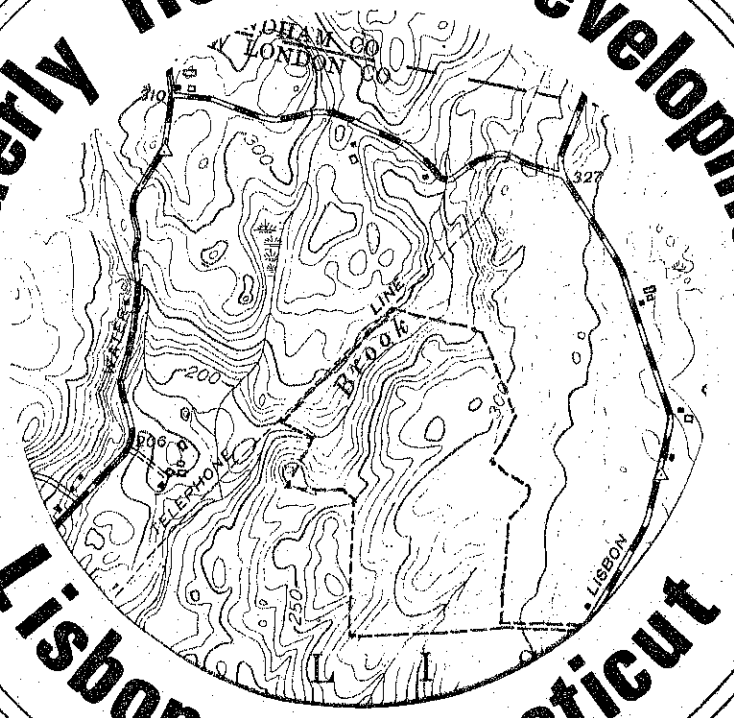
environmental review team report

Elderly Housing Development

Lisbon, Connecticut



RC&D

EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ASSISTED BY: U.S. DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ELDERLY HOUSING DEVELOPMENT
LISBON, CONNECTICUT
JANUARY, 1977

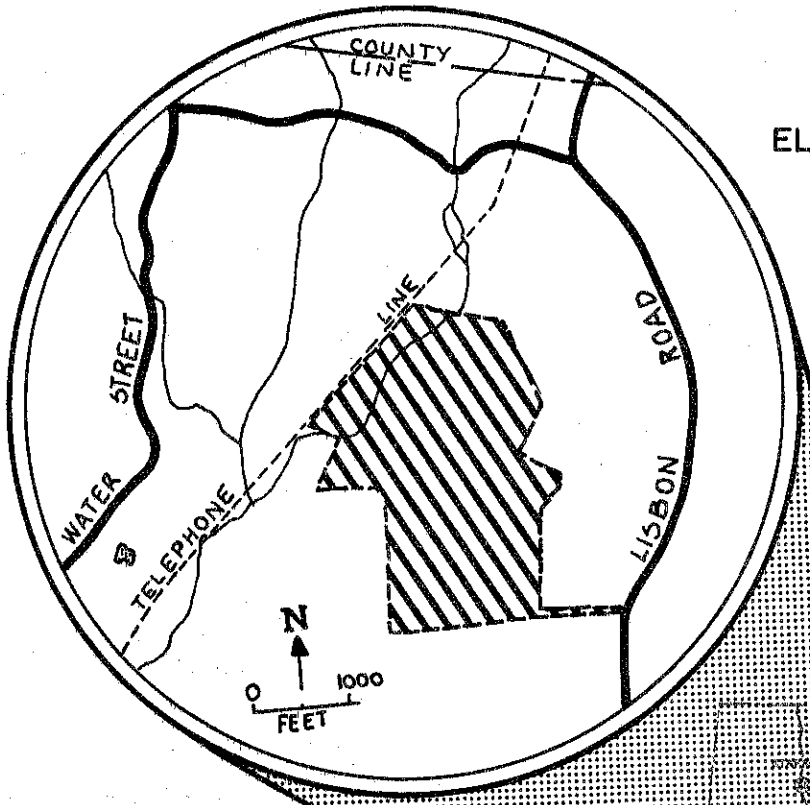
The preparation of this report was assisted by a grant under Title 1, Section 107(a)4 of the Housing and Community Development Act of 1974, 24 CFR, Part 570, Section 570.406.

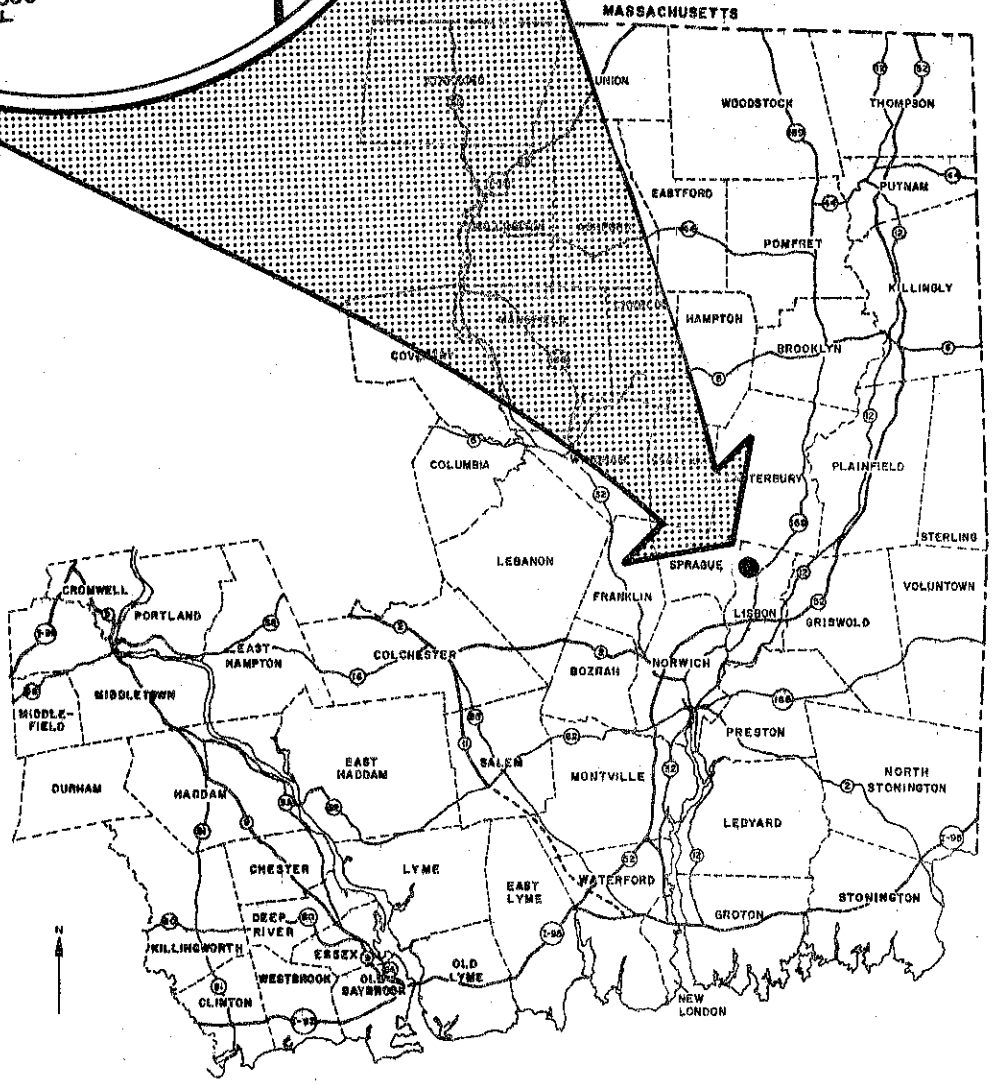
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT PROJECT
Environmental Review Team
139 Boswell Avenue
Norwich, Connecticut 06360

LOCATION OF STUDY SITE

ELDERLY HOUSING DEVELOPMENT

LISBON , CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ELDERLY HOUSING DEVELOPMENT
LISBON, CONNECTICUT

This report is an outgrowth of a request from the Lisbon Planning and Zoning Commission, with permission of the landowner, to the New London 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: Sherman Chase, District Conservationist, SCS; Steve Elmer, Soil Scientist, SCS; Tim Dodge, Wildlife Biologist, SCS; Richard Hyde, Geologist, Connecticut Department of Environmental Protection (DEP); George Cloutier, Forester, DEP; David Miller, Climatologist, UConn Cooperative Extension; Donald Capellaro, Sanitarian, Connecticut Department of Health; Thomas Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; and Linda Simkanin, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Tuesday, November 9, 1976. Reports from each Team member were sent to the ERT Coordinator for review and summarization for this 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 Lisbon. 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 Area 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 Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.

INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to review approximately 120 acres of land proposed for 240 apartment units intended for elderly persons. The apartment complex is proposed by private developers, and each building is proposed to contain five units.

At the time of the review, the preliminary site plan located the apartment buildings along the single cul-de-sac road into the property. The tract is presently undeveloped. Present land uses include wooded land which was completely burned in a forest fire about one year ago. Some intermittent streams drain portions of the property. Water retrieval and sewage disposal would have to be developed on-site.

Some aspects of the proposed development include the placement of the development, and on-site sewage disposal systems.

The report will also describe the natural characteristics of the site including topography, geology, soils, and forest cover. Consideration will be given to the compatibility and suitability of the proposal 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.

TOPOGRAPHY AND GEOLOGY

Topographically the property is situated on an irregular westward sloping hillside that forms part of Negro Brook's eastern valley wall. The property is steepest along the northern and western portions with some fairly flat and gently rolling surfaces in the central and eastern sections. Negro Brook, along with three smaller sub-drainage systems, drain through the property in a southwesterly direction with Negro Brook situated in the most northerly portion. The southernmost brook exits through the southern property border and the two intermittent streams draining the central portions of the property exit along the western boundary. Land slope is steepest in the northwest where it may exceed 15% in places but in general is only 10%. In the highest elevations, slope ranges from 5% to 10% with one or two locations along the eastern boundary being nearly flat. Refer to the Topography Map on the following page.

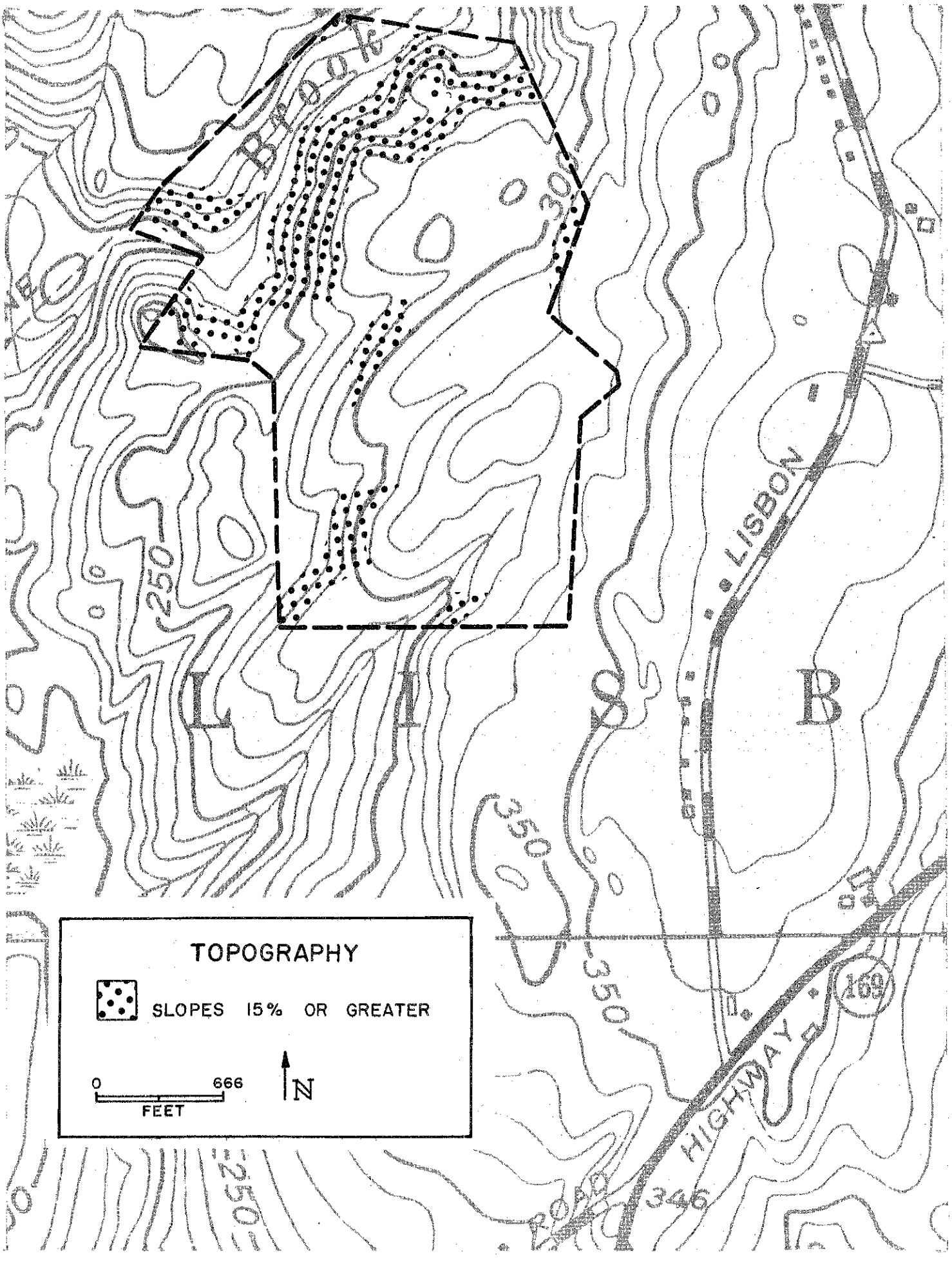
Surficial Geology

In terms of the overburden materials, those primary unconsolidated deposits that lie on top of the bedrock surface, the entire piece of property is covered with what is termed glacial "till." The geologist is principally concerned with those parent deposits below the soil zone. The soil zone is the upper 3 to 5 feet of weathered parent material that is altered through chemical, mechanical and biologic processes of the land surface and mapped by the soil scientist. Glacial till is the predominant primary overburden found in Connecticut and resulted from the melting of glacial ice. These materials were carried, on, in, and pushed along under the active glacial ice and once the ice melted they remained where they were. While it is true that the melting ice waters carried much of these materials away to be deposited as stratified sands and gravels in stream valleys and clay beds in lake bottoms, many of the particles trapped in the ice were dropped in place once glacial activity ceased. By definition, till, or "hardpan" or "boulder clay" terms more commonly used by non-geologists, is a heterogeneous material composed of various mixtures of boulders, gravel, sand, silt, and clay, none of which are significantly sorted or stratified according to particle grain sizes as is the case with waterlain and windblown deposits. To restate, till is simply the mass of various sized materials that remained after all glacial ice melted.

The thickness of till overburden varies from place to place but averages 10 feet to 15 feet throughout most of the State. Following the site review, a backhoe was brought on-site and several test pits were dug. Bedrock was not encountered in any test pits nor was it observed as an outcropping at any location on the property during the site-review. Based on these observations, the published "Geologic Map of the Scotland Quadrangle, Connecticut," by H. Roberta Dixon and Charles E. Shaw, Jr., 1965, and the configuration of the topography, it can be estimated the overburden thickness probably falls in a range of 15 feet to 25 feet over most of the property, although adjacent to Negro Brook it probably only ranges between 5 feet and 10 feet in thickness.

Bedrock Geology

The property falls entirely within an area where the underlying bedrock has been mapped as falling into the sillimanite gneissic unit of the Putnam Group.


TOPOGRAPHY
SLOPES 15% OR GREATER
0
666
FEET
N
LISBON
HIGHWAY
169
A
B
300
250
350
346

Gneiss is a metamorphosed rock, deformed and altered by intense heat and pressure during deep burial within the earth, that is characterized by bands or distinct layers of granular light colored minerals that alternate with bands of flat or platty dark colored minerals that are arranged in a parallel orientation. This particular gneiss is differentiated from other gneisses by the presence of a high concentration of the mineral sillimanite. Sillimanite occurs in long, slender, needle-like crystals that only form under the highest temperatures and pressures of metamorphism.

SOILS

A detailed soils map of the properties is given in the Appendix to this report. As the map is an enlargement from the original 1,320'/inch scale to 660'/inch, the soil boundary lines shown should not be viewed as absolute boundaries, but rather as guidelines to the distribution of soil types on the property. The soils map, along with the Special Soils Report, Southeastern Connecticut Region (USDA, SCS, 1969), can serve as an educational tool regarding the identification and interpretation of soils.

The soils limitations chart for certain land uses which is found in the Appendix of this report, provides useful information concerning each soil type found on the site. An explanation of the numbered ratings for particular land uses is provided on the last page of the Appendix.

The site is composed of three major soil types in addition to those soils which are classified as inland wetlands under Public Act 155, as amended.

Approximately 34% of the site is mapped as Paxton soils 35XB and 35XC. In general, the Paxton series are well-drained soils with a slowly to very slowly permeable fragipan at about two feet in depth. The fragipan restricts internal drainage. A temporary perched water table may form above the fragipan in wet seasons and after heavy rains. Seep spots occur seasonally on slopes as water moves laterally down slope over the pan. Paxton soils occur on slopes ranging from gently sloping to steep. Surface stoniness varies from essentially stone free on areas where stones have been removed to extremely stony. The Paxton soils are associated with moderately well drained Woodbridge, poorly drained Ridgebury, and very poorly drained Whitman soils, as is the case on this site. Paxton soils have a severe limitation rating for subsurface sewage disposal due to the fragipan and the high water table. Subsurface sewage disposal systems must be carefully engineered in order to function properly in these soil types.

Charlton soils 32B, 32C, and 32D comprise roughly 28% of the total site. These are well drained upland soils offering a minimum of development limitations. Surface and subsoil textures to a depth of 24 to 30 inches are normally very friable (easily crumbled) fine sandy loams with varying amounts of gravel size angular rock fragments. These soils are naturally stony and bouldery. Surface stoniness varies from essentially stone-free to very stony. Stones are present in varying amounts below the surface and will be encountered during excavations. Slopes range from very gently sloping to steep.

The Woodbridge soils 31XA and 31XB comprise the third major soil type of the property. Woodbridge soils are moderately well drained upland soils with a slowly permeable fragipan at about two feet in depth. Surface and subsoil

textures above the fragipan are friable fine sandy loams. The lower subsoil is mottled, indicating a waterlogged condition from late fall until spring and after heavy rains in summer. These soils are moderately permeable above the fragipan. Water moves laterally down slope over the fragipan in wet seasons. Woodbridge soils are on slopes ranging from nearly level to sloping. The greater portion of these soils, however, are on slopes of 2 to 8 percent. Surface stoniness varies from essentially stone-free on areas where stones have been removed to extremely stony. Woodbridge soils have a severe limitation rating for subsurface sewage disposal due to the fragipan and the seasonally high water table. As with systems placed in Paxton soils, they must be carefully designed to account for the soil limitations.

The remaining soils on the property are the inland wetland soils and the shallow to bedrock soils. There are some areas of Hollis/Charlton soils along the northwest boundary of the property. These are primarily shallow to bedrock soils which on this site are separated from the balance of the site by Negro Brook and its attendant inland wetland soil type, 43M, the Ridgebury/Whitman/Leceister complex. This soil complex is a regulated inland wetland soil under P.A. 155 and is characterized by stoniness and a high water table, and has a severe limitation rating for development. Another area of P.A. 155 inland wetland exists along a brook which drains the southeast portion of the site. This wetland soil type is Ridgebury 98, and is characterized by a high water table. Like 43M it is a poorly to very poorly drained soil which has a hardpan at about two feet in depth. These soils both occupy low-lying, nearly level areas. The water table is near the surface from late fall through early spring, but commonly drops below six feet in late summer and fall. The Charlton soil areas offer the least limitations for building. The most imposing site limitations are the fragipan (a semi-impervious layer restricting internal drainage) and the high water table. The hardpan will cause the water table to rise during times of heavy rainfall and this is one reason for the severe ratings for on-site sewage and basements. Subsurface sewage disposal systems can function properly in soils exhibiting these limitations but they must be designed with regard for these limitations. To insure adequate design measures it is suggested:

1. Determine highest water table by observing test pits in the early spring, normally time of the highest water table.
2. When the water table has been observed, design adequate remedial measures such as drainage, fill, or a combination of drainage and fill where needed.
3. Work closely with appropriate health official, or officials, in designing the sewage systems. The systems should be so located and designed that they pollute neither the wells nor the wetlands. It is likely a 100% reserve area will also be required for the systems.

Provisions should also be made to prevent excessive erosion and sedimentation during development. Therefore, it would be desirable to have a plan for erosion and sedimentation control prior to any development on-site. The change from woodland to development will increase the run-off during storm flow. Provisions should be made to accommodate the added runoff without causing harmful effects downstream. In areas where buildings and roads are planned, sediment and erosion control plans should be developed and implemented. Components of effective sediment and erosion control include, but are not limited to, keeping much of the area under existing vegetative cover and keeping areas devoid of cover exposed

for the shortest practical period of time. Permanent roads should be installed as early as possible. Temporary seeding and mulching may be necessary if development becomes protracted.

FOREST COVER

The area was wooded with mixed hardwoods, however, a severe fire last year killed virtually all standing trees. Species included red oak, red maple, hickory, beech, birch, and ash. The site is a medium to good growing site moderately well drained with good moisture retention. If replanted, the area could be suitable for logging during the drier months of the year.

The burned over stand contains many cords of firewood which should be salvaged in the next two years. This would help reduce the use of fossil fuels for energy for many homeowners equipped to burn wood as a substitute source of heat.

The after effects of this forest fire present a very bleak landscape. Large dead material should be removed and some planting of evergreens should be made to reverse the effects of the bleak landscape. White pine and hemlock, native evergreens, can be planted in strips, patches and borders to improve the aesthetics and provide a habitat pleasing to man and wildlife. Seedling trees are available from the State Forestry Nursery at minimal cost for some of this type of planting.

At present live growth is limited primarily to understory plants including sweetfern, viburnams, brambles, ragweed, goldenrod, greenbriar, blueberry, meadowsweet, mountain laurel, and ground pine. In addition, chestnut sprouts, red maple, young oak principally white oak, birches and sassafras are common.

Elimination of this site as a forest will leave no great impact on the present forest resource base, but presents a gradual adverse effect as the total regional forest resource base is reduced by gradual change of forest areas to other uses. Only future demand for our only renewable natural resource will show how much the adverse impact will be.

WILDLIFE HABITAT

In its present condition the site provides good wildlife habitat. Vegetative regrowth following a fire is usually higher in nutritive value for wildlife than similar growth on unburned areas. Quality of habitat can be expected to increase over the next few years as growth of desirable vegetation increases. As oaks, maples and other hardwoods mature, they will shade out many of the understory plants and both quality and quantity of the woody plants will decrease.

The area is utilized by whitetail deer, cottontail rabbits, ruffed grouse, songbirds and a variety of other small animals and birds. Without management to maintain brushy growth, habitat quality will decrease. However, cluster housing favors wildlife habitat by limiting the acreage that actually becomes developed, retaining much of the land in its natural state. Also, areas devoted to leaching fields will be retained in grasses, helping to maintain the diversity of vegetation.

WATER SUPPLY

As there is no municipal water available in the area, an on-site supply and system would have to be developed. In order to service the project one or more central or public water supplies would be provided. In considering such a facility the main considerations are the proper location for a well(s), sufficient yield to provide an adequate amount of water for the size of the project and the needs of the people, and obtaining satisfactory (potable) water. In respect to the first consideration is the selection of a well(s) site which would provide protection from possible sources of pollution and also allow for control of the land around a well. As this is a sizable parcel, there should be no particular difficulty in locating an acceptable site(s). In addition to consideration of well locations for protection, is a location which might give sufficient (adequacy) and would tend to govern the type of well(s) to be constructed. The geology of the area would determine this. In general drilled or rock wells have less natural limitations, however, their yields are usually limited. The water would have to be safe as well as being free of objectionable properties, such as those associated with excessive concentrations of minerals, particularly iron and manganese.

From the geology of the area, it is apparent the bedrock aquifer will have to be utilized. Based on information supplied in the publication "Water Resources Inventory of Connecticut Part I, Quinebaug River Basin," Connecticut Water Resources Bulletin No. 8, 1966, a statistical survey of bedrock wells in this portion of Connecticut revealed that 85 percent of wells penetrating at least 100 feet of bedrock could supply at least 3 gallons of water per minute to the well.

The crystalline bedrock underlying this area is composed of hard, dense, tightly interlocking mineral grains that do not allow appreciable amounts of ground water to flow into a drilled well shaft from between the mineral grains. For this reason almost all water entering a well travels through any cracks or joints that happen to exist in the rock itself and that intersect the well shaft. In most rocks in eastern Connecticut the largest and most numerous cracks are generally encountered within the upper few hundred feet of bedrock and therefore as a general rule of thumb the chances of discovering the greatest amounts of water declines as the well is drilled deeper than 200 to 250 feet. This is not to say additional water supplies cannot be found by drilling to greater depths but the chances are statistically more water will not be found.

Water wells utilized to supply two or more consumers is regulated by the Connecticut State Department of Health. Existing regulations require municipal supply wells to be greater than 50 feet from all property lines and foundation drains. The regional health officer will have to be consulted for establishing municipal water supply wells on this property.

Water requirements to supply 480 elderly residents of the proposed 48 buildings if we assume each individual will utilize 70 gallons of water per day runs in the neighborhood of 35,000 gallons of water per day. This figure was chosen as a general point of reference and Health Department requirements should be utilized in calculating use figures during that stage of design development. If a single 6 inch bedrock well will produce at least 3 gallons per minute, than a daily total yield will be 4,320 gallons. At this rate approximately eight wells would have to be drilled. Obviously if higher yields are encountered then fewer wells will be required to meet daily overall needs. Unfortunately, water use is concentrated between certain hours of the day, resulting in peak demand periods

that will exceed the instantaneous water supply unless sufficient subsurface and surface storage capability is developed.

For these reasons, particularly in a project of this density, a water supply should be developed before any construction is undertaken. Knowing the yield and quality of water will assist the design engineer in the preparation of plans for pumpage, possible treatment, storage and distribution. The water supply section of the State Health Department is to be contacted regarding a possible public water supply.

WASTE DISPOSAL

As the proposed development lies beyond any proposed public sewerage systems, sewage disposal like water supply will depend upon private on-site disposal systems. It is understood the owner has also considered a possible sewerage treatment system. Regarding the latter, such a facility would have to be approved by the Department of Environmental Protection. In general, that agency has considerable reservations on a private treatment plant with a discharge to a watercourse. These range from having a suitable watercourse to which the effluent could be discharged to the maintenance and operation of the treatment facilities. For these and other reasons it would seem that in reality sewage disposal would need to depend upon on-site subsurface means.

Based on visual observations of the property, including the inspection of a number of test holes which were dug as part of the on-site investigation, and consideration of the soil survey mapping data, the State Health Department, too, would have reservations concerning possible subsurface sewage disposal for a project of this scope. A large percentage of the property has severe limitations due to slope, soils being wet or having high seasonal ground water, and soils underlain with shallow ledge rock or hardpan. Of the total 120 acres, less than 25 of them are considered to have little or no limitations for subsurface sewage disposal. This area is chiefly in the higher terrain towards the central (northern) part of the property, and is soil mapped as Charlton soils 32B and 32C. It is noted that this area has several watercourses which encircle much of the Charlton soils. While it is possible to build in other soil areas, special engineering considerations should be applied when designing for subsurface sewage disposal in order to provide for successful renovation of waste materials.

SERVICES TO SUPPORT DEVELOPMENT

The site is beyond walking distance of any facilities or services. Residents will have to travel to Griswold, Sprague, Plainfield or Norwich for most commercial and institutional facilities. For a project of this size a van or mini bus would probably be desirable and necessary to help residents without cars to travel to these destinations.

ROADS AND ACCESS

The proposed development is located in an undeveloped area with residential uses east of the site along Kimball Road. A more intensive residential development is located northeast of the site along Kimball and Rex Roads. An increase of 240

units in 48 buildings will change the character of the area from rural to suburban and will increase traffic on Kimball Road. According to the developer's preliminary site plan, access to the site will be from Kimball Road by a deadend street about 3,200 feet in length (2,400 feet on the site and 800 feet access). It would be desirable if this proposed road could be connected to Baron Drive at the northeast corner of the site. This would permit another means of entrance and exit for fire trucks, oil trucks, emergency vehicles and automobiles. Lisbon subdivision regulations currently permit deadend streets to be 1,200 feet in length.

COMPATIBILITY WITH SURROUNDING LAND USES AND ALTERNATIVE USES

According to the U.S. Census, approximately 201 persons aged 65 or older resided in Lisbon in 1970. 29.8% of these persons (60) were classified in the poverty category, second only to Sprague with 30.2% or 93 persons in the poverty category. Regionwide, 18% of the elderly population of 18,900 were classified in the poverty category. This would indicate a need for some elderly rental units with rental subsidies. The Lisbon Housing Authority is about to begin construction of 30 elderly units with State Department of Community Affairs financing, and a private developer has begun construction of 25 elderly units. If the current proposal is to reach full occupancy with elderly residents (Lisbon Zoning Regulations define elderly persons as individuals or couples aged 55 years or older) then non-Lisbon elderly persons will probably have to be sought. All of the towns surrounding Lisbon with the exception of Canterbury have Housing Authorities and have constructed elderly projects.

As the site is outside any areas proposed for public water supply or sewerage system, the Lisbon Town Plan recommends the eastern portion of the site for moderate density residential uses (1 unit per acre) and the western portion for low density residential (1 unit per 1 1/2 acres) and rural residential, open space, recreation, conservation, and agricultural uses (1 unit per 2 acres). The Regional Development Plan recommends this area of Lisbon for low density residential uses at greater than 1 acre per unit or conservation, agricultural, and recreational uses. The State Plan of Conservation and Development depicts the area as suited for limited development. This means that at the present time, the area is planned to remain open or developed at low densities with all uses served by on-site septic disposal systems.

Considering the existing rural nature of the area and various adverse site conditions including limited access and the soil conditions discussed earlier, it would appear that the overall planned density of this proposed development should be carefully evaluated. Considerable land space would be taken up by the individual buildings, as well as roadways which will decrease the area that might be available and be more suitable for sewage disposal. Further consideration for the intended purpose would require an engineering layout plan, including more detailed site testing in the area that would be used for sewage disposal. From the information currently available, as far as possible residential development goes, it would seem the property could best support a low or limited amount of building.

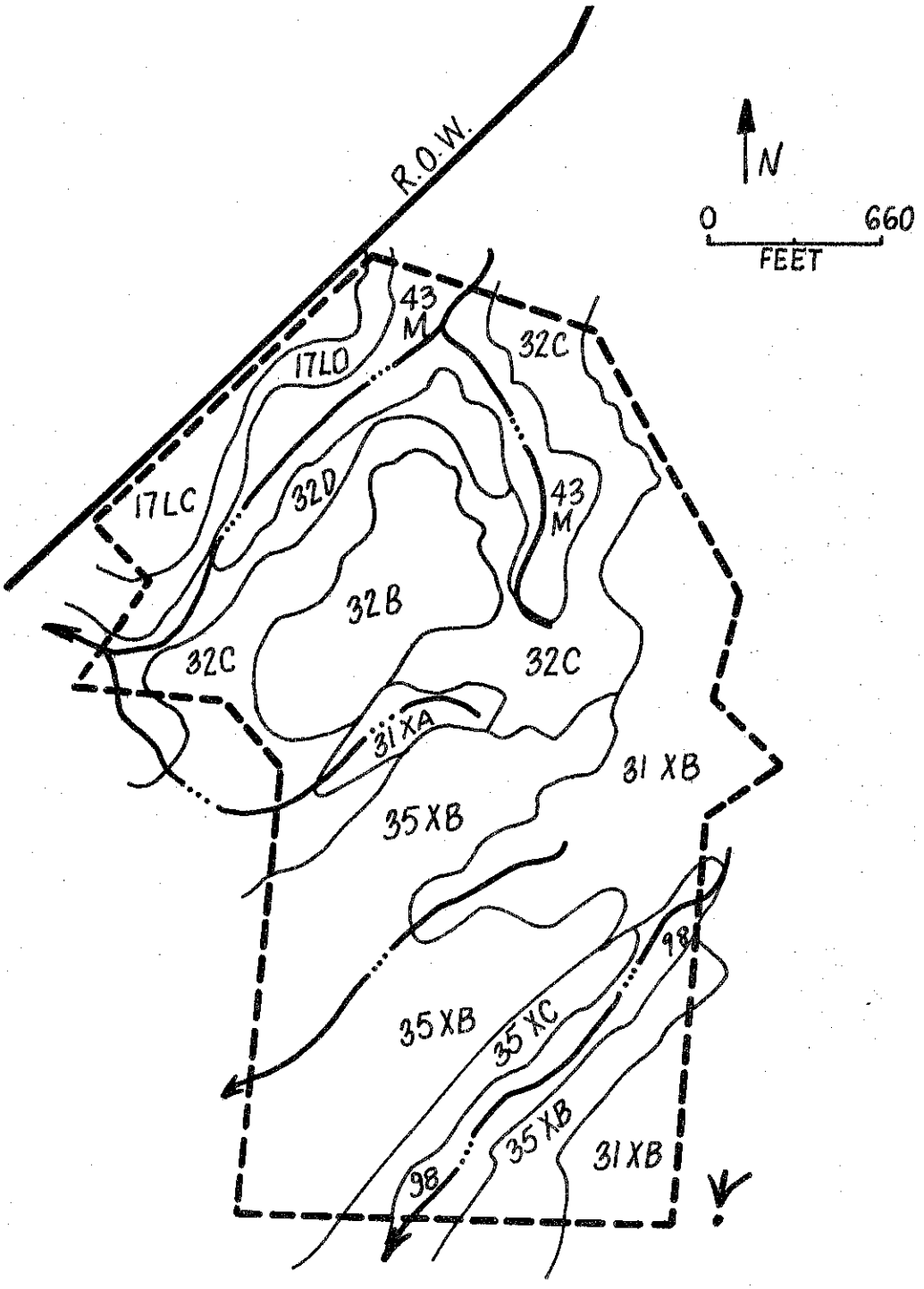
Alternative uses that appear feasible would be undeveloped, low density residential, or conservation-agricultural-open space uses as suggested in the above Plans. The site is too far removed from facilities and major access roads to be used for commercial or industrial uses.

APPENDIX

SOIL MAP

ELDERLY HOUSING DEVELOPMENT

LISBON, CONNECTICUT



The map is an enlargement from the original 1320'/inch scale to 660'/inch.

Prepared by: UNITED STATES DEPARTMENT OF AGRICULTURE, Soil Conservation Service.
ADVANCE COPY, SUBJECT TO CHANGE.

LISBON: ELDERLY HOUSING DEVELOPMENT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Natural Soil Group	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
						On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
Hollis/Charlton		17LC	5.0	4.3	Shallow to bedrock, slope	3	3	3	3
Hollis/Charlton		17LD	3.2	2.6	Shallow to bedrock, slope	3	3	3	3
Woodbridge		31XA	2.4	2.0	Seasonal high water table	3	2	2	2
Woodbridge		31XB	18.3	15.2	Seasonal high water table	3	2	2	2
Charlton		32B	9.0	7.5	-	1	1	2	1
Charlton		32C	18.6	15.5	Slope	2	1	3	2
Charlton		32D	5.5	4.5	Slope	3	2	3	3
Paxton		35XB	37.0	30.8	Fragipan	3	1	2	1
Paxton		35XC	4.0	3.3	Fragipan	3	2	3	2
Ridgebury, Whitman, Leceister		43M**	12.0	10.0	High water table, stony	3	3	3	3
Ridgebury		98**	5.0	4.1	High water table	3	3	3	3
			120.0	100.0%					

* Urban Use Limitations: 1 = slight; 2 = moderate; 3 = severe (see back of this page for a further explanation of limitation classifications.)

** Inland Wetland soils as defined by Public Act 155, as amended.

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.