded, mulched and anchored with erosion control netting. A hydroseeder could be used along with a mulching machine. It is extremely important that the correct plant materials and seeding dates be used. An excellent seed mixture would be (1½ lbs/1,000 square feet) Kentucky 31 Tall Fescue and Creeping Red Fescue. Seeding dates for this mixture are April 1 - June 15 or August 15 - September 30. It would be best to final grade this area as close to these seeding dates as possible. After grass vegetation is established, the following spring, white pine seedlings could be planted to further assist in stabilizing the slope.

Phasing construction of this parcel was discussed during the field review. Construction of the project in several phases would provide several advantages:

- a) decrease amount of land disturbed
- b) allow more rapid restoration of disturbed area
- c) enhance aesthetics of the site while additional phases are constructed
- d) significantly lower initial costs of site development and restoration.

The proposal could be developed from lots 1 through 9, 71-78 as part of Phase I.

Regrading and clear cutting large areas should be avoided because of slopes and soil limitations. Driveways should be constructed along contours to avoid steep cuts and possible erosion. Homes should be located to conform and blend in with the site contours and vegetation. Minimizing land disturbance will: reduce erosion potential, hasten restoration of the site and establishment of permanent vegetation, create an aesthetically pleasing housing environment, decrease site work time, thus allowing faster completion of the homes.

When planning earth movement on this site, the following suggestions should be taken into consideration.

1. During construction of roadway embankments, utilize calcium chloride and/or water to minimize dust conditions.
2. Trucks transporting materials to the site, away from the site or on site should be covered during transit to minimize dust conditions.
3. Utilize on-site material from cut sections for all fill areas.
4. Investigate the use of a toe-of-slope or side slope retaining structure (e.g., bin wall, gravity wall, reinforced earth wall) to minimize the cut section in the slope left of Walnut Farms Drive Station 31+0.

#### Sediment and Erosion Control Measures

A detailed sediment and erosion control plan should be prepared and implemented prior to development of this site. Should final development take place in phases, a separate detailed plan could be developed for each phase. The following list of specific measures should be considered when developing a sediment and erosion control plan for this project.

1. Provide hay bale or filter fabric fence at the toe of all fill slopes.
2. Seed and mulch all exposed earth slopes as soon as possible upon achieving final grades or to slopes that will remain exposed for a prolonged time period.
3. Perform excavations so as to minimize siltation of undisturbed areas.
4. Provide sumps on all storm sewer catch basins.
5. Provide sedimentation check dams at all storm sewer outfalls.
6. Provide velocity abatement systems to preclude scour at all storm sewer outfalls.
7. Construct/install stream culverts during dry or low flow conditions.
8. Minimize the amount of channel reconstruction upstream and downstream of proposed culverts.
9. Provide suitable riprap and/or inverted filter systems in areas of channel disturbance.
10. Provide checkdam or filter fabric system downstream of proposed culvert crossings to minimize sedimentation of the wetland and pond area.

Generally a sediment and erosion control plan should include but is not limited to showing the following items:

- a) top soil stockpiling location
- b) temporary and permanent seeding mixtures to be used
- c) hay bale checks and/or filter fabric at catch basins and critical sloping areas
- d) storm water detention basin location(s)
- e) sediment basin location(s)
- f) final contours
- g) soils information

The Connecticut Erosion and Sediment Handbook should be used to assist in the development of the plan. Maintenance of any sediment/erosion control devices is imperative.

## VEGETATION

Vegetation identified on the site was typical of that found in the northeast in droughty, slightly acidic soil conditions. Tree species found on the eskers and upper slopes of the parcel included hickory, oak, beech, paper birch, grey birch, black birch, Canadian hemlock, and white pine. The understory in this area is sparse, allowing for easy foot travel through the site. It consists primarily of viburnums, lowbush blueberry and huckleberry. Groundcover species seen at this time were predominantly "evergreen" types. They included partridge berry, Christmas fern, clubmoss, striped pipsisewa, rattlesnake plantain, sedge, lichens/mosses, and lobed hepatica.



As soils on this parcel are typically droughty and subject to rapid erosion, revegetation of cut slopes should take place as soon as possible. Hydroseeding and mulching with grass/wildflower species suitable to droughty conditions is recommended. After groundcover establishment, tree and shrub species can be introduced to disturbed areas.

#### WATER SUPPLY/WASTE DISPOSAL

Based on the site plan, the proposed subdivision would be serviced by a public water and sewage system.

In accordance with Town regulations, the applicant has indicated a water supply well location on the site plan. It is located in the proposed open space area near Hyde Brook in the central portions of the site. Based on information open filed at the Department of Environmental Protection Natural Resources Center, the proposed well location lies in an area of coarse grained stratified drift which is composed of sand or sand and gravel. Areas underlain by these types of deposits are known or inferred to be capable of yielding moderate to very large amounts of water. Estimated yields of properly constructed wells tapping these deposits are from 100 to more than 1,000 gallons per minute. Source: Hydrogeology of Stratified Drift in Farmington, Connecticut, Available Data and Future Needs, by Robert L. Melvin, U.S. Geological Survey.

#### PLANNING CONCERNS

The current plan will create a dead-end street more than 4500 feet long. Although this situation is intended to be "temporary," it is not desirable for cul-de-sac streets to be over 1000 feet long. In some cases, exceptions to this standard must be made because of unusual topography or other circumstances. The Town should consider the implications of such a long dead-end street to public safety and the provision of school transportation.

The possibility of terminating the extension of Walnut Farms Drive at approximately Station 29 and of linking the remaining portion of the development directly to New Britain Avenue across property owned by the Town of Farmington and the State of Connecticut was discussed during the field review. The extension of Walnut Farms Drive would then become a permanent dead-end street approximately 3000 feet long. For the reasons cited previously, this is not advisable.

If the proposed direct link to New Britain Avenue were to be constructed as an addition to the roadway system now proposed, the result would be a much improved circulation plan. Most of the development would then have two means of access which would reduce the distance travelled by residents and lower the possibility of isolating them from emergency services in case of an accidental road closure.

# 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.

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, and a statement identifying the specific areas of concern the Team should address. When this request is approved by the local Soil and Water Conservation District and the 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 Jeanne Shelburn (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.