ENVIRONMENTAL REVIEW TEAM REPORT

BURTON ROAD SUBDIVISION
SALISBURY, CONNECTICUT

KING'S MARK
RESOURCE CONSERVATION AND DEVELOPMENT AREA

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ENVIRONMENTAL REVIEW TEAM REPORT

On

BURTON ROAD SUBDIVISION
SALISBURY, CONNECTICUT

FEBRUARY 1979

King's Mark Resource Conservation & Development Area

Environmental Review Team

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ACKNOWLEDGMENTS

The King's Mark Environmental Review Team operates through the cooperative effort of a number of agencies and organizations including:

Federal Agencies

U.S.D.A. SOIL CONSERVATION SERVICE

State Agencies

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEPARTMENT OF HEALTH
DEPARTMENT OF TRANSPORTATION
UNIVERSITY OF CONNECTICUT COOPERATIVE EXTENSION SERVICE

Local Groups and Agencies

LITCHFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT
NEW HAVEN COUNTY SOIL AND WATER CONSERVATION DISTRICT
HARTFORD COUNTY SOIL AND WATER CONSERVATION DISTRICT
FAIRFIELD COUNTY SOIL AND WATER CONSERVATION DISTRICT
NORTHWESTERN CONNECTICUT REGIONAL PLANNING AGENCY
VALLEY REGIONAL PLANNING AGENCY
LITCHFIELD HILLS REGIONAL PLANNING AGENCY
CENTRAL NAUGATUCK VALLEY REGIONAL PLANNING AGENCY
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Richard Lynn, ERT Coordinator
Rebecca West, ERT Draftsman
Irene Nadig, Secretary

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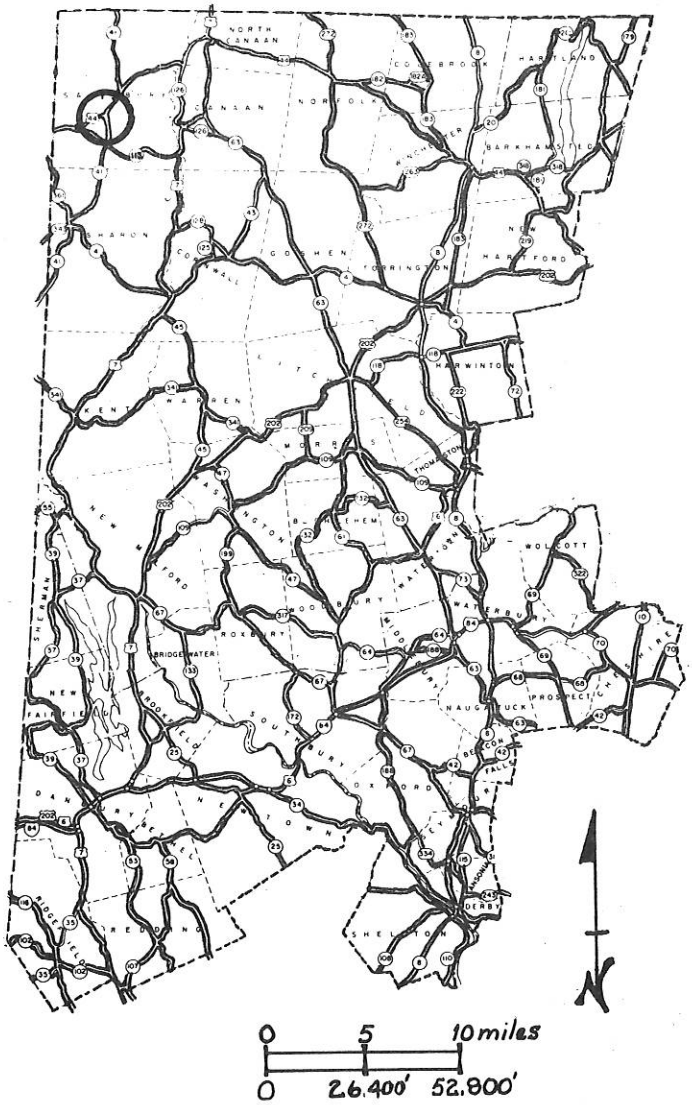
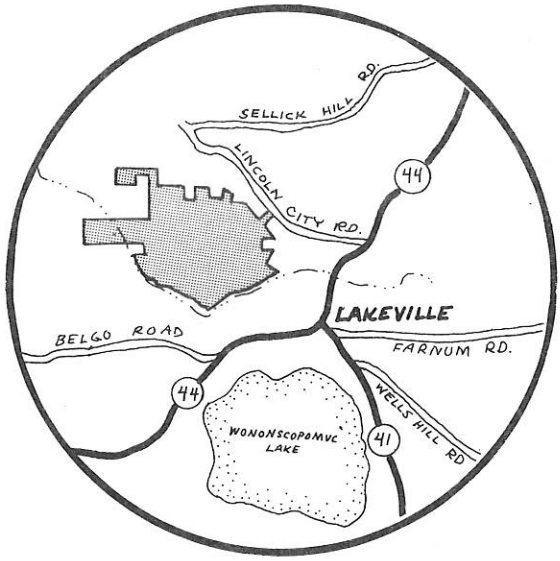
BURTON ROAD SUBDIVISION
SALISBURY, CONNECTICUT





ENVIRONMENTAL REVIEW TEAM REPORT
ON
BURTON ROAD SUBDIVISION
SALISBURY, CONNECTICUT

I. INTRODUCTION

The Town of Salisbury, Connecticut is presently reviewing an application for subdivision of ± 300 acres of land. The land slated for development is located just west of Lakeville Village off Lincoln City Road. According to the developer's "Master Plan Sketch", the proposed development would consist of 60 homesites varying in size from 2 - 7 acres plus a "nature way" consisting of a 150 foot minimum buffer strip along that portion of Burton Brook which abuts the property. The development would entail construction of one public road (Burton Road) off Lincoln City Road and a number of private interior roads (see Figure 1). All lots would be serviced by on-site sewage disposal systems and individual wells.

The developer has formally applied for the "first phase of development" which consists of 10 lots (lots 1 - 10; see Figure 1) on ± 41 acres of land.

The Planning and Zoning Commission from the Town of Salisbury requested the assistance of the King's Mark Environmental Review Team (ERT) to help the town in analyzing the proposed development. Specifically, the ERT was asked to identify the natural resources of the site and to highlight opportunities and limitations for development of the land. Major concerns raised by the town in requesting this review included the impact of the project on soils, vegetation, sewage disposal, storm water drainage and transportation.

The ERT met and field reviewed the site on January 3, 1979. Team members for this review consisted of the following:

Mallory Gilbert.....Soil Conservationist.....U.S.D.A. Soil Conservation Service

Michael Zizka.....Geohydrologist.....State Department of Environmental Protection

Robert Rocks.....Forester.....State Department of Environmental Protection

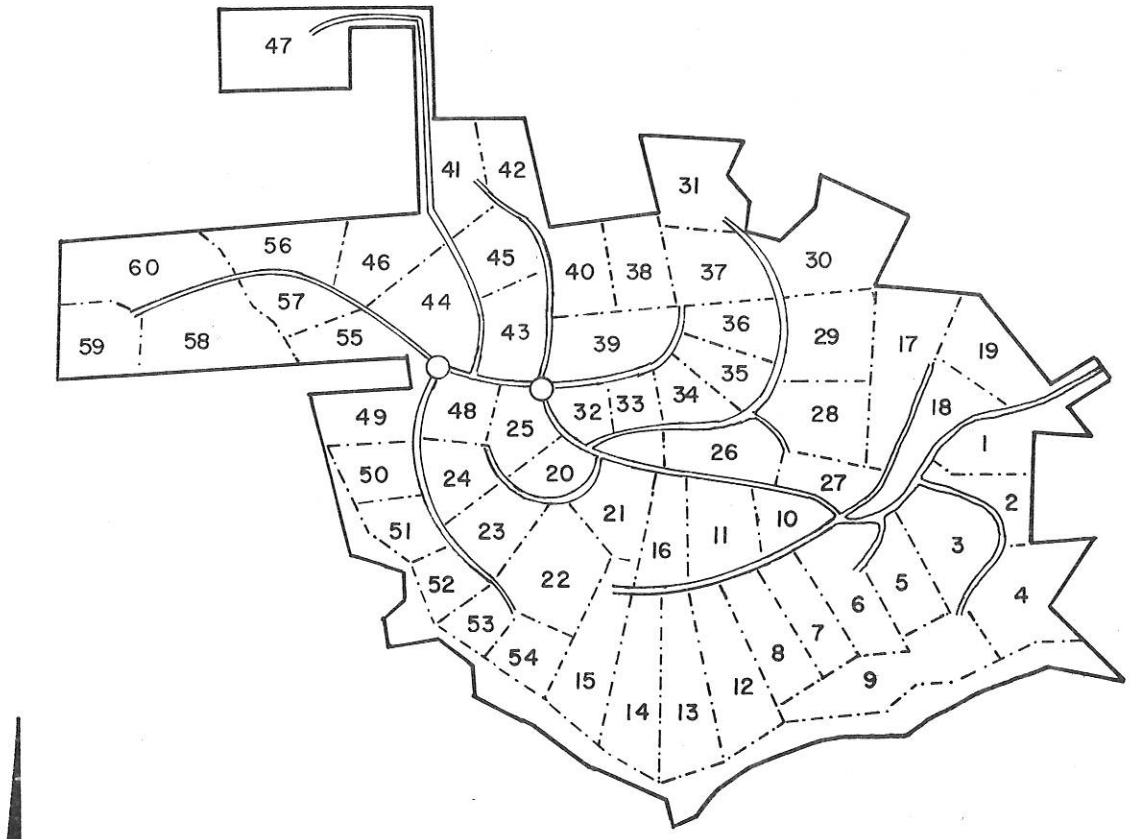
Steven Jackson.....Wildlife Biologist.....State Department of Environmental Protection

Alan Buzzetti.....Sanitarian.....State Department of Health

Lee Markscheffel....Regional Planner.....Northwestern Connecticut Regional Planning Agency

FIGURE I.

SIMPLIFIED SITE PLAN



N

SCALE: 1" = 1000'

0 1/4 1/2 mile

0 1000' 2000' 3000'

Prior to the review day, each team member was provided with a summary of the proposed project, a checklist of concerns to address, a detailed soil survey map, a soils limitation chart, a topographic map, and a simplified site plan of the development proposal. Detailed plans and documents prepared by the developer as part of his application were made available to the team the day of the field review. Following the field review, individual reports were prepared by each team member and forwarded to the ERT Coordinator for compilation and editing into this final report.

This report presents the team's findings and recommendations. It is important to understand that the ERT is not in competition with private consultants, and hence does not perform design work or provide detailed solutions to development problems. Nor does the team recommend what ultimate action should be taken on a proposed project. The ERT concept provides for the presentation of natural resources information and preliminary development considerations--all conclusions and final decisions rest with the town and developer. It is hoped the information contained in this report will assist the Town of Salisbury and the landowner/developer in making environmentally sound decisions.

If any additional information is required, please contact Richard Lynn, (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P. O. Box 30, Warren, Connecticut 06754.

* * * * *

II. SUMMARY

- *A high percentage of the soils on the property are silt loams underlain with hardpan at varying depths. These soils can be easily eroded if not properly protected during construction. With implementation of the proposed project, it is recommended that an erosion and sediment control plan for the entire development process be prepared and followed.*

- *The property is completely forested and may be classified into eight major forest stands. Intermediate harvests of some of the stands would make the remaining trees healthier by giving them more room to grow. Care should be taken with the development of this land not to remove healthy mature trees which could be preserved as specimen trees.*

- *The tract contains three major types of wildlife habitat. No unusual habitats or endangered species are known to exist on the site. White-tailed deer are the most evident wildlife population in the area and their numbers can be expected to remain high with implementation of the proposed project. Total populations of other wildlife species can be expected to decrease somewhat with implementation of the project.*

- *Drainage of the property is provided by Burton Brook, McDuffee Brook, and an intermittent stream that flows eastward from the center of the site. Development of the property may be expected to generate both runoff-volume and peak flow increases. Due to the relatively large watershed of Burton Brook, peak flow increases in that brook would be insignificant. In the smaller, intermittent stream flowing through the site, peak flow increases may be more noticeable. A properly designed retention basin at the eastern end of the stream may eliminate the peak flow (although not the volume) increases by restricting the outflow of water.*

- *Bedrock appears to be the only suitable aquifer for on-site water supply wells in the area. It is difficult to predict the potential yield from any new well, but a survey of wells tapping a rock type similar to that underlying the proposed subdivision site found that 70 percent of the wells provided at least 3 gpm (gallons per minute). Approximately 10 percent yielded less than 1 gpm. A yield of 3 gpm is desirable and is adequate for most household needs. Water from any new well should be analyzed for chemical problems.*

- *Most soils on the property are rated as having <u>severe</u> limitations for on-site sewage disposal according to Soil Conservation Service criteria. Clearly, careful engineering will be required in the design and construction of septic systems in the area. Percolation tests performed by the developer for the "phase one" lots were marginal on 9 of the 10 proposed lots (i.e. characterized by slow percolation rates). As this testing was performed during the fall, it is recommended that percolation tests and observation pits be conducted again on each "phase one" lot in the spring. Such testing should establish the maximum ground water table on these lots and assist in determining if the soils will satisfactorily support on-site septic systems. If curtain drains are proposed to lower the water table on certain lots, their effectiveness should first be proven. Dependent upon ground water observations*

and percolation tests conducted in the spring, and the degree of effectiveness of any proposed curtain drains, some lots may prove unacceptable for subsurface sewage disposal.

- *The section of Burton Road adjoining lot 10 should be considered for relocation 50-100' south of its present location in order to avoid excessive disturbance of the natural drainageway in that area.*

- *The proposed project is compatible with surrounding land uses and appears to be consistent with state and local plans. Population projections indicate the Salisbury School system will be able to accommodate those students generated by the development. Traffic generated by the proposed development will not overload the capacity of Lincoln City Road.*

- *The proposed plan indicates only one access point to the subdivision (Lincoln City Road). This could pose a safety problem during storm conditions and it is recommended that another access point be developed for emergency access only onto Upland Meadow Road.*

- *The proposed private roads do not indicate any turn-arounds or back-arounds at their ends. It is recommended that back-arounds or turn-arounds be provided to preclude the need for emergency vehicles such as fire apparatus to back up and out onto the main road. It is also recommended that private roads in the vicinity of lots 32 and 20 and lots 44, 48 and 55 be aligned opposite each other on the public road for safety reasons.*

- *Perhaps the most outstanding physical feature on the property is the Burton Brook Streambelt Corridor. The steep slopes, fast running water, and large hemlock groves in the area contribute to the scenic qualities of the property and offer excellent potential for hiking, picnicking and fishing. It is strongly recommended that a minimum 200' buffer strip be preserved adjacent to the stream and/or its associated wetlands. The streambelt area could be protected and maintained through several devices such as the establishment of a homeowners association.*

III. SETTING, TOPOGRAPHY, LAND USE

The ± 300 acre site is located in an upland area in the southwestern quarter of the Town of Salisbury. The site is irregularly shaped but bounded more or less by Upland Meadow Road on the north, residential land off Lincoln City Road on the east, and Burton Brook on the south and west (see Figure 2). Lakeville village is located less than 1/2 mile southeast of the parcel.

The tract of land is presently undeveloped and blanketed with a woodland cover of mixed hardwoods and groves of mature hemlock. Numerous stone walls transect the parcel which indicate the land has a history of agricultural use. The majority of slopes on the site range from moderate to steep with relief particularly precipitous on the southern border of the property (see Figure 2). Both Burton Brook and McDuffee Brook run through, or border, portions of the southern and western edges of the property. The steep slopes, rapidly moving water, and associated vegetation of this streambelt area makes this section of the property uniquely aesthetically pleasing.

IV. SOILS

A detailed soil survey map and soils limitation chart of the tract is presented in the Appendix of this report. The soils map illustrates the geographic location of all soils identified on the property. The soils limitation chart identifies limiting factors for various land uses on individual soil types and also rates the severity of the limitations as determined by the U.S.D.A. Soil Conservation Service.

The major soils identified on the property include Alluvial land, Amenia Series, Bernardston Series, Charlton Series, Copake Series, Groton Series, Hollis Series, and Kenaia-Lyon Series. Development limitations associated with these soils are related to wetness, slope, frost action, stoniness, and shallowness (see Soils Limitation Chart in Appendix). Following is a brief description of each of these soil series.

Alluvial Land - Consists of recent alluvium so variable in texture and drainage that individual classification is not practical at the mapping scale used by the Soil Conservation Service. Drainage can vary from well to very poorly drained. This land occurs in scattered areas along rivers and streams, and is subject to flooding.

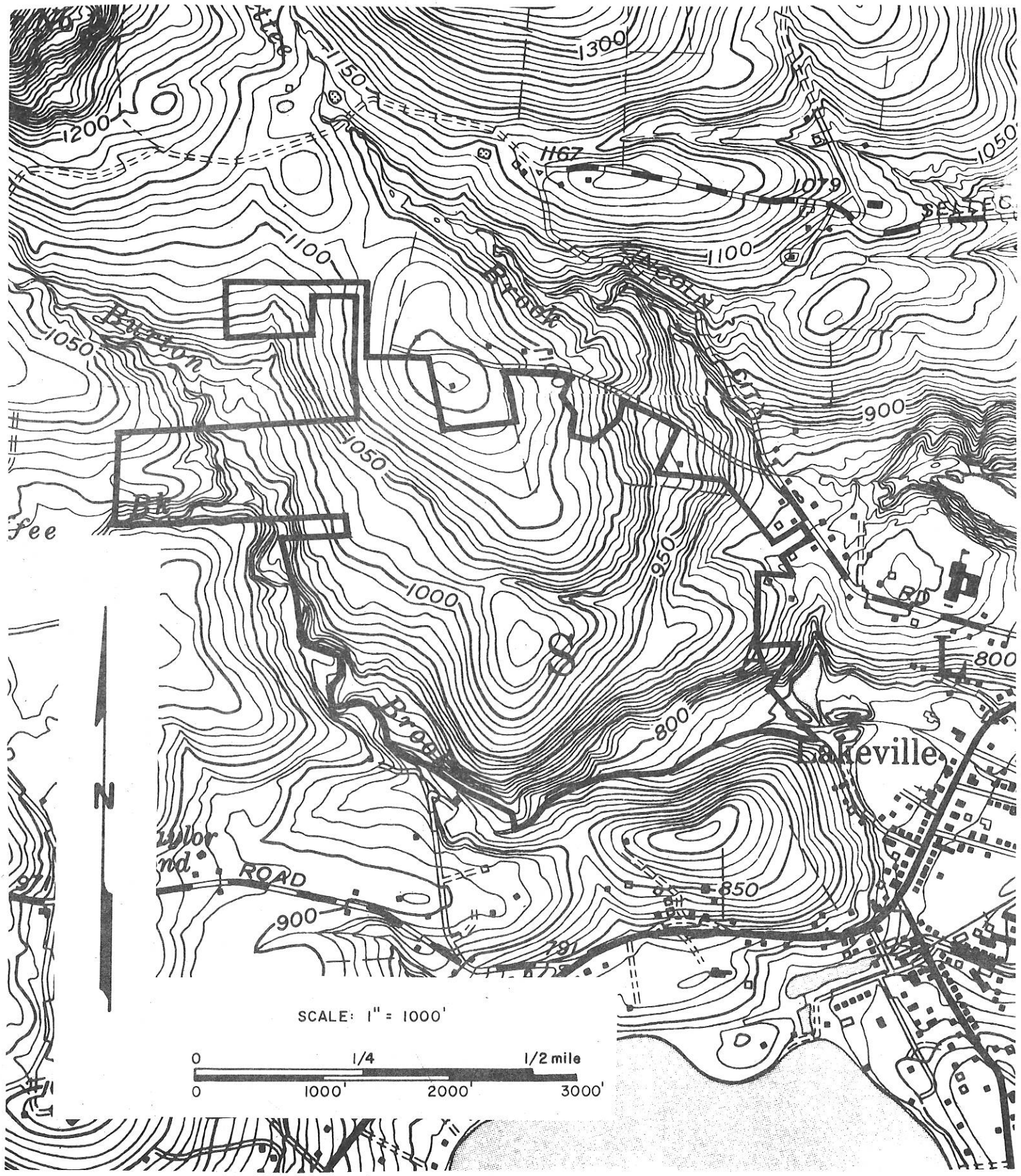
Amenia Series - These soils are silt loams which are considered moderately well drained. They are moderately permeable in the surface layer and subsoil, but are slowly to very slowly permeable in the substratum. These soils have a high moisture holding capacity and often have a seasonally high watertable.

Bernardston Series - These soils are silt loams that are generally well drained to a depth of about 2 feet. At approximately 2 feet, a slowly to very slowly permeable pan exists. These soils are often waterlogged in spring and dry out slowly. This is the dominant soil series found on this site.

Charlton Series - The Charlton series consists of deep, well drained soils that developed in friable to firm glacial till. They are classified as fine sandy loams and their permeability is moderate to moderately rapid throughout.

FIGURE 2.

TOPOGRAPHIC MAP



Copake Series - The Copake Series is a well drained soil type which developed on terraces in the northwestern part of Litchfield County. They are classified as loams. Their permeability is moderate in the surface layer and subsoil, and is very rapid in the substratum. Septic fields work well in these soils, but, where excessively rapid percolation exists in the substratum, effluent moves rapidly toward the water table (danger of well pollution).

Groton Series - The Groton Series are excessively drained soils that developed in stratified sandy and gravelly drift. Their permeability is moderately rapid in the surface layer and subsoil and very rapid in the substratum. Again effluent may move rapidly toward the water table if septic systems are installed in these soils.

Hollis Series - This soil series is the most extensive in Litchfield County. These soils developed in a thin mantle of glacial till over bedrock. The surface soil is a fine sandy loam. Depth to bedrock is usually about fifteen inches. Outcrops may occupy as much as 50 percent of the surface.

Kendaia-Lyons Series - These soils are very stony silt loams. Both are wetland soils as defined by Public Law 155.

Soil Loss and Sedimentation

A high percentage of the soils on the Burton Road Subdivision property are silt loams underlain with hardpan at varying depths. These soils can be easily eroded if not properly protected during construction. Soil loss and resultant sedimentation can be kept at manageable levels with implementation of the planned project if some basic precautions are taken. These precautions include:

- Complete each section of the proposed road (with all erosion and sediment control practices in place)before the lots along that section are developed.
- Keep soil disturbance during construction to a minimum.
- Note, respect, and use natural drainage where possible.
- Regrade and vegetate exposed areas as soon as possible.
- Protect stockpiled soil with mulch and/or vegetation.
- Attempt to keep cuts and fills at a 3:1 slope (so stated by Town of Salisbury).
- Use erosion and sediment controls such as haybale check dams wherever feasible.
- Do not do extensive wetland-related work during the wet seasons. Wait for low flow conditions.
- Provide for some future means of maintaining the proposed sediment basin.
- Consider establishing a fire pond in the area of lots 18 and 19. This would benefit the entire community and also provide some additional storm water storage.

In short, it is suggested that an erosion and sediment control plan for the entire development process be prepared. Techniques for effective erosion and sediment control are presented in the "Erosion and Sediment Control Handbook, Connecticut" (U.S.D.A. Soil Conservation Service, 1976). Technical assistance in developing erosion and sediment control plans is available from the Litchfield County Conservation District.

V. GEOLOGY

In the Burton Road subdivision area, a blanket of unconsolidated glacial deposits overlies a bedrock unit that is part of the Walloomsac Formation. The glacial deposits include both till and stratified drift. Till consists of a nonsorted mixture of rock particles of all shapes and sizes. Two types of till are known in the northwest Connecticut region: a friable, generally thin till that is relatively low in fine particles, and a very compact till that is relatively high in silt and clay content. Whereas the sandier till generally has a moderate permeability, the finer grained variety has a very low permeability. It is the latter type of till that predominates on the Burton Road Subdivision property. Stratified drift, the other unconsolidated material that is found on the site, consists primarily of sand and gravel. These particles were deposited by meltwater streams that issued from the wasting glacier ice. Stratified drift is found principally adjacent to Burton Brook, but it may occur in scattered lenses throughout the till. The rest of the site is covered by till. Because of the topographic characteristics of the property and the apparent dearth of bedrock outcrops, it seems likely that the till is at least 10 feet thick in most areas.

The bedrock unit underlying the site is a metamorphic rock known as schist. In a schist, platy minerals have aligned to form layers along which parting can easily occur. According to an unpublished bedrock geologic map of the Sharon quadrangle, in which the Burton Road Subdivision property is located, the schist on the site is medium gray to black, fine to medium-grained, and composed largely of the minerals quartz, plagioclase, biotite, and muscovite. The map, which was prepared by Robert M. Gates, is on file with the Natural Resources Center of the Department of Environmental Protection.

VI. FORESTRY

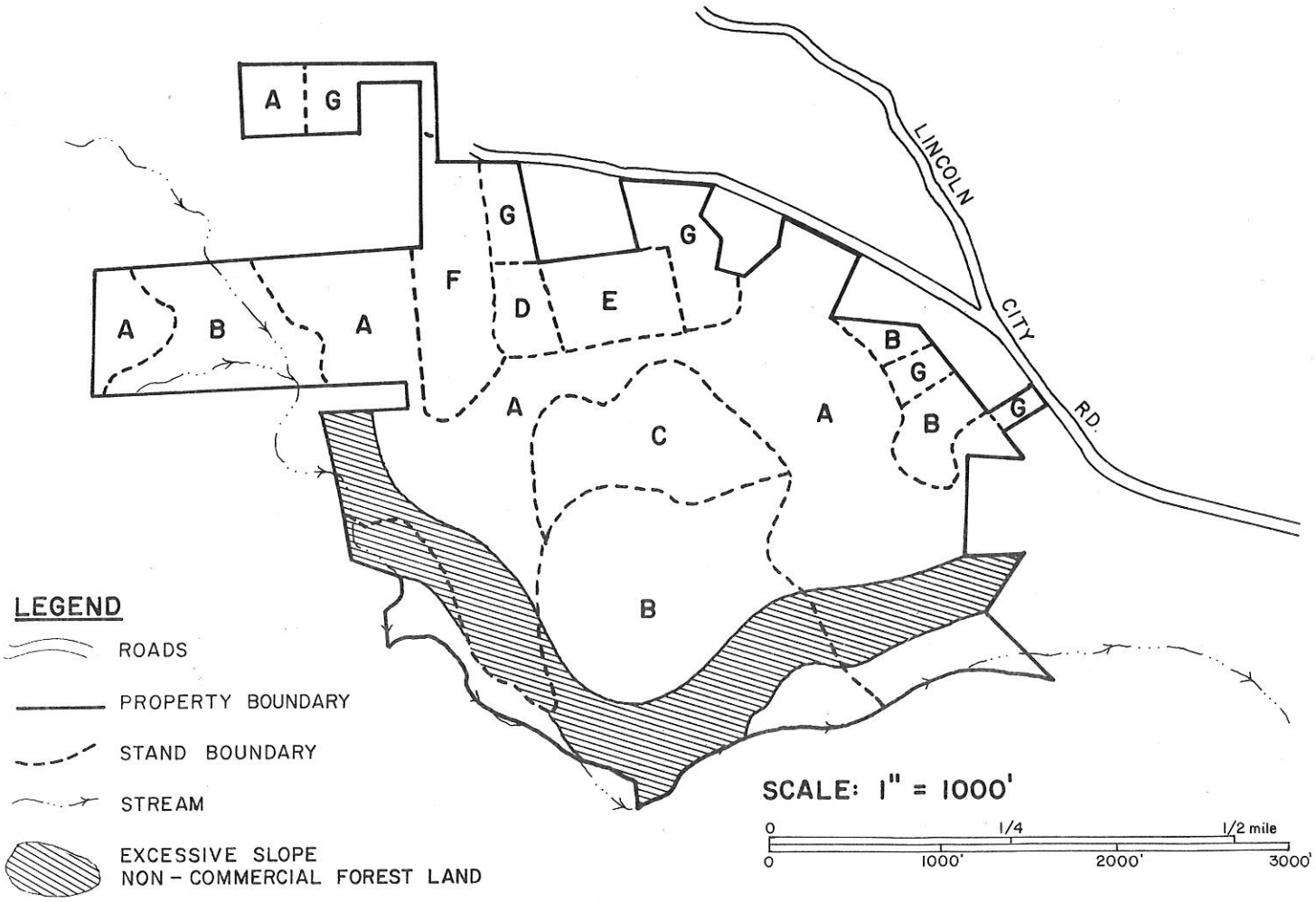
The 300 acre Burton Road Subdivision property is completely forested and may be classified into eight major vegetation types or forest stands (see Figure 3). The composition of these forest stands is described below; followed by a discussion of a number of forestry related concerns.

Stand Descriptions (refer to Figure 3)

Stand A. Mixed hardwoods. This 134 acre fully-stocked two-aged stand is made up of sawlog-size white, black and red oak which are between 80 and 100 years old. These trees overtop pole size mixed hardwoods (white ash, sugar maple, hickory and oaks) which are between 30 and 40 years old. Witchhazel and scattered mountain laurel are present in the lower understory. Grasses, club mosses and Christmas ferns form the ground cover in this area.

FIGURE 3.

VEGETATION TYPE MAP



VEGETATION TYPES *

STAND **A** MIXED HARDWOODS (FULLY STOCKED, POLE & SAWLOG SIZE)

STAND **B** HEMLOCK (OVERSTOCKED, SAWLOG SIZE)

STAND **C** SOFTWOODS/HARDWOODS (FULLY STOCKED, POLE TO SAWLOG SIZE)

STAND **D** MIXED HARDWOODS (FULLY STOCKED, POLE SIZE)

STAND **E** NORTHERN HARDWOODS (FULLY STOCKED, SAPLING TO POLE SIZE)

STAND **F** MIXED HARDWOODS (FULLY STOCKED, POLE TO SAWLOG SIZE)

STAND **G** OLD FIELD (SEEDLING TO SAPLING SIZE)

N

* SEEDLING SIZE – LESS THAN 1" IN DIAMETER AT BREAST HEIGHT (D.B.H.)
SAPLING SIZE – 1 TO 5 INCHES IN D.B.H.
POLE SIZE – 5 TO 11 INCHES IN D.B.H.
SAWLOG SIZE – 11 INCHES AND LARGER IN D.B.H.

Stand B. Hemlock. Sawlog-size hemlock between 80 and 100 years old is the main constituent of this 96-acre over-stocked stand. Occasional hemlocks as large as 34" in diameter are also present. Sawlog-size oak, yellow birch and sugar maple are found scattered throughout this area. The understory and ground cover vegetation is spotty or lacking under most of this stand.

Stand C. Softwoods-hardwoods. Twenty-one acres of small, sawlog-size white oak and black oak with pignut and shagbark hickory are overtopping pole-size hemlock in this fully-stocked stand. Scattered mature hemlock are also present. American chestnut sprouts and witchhazel make up the understory. Club mosses and ferns are the principle ground cover species in this stand.

Stand D. Mixed hardwoods. Pole-size sugar maple and white ash with scattered paper birch fully occupy this six acre stand. Little understory vegetation is present and grasses form the ground cover in this area.

Stand E. Northern hardwoods. Nine acres of sapling-size and pole-size sugar maple, yellow birch and white ash make up this fully-stocked stand. Witchhazel, American chestnut, eastern white pine and mountain laurel are the understory species present. Ground cover is made up of club mosses and ferns.

Stand F. Mixed hardwoods. Pole to sawlog-size white ash, oak, hickory and red maple are present in this 16 acre, fully-stocked stand. The understory consists of bluebeech and witchhazel. Club mosses and Christmas fern make up this area's ground cover.

Stand G. Old field. Seedling-size and sapling-size old field brush species (gray birch, hawthorn, witchhazel, staghorn sumac and cherry) are present in four old field stands, which collectively total 18 acres. Grasses and ferns are the most abundant ground cover species present.

Limiting Conditions

Excessive browsing by deer over almost all of this 300 acre tract, and the lack of sunlight reaching the forest floor in the hemlock stand, has severely limited desirable seedlings that could become the future forest.

Another condition impacting forest growth is the seasonally high water table characteristic of many of the soils on-site. When shallow rooted trees (such as hemlock) grow on these wet soils, windthrow may be severe.

Aesthetics and Preservation

Signs of past forest resource use are very apparent throughout this site. Numerous charcoal mounds are still identifiable over the entire area. Also present are chestnut stumps, left when the chestnut was salvaged after the chestnut blight invaded during the early 1900's.

Several of the stands in this forest have a variety of large trees which are healthy and aesthetically pleasing. Preservation of some, if not all, of these

as specimen trees would be beneficial, particularly near roads where they could be easily seen and appreciated.

The hemlock stand (B) found on this property is a major wintering area for white-tailed deer. Presently the quality and quantity of both food and cover in this stand are declining. Preservation of this stand as a quality wintering ground for white-tailed deer is possible if methods of forest management are followed that allow regeneration of the stand to occur. Regeneration of this stand for deer habitat may not be compatible with the proposed subdivision however.

Potential Hazards and Mitigating Practices

Trees are very sensitive to changes in soil conditions which occur within their driplines (entire area under branches). Soil disturbances (e.g. cutting, filling) under a tree's crown may in fact, cause death to that tree within three to five years. Hence, care should be taken to limit soil disturbances under trees which are to be saved for aesthetic or shade purposes. In general, healthy, vigorously growing trees withstand disturbances better than unhealthy, slow growing trees. Also, groups or islands of trees are easier to protect from soil disturbances than individual trees.

If trees are injured or the soil is altered under their crowns it would be safer and more economical to remove them at the time of disturbance rather than wait until they become hazardous.

As mentioned above, hemlock trees are shallow-rooted and windthrow may be severe when these trees are growing in soils which are saturated. Large openings may increase the chance of windthrow as wind will tend to move through, rather than over, the stand. To minimize windthrow hazards, openings and lane ways should be kept as small as possible and should not line up with prevailing winds during the months when the soils are saturated.

Management Techniques

Trees which are healthy and have room to grow are able to withstand much more environmental stress (both natural and man-made) than trees which are unhealthy and crowded. Thinnings reduce competition for sunlight, water, nutrients and space; as a result residual trees can become healthier, producing more stable forest stands.

Intermediate thinnings of about 1/3 of the total volume (depending on crowding) in the fully stocked and over-stocked stands containing predominantly sawlog-size trees would, in several years, increase the health and vigor of such stands.

The gradual opening of the forest canopy in the hemlock stand produced by a light thinning of perhaps 1/5 of the total volume would help the trees to become more windfirm. This would also help to reduce windthrow hazards when and if the area is opened up for development.

The harvests in the hardwoods, softwoods-hardwoods, and hemlock stands should be concentrated on removing unhealthy, poor-quality and undesirable trees. Main haul roads should follow contour lines to reduce erosion problems and should coincide with planned subdivision roads wherever possible. If harvests were timed properly, tree tops left on the site could supply deer with browse for a year or two, lessening their dependence on desirable tree seedlings.

Care should be taken not to remove healthy mature trees which could be preserved as specimen trees. Injury of selected trees and disturbances of the soil under their crowns should also be avoided.

If de-icing salts are going to be used on the roads, intolerant species such as the maples, hickories and hemlock should ideally be on the uphill side of the road and far enough away so that saltwater runoff cannot reach them. The oaks, birches and white ash are relatively tolerant of salt and may be closer to roads without as great a risk of harm.

It is recommended that a consulting forester be utilized in developing a time schedule for harvests, marking trees to be removed, laying out main haul roads, over-seeing all harvest operations and selecting specimen trees.

VII. WILDLIFE

The ± 300 acre site may be classified into three major types of wildlife habitat. These include hardwood forest, mixed hardwood/hemlock forest, and open land. No unusual habitats or endangered species are known to exist on the site.

White-tailed deer are by far the most evident wildlife population in the area. Extensive browsing of hemlock, laurel, and hardwoods is evident throughout the site. In addition, many nearby residents have reported shrub damage from deer this year. Hemlock stands on the property together with open areas and hardwood stands on this and the surrounding property combine to form excellent deer habitat. Hemlock stands provide winter cover and wind protection while open areas and hardwood stands provide ample browse.

The large lots, roadways, lawns, and shrubbery associated with the development proposal will provide for a continued high deer population. As a result, vegetation damage from deer can be expected to remain high. The impact of deer can be reduced somewhat by planting deer resistant shrubs and trees in landscaping and avoiding such vulnerables as yew and euonymus. Convential control measures such as shooting and fencing are generally unsatisfactory around homes.

Other wildlife populations in evidence on the site are raccoon, cottontail rabbit, skunk, red squirrel, a variety of mice, ruffled grouse, and a variety of songbirds. Total population of these species can be expected to decrease somewhat with implementation of the proposed project due to direct loss of habitat and the adverse impacts generated by increased human presence, vehicular traffic, and number of roaming cats and dogs in the area. Impacts to wildlife in general will clearly be buffered however by the large lot sizes which will serve to protect much of the present habitat.

Generally, it is possible in land development to reduce wildlife impact through planting trees and shrubs valuable to wildlife. It will be difficult in this particular area however to make wildlife plantings to reduce impact without deer utilizing these plants also as food.

VIII. HYDROLOGY

McDuffee Brook enters the Burton Road Subdivision property near the western boundary and, within 0.25 mile, joins Burton Brook, which enters the site from the north. After this confluence, Burton Brook flows eastward toward the center of Lakeville, following the southern boundary of the site. Apart from these brooks, drainage of the property is provided by an intermittent stream that flows eastward from the center of the site. The proposed Burton Road would run parallel to and slightly south of the stream.

The town has expressed concern over the possible effects of septic system effluent from the proposed subdivision on Burton Brook. At the point at which Burton Brook flows under Route 44, the overall drainage area (watershed) of the brook is approximately 2200 acres, or about 3.5 square miles. Consequently, the brook at this point has a respectable flow during most times. Connecticut Water Resources Bulletin No. 21, a cooperative publication of the U.S. Geological Survey and the Connecticut Department of Environmental Protection, contains a graphical-mathematical method for estimating certain flow rates in ungaged streams in the upper Housatonic River basin. Such an analysis indicates that an average flow rate for Burton Brook (one that is exceeded 50 percent of the time) would be approximately 1,440,000 gpd (gallons per day). Assuming completion of the subdivision as planned, 56 of the proposed lots would drain into the brook. If each house discharges 250 gpd of wastewater, a total discharge of 14000 gpd would occur. This discharge represents only 1 percent of the average flow of Burton Brook. In addition, much of the wastewater would be lost to evapotranspiration before reaching the brook, and most of it would have to travel several hundred feet within the soil (assuming no surfacing), allowing ample opportunity for purification.

During a low-flow period, of course, Burton Brook would carry substantially less water. On an average of once every two years, for instance, for a period of 30 consecutive days, the flow in the brook may be expected never to exceed 28,800 gpd. Such a period would be most likely to occur during the summer months, when often 90 percent of any precipitation is lost to evapotranspiration (and hence does not become runoff). During these times, then, only about 10 percent of the septic system effluent might be expected ever to reach the brook, and that which did reach the brook would probably have been considerably purified by the soil and would, in any event, represent only about 5 percent of the brook's total flow.

It would seem, therefore, that the proposed subdivision is small enough relative to the watershed of Burton Brook that natural processes could effectively buffer most harmful effects of septic system discharges on the brook. This is not meant to suggest, however, that the septic systems would not be problematic in and of themselves. Indeed, the compact till soil and the high groundwater levels in many areas indicate that substantial problems may need to be overcome in the design of the systems.

Development of the property may be expected to generate runoff-volume increases. These increases in turn will cause peak flows in local streams to increase to an extent based upon the percentage of the overall watershed of the stream that is being developed. Because of the relatively large watershed of Burton Brook, peak-flow increases in that brook would be insignificant. In the smaller stream flowing through the central eastern part of the site, peak flow

increases may be more noticeable. The drainage area of the stream, to the approximate point of its exit from the site, is approximately 49 acres. From a method outlined in Technical Release No. 55 of the Soil Conservation Service, it may be estimated that the present overall runoff volume for a 25-year, 24-hour storm* would be 7,587 cubic feet. Following development, this volume would be approximately 8,821 cubic feet, a 16 percent increase. For the same frequency storm, peak flows in the stream near its outlet from the property may be estimated to increase from 99 cfs (cubic feet per second) to 128 cfs, a 29 percent increase. The latter estimate, however, does not take into account potential engineering measures that could affect the natural channel. Piping, for instance, may increase the peak flows while energy dissipators would reduce them. A properly designed retention basin at the eastern end of the stream may eliminate the peak-flow (although not the volume) increases by restricting the outflow of water.

IX. WATER SUPPLY

On-site water supply wells have been proposed to serve the subdivision. Bedrock appears to be the only suitable aquifer for such wells in the area. Water is supplied to bedrock-floored wells chiefly through fractures in the rock. Because of the uneven distribution of the fractures, it is very difficult to predict the potential yield from any new well. A yield of at least 3 gpm (gallons per minute) is desirable and is adequate for most household needs. A survey of several wells near the northern boundary of the site showed yields ranging from 3 to 20 gpm (this survey was supplied to the Team by the developer). In a survey of wells in the upper Housatonic River basin, on the other hand, it was found that only about 70 percent of bedrock-based wells tapping a rock type similar to that underlying the proposed subdivision site provided 3 gpm or more (source: Connecticut Water Resources Bulletin No. 21). Approximately 10 percent yielded less than 1 gpm.

In addition to potential supply problems, Bulletin No. 21 suggests that high iron and manganese contents or hardnesses may taint the local well water. Hence, water from any new wells should be analyzed for chemical problems and, if necessary, appropriate filtration measures taken.

X. SEWAGE DISPOSAL

As mentioned earlier in this report, a high percentage of the soils on the proposed subdivision site are silt loams underlain with hardpan at varying depths (Bernardston Soil Series). These soils typically have a high water holding capacity, and often less than favorable percolation characteristics for septic system function. The U.S.D.A. Soil Conservation Service rates Bernardston soils as having <u>severe</u> limitations for on-site sewage disposal due to slow percolation rates. (See Soils Limitation Chart in Appendix.)

At the ERT pre-review meeting, Team members were provided with results of percolation tests and deep observation pits performed by the developer on the

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*A 25-year, 24-hour storm is a storm of 24 hour duration that occurs on a statistical average of once every 25 years.

10 lots proposed for the first phase of development. These tests consisted of one percolation test and one observation pit on each of the 10 lots. No detailed soil testing was available on the remaining 50 proposed lots.

Percolation test results on 9 of the 10 proposed lots were marginal with percolation rates averaging between 30 and 60 minutes per inch. Only lot 9 with a percolation rate less than 5 minutes per inch showed rapid percolation. (Portions of lot 9 are mapped as alluvial deposits which could account for the rapid percolation on that lot). It should be noted that any areas with percolation rates slower than 60 minutes per inch are considered unacceptable for subsurface sewage disposal by the State Health Department. This does not preclude however the testing of alternate areas on the same lot. Areas with percolation rates between 30 and 60 minutes per inch are marginal at best and special engineering consideration is required.

It should be recognized that the above mentioned percolation tests were conducted on August 15, 1978, and testing in the spring would certainly be no better and may in fact yield even slower percolation rates.

Because of the marginal results of the August 15, 1978 testing, it is recommended that percolation tests be conducted on each Phase I lot in the spring (March to May) prior to subdivision approval. Such testing should establish the maximum ground water table on these lots and assist in determining if the soils will satisfactorily support on-site septic systems. If ground water tables are so elevated as to require installation of ground water control drains in order to provide compliance with required separation distances between bottoms of leaching systems and ground water, the effectiveness of the ground water control drain (curtain drain) should first be proven. Curtain drain effectiveness in Bernardston soils is somewhat questionable and can only be determined by installation of drains on sample lots and monitoring the effect of the drains on ground water levels in the area where the furthest part of the leaching system would be installed. The area in which ground water must be controlled will likely be sizeable as the slow percolation rates characteristic of these soils will necessitate large leaching systems.

Applicable parts of the Public Health Code require that:

1. The bottom of the leaching system be at least 18 inches above maximum ground water level.

2. Curtain drains be installed no closer than 25 feet from any portion of the subsurface sewage disposal system.

3. Curtain drains, when utilized, must effectively lower the maximum ground water level at least two feet below the entire leaching area.

Areas with slopes greater than 20% should be avoided; however, sufficient slope for curtain drain discharges is required where curtain drains are utilized.

In conclusion, it should be emphasized that dependent upon ground water observations and percolation tests conducted in the spring, and the degree of effectiveness of curtain drains in the Bernardston soils, some lots may be unacceptable for subsurface sewage disposal.

XI. FOUNDATION DEVELOPMENT, STORMWATER CONTROL, AND INTERIOR ROADS

It is hoped that the proposed sedimentation pool in the vicinity of lot 19 will be a permanent structure. And that it will be maintained and cleaned out regularly. Consideration should also be given to designing the sedimentation basin for some temporary storm water storage. Design criteria and guidelines for constructing sedimentation and storm water control basins is available from the Litchfield County Conservation District.

All culvert outlets should be protected with rock rip-rap that will resist washing for the minimum design storm. At appropriate intervals, energy dissipators should be placed in the natural drainageway north of the proposed Burton Road. These dissipators can be made using native stone materials or trucked in rip-rap of adequate size. This practice is recommended to slow water velocities and dissipate energy. A useful reference on this subject is Erosion and Sediment Control Handbook, U.S.D.A. Soil Conservation Service, Storrs, Connecticut (1976).

To avoid excessive disturbance of the above mentioned natural drainageway, a relocation of Burton Road section 17+50 to 23+50 should be considered. A centerline shift 50' to 100' in a southerly direction would reduce necessary filling within the drainageway. The acreage of lot 10 would be reduced, but it would not be eliminated as a lot. It is recommended that the road be constructed with all erosion and sediment control practices complete before individual lot development begins. The engineering review of Burton Road Subdivision prepared for the Town by H. F. Mounier details additional concerns for this proposed road.

Foundation development on most homesites will require some special engineering consideration. Footing drains backfilled with gravel may be necessary in several locations. Outlets for footing drains and curtain drains should be carefully protected to reduce possible erosion on slopes.

XII. PLANNING CONSIDERATIONS

Consistency of Proposed Project With State Plans

A review of the "State of Connecticut - Conservation and Development Policies Plan - Proposed Revision of 1979 - locational Guide Map - Land Area Classification, March 1978" indicates that the proposed project, while within the "Rural" designation, is in close proximity to the Lakeville "Rural Community Center". The proposed State Action Strategy for rural areas is "Avoiding support of structural development forms and intensities which exceed on-site carrying capacity for water supply and sewage disposal on a permanent basis which are inconsistent with open rural character or conservation values of adjacent areas and which are more appropriately located in Rural Community Centers". The proposed State Action Strategy for Rural Community Centers is as follows. "High priority and affirmative support for the clustering in locally designated centers of the relatively higher intensity land uses for residential, shopping, employment and public facilities and services occurring in rural communities."

The development as proposed would be consistent with the State Action Strategy for rural areas providing the site can support individual wells and septic systems on a permanent basis.

Consistency of Proposed Project with Local Plans

The Land Use Plan maps for Salisbury, prepared by Environmental Design Group indicate that the subject property straddles two land use classifications, "Village Density" and "Rural Density". This designation is reflected on the zoning maps where the western three-quarters of the property is zoned RR-1 (Rural Residence 1) while the eastern quarter is zoned RR-1v and R-20 (Rural Residence 1 village and Residence 20 zone).

Under the R-20 regulations, single family residences require a minimum lot size of 20,000 square feet. Uses, by right, include single family residences, office of a resident professional person, one home occupation and up to 6 boarders. Among the uses permitted by special permit are: schools and colleges, nursery schools, churches, hospitals, undertakers, parks and other recreational uses operated by non-profit organizations. Also permitted by special permit are multi-family units at densities of 10,000 square feet/unit on minimum lot sizes of 6 acres.

The Rural Residence 1 zone permits single family homes on a minimum lot size of 80,000 square feet. The uses permitted by right are the same as the R-20 zone with the addition of auto service stations, repair garages, car washes, agriculture, farming, forestry, and horticultural uses. Uses permitted by special permit include those listed under R-20 zone, kennels, vets, stables, hotels, motels, research labs, manufacturing, offices, restaurants, ski slopes, camping, and clubs operating as a non-profit organization. Multi-family units are permitted on a minimum of 12 acres at a density of 80,000 square feet/unit. The lot sizes and density for single family and multi-family units may be halved depending on soil classifications, availability of sewage disposal system and the granting of a special permit by the Planning Commission.

The Rural Residence 1 village zone has all the permitted uses of the RR-1 zone. Minimum lot area per single family home is 80,000 square feet. For a multi-family development, a minimum lot size of 12 acres is required at a density of 40,000 square feet per unit. The provisions for halving the lot sizes and density restrictions as in the RR-1 zone apply to the RR-1v zone as well.

The proposed subdivision will be developed under the RR-1 regulations with all lots having a minimum size of 80,000 square feet. Therefore, it appears to be in conformance with the Salisbury zoning regulations. By developing the entire tract along the RR-1 regulations, the boundary of the "village density" will in effect have been pulled back to the southern and eastern property boundaries.

Compatibility of Surrounding Land Use

The proposed development is compatible with surrounding land uses. The surrounding lands are either developed residentially, or are vacant, forested parcels. Therefore, the large lot residential proposal would be compatible.

Support Facilities

The project as proposed calls for 60 single family units whose development will span approximately 13-20 years or 4.5 units per year. To determine the impact of the proposed development on the Salisbury School System the average family size and number of school-aged children were calculated as follows:

In 1975, there were 1654 housing units in the Town of Salisbury(1). The total population was estimated at 3499(2), while the school age population (those between 5 and 19 years of age) was 776(3). Given the above, it is calculated that there were 2.12 persons/housing unit and .47 school age children/housing unit in 1975. It is cautioned that these figures may be conservative since they include year round and vacation homes. Using the 2.12 and.47 figures and applying them to the first phase size of 10 units, approximately 21 residents and 5 school age children will be generated. If the same proportions as existed in 1975 remain during the construction life of the project, the total population will be approximately 127 with the number of school age children approximately 28. Given the length of development of the project, it should be noted that the above figures are very tentative and could change significantly if housing market or demographic factors change.

The Salisbury Central School has a current enrollment of 380 students. Its capacity is between 430 and 450 students. Therefore, given the project independently it appears that the school could easily accommodate those students in grades kindergarten through eight. It must again be noted that this does not take into account the other growth which may occur within the school district*.

It appears that the commercial areas of Salisbury and Lakeville will be able to absorb the additional demand created by the subdivision.

It is difficult to gauge the impact of the proposed project on the other services of the Town of Salisbury given the length of time of the development. The rate of 4.5 units per year over a period of 13-20 years would have a significantly lesser impact than if the development had been scheduled for completion within say, 3-5 years.

Traffic and Circulation

The project as proposed indicates one access to the property via Lincoln City Road. Lincoln City Road is a two lane paved road with flat gradient east of the property to Route 44. The Salisbury Central School is located in two buildings southeast of the property on the corner of Lincoln City Road and Route 44.

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1 Construction Activity Authorized by Building Permits - Housing Units in Connecticut, Annual Summary 1975. Prepared by M. L. Johnson & T. E. Skarupa, Bureau of Housing.

2 Preliminary Population Projections - Connecticut Towns By Age and Sex 1970-2000 Regional Planning Agency Totals, Prepared by Division of Health Statistics, State Department of Health with assistance from Comprehensive Planning Division, Office of Policy & Management.

3 Ibid.

* The current enrollment (12/1/78) at the Housatonic Regional High School is 758 pupils. Barring any significant change in developmental rates in the school district, enrollment is projected to decline to approximately 612 students by 1981. Therefore, it would appear that at least through 1981 there could be the capacity in the high school to accommodate the preliminary phase of the subdivision. It is difficult to predict beyond that given the many variables that could affect school enrollments.

The 1977 estimated traffic count on Route 44 in the vicinity of Lincoln City Road is 6900 Average Daily Trips (ADT). This is well below maximum rated capacity under current road conditions of 11,765 ADT. However, it should be noted that between 1968 and 1973 there have been 16 serious traffic accidents reported in the vicinity of Lincoln City Road.

The Lincoln City Road - Route 44 intersection is currently signed with flashing lights at the beginning and end of school hours, There is also a traffic policeman on duty at that time. Sight distance looking south from Lincoln City Road down Route 44 is restricted to approximately 100-150 feet. However, improvement of the sight distance does not appear to be feasible given the vertical drop and curve in the road.

Traffic generation rates presented below are based on the "Traffic Generation Study of Various Land Uses" by Israel Zevin, Engineer of Traffic Statistics, Connecticut Department of Transportation, June 1974. The study indicates that the mean number of trips generated per dwelling unit in single family residential subdivisions is 10.6 per day. The ten units of the first phase will, therefore, generate approximately 106 trips (one way traffic movements) per day. Upon completion of the entire 60 units, it's anticipated that there would be approximately 636 per day generated at the site.

Analysis by Mr. Zevin indicates that the morning peak traffic flows amount to approximately 7.9% of the traffic generated by the site. Therefore, under the initial phase, approximately 8.3 trips will be added to Lincoln City Road while the completed project will add approximately 50 trips. Mr. Zevin's studies indicate that the peak morning hour was from 7 a.m. - 8 a.m. in 70% of his sample, while it was from 8 a.m. - 9 a.m. in 30% of the sample.

Internal Circulation Recommendations

As mentioned earlier, there is only one access point to this subdivision via Lincoln City Road. This could pose a safety problem for the 60 lots during storm conditions. It is recommended that another access point be developed for emergency access only onto Upland Meadow Road through lot 30, 39, 41 or 42. This road could be gravelled and chained off to be used only in the case of an obstruction across the main subdivision road.

As proposed, the private roads do not indicate any turn-arounds or back-arounds at their ends. It is, therefore, recommended that back-arounds or turn-arounds be provided to preclude the need for emergency vehicles such as fire apparatus to back up and out onto the main road.

There appears to be two turn-arounds located in the vicinity of lots 44 and 48 and lots 39 and 25. Given the private roads entering the turn-arounds, it is recommended that if possible, they be used temporarily and replaced with street intersections. It is recommended that private roads in the vicinity of lots 32 and 20 and lots 44, 48 and 55 to be aligned opposite each other on the public road for safety reasons.

Sight distance at the intersection of Lincoln City Road and the proposed subdivision road should be improved by the clearing of brush.

Archaeological/Historical Significance

A review of the "Connecticut Natural Areas" prepared by the Connecticut Forest and Park Association does not indicate that any areas fall within this project. A review of "Northwestern Connecticut's Iron Hills Heritage" published by the Department of Environmental Protection does not indicate that any historical activity took place within the project area.

Preservation of Burton Brook Streambelt

Perhaps the most outstanding physical feature on the property is the Burton Brook Streambelt Corridor. The steep slopes, fast running water, and large hemlock groves in this area contribute to the scenic qualities of the property and offer excellent potential for passive hiking, picnicking and fishing. It is strongly recommended that a minimum 200' (perferably more) buffer strip be preserved adjacent to the stream and/or its associated wetlands. Within this corridor, no building, excessive soil disturbance, or vegetation removal should be allowed (with the exception of dead, diseased, or hazardous trees).

The streambelt area could be protected through several devices such as the establishment of a homeowners association of the subdivision owners. Access and use of the corridor could be controlled by the homeowners association. Questions over use, access, and policy should not preclude the preservation of the corridor in one parcel.

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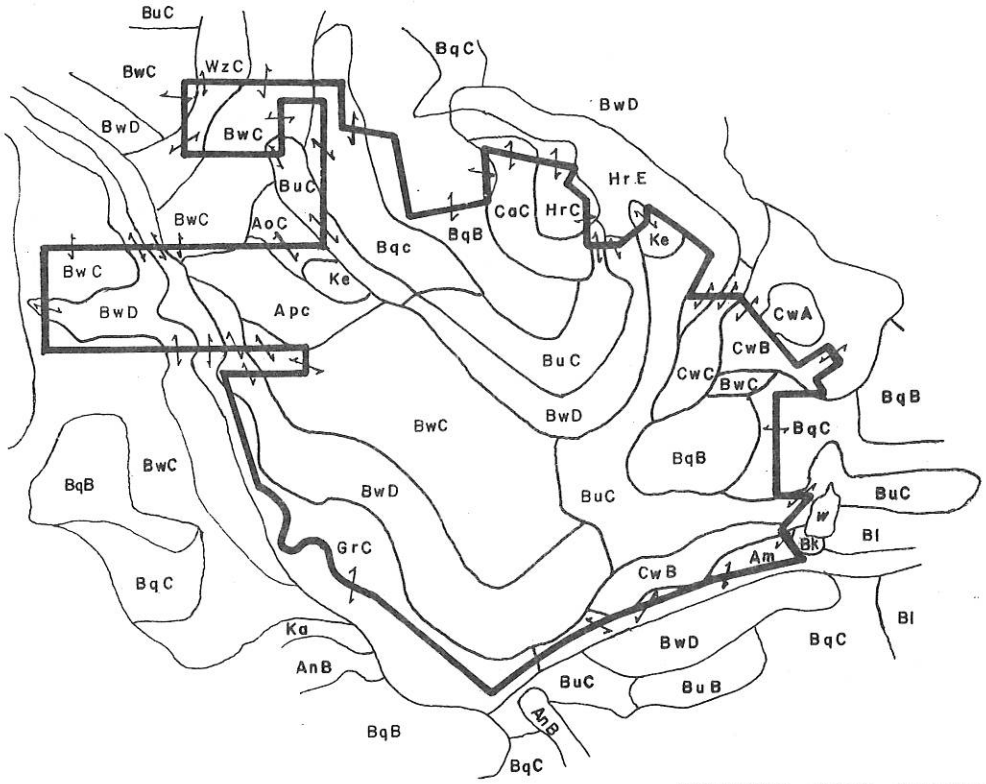
XIII. APPENDIX

SOILS MAP



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ADVANCE COPY SUBJECT TO CHANGE
1979 PREPARED BY U.S.D.A. - S.C.S.

— SCALE: 1" = 1320' (1/4 mile)

0 1/4 1/2 3/4 1 mile

SOILS LIMITATION CHART
BURTON ROAD SUBDIVISION

MAP SYMBOL	SOIL NAME	SEPTIC ABSORBTION FIELDS		BUILDINGS W/ BASEMENTS		ROADS OR DRIVEWAYS		LANDSCAPING	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
Am	Alluvial land	Severe	Floods, Wetness	Severe	Floods, Wetness	Severe	Floods, Wetness, Frost Action	Severe	Floods, Wetness
AoC	Amenia stony silt loam 8 to 15% slopes	Severe	Percs Slowly	Severe	Wetness	Severe	Frost Action	Moderate	Large Stones
ApC	Amenia very stony silt loam 3 to 15% slopes	Severe	Percs Slowly	Severe	Wetness	Severe	Frost Action	Moderate	Large Stones
BqB	Bernardston silt loam 3 to 8% slopes	Severe	Percs Slowly	Moderate	Wet	Moderate	Wet	Moderate	Small Stones
BqC	Bernardston silt loam 8 to 15% slopes	Severe	Percs Slowly	Moderate	Wet	Moderate	Wet	Moderate	Small Stones
BuC	Bernardston stony silt loam 8 to 15% slopes	Severe	Percs Slowly	Moderate	Wet Large Stones	Moderate	Frost Action	Moderate	Large Stones
BwC	Bernardston very stony silt loam 3-15% slopes	Severe	Percs Slowly	Moderate	Wet Large Stones	Moderate	Frost Action	Moderate	Large Stones
BwD	Bernardston very stony silt loam 15 to 25% slopes	Severe	Slope	Severe	Slope	Severe	Slope	Severe	Slope
CaC	Charlton fine sandy loam, 8 to 15% slopes	Moderate	Slope	Moderate	Slope	Moderate	Slope	Moderate	Slope
CwB	Copake loam 3 to 8% slopes	Slight	----	Slight	----	Slight	----	Slight	----
CwC	Copake loam 8 to 15% slopes	Moderate	Slopes	Moderate	Slope	Moderate	Slope	Moderate	Slope
GrC	Groton gravelly sandy loam 3 to 15% slopes	Moderate	Slope	Moderate	Slope	Moderate	Slope	Moderate	Slope
HrC	Hollis very rocky fine sandy loam 3 to 15% slopes	Severe	Depth to Rock	Severe	Depth to Rock	Severe	Depth to Rock	Severe	Depth to Rock

CONTINUED ON NEXT PAGE

MAP SYMBOL	SOIL NAME	SEPTIC ABSORBTION FIELDS		BUILDINGS W/ BASEMENTS		ROADS OR DRIVEWAYS		LANDSCAPING	
		RATING	REASON	RATING	REASON	RATING	REASON	RATING	REASON
HrE	Hollis very rocky fine sandy loam 15 to 35% slopes	Severe	Slope, Depth to Rock	Severe	Slope, Depth to Rock	Severe	Slope, Depth to Rock	Severe	Slope, Depth to Rock
Ke	Kendaia - Lyons very stony silt loams	Severe	Wetness, Percs Slowly	Severe	Wetness	Severe	Wetness, Frost Action	Severe	Wetness

EXPLANATION OF RATING SYSTEM

1. SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.
2. MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.
3. SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state, and regional agencies. Specialists on the team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, recreation specialists, engineers, and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - a 47 town area in western Connecticut.

As a public service activity, the team is available to serve towns and developers within the King's Mark Area --- free of charge.

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 the review of a wide range of significant activities including subdivisions, sanitary landfills, commercial and industrical developments, and recreation/open space projects.

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 official of a municipality or the chairman of an administration agency such as planning and zoning, conservation, or inland wetlands. Requests for reviews should be directed to the Chairman of your local Soil and Water Conservation District. This request letter must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer 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 King's Mark RC&D Executive Committee, the team will undertake the review. At present, the ERT can undertake two reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil Conservation District Office or Richard Lynn (868-7342), Environmental Review Team Coordinator, King's Mark RC&D Area, P.O. Box 30, Warren, Connecticut 06754.