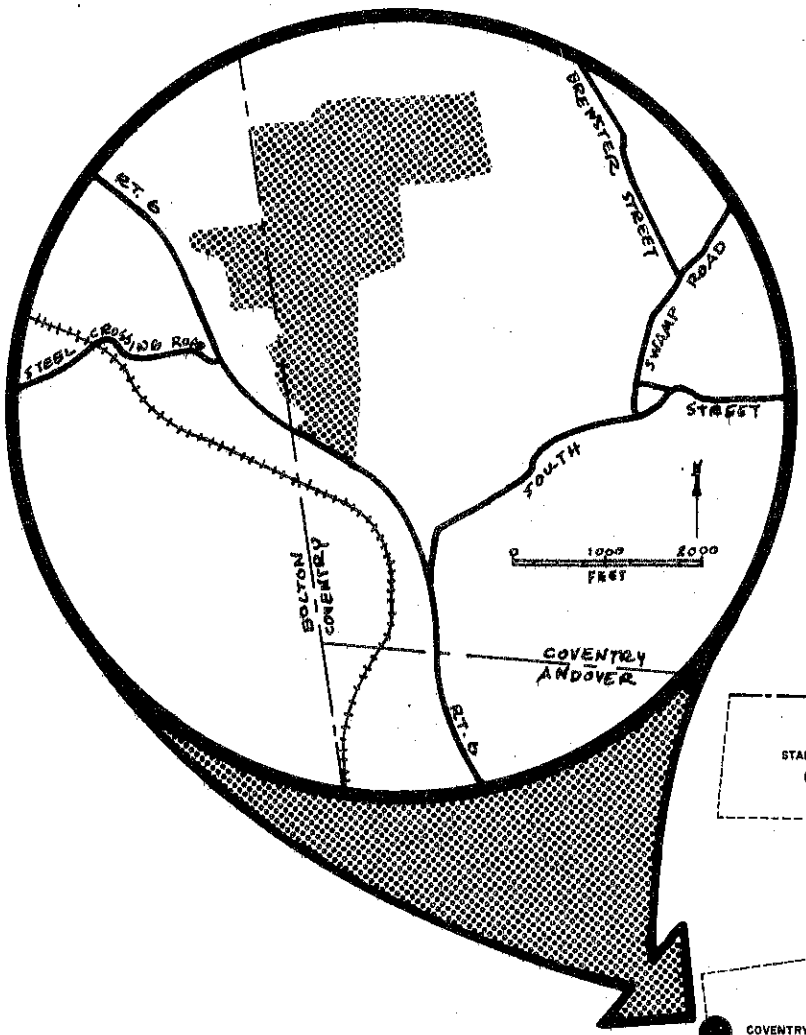
ENVIRONMENTAL REVIEW TEAM REPORT
ON
ARROWHEAD RIDGE
COVENTRY, CONNECTICUT
NOVEMBER, 1975

Project CPA-CT-01-00-1037

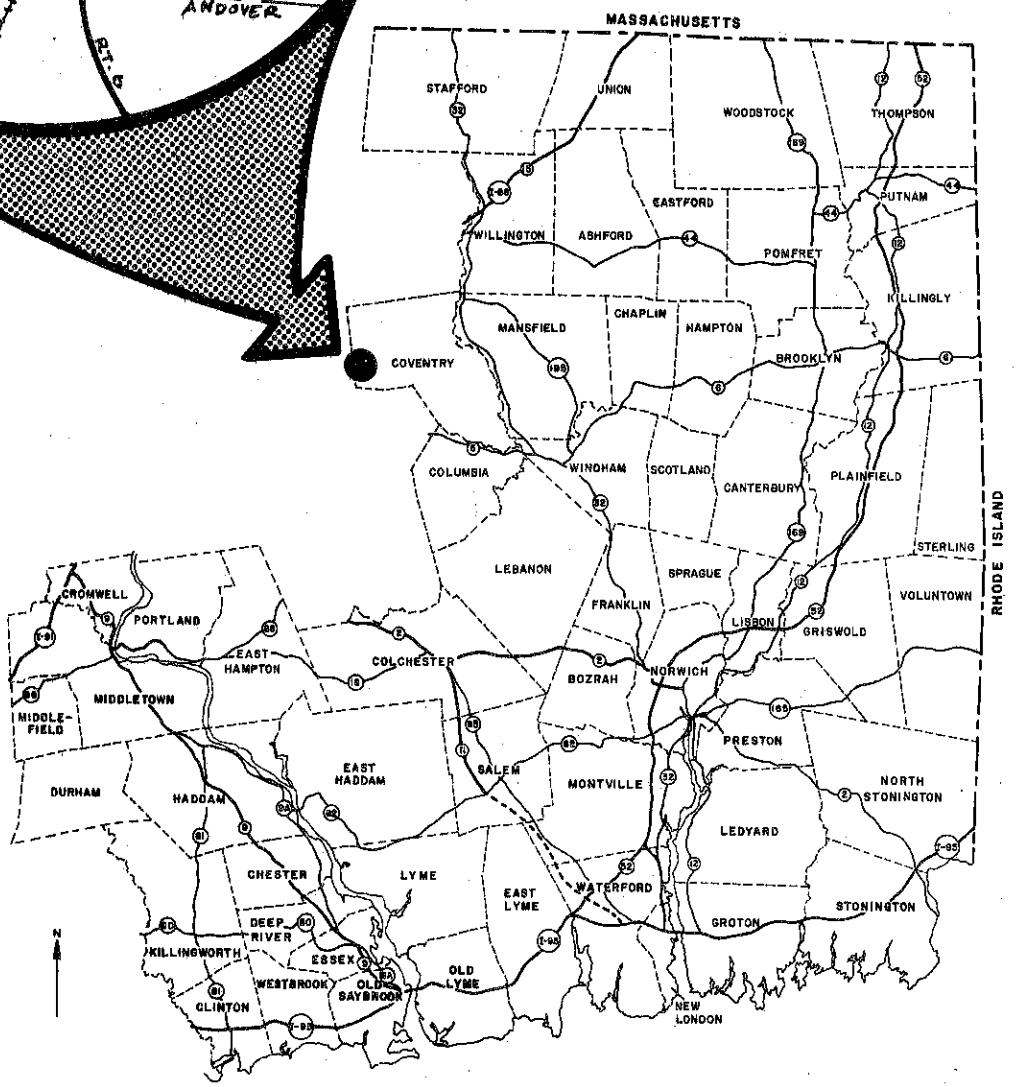
The preparation of this report was financed in part through an urban planning grant from the Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1974, as amended, through a regional planning assistance grant from the Connecticut Department of Planning and Energy Policy and through contributions from the member communities of the Southeastern Connecticut Regional Planning Agency.

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT PROJECT
Environmental Review Team
139 Boswell Avenue
Norwich, Connecticut 06360

LOCATION OF STUDY SITE



ARROWHEAD RIDGE
COVENTRY, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ARROWHEAD RIDGE
COVENTRY, CONNECTICUT

This report is an outgrowth of a request from the Coventry Planning and Zoning Commission, with the approval of the landowner, to the Tolland County Soil and Water Conservation District (S&WCD). The S&WCD regerred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Project Committee for their consideration and approval as a project measure. The request was approved and the measure reviewed by the 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, a table of soils limitations for certain land uses, and a topographic map showing the Arrowhead Ridge property boundaries were forwarded to all members of the Team prior to their review of the site.

The Team that field-checked the property consisted of the following personnel: Donald Summers, District Conservationist, SCS; Dean Rector, Soil Scientist, SCS; Edwin Minnick, Civil Engineer, SCS; Richard Hyde, Geologist, Connecticut Department of Environmental Protection (DEP); Huber Hurlock, Forester, DEP; Charles Phillips, Fisheries Biologist, DEP; David Miller, Climatologist, University of Connecticut Extension Service; Paul Schur, Sanitarian, Connecticut Department of Health; Lester Barber, Regional Planner, Windham Regional Planning Agency; and Linda Simkanin, ERT Coordinator, Eastern Connecticut RC&D Project.

The Team met and field-reviewed the site on Thursday, August 7, 1975. Reports from each Team member were sent to the ERT Coordinator for review and summarization.

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 Coventry. 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: Miss Linda M. Simkanin, Environmental Review Team Coordinator, Eastern Connecticut RC&D Project, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.

INTRODUCTION

The Arrowhead Ridge development is proposed for a 115 acre tract of land located near the southwest corner of the Town of Coventry. Approximately 14 acres of the tract is in the Town of Bolton with the remainder of land in Coventry. The southernmost portion of the property fronts along U.S. Route 6. Undeveloped woodlands surround the site, with some single-family homes located along Route 6 near the western boundaries of the site in the Town of Bolton.

The Environmental Review Team field-reviewed the site relative to the proposal to construct 340 one and two bedroom residential units. The plans for the site indicated that the units be clustered in the northeastern corner of the property, that access be provided by a single road entering from Route 6, that 40%, or 136 units are planned to have two bedrooms, and that water retrieval and sewage disposal are to be developed on-site.

Some of the aspects of the development discussed by the Team are the location of on-site septic systems and the adequacy of the soils to accommodate the proposed systems, the potential soil erosion hazard during and after construction on the steep slopes which dominate a large portion of the site, the damming of the Hop River in order to provide a fire protection water supply pond, and the overall question of establishing an urban density development in a predominantly rural area where basic urban facilities such as public water and sewers do not presently exist, nor are they planned.

This report will also describe the natural characteristics of the site including topography, geology, and soils. Consideration will be given to the compatibility and suitability of the development relative to the natural resource base. Comments or recommendations made within the report are presented for consideration by the developer and the town in the preparation and review of the development plans, and should not be construed as mandatory or regulatory in nature.

NATURAL CHARACTERISTICS

TOPOGRAPHY AND GEOLOGY

The Arrowhead Ridge property includes approximately 115 acres of land situated on the western valley wall and on top of an irregularly shaped hill, adjacent to the Hop River. A topography map of the site and surrounding area is shown on the next page. This particular hill is part of the southern and lowest step of a larger hill system to the north which covers most of northwestern Coventry. It was formed by the piling up of glacial till on and against the underlying bedrock surface. With time the natural drainage patterns developed and segmented the area into the various hill and river systems. Typically, such processes exposed the bedrock along the southern flanks of most till hills in this section of Connecticut. As Arrowhead Ridge falls close to the northern flank, much bedrock is exposed south of the site, and to a certain extent within the property lines.

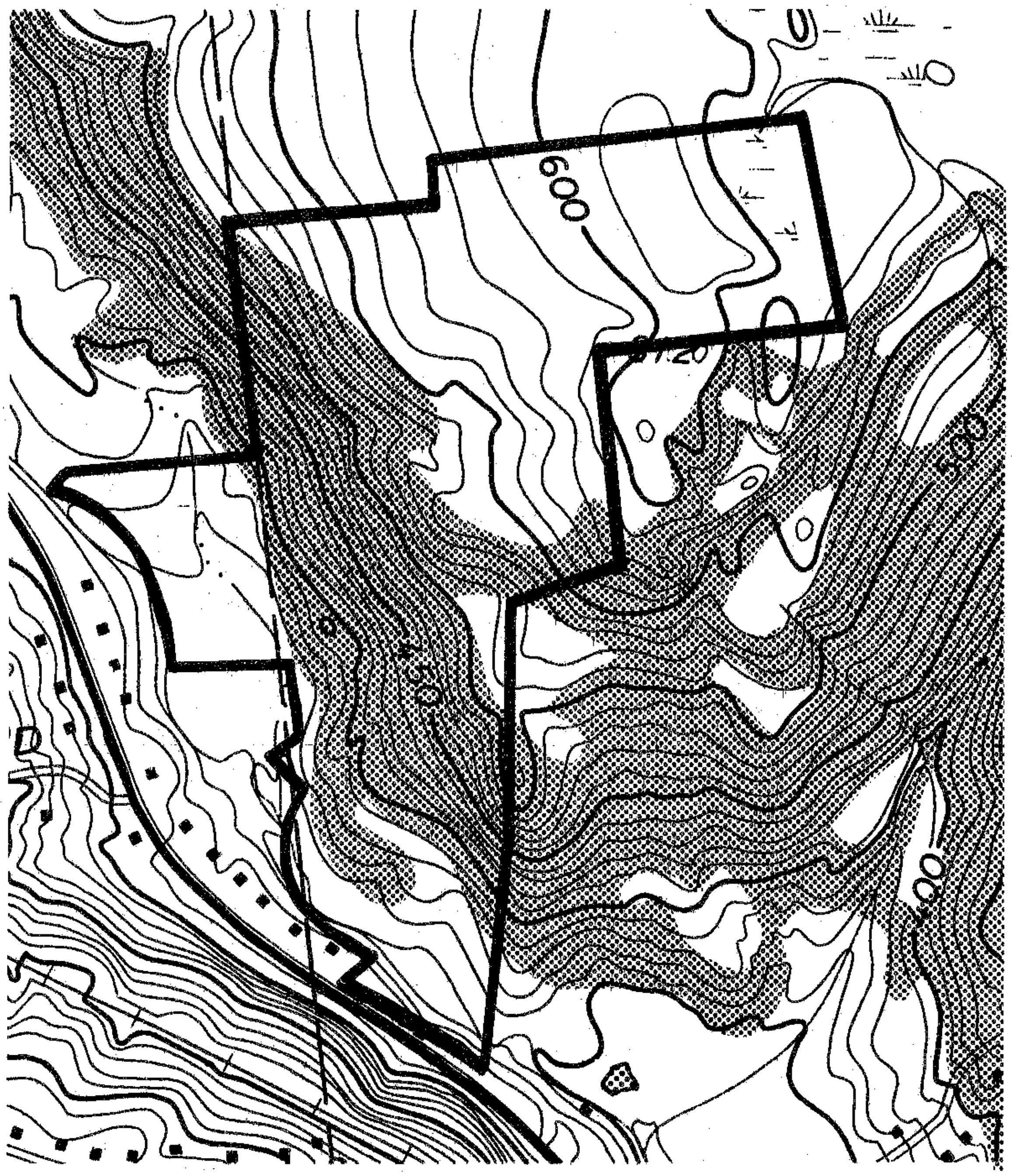
The bedrock underlying this site has been placed in the Hebron Formation by Janet Aiken in her Rockville Quadrangle Bedrock Map, Quadrangle Report #6 of the Connecticut Geological and Natural History Survey. Dr. Aiken feels that these Hebron gneisses may represent metamorphosed remnants of deep quiet water clay size sediments with interspersed lenses of sandy sediments. By metamorphosed we mean the originally deposited sediments were buried quite deeply in the earth where they were subjected to very high temperatures and pressures causing them to be altered to their present form. By gneiss we mean a relatively coarse-grained metamorphic rock in which fairly wide bands, sometimes several feet in thickness, and rich in granular materials, alternate with narrow bands, usually only inches thick, and rich in flat and elongate minerals.

Local drainage and late stages of glacial activity within the Hop River Valley resulted in the development of two distinct categories of unconsolidated earth materials on the site, that is, the stratified and non-stratified deposits.

Adjacent to the river a natural floodplain has formed which is typically low-lying, very flat and as a result, accommodates the Hop River overflow during times of flood. Materials found here are quite recent and usually consists of thinly stratified fine sands and silt sized particles. Such a floodplain is located in the extreme western edge of the site. Characteristically, the seasonal high water table is very close to the land surface, probably at or within several inches at some time each year. The frequency of flooding of these areas can probably best be determined by canvassing the owners of the 15 or so houses on the river's western bank. It can be said, however, that as upstream development intensifies in the future, flood frequency and intensity will increase to cause greater flood hazards.

The land slope of the Arrowhead Ridge property is also shown on the topography map. Using the 1/24,000 scale topographic map and applying a simple slope formula, it is possible to delineate those areas where land surface slope exceeds 15%, or for any other value desired. The figure 15% was chosen because this appears to be one of the critical points for engineering design requirements and construction activities. In this case 15% or greater means there is a 15 foot or greater vertical change in land elevation over a 100 foot horizontal distance.

TOPOGRAPHY



SITE BOUNDARY

STEEP SLOPE: 15% OR GREATER

0 666 FEET

The topography map illustration indicates the approximate area of the site which falls within the 15% or greater slope regime. The development plans for Arrowhead Ridge indicate that the leaching field galleries are proposed for the same approximate area.

Within the southern portion of the property, in the approximate location of the proposed reserve leach field, is a remnant of a valley terrace or ancient floodplain. Topographically this feature is at a higher elevation than the floodplain, is fairly steeply sloped (10% to 15%) and is made up of stratified sand, silt, and gravel. From viewing several of the old test pits in this area, it appears the underlying materials are waterlain stratified sands and gravels, all of which lie below a one foot or two foot surface layer of rusty brown silt, possibly a windblown deposit.

Moving eastward from this point, the stratified deposits give way to the second type of earth material till. Till is the geologist's term for "hardpan" or "boulder clay" which are the more commonly used terms. More precisely till may be defined as a heterogeneous material composed of various mixtures of boulders, gravel, sand, silt, and clay particles, none of which are significantly sorted or stratified according to particle grain sizes, as in the case with the previously described waterlain or windblown deposits.

The thickness of all types of unconsolidated materials lying on top of the solid bedrock varies from place to place with the thickest deposits being found on the very top of the hill and along the valley bottom. The more steeply sloping areas tend to be very thinly covered or not at all. A depth to bedrock map, prepared for the Connecticut Valley Urban Area Project depicts areas of overburden thickness (depth to bedrock). The map was developed from logs of domestic wells, highway borings, and the location of actual bedrock outcrops. In general, the greatest concentration of bedrock outcroppings, and the areas having a shallow overburden thickness ranging from 0 feet to 10 feet, coincided with the area having a land slope of 15% or greater (refer again to the topography map).

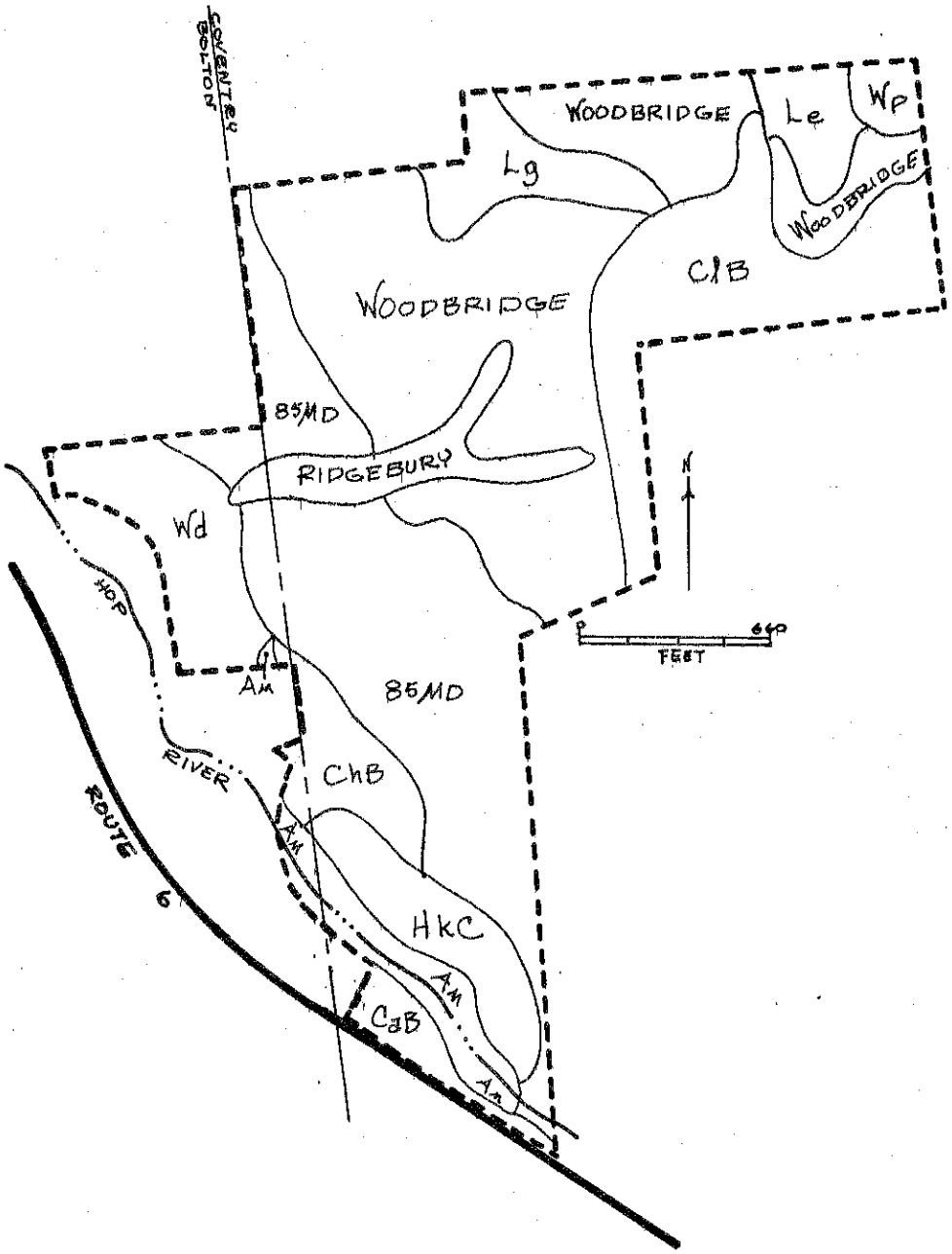
SOILS

A detailed soils map of the site and a soils limitations chart are presented in the following pages of this report. Although the original soil map was prepared at a scale of one inch = 1,320', since the time of the field review of the Arrowhead Ridge property, a more detailed mapping on a larger scale map (one inch = 660') was prepared by the soil scientist. His on-site investigations showed areas of inclusions which are reflected in the soil map shown here on the following pages. All of this soils information was distributed to the Team members after the time of the review for their consideration.

The lines shown on the soils map should not be viewed as precise boundaries, but rather as guidelines to the distribution of soil types on the property. The soils limitations chart indicates the probable limitations for each of the soils for basements, landscaping, streets and parking, and on-site sewage disposal. However severe, the natural limitations imposed do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended use is consistent with the objectives of local and

SOIL MAP

ARROWHEAD RIDGE
COVENTRY, CONNECTICUT



Prepared by: UNITED STATES DEPARTMENT OF AGRICULTURE,
Soil Conservation Service.

ADVANCE COPY, SUBJECT TO CHANGE. *OCTOBER, 1975*

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Natural Soil Group	Soil Symbol	Slope (percent)	Approx. Acres	Percent of Acres	Urban Use Limitations*			
						On-Site Sewage	Buildings with Basements	Streets & Parking	Land-scaping
Hinckley	A-1b	HkC	3-15%	5.4	5%	1	2	2	2
Walpole	A-3a	Wd		7.5	6%	3	3	3	3
Charlton	B-1a	CaB	3-8%	2.2	2%	1	1	2	1
Charlton	B-1a	ChB	3-8%	4.8	4%	1	1	2	1
Leicester	B-3a	Le		3.1	3%	3	3	3	3
Leicester	B-3b	Lg		4.6	4%	4	4	4	4
Woodbridge	C-2a			37	32%	4	4	4	2
Ridgebury	C-3b			5	4%	4	4	4	4
Whitman	C-3b	Wp		1.9	2%	4	4	4	4
Montauk	C-3e	85MD	15-35%	26.5	22%	variable	variable	4	4
Charlton/Hollis	D-1	ClB	3-15%	14.5	12%	variable	variable	variable	variable
Alluvial	E-3a	Am		4.3	4%	3	3	3	3
TOTAL:				116.8	100%				

* 1 = slight; 2 = moderate; 3 = severe; 4 = very severe.

regional development, many soils and sites imposing difficult problems can be used. The soils map, along with the report, Soil Survey, Tolland County, Connecticut (USDA, SCS, 1966), can serve as an educational tool regarding the identification and interpretation of soils.

A large portion of the site contains a deep to hardpan layer which may be restrictive to water (or waste) movement. Referred to as a Montauk 85MD soil type on the soil map, this area possesses steep slopes ranging from 15-35%. An extremely stony, fine sandy loam, this soil has a hardpan (compact layer) located about 40" below the surface which may cause water to move rapidly downslope over the surface of the hardpan especially during the wet season.

Permiability above the hardpan is moderate but the pan drastically reduces percolation. Sewage disposal problems may arise during the wet season when the pan restricts the downward movement of excess water in the soil. In those times, excess rain water, that from spring thaws, or septage effluent from the leach fields may move rapidly downslope over the surface of the pan. Since the leach field galleries for the development complex are planned over this soil area, it will be important to locate the leaching galleries in sufficient soil or fill depths so that the effluents can be successfully eliminated without an environmental or health hazard.

In general, the site does appear to have soils suitable for sewage disposal in the area proposed for the leaching field galleries. However, the steep slopes and length of transmission lines leading to this area may create installation and operational problems. The steep slopes may create serious erosion and sediment problems both during and after construction. Detailed plans for controlling water runoff and soil erosion should be prepared and followed. The Erosion and Sediment Control Handbook for Connecticut is useful in preparing this plan, and the District Conservationist of Tolland County is available to assist the developer in the plan preparation as well.

A considerable ledgy, or shallow to bedrock soil area exists in the northeast corner of the site, underlaying an area where some of the residential units are planned. This soil, the Charlton-Hollis complex ClB, is a rocky, fine sandy loan with slopes ranging from 3-15%. The soil is underlain by bedrock usually less than 20 inches below the soil surface. Bedrock outcrops, in addition to the generally shallow and rocky soil condition, may cause severe problems and considerable expense when excavating for construction. As noted in the soils limitations chart, limitations for urban development in this soil type will vary from slight to severe as within this soil type, there can be pockets of deep soil, which, if located using a means such as a backhoe, can provide acceptable locations for residential units and on-site waste disposal systems.

The Woodbridge soils cover a large portion of the site, and are moderately well drained and have a slowly permeable compact layer at a depth of roughly 30 inches below the surface. Slopes can range from 0 to 15%, and so the limitations imposed can be slight to moderate. On slopes greater than 3%, Woodbridge soils are likely to erode, and should be stabilized. Removal of stones is generally necessary before a lawn can be established, and cloth or mulch may be needed to help establish lawns. All topsoil should be stockpiled when grading and saved for final grading of lawns. A minimum of clearing should be done at any one time. Disturbed areas should be revegetated as soon as possible. The Arrowhead Ridge development plans indicate considerable residential construction is planned over Woodbridge soils.

Excavation is moderately difficult. Bedrock outcrops or large surface boulders occur in some places. Excessive seepage in foundation holes and trenches may hinder building operations. Internal drainage problems are caused by the compact layer. Seepage is common in excavations that intersect with the compact layer; basements are frequently wet.

These soils have severe limitations for septic tank leach fields. The compact layer is slowly permeable, and lateral movement of water over it is slow. A high water table, which develops late in fall and persists through spring or early summer, hinders normal septic tank operation. Surface seepage and backups are common during these periods.

The Ridgebury series consists of poorly drained to somewhat poorly drained soils formed on a hard layer in glacial till. The 4-8" surface layer is very dark grayish-brown to black, friable fine sandy loam. The subsoil is olive or olive gray mottled with various shades of yellow, brown, and olive. It is generally friable to very friable fine sandy loam but may be sandy loam in the lower part. Both the surface soil and subsoil contain some small, angular fragments of rock. At a depth of 18 to 20 inches, the lower subsoil is underlain by a gray or olive-gray, hard, compact layer. The depth to the hard layer generally range from 18 to 24 inches but is deeper in places.

Generally, runoff is slow to very slow, and internal drainage is slow because of the very slowly permeable hard layer at 18 to 24 inches. The water table is 0 to 12 inches from the surface during spring and lasts until early summer. It severely limits these soils as sites for septic tank systems and leach fields as a considerable depth of fill is required if these soils are used in developed areas. If the fill settles unevenly, the septic tank and distribution box may tilt, or the tile lines of the leach field may lose the proper gradient. Insufficient fill depth can result in leach field flooding.

There are a variety of soil types along the south and east boundaries of the property. Along the Hop River in the southern portion is a band of alluvial soil following the floodplain (Am). Alluvial soils have a wide range of texture and drainage. Their use as building sites is limited as they are subject to flooding.

North of the floodplain soil is a band of Hinckley (HKC) gravelly sandy loam, with slopes ranging from 3-15%. This soil presents few limitations for urban development. Septic tank performance in this soil is generally very good; basements are generally dry; percolation rates are moderate to rapid; and failures of septic systems are rare and usually not related to soil properties.

Two Charlton soils occur on the property (ChB and CaB) and deep, friable, well-drained soils that formed in glacial till. In some areas these soils have a compact layer that is below a depth of 30 inches. The percolation rates of substratum materials are generally favorable for septic tank disposal fields. Where there is no compact layer, internal drainage is rapid. Excavation limitations are slight; outcrops of bedrock are not common, but they occur in places; the depth to bedrock varies but generally is more than 10 feet.

A considerable area of Walpole sandy loam (Wd) exists at the westernmost portion of the site. This soil consists of poorly drained soils formed in glacial

till and in stratified, water-laid deposits. The Walpole soil has no compact layer and is more easily drained with tile than the other poorly drained soils, but a suitable outlet is required. Excavation difficulties are compounded by a high water table, and by large surface boulders.

FORESTRY

Because of excessive slopes this property could not be a commercial forest. Erosion in the shallow to bedrock soils coupled with the steep slopes would also prohibit most commercial forestry. Steep slopes in the western portion of the property, the streams and swampy areas, and the current long distance to a road to the east (Brewster Street), makes the removal of timber impractical unless a development road were constructed. With the advent of a road, approximately 4,700 board feet/acre of timber could be taken from land cleared for roads and parking lots, septic tanks and leach fields, and actual residential units. The logs could yield $45.00 per thousand board feet.

When clearing land for development, trees should be left in clumps of 1/4 acre or more as winds would tend to break or uproot individual trees. In addition, the aesthetics of the area may be changed as the cleared upper slope becomes a part of the Route 6 vista.

CLIMATOLOGY

The climatic and microclimatic effect of the proposed development will probably be minimal. Since the building site is located on the crest of a ridge there may be some noise from I-84 when the highway is finally completed. Also, winter winds exposure and therefore heating requirements will be high unless wind barriers of tall vegetation are left across the ridge on the north edge of the property and east to west along the southern boundary.

The tall vegetation on the steep hillside should be left undisturbed to avoid intensifying the frost pocket at the bottom of the hill. Also, the proposed access road should be along the contours of the hill as much as possible to avoid affecting the cold air drainage down the hill.

WATER SUPPLY AND WASTE DISPOSAL

At present, the Arrowhead Ridge property lies outside any area identified to be serviced by public water or sewer service. While the provision of public water supply is probably not of major importance in assessing this particular site for the proposed development, the eventual availability of public sewer facilities may be of great importance for a high density residential development for which on-site disposal means are proposed. Extension of public sewers can be expected to be the mandated solution to a major on-site failure of sanitary facilities.

The State Plan of Conservation and Development identifies areas "Suitable for Urban Development," defined in large measure as those areas which can be economically serviced by public water and sewer and therefore accommodate high density development. Areas outside the SUD areas are planned to remain open or developed at low densities with all urban uses served by on-site disposal techniques permanently. The site under question lies four miles beyond the outer limit of the SUB area both as defined in this region and in the capitol region. The adopted water and sewer plan of the Windham Regional Planning Agency, published in 1972, defines a very similar area to be sewered in the region in stages through the year 2000. Any federal or state assistance sought in the provision of sewers in Coventry would be weighed in view of these recommendations. A suggested sewer program for the Town of Coventry was developed at the request of the Town by Griswold and Fuss. In that report, published in 1972, large areas of the northern part of Coventry along Route 44A were suggested for sewering after 1995 but even with that ultimate extension of sewer service the present proposal would lie almost two miles away and require the pumping of the effluent up to the proposed service area.

Waste Disposal

As mentioned earlier in the section on soils, the site does possess soils which are presently suitable for sewage disposal in some areas. While the areas investigated with observation pits are satisfactory for sewage disposal, the amount of sewage which can be disposed of and its method of disposal have not been established. The preliminary plan does not provide enough information to approve the site for the sewage disposal system which was proposed or the anticipated flows. The amount of flow, depth and design of the system will be critical due to the possibility of groundwater. Since there may be a question as to where maximum high groundwater is located, tests for maximum groundwater should be made at a time of year when groundwater is at its maximum level (spring of the year). While groundwater may not eliminate sections of the site for sewage disposal, its presence will effect the type of installation and possibly the use of sections of this site for sewage disposal.

The area which is proposed for sewage disposal would have to be cleared to install the system. This would be necessary in order to get equipment through the area and allow space for casting soil from the trenches dug for the leaching area. The clearing may create an erosion and sedimentation condition which must be considered in advance of actual groundbreaking in order to protect wells and streams from pollution. The steep slopes in the area proposed for the installation of the sewage disposal system, and those uphill of the actual leaching galleries, which lead to the actual disposal area, may create additional stress on such a large-scale sewage-disposal system.

Water Supply

The water supply for a development of this size (340 units) should be assured prior to any final approvals. This would require at least the installation of test wells to assure adequacy of supply and a suitable water quality. The location of such a supply in relation to sewage disposal and surface water drainage

will be very important. Wells developed adjacent to the apartment site would probably be drilled wells and may not provide (in one well) the quantity of water a developed well would provide. As a result, several wells with adequate separating distance between them and any sources of pollution would be needed.

Bedrock wells situated in any of the upland areas of Connecticut generally will yield on the average less than 5 gallons of water per minute to the user. The reason for this is water only can enter the well shaft from cracks, joints, and fissures intersecting the well below the natural water table. The more numerous and larger the size of these rock seams the more water than can enter the well in the shortest period of time. In general, however, these openings tend to decrease dramatically in size and number with depth below the rock surface. From a statistical analysis of water wells drilled to a depth of 200 feet, it appears they produce proportionately more water per foot drilled than do wells drilled to 400 feet. In other words, the cost, on the average, from putting additional well footage, below the 200 foot level, far exceeds the return in usable water. From the many well records in eastern Connecticut, it has been calculated 9 out of 10 bedrock wells yield at least 3 gallons of water per minute but only through exploratory drilling can a more accurate figure be determined on the quantity and quality available in this region of Coventry. One method to get an approximate number on well yields would be to question the owners of nearby homes and just see what their wells yield. One other factor to consider in choosing water supplies is the quality. The water produced from the rocks of the Hebron Formation tends to be of a less desirable quality than that of other bedrock formations found in Connecticut. If wells are drilled, water samples could be taken, analyzed and if needed a treatment system incorporated.

Gravel packed wells in the vicinity of the Hop River may be contemplated, but would have to be located so as to be protected from flooding and contamination. Such wells would also be 250-300 feet below the proposed apartments and would require large lift pumps to get water to the apartment complex.

Fire Protection Water Supply

The public water supply (drinking water) would have to be completely separate and protected from any nonpotable supply (fire-fighting water from proposed pond). The water for fire fighting, as proposed, is 250-300 feet below the apartments and would require a large pump to lift the water--in any quantity--to the apartment site.

The development plans call for the creation of a fire pond by damming the Hop River. If the Hop River is to be dammed for a fire pond, it is important to contact the Department of Environmental Protection for a design structure permit. This consists of a review by the Department to ensure the dam will meet the state's safety requirements.

The proposed impoundment for a water supply for fire protection should be designed to meet all safety standards. It is to serve as an access road crossing the Hop River. An area of 8.2 square miles drains to this point and this impoundment and associated water control devices must safely handle the storm runoff from this area. Complex investigation and design will be needed to determine the

feasibility of this structure. To provide adequate fire protection, an extensive pumping and storage system will be needed for maintaining sufficient water for the development area. The elevation head differential is in excess of 260 feet.

Concerning the creation of a fire pond, the Hop River is nearly dry during the average summer at the point where the developer wishes to build the impoundment. When investigated on September 5, the river was about 3 feet deep and 4 1/2 feet wide. Construction of an impoundment in this area would likely interfere with the Stream Low Flow requirements set forth by DEP Water and Related Resources Division. From the developer's viewpoint, the pond created would have limited value as a firefighting tool as fire equipment would be required to pump water up nearly 300 vertical feet.

Investigation of the upland vegetation in the northeast corner of the property to determine if this might be made a fire pond revealed that unfortunately, the water table in this wetland area is at least 8 to 10 feet below the ground surface at this time of the year as evidenced by a dried-up watering hole pond on adjacent property in the immediate area of the wetland. There appears to be no springs in the immediate area of the wetland which could facilitate pond construction. For these reasons it appears that a fire pond in conjunction with this development is not feasible.

ROADS AND UTILITIES

Route 6 will provide the only access to the proposed development. As a major arterial road in the area, the highway will certainly be capable of accommodating the additional traffic load. And, as the road's function is to carry and distribute large volumes of traffic through the region and off of local roads, the location of a high density development of this type would appear an appropriate use to be served by the highway. While increasing traffic will undoubtedly cause harm over time to the scattered low density residential development currently along the road, it is more appropriate to accommodate the increased vehicle traffic that growth in the region will entail here rather than on secondary roads. Coming from the east on Route 6, visibility is quite limited in the vicinity of the site due to a large continuous curve in the road. The high speed, high volume nature of the highway may indicate some safety problems with access onto the site, especially along the eastern edge of the property.

The proposed access road into the site will have to be on the order of 3,000 feet in length to reach the proposed location of the apartment complex. That single length of road will provide the only access through the site for most of its length. Such a length is more than three times the standard recommended length for dead end, cul-de-sac roads. The Urban Land Institute in the the Community Builder's Handbook suggests that such streets should be on the order of 1,200 feet for single family developments, but only 400 to 500 feet for multi-family developments. A more recent publication of ULI in cooperation with the American Association of Civil Engineers called Residential Streets indicated that the usual length of cul-de-sac is 400 to 600 feet with a 1,200 foot street considered a long one. The Coventry subdivision regulations, which would not technically apply in this situation, only permit dead-end streets of 400 feet. While such standards are not inflexible, the proposed road length is so much more extensive than ordinarily recommended, critical evaluation of the wisdom and possible

dangers of such a road providing the only link for 700 or more people off of the property must be carefully assessed.

AESTHETICS AND PRESERVATION

The proposed site design does present certain commendable features. With the exception of the one access road, no construction is occurring along the highway frontage, reducing to a considerable degree the visual impact of large numbers of dense residential development. Construction near or over the river is limited to that one road crossover necessary to reach the bulk of the property. As a result, the essential natural character of the road frontage and the valley of the Hop River need not be severely altered. The clustering of the urban development in one portion of the site would permit the retention of much of the tract, including that portion most visible to the general public, in a natural or developed open space.

SERVICES TO SUPPORT DEVELOPMENT

Supporting commercial development now exists in Andover and Bolton Notch within a moderate distance. It can be expected that as the population of the general area grows Route 6 will be the location of much of the additional commercial services likely to develop to serve the needs of new residents. However, a closer association of such a high density development with supporting commercial services would be more desirable to reduced vehicular traffic activity.

A commuter bus between Willimantic and Hartford is proposed along Route 6. As proposed, the bus will make no stops along this portion of Route 6, but, nevertheless, the proposal is undoubtedly indicative of future public transportation activity along this commuting route.

The development will be served by either the Coventry fire departments or those of Bolton or Andover. The Coventry company lies four miles away. Both Andover and Bolton lie about three miles away. All fire companies lie at the extremity or beyond the recommended safe service radius for fire protection. With the long, single access road to the summit of the property where the apartments are proposed to be located, the adequacy of fire protection should be carefully investigated before approval is granted for the proposal.

COMPATIBILITY OF SURROUNDING LAND USES

With careful siting of the apartment units on the site, there need not be any conflict with surrounding land uses. Traffic generated by the complex will be occurring directly on a major arterial highway without serious interruption of existing adjacent residential or rural neighborhoods. The concentration of apartment construction on one section of the site provides the opportunity to well buffer, visually, the impact of the structures from adjacent detached home

areas. The limits on height found in the zoning regulations should insure, with careful site review, that the buildings are not excessively overpowering in the environment.

As a specific, isolated proposal, the apartment complex can easily and unobtrusively be integrated into the larger predominantly suburban and exurban landscape. If, however, it is a precursor to similar more widespread development in the general area, its compatibility must be called into question.

Both the State Plan of Conservation and Development and WRPA's Guide Plan suggest this area remain rural or developed at low densities and permanently unsewered. Where environmentally safe, the clustering of the low density development potential of the area into nodes of moderate density of the type proposed in this review would be consistent with that State and regional policy and go a long way toward protecting and maintaining the area's rural quality. However, encouraging or permitting development at an overall density of 5 units/acre would inevitably transform the area into a more intensive suburban area, almost inevitably requiring public water and sewer service.