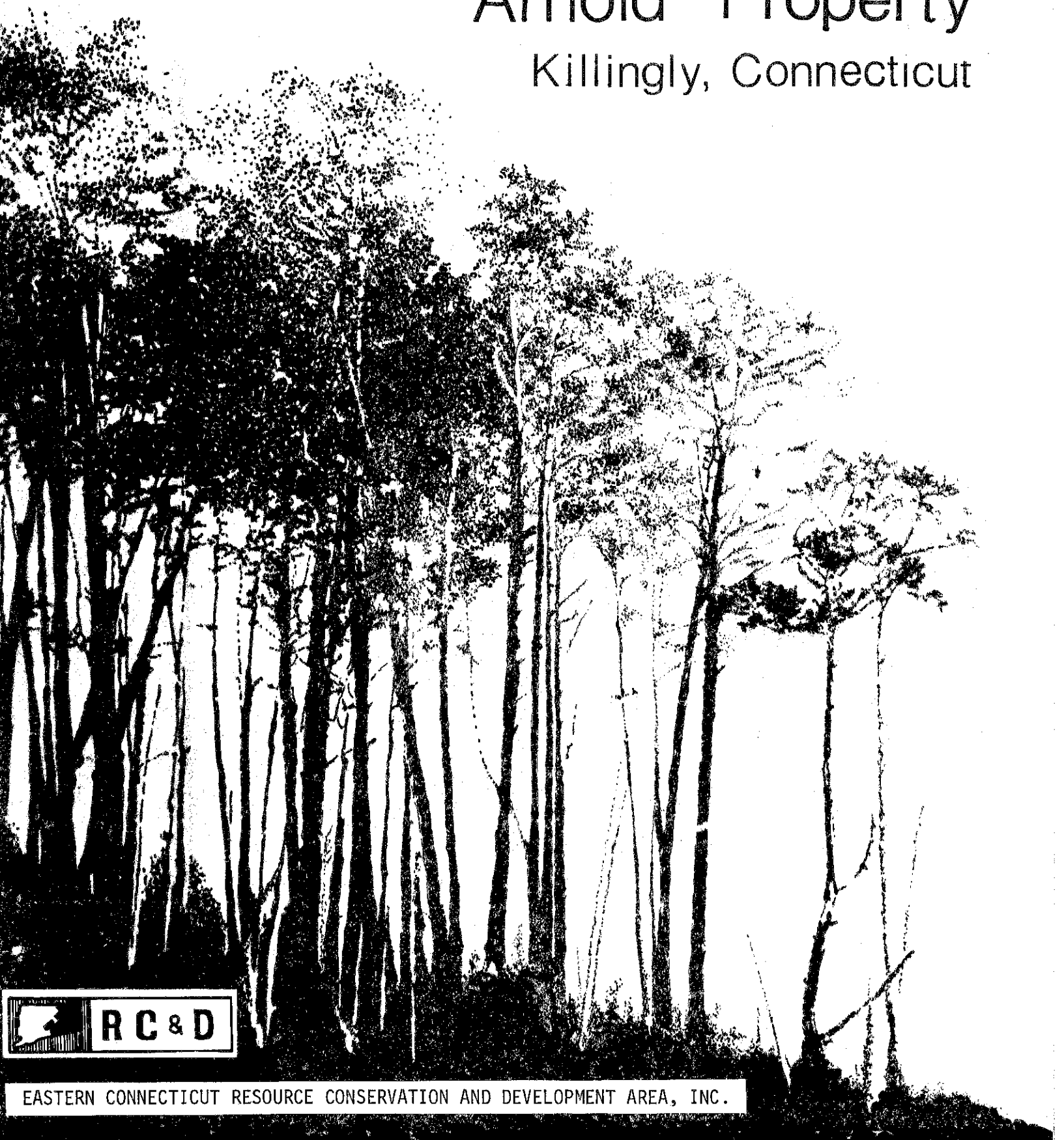


Environmental Review Team Report

Arnold Property

Killingly, Connecticut

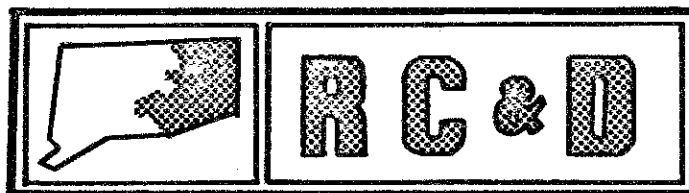


EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report
on

Arnold Property
Killingly, Connecticut

May 1979

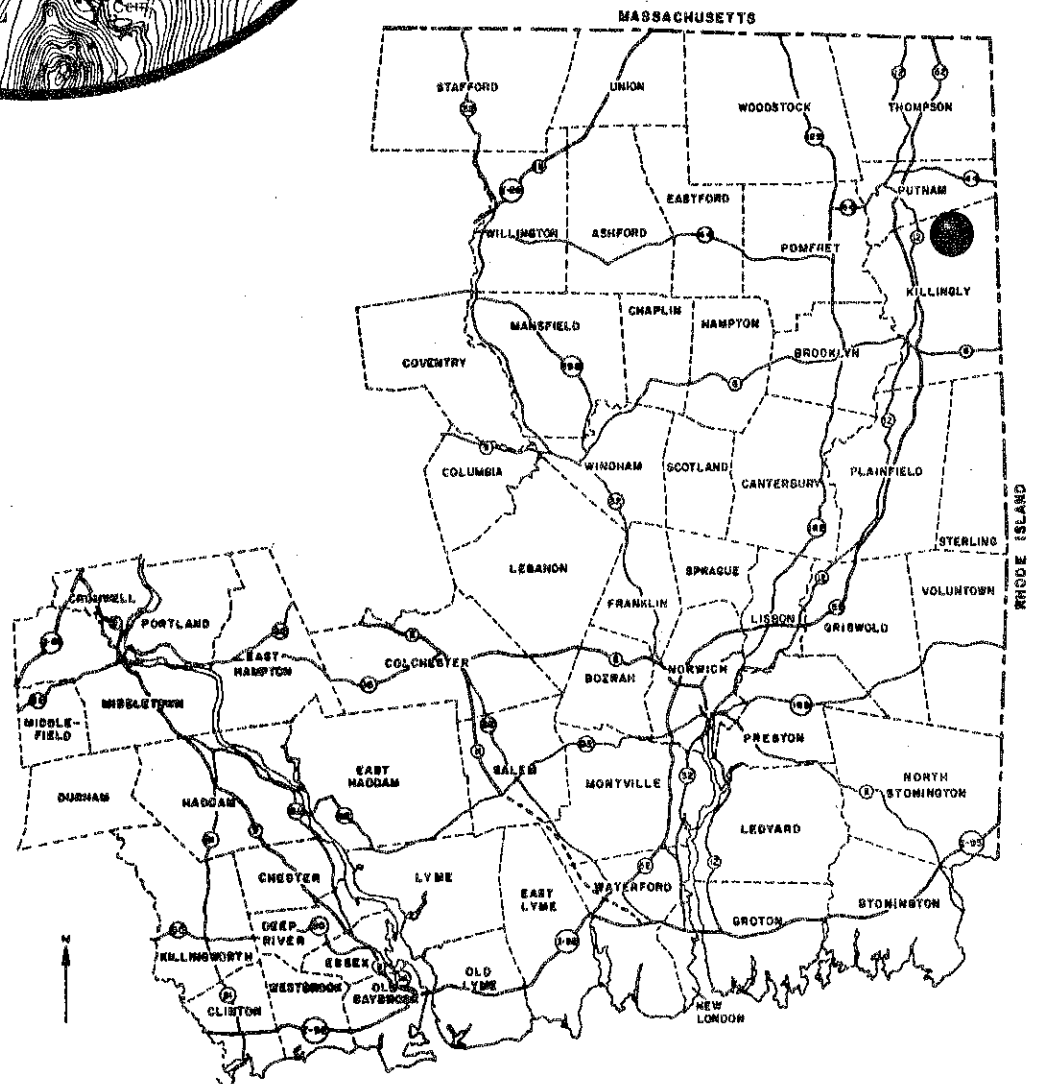
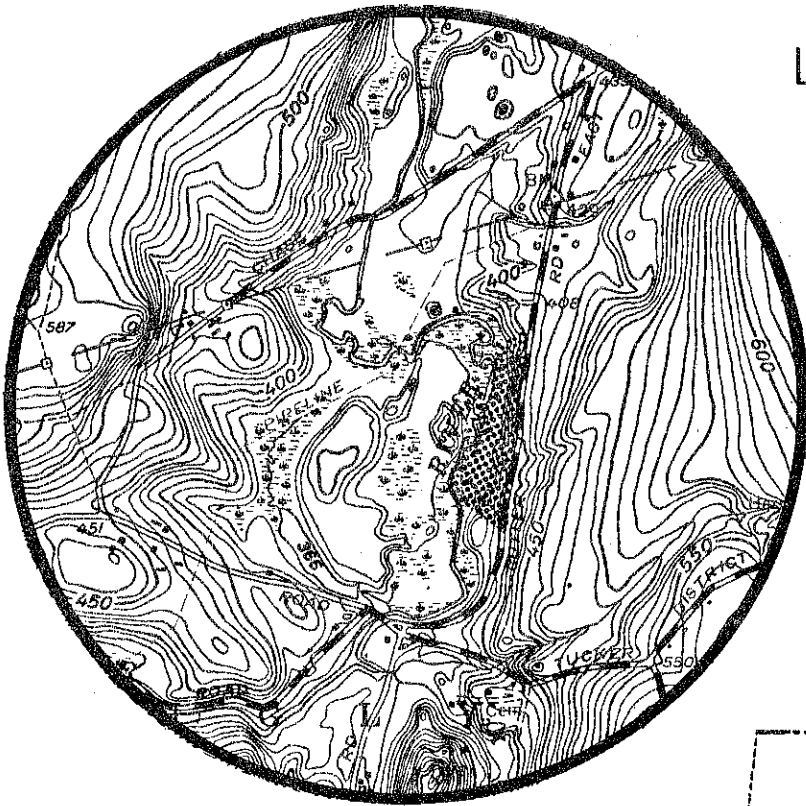


eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

ARNOLD PROPERTY
KILLINGLY, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ARNOLD SUBDIVISION
KILLINGLY, CONNECTICUT

This report is an outgrowth of a request from the Killingly Planning and Zoning Commission, to the Windham 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: Ed Lukacovic, Soil Conservationist, Soil Conservation Service (SCS); Michael Zizka, Geologist, Department of Environmental Protection (DEP); Rob Rocks, Forester (DEP); Marian Storch, Sanitarian, State Department of Health; John Valente, Sanitarian, Northeast District Department of Health; Peter DeMallie, Regional Planner, Northeastern Connecticut Regional Planning Agency (NECRPA); Terence Chambers, Regional Highway Safety Engineer, (NECRPA); John Cimochofski, Environmental Planner (NECRPA) and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Tuesday, April 17, 1979. 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 Killingly. 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.

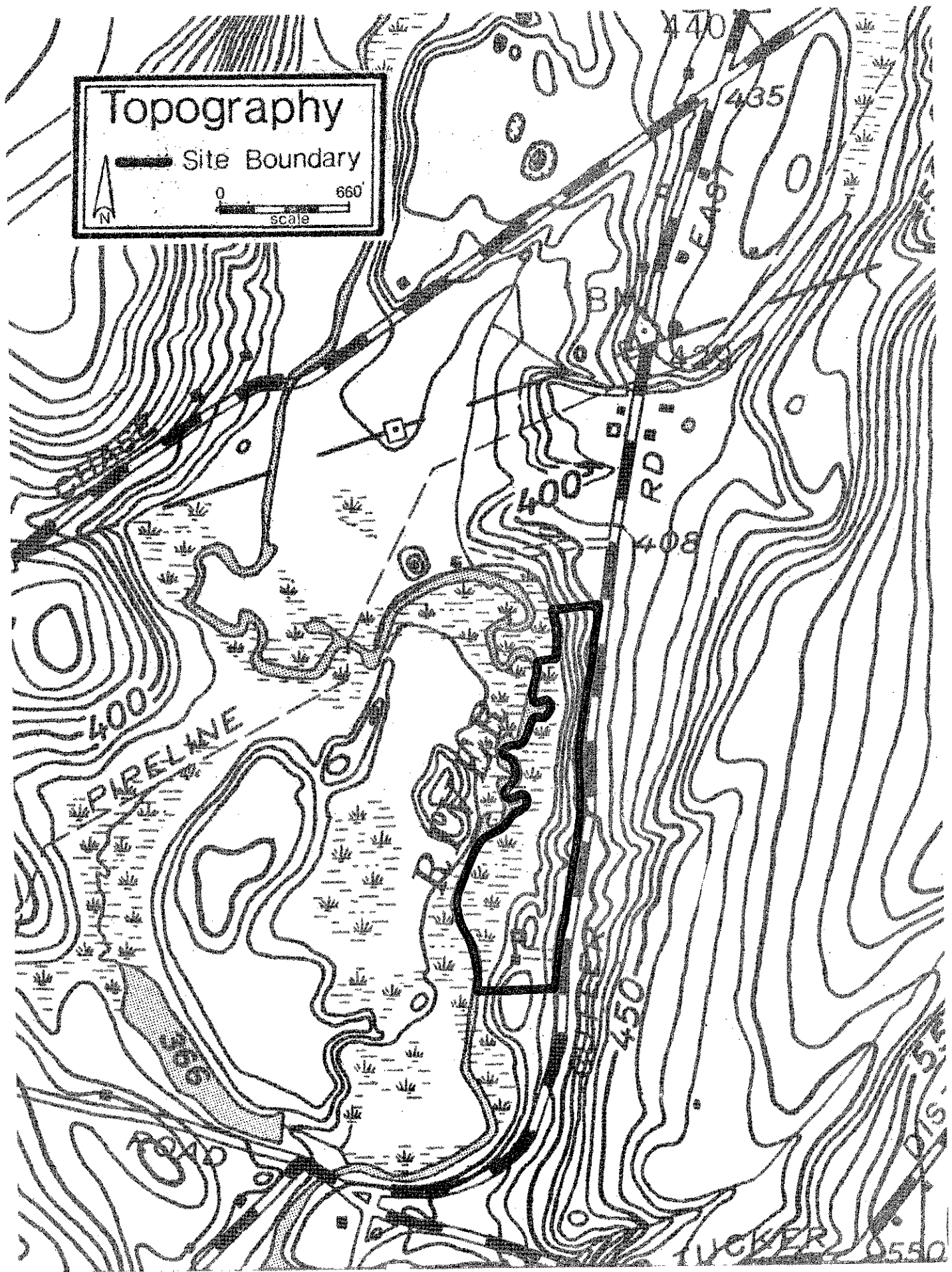
The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.

Topography

— Site Boundary

0 660'
scale



INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review a 14 acre parcel for proposed subdivision. The site is located in northern Killingly, bounded by Cutler Road to the east and the Five Mile River to the west. The property is currently owned by Robert Arnold, a Killingly resident. Mr. Arnold intends to subdivide the site into five lots, which would be offered for sale. If bought for building purposes, the lots would be served by on-site septic systems and on-site wells. The proposed lots range in size from one to 5.1 acres.

The major portion of the site has slopes in excess of 15%, which extend from Cutler Road to the wetland area associated with Five Mile River. Soils are well drained in most cases, except for those wetland areas. One drainageway crosses the site; in other instances, drainage or run-off from the street occurs by sheet-flow across the site. The area is moderately vegetated with sparse groundcover in the upland areas and more dense plant populations near the wetland areas. Hartford Fern, a rare and endangered species, was noted in the vicinity of Lot #2.

The Team is concerned with the effect of this proposed subdivision on the natural resource base of the site. Although the preliminary site plans show the lots for sale purposes only, the owner is planning to sell them for building lots, as evidenced from deep soil test pits and percolation tests performed on the site. Team planners do not recommend subdivision approval for sale purposes only. Subdivision approval for sale and not for building development purposes should only be applied for subdivisions for which no building development is contemplated.

Severe slope, generally in excess of 15%, is the greatest limiting factor to development of this site. The slopes are well adjusted to the present sheet-flow system of run-off discharge; however, soil disturbances such as the cuts and fills needed for construction on this site will alter this natural balance, causing problems with erosion and sedimentation. These problems may also be aggravated by creation of impervious surfaces on the site, which will increase the volumes of run-off. There may also be a potential for well contamination due to the proposed well locations down slope of the septic systems. Team sanitarians recommend that engineered septic systems be required in this subdivision due to the extreme topographic conditions and space constraints on the site. Special zoning permits will be necessary for building to occur on these proposed lots, due to excessive slope and need to comply with setback requirements from Cutler Road.

The site also lies within the flood hazard boundary zone for Five Mile River.

ENVIRONMENTAL ASSESSMENT

GEOLOGY

The Arnold subdivision site is situated along a steeply sloping, narrow sand-and-gravel terrace east of and adjacent to a flat, swampy section of the Five Mile River floodplain. The property forms part of the western flank of an elongate hill, which is composed of bedrock overlain by glacial till deposits of varying

thicknesses. During retreat and wastage of the last ice sheet to cover Connecticut, sand and gravel was washed from a tongue of ice occupying the Five Mile River Valley. These materials, deposited in meltwater, formed flat-topped or very gently sloping landforms in open areas in contact with the remnant ice. Such landforms were produced in the vicinity of the Arnold property; their surface elevations were generally 400 to 410 feet. The ice edge apparently remained very close to this till-covered hill; consequently, the sand and gravel terrace was restricted to a very narrow zone. Postglacial erosion and slumping of the deposits has generated a hummocky surface. Most of the site contains sand and gravel deposits, but till is at the surface in other areas. The floodplain to the east contains relatively recent sand, silt, and organic deposits overlying coarser, more gravelly materials.

The bedrock underlying the site is described in "Bedrock Map of the Thompson Quadrangle, Windham County, Connecticut, and Providence County, Rhode Island", publication GQ-1165 of the U.S. Geological Survey, by H.R. Dixon (1974). The rock is predominantly a fine-to medium-grained, very light gray to medium gray and greenish-gray, biotite-muscovite-quartz schist. A schist is a typically well-layered type of rock that tends to part easily along mica-rich surfaces. Smaller amounts of other rock types are locally present.

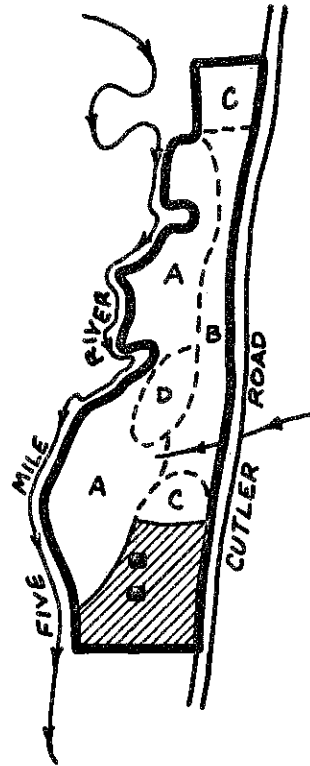
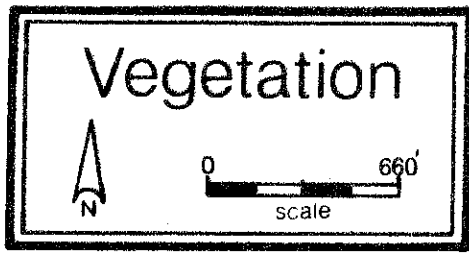
HYDROLOGY

Most surface run-off on the property moves by sheet-flow toward Five Mile River. Only one prominent channel was observed on the site, near the boundary of lots 3 and 4. The channel carried a significant flow at the time of the field review, but it is likely that the flow is intermittent. Smaller troughs and gullies exist in other parts of the site; these probably carry water during or shortly after periods of heavy rainfall.

In the present natural condition, the slopes on the site are well-adjusted to the predominant sheet-flow system of discharging run-off. Disturbance of the topography by cut-and-fill operations, which would be necessary to accommodate houses and driveways on all the lots, would tend to offset this natural balance and lead to increased gullying and other forms of erosion. Such erosion would be enhanced by the increase in run-off volume that would occur due to establishment of impermeable surfaces. If development occurs, efforts should be made to minimize the run-off problem. The Soil Conservation Service's Erosion and Sediment Control Handbook discusses a number of measures that may be used for this purpose.

VEGETATION

The 14[±] acres of the Arnold Property proposed for development may be divided into four vegetation types. (See vegetation type map and vegetation type descriptions). Of particular interest is the occurrence of the endangered Hartford Fern on this tract. Development in this area may destroy this local population. A fuelwood thinning in the mixed hardwood stand would improve the condition of this stand by reducing light competition between the trees, causing residual trees to become more healthy.



LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Stream
- Existing Dwelling Area, 24 acres

LEGEND*

- STAND A Hardwood swamp, fully-stocked, sapling to pole-size, 7-acres.
- STAND B Mixed hardwoods, fully-stocked, pole to sawlog-size, 4-acres.
- STAND C Pine, fully-stocked, pole-size, 2-acres.
- STAND D White cedar, fully-stocked, pole-size, 1-acre

* Seedling-size = trees less than 1 inch in diameter at breast height (dbh).
 Sapling-size = trees 1 to 5 inches in dbh.
 Pole-size = trees 5 to 11 inches in dbh.
 Sawlog-size = trees 11 inches and greater in dbh.

Stand A: (Hardwood Swamp) - This 7 acre fully stocked stand is dominated by poor quality sapling to pole-size red maple. High bush blueberry, spicebush, speckled alder, grape vines and poison ivy are present in the understory. Several species of fern including the endangered Hartford Fern are also present along with skunk cabbage, wild raspberry, marsh marigold, mosses and scattered mounds of tussock sedge.

Stand B: (Mixed Hardwoods) - Pole to sawlog size red oak, white oak, black oak, red maple and shagbark hickory are present in this 4 acre fully-stocked stand. Many of the trees in this stand are declining in health and vigor due to crowded conditions. Hardwood tree seedlings, bluebeech, azalea, witch hazel, white pine and alternate leaf dogwood dominate the understory. The major ground cover species present are silver spleenwort, spinulose woodfern, wintergreen, partridgeberry, striped pipsissewa, rattlesnake plantain and club moss.

Stand C: (Pine) - Pole size Eastern white pine are present in this two-acre fully stocked stand, with scattered sapling-size black oak, bigtooth aspen, gray birch and red cedar. Dogwood, maple leaf viburnum, highbush blueberry and hardwood tree seedlings comprise the understory in this area. Wild strawberry, dewberry and lowbush blueberry form a spotty ground cover.

Stand D: (White Cedar) - Pole size Atlantic white cedar and white pine dominate this one acre fully-stocked stand. The understory vegetation consists of maple leaf viburnum, azalea, spicebush, highbush blueberry and sheep laurel. Club mosses, skunk cabbage and wintergreen form this area's ground cover. Atlantic white cedar is an uncommon species in Connecticut.

The permanent high water table and seasonal flooding which occurs in the hardwood swamp (Stand A) limits vegetative growth to species which are not suitable for timber management. Red maple, which is tolerant of excessive moisture conditions, is the dominant tree species present within this wetland area. Severe crowding in the seedling and sapling stages eventually causes the development of slow growing poor quality stands.

Windthrow may become a significant problem in these wetland areas. The trees in this stand are shallow rooted and are unable to become securely anchored in the saturated soils which are present. Clearings which may change windflow patterns should be avoided near this stand. Such openings may allow wind to pass through rather than over this area increasing windthrow potential.

The steep slopes along Cutler Road will warrant excavating, filling and grading for construction of driveways and houses; this will cause changes in soil conditions which may, in time, affect tree health and vigor. Trees are sensitive to changes in aeration, moisture level and physical composition of the soil under their crowns. Such disturbances may cause a decline in tree health and possibly death within three to five years. Care should be taken not to alter the soil near trees that are to be preserved. Direct physical injury to any part of the trees to be preserved on the site should be minimized. If trees are injured during the construction process, consideration should be given to their removal at that time.

In general, the health and vigor of the trees in Stand B is declining due to crowded conditions. A fuelwood thinning, removing between 1/4 and 1/3 of the stems would reduce this crowding and give residual trees an opportunity to improve their strength. This thinning should focus on removal of poor quality, damaged

and unhealthy trees, leaving the larger, full crowned healthiest trees in the residual stand.

A service forester from the Department of Environmental Protection is available free of charge to help the owner mark the trees to be removed, or a private consulting forester could be contacted to physically mark the thinning.

AESTHETICS/PRESERVATION

The Hartford Fern or Climbing Fern (lygodium palmatum) located along the interface between the hardwood swamp and the pine stand, is classified as a rare and endangered species in Connecticut. This small vine-like fern has unusual palmate leaves. It is also very sensitive to site disturbances. It was almost decimated by collectors in the nineteenth century, and as a result has been protected by State law since 1869. This species is very rare in western Connecticut and occurs only locally in the Northeast Hills region and the North Central lowlands of Connecticut.

SOILS

A detailed soils map of this site and detailed soils descriptions are 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'/inch scale to 660'/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. Know Your Land: Natural Soil Groups for Connecticut can also give insight to the development of the soils and their relationship to the surficial geology of the site.

The Arnold property is located in the northern section of Killingly. The dominant soils of the property and the surrounding area are derived from glacial outwash and alluvium. These are the Hinckley series, the Podunk series, the Ridgebury-Leicester - Whitman series and the Canton-Charlton series. Podunk soils and Ridgebury - Leicester - Whitman soils are regulated wetland soils under Public Act 155; other development limitations are due to excessive slopes, stones, susceptibility to frost action and flooding. In general, the soils located on this property have severe limitations for building.

Insofar as the major part of the site is composed of slopes in excess of 15%, a critical factor in site development, erosion and sediment control measures should be exercised during any activity which may disturb the soil or vegetative cover. Soil movement during construction on these lots may cause excessive siltation and sedimentation of the wetlands associated with Five Mile River. Extreme caution to minimize vegetative cover disturbances is recommended. These problems will be compounded by the presence of several intermittent streams and run-off sheet-flow across the site.

Disturbing the natural terrain as little as possible and only when needed will reduce soil loss. Filling and grading operations should have erosion checks such as staked hay bales, down slope from construction activity. This will help to reduce sedimentation. As soon as construction in an area is completed, mulch and seeding should be applied. Caution is necessary when a construction activity is near a natural drainageway. Staked hay bales between construction and the drainageway is important to prevent sediment from being transported further downstream and ultimately to the wetlands of the Five Mile River.

Connecticut's Sediment and Erosion Control Handbook, prepared by the Soil Conservation Service can aid both the developer and the Town in preparing a sediment and erosion control plan for this site. Technical expertise for developing both mechanical and vegetative methods of erosion control is available from the Windham County Soil Conservation Service field office in Brooklyn.

WATER SUPPLY

Water for the proposed house lots will be provided from on-site wells.

Wells should be placed uphill from the leaching systems. They should also be placed to avoid contamination from surface water and run-off water from Cutler Road.

Possible well contamination must be considered as the sewage systems are proposed for a higher elevation than water supply wells. Because the septic systems are to be located in gravelly soils underlain by less permeable till soils above steep slopes, it is recommended that drilled wells rather than shallow dug wells be used as a source of water supply. It is also recommended that increased separating distances between septic systems and wells be considered.

WASTE DISPOSAL

The proposed lots will be served by on-site septic disposal systems. Deep soil test pits and percolation tests were observed prior to the field review by the Northeast District Department of Health. The percolation rates obtained were less than five minutes per inch, except for one which was eight minutes per inch. Major limitations for installation of subsurface sewage disposal systems on this site include excessive slope, surface sheet run-off and lack of sufficient suitable area. Engineered plans for these systems should be required due to the topography and space constraints.

As the septic systems will apparently be located in the higher elevations near Cutler Road, characteristically of better topography than the greater slopes downhill, considerations in system design should reflect the slope problem and compensate for possible leachate breakout. This leachate breakout could occur resultant of excellent soil drainage in a gravel soil underlain by a till soil of moderate drainage. The most favorable septic system sites on lots 2 and 3 are along Cutler Road; however, surface water does enter on each lot. Although lots 4 and 5 are 5.1 and 4.0 acres in size, respectively, the most favorable septic system sites are restricted to the southeast corner of lot number 4 and the northeast corner of lot number 5. Installation on lot number 6 may very well be inhibited by the presence of a stream and moderately steep slope.

It does not appear feasible to subdivide the property into as many lots as proposed. Major problems will be encountered in placing a well house, driveway, properly functioning septic system, and 100% reserve area, in the suitable areas and still maintain proper separating distances. Several of the lots should be combined. Lots #2 and #3 could be combined, and Lot #4 with part of #5. The northern end of Lot #5 and Lot #6 should be avoided because of the steep slopes and close proximity of the wetlands and flood hazard area. The area around the stream flowing between Lots #3 and #4 should also be avoided. The leaching systems should be placed in original soil. Filled systems should not be installed on hillsides with steep slopes.

All separating distances as established by the State Department of Health (Health Code Sec. 19-13-B20) must be met. To qualify these requirements the house, primary and reserve system areas, and well locations must be staked on the site. In regard to well location, Team sanitarians recommend a separating distance of 100 feet be maintained due to drainage of soil and location of systems. Excessive slope (exceeding 25%), streams, culverts and road drainage present themselves as problems in designing a properly functioning system that will neither contaminate ground or well water.

Comments on the soils and percolation data for each proposed lot can be found in the Appendix to this report.

STREETS AND DRAINAGE

While Cutler Road is rather narrow (approximately 18 feet) the wearing surface is generally in good condition except for a few isolated spots.

There are no storm drainage facilities per se on this road, except for two field stone culverts and one 12" RCP cross culvert. The first, located near the property line between Lots #3 and #4, is shown on the subdivision plan and is approximately 4 feet by 1 foot in size. Wooden guide posts are missing from the west side of the road at the location of this culvert and should be replaced. In addition, the culvert ends are directly adjacent to the edge of pavement, creating an immediate five foot drop off from the road and, as such, a potential hazard to motorists. This culvert should be replaced with one of properly designed size terminating not less than 8 feet from the edge of pavement in standard headwalls on both sides of the road.

The second culvert draining onto the subject property is not shown on the subdivision plans and is located near the property line between Lots #5 and #6. It is also constructed of field stone and is approximately 9 inches by 9 inches in size. It was clogged with debris and causing ponding of water on the road at the time of the Regional Highway Safety Engineer's visit to the site. It has collapsed at one point in the road causing the pavement to fall in on top of it. Again, this culvert should be replaced with one of properly designed size and should be terminated as previously described.

The third culvert drains onto Lot #2 and appears in satisfactory condition.

The Town should acquire rights-to-drain for these culverts if they do not exist already. The subdivision plan map indicates rights to discharge storm-water would be granted to the Town for all six lots. Also, easements from the

culverts along the natural watercourses to the Five Mile River should be given to the Town for maintenance purposes. Due to steep slopes and sandy soil, as little modifications to stream courses as possible should be done except for improvements at the culverts.

Because the land slopes dramatically from the road to the river, extreme care should be exercised during construction if this subdivision is approved. Berm type driveways should be utilized and the gradient of drives should not exceed 9 percent. This, admittedly, may be difficult and/or expensive to achieve on this site due to topography but is an important standard to be adhered to, none the less.

Without the installation of curbing and properly spaced catch basins, road stormwater will continue to shed in a sheet flow manner onto the proposed lots for the entire length of the road. Houses should be carefully positioned, both in location and elevation, so that this surface flow does not create flooding problems.

Furthermore, across Cutler Road from Lot #5 is a private above-ground 12" concrete pipe which discharges water directly onto Cutler Road and could present drainage problems for this proposed lot, particularly in the vicinity of test pit #3, and indeed the road itself. The aforementioned second culvert might present drainage problems for Lot #5 as well.

CONFORMITY TO LAND USE REGULATIONS

The entire site is zoned for flood hazard and rural residential development uses. The former allows by-right-only recreational parks and the like, or by special permit, residences on lots of 60,000 square feet or more. If a residential special permit were to be granted, every effort should be taken to site each residence outside of the Five Mile River flood hazard area. Given the severe limitations of the remaining acreage, this could be difficult. The latter zoning district now permits single-family residential structures on lots of two acres or more; however, because this application was received prior to the effective date of these regulations, only one acre lots are required and the subdivision plan map was designed accordingly. Within this rural district, however, residential development on slopes of 15% or greater are permitted by special permit only. Insofar as this subdivision contains numerous slopes in excess of this critical percentage, special zoning permits will be necessary for most lots prior to construction commencement. Moreover, adherence to zoning front yard setbacks could be extremely difficult due to the steeper slopes to the west of Cutler Road.

In terms of the subdivision review, the applicant has indicated by notation on the subdivision plan map that a special permit shall be required due to steep slopes. The Team feels that this should be supplemented by a shading of all slopes in excess of the 15% critical point in order to facilitate review of house locations by planning and zoning officials.

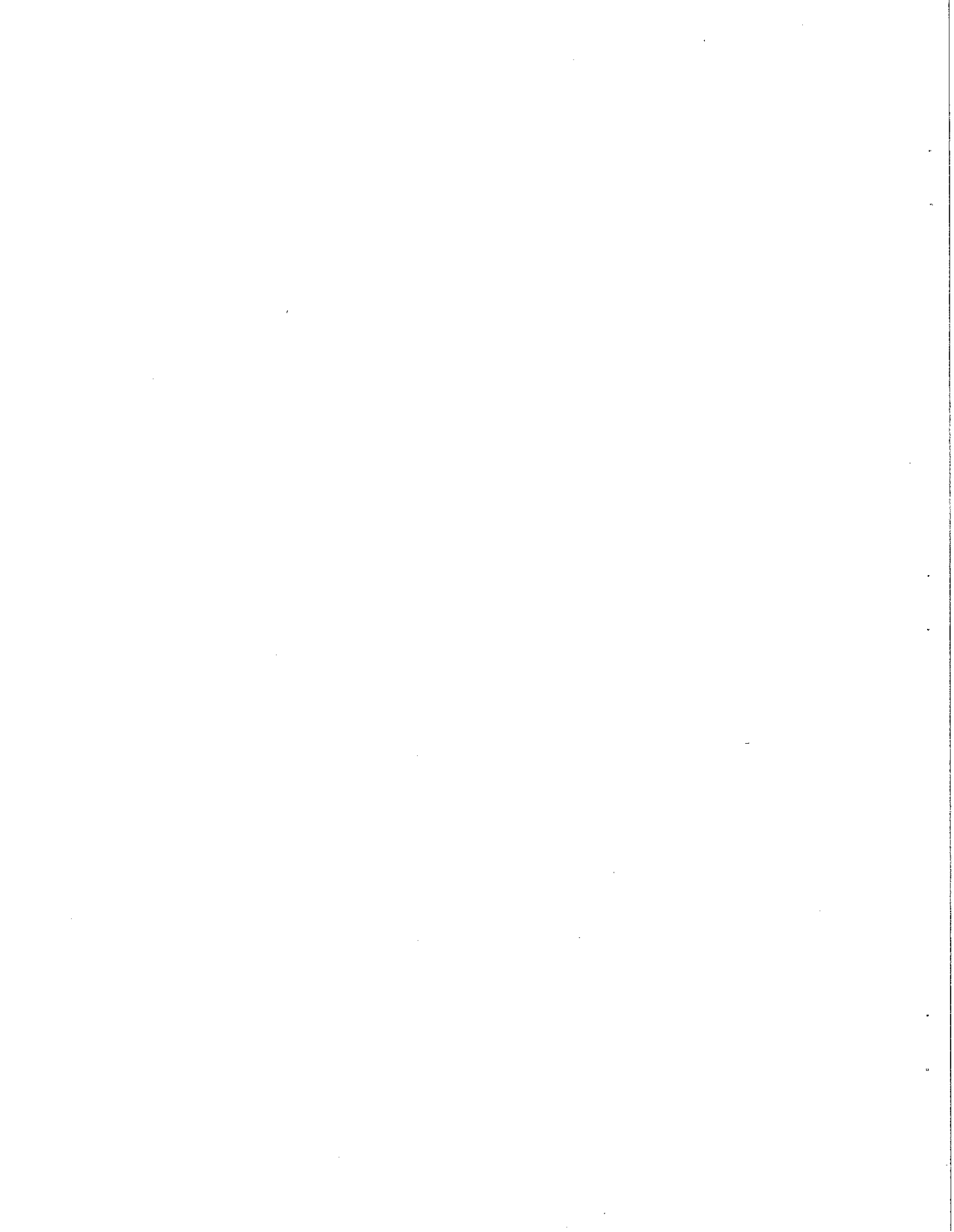
Furthermore, insofar as building development is being contemplated by the applicant for all lots, as evidenced by test pits, the Team Planners do not recommend subdivision approval for sale purposes only. Subdivision approval for sale and not for building development purposes should only be applied for subdivisions for which no building development is contemplated.

CONFORMITY TO LAND USE PLANS

The Killingly Plan of Development's (1974) Master Land Use Plan Map assigns this site to Residential Rural, Residential Limited, and Open Space uses. The Residential Rural category is therein defined as an area of large lots (less than one unit per acre) designed to retain the rural character as well as maintain much of the natural landscaping. On the other hand, the Residential Limited area was generally assumed by the Town to be "unacceptable" for housing. It embodies areas containing inland wetlands, steep slopes, and soils considered as having very severe limitations for on-site subsurface septic system disposal. The Open Space category removes "unsuitable areas from development and serves to retain the rural nature of the town." In the selection of sites to be assigned to this category, the Town considered such criteria as watershed protection, major potential recreation sites, major inland wetlands, flood prone areas, excessively steep slopes, soils presenting severe development limitations, and major stream-belts. Each criterion above is generally applicable to the site of the proposed Arnold subdivision.

Based on area computation by planimeter, some 21% of the 18 acre site is in the Residential Rural category, 32% in Residential Limited, and 47% in Open Space. Therefore, almost 80% of the site falls in areas considered unsuitable or unacceptable for development in the Town's Plan of Development. These areas encompass the Five Mile River streambelt and wetlands area along the western portion of the property as well as the severe slopes characteristic of the northeastern portion. Only the southeastern corner falls within the Residential Rural category, i.e., deemed suitable for development by the Town plan, or 20% of the site.

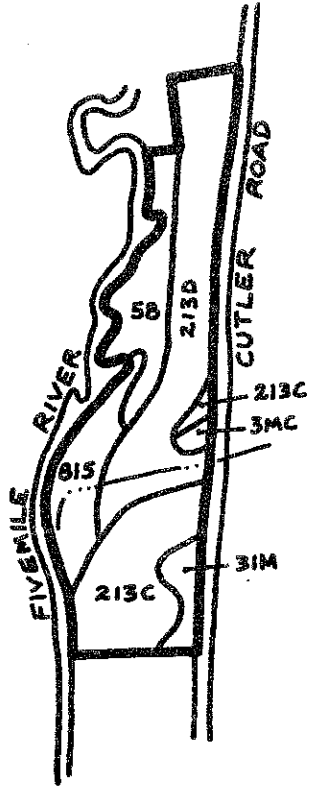
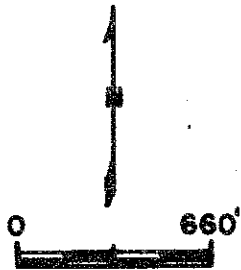
The Northeast area's Regional Plan of Development recommends rural residential growth in location "able to accommodate 'on-site' services, i.e., septic systems." Limited residential development at a density of less than 0.5 dwellings per acre is proposed in the plan for all land outside existing and proposed sewer service areas which does not have severe or very severe limitations for development. In the Arnold subdivision proposal, however, most of the site presents severe or very severe limitations for development. Consequently, it is generally inconsistent with the Regional Plan of Development. Other sections of this report express concern as to the ability of the proposed lots to accommodate on-site wells and septic systems in this rural residential area.



Appendix

Soils

ARNOLD SUBDIVISION
KILLINGLY, CONNECTICUT



This is an enlargement from the original 1,320'/inch scale to 660'/inch.

SOIL LEGEND

<u>Symbol</u>	<u>Soil Name</u>
3MC	Canton & Charlton extremely stony fine sandy loams, 3 to 15 percent slopes.
*43M	Ridgebury, Leicester & Whitman extremely stony fine sandy loams.
*58	Rumney fine sandy loam.
213C	Hinckley gravelly sandy loam, 3 to 15 percent slopes.
213D	Hinckley gravelly sandy loam, 15 to 35 percent slopes.
*815	Podunk fine sandy loam.
*	Designated wetland soil by P.A. 155.

Information taken from: Soil Interpretations, Windham County, Connecticut, 1975; soil survey sheet #2875; prepared by United States Department of Agriculture, Soil Conservation Service. Advance copy, subject to change.

Robert Arnold
 Cutler Road
 Killingly, Connecticut

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations		
					On-site Sewage	Dwellings without Basements	Dwellings with Basements and Land-scaping
Canton & Charlton	3MC	1	.05	Large stones	3	3	3
*Ridgebury, Leicester & Whitman	42M	2	.10	Percs. slowly, frost action, wetness, large stones	3	3	3
*Rumney	58	3	.16	Floods, wetness, frost action	3	3	3
Hinckley	213C	4	.21	Slope, small stones	2	2	2
Hinckley	213D	6	.32	Slope	3	3	3
*Podunk	815	3	.16	Floods, wetness	3	3	3
		18.4	100%				

*Designated wetland soil by P.A. 155

1-slight, 2-moderate, 3-severe

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

SOIL INTERPRETATIONS

3C Canton & Charlton extremely stony fine sandy loams, 3 to 15% slopes. This gently sloping to sloping unit of Canton and Charlton well drained soils occur in patterns too intricate to separate in mapping at the current scale. Each mapping unit may contain an individual soil or percentage of each of the two soils. More than 3 percent of the surface is covered with stones. In general, these soils are normally deeper than 5 feet. These soils are rapidly permeable in the subsoil but slowly to very slowly permeable layers may be present below 60 inches. The water table normally is below 60 inches during most of the year. The Canton and Charlton soils are naturally stony and contain few to many stones throughout the soil. Gravel size rock fragments generally make up 10 to 30 percent of the surface and subsoil. Most use problems are related to slope and stoniness.

*43M Ridgebury, Leicester & Whitman extremely stony fine sandy loams. This mapping unit is made up of poorly and very poorly drained soils. These soils occur in an intricate and complex pattern and separation of each individual soil was not practical at the scale surveyed. Each mapping unit may contain an individual soil or a percentage of each of the three soils. More than 3 percent of the surface is covered with stones. In general, these soils are normally deeper than 5 feet. They have a hardpan at a depth of 18-24 inches. They are found in low-lying nearly level upland areas. They are slowly to very slowly permeable in the subsoil, are naturally stony and contain few to many stones throughout. Most use problems are related to the slowly to very slowly permeable subsoils and long seasonal high water tables. The water table is at or near the surface from late fall through early spring.

*58 Rumney fine sandy loam. Rumney are somewhat poorly to poorly drained soils developed in recent floodplain sediments. These sediments, normally deeper than 10 feet, are high in silts and very fine sands. Stratified sands and gravels may occur below 20 inches. They flood frequently and have moderate permeability in the subsoils. The water table normally rises to the surface from late fall through early spring. Most use problems are related to flooding and long seasonal high water table.

213C Hinckley gravelly sandy loam, 3 to 15% slopes. Hinckley are excessively drained soils developed in stratified sandy, gravelly and cobbly water deposits. These deposits, normally deeper than 10 feet, are located on undulating to rolling terrace topography above the present overflow of large streams. They have rapid to very rapid permeability in the subsoil. The water table is below 60 inches during most of the year. Most use problems are related to texture, droughtiness and rapid to very rapid permeability. This soil is gently sloping and sloping. Areas occur in patterns too intricate to separate in mapping, and the surface layers are not as thick.

213D Hinckley gravelly sandy loam, 15 to 35% slopes. Hinckley are excessively drained soils developed in stratified sandy, gravelly and cobbly water deposits. These deposits, normally deeper than 10 feet, are located on undulating to rolling terrace topography above the present overflow of large streams. They have rapid to very rapid permeability in the subsoil. The water table is below 60 inches during most of the year. Most use problems are related to texture, droughtiness and rapid to very rapid permeability. A higher percent of boulders occur on this soil.

*815 Podunk fine sandy loam. Podunk are moderately well drained soils developed in recent floodplain sediments. These sediments, normally deeper than 10 feet, are fine sandy loam and sandy loam. Stratified sands and gravels may occur below 20

SOIL INTERPRETATIONS CONTINUED

inches. The water table normally rises to within 15 to 20 inches of the surface during late fall and early spring months. Most use problems are related to flooding and seasonal high water table.

* Designated wetland soil by P.A. 155

STATE DEPARTMENT OF HEALTH-COMMENTS ON SITE
CONDITIONS OF INDIVIDUAL LOTS

- Lot #1: Owner's home is already built on it.
- Lot #2: Consists of approximately 2 acres. The test pits showed a sandy loam to approximately 2', underlain by gravel and glacial till. One of the pits showed mottling at 3' and groundwater at 4'. A culvert from under Cutler Road empties about 20' from the Lot #2-#3 boundary.
- Lot #3: Contains approximately 2 acres. The test pits showed sandy loam soil to 21 inches, underlain by gravel. The pit near the Lot #3-#4 dividing line showed groundwater and mottling at 44". A stream runs the length of the lot line between Lots #3 and #4.
- Lot #4: Approximately 5 acres in size. The test pits contained a layer of sandy loam, underlain by gravel and gravelly till. One of the test pits, located close to the stream, showed groundwater at 40" and mottling at 34".
- Lot #5: Consists of 4 acres. Test pits showed a layer of sandy loam underlain by gravel and glacial till. Mottling was found at 36" and groundwater at 52" in the pit near the lot line between Lots #5 and #4. Much of the nonwetland area of this lot consisted of steep slopes.
- Lot #6: Consists of approximately 40,000 sq. ft. The test pit showed a layer of sandy loam, underlain by gravel and sand and gravel. The back part of the lot lies in a flood hazard area, and the area along Cutler Road contains some severe slopes, up to 30%.

Town Newburgh
Road Cutler Road

NORTHEAST DISTRICT DEPARTMENT OF HEALTH

P.O. Box 599, 35 School Street-Danielson, CT. 06239-Telephone (203) 714-1350

INSPECTOR Bob Arnold LOCATION Cutler Rd

PERCOLATION TESTS: 1/4/79 (date) SOIL MOISTURE: High (High, Med., low, etc.)

OBSERVED BY: J.C.J.

T.O.C.

TEST READINGS

HOLE # 2		HOLE # 4		HOLE # 7		HOLE # 11	
Time	Reading	Time	Reading	Time	Reading	Time	Reading
10:00	16	10:02	18	11:10	17	3:40	13
	21 1/2		21		23		19
	26		24 1/2		28	10:39	23
	Empty		26		33	41	29
			27 1/4		Empty	18	Empty
			28 1/2			22	
						24	
						26	
						27 1/2	
						29	

TABULATION OF TEST RESULTS

Hole	Location	Depth (Inches)	Percolation (hrs.)	Minimum Percolation Rate (Mins./Inch)
2	2	36	> 1 hr	< 5
4	4	36	> 1 hr	8
7	7	36	> 1 hr	< 5
11	11	34	> 1 hr	< 5

OBSERVATION PITS: (Record all pits) 1/4/79 (date) Ground Water Table: Near Max (Near Max., below Max., etc.)

SOIL DESCRIPTIONS

PIT 2	PIT 3	PIT 4	PIT 5
0-9 T. Soil	0-3 T Soil	0-6 T. Soil	0-6 T Soil
9-28 S. loam	3-24 S. loam	6-36 loam <u>loam</u>	6-30 S. loam
28-64 Dravel	24-64 Dravel	36-84 loam <u>loam</u>	30-74 loam <u>loam</u>
67-96 Sand + Dravel	64-96 loam <u>loam</u>		

TABULATION OF OBSERVATION PITS

Pit	Location	Slope	Depth	Edge At	Ground Water At	Soil Boiling At
2	2		96	—	—	—
3	3		96	—	84	64
4	4		84	—	64	52
5	5		74	—	52	36

FIELD COPY ONLY

Town Willington
Road Cutter Rd

NORTHEAST DISTRICT DEPARTMENT OF HEALTH

Box 600, 35 School Street-Danielson, CT. 06239-Telephone (203) 774-1350

TESTER Bob Arnold LOCATION Cutter Rd

PERCOLATION TESTS: 1/4/79 (Date) SOIL ROTATURE: High (High, Med., Low, etc)

OBSERVED BY: J.C. J.V.

TEST READINGS

HOLE #		HOLE #		HOLE #		HOLE #	
Time	Reading	Time	Reading	Time	Reading	Time	Reading

TABULATION OF TEST RESULTS

Time	Location	Depth (Inches)	Percolation (Min./Inch)	Minimum Percolation Rate (Min./Inch)

OBSERVATION PITS: (Record all pits) _____ (date) Ground Water Table: _____ (Near Max., Below Max., etc)

SOIL DESCRIPTIONS

PIT 6	PIT 7	PIT 8	PIT 9
0-8 T. Soil	0-4 T. Soil	0-7 T. Soil	0-9 T. Soil
8-27 S. loam	4-34 S. loam	7-22 S. Loam	9-21 S. Loam
27-72 gravel	34-84 loose gravelly Till	22-44 gravel	21-65 gravel
72-96 gravelly Till		44-84 gravelly Till	65-90 pan

TABULATION OF OBSERVATION PITS

Pit	Location	Slope	Depth	Ledge AL	Ground Water AL	Soil Moisture AL
6	6		96	-	77	72
7	7		84	-	40	34
8	8		84	-	44	44
9	9		90	-	84	65

Loc. Keeney
Road Cutler Rd

NORTHEAST DISTRICT DEPARTMENT OF HEALTH

Box 690, 35 School Street-Danielson, CT. 06219-Telephone (203) 774-7359

INSPECTOR Bob Arnold LOCATION Cutler Rd.
 PERCOLATION TESTS: 1/5/73 (Date) SOIL MOISTURE: _____
 (High, Meds., Low, etc.)

OBSERVED BY: J.C. Ju

TEST READINGS

HOLE #		HOLE #		HOLE #		HOLE #	
Time	Reading	Time	Reading	Time	Reading	Time	Reading

TABULATION OF TEST RESULTS

Date	Location	Depth (Inches)	Pre-soak (hrs.)	Minimum Percolation Rate (Min./Inch)

OBSERVATION PITS: (Record all pits) _____ (Date) _____
 Ground Water Table: _____ (Near Max., below Max., etc.)

SOIL DESCRIPTIONS

PIT	PIT	PIT	PIT
PIT 10 0-6 T. Soil 6-20 S. loam 20-48 gravel 48-84 Sandy till	PIT 11 0-8 T. Soil 8-24 S. loam 24-75 gravel 75-96 Silty clay		

TABULATION OF OBSERVATION PITS

PIT	Location	Slope	Depth	Ledge At	Ground Water At	Soil Moisture At
10	10		84	-	48	36
11	11		96	-		75

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 (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.