SOAPSTONE VIEWS

Somers, Connecticut

JULY 1988

ENVIRONMENTAL REVIEW TEAM REPORT

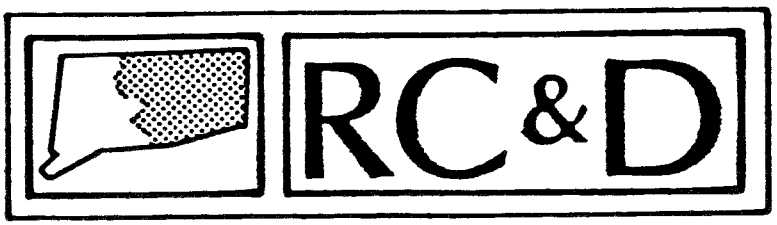
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

SOAPSTONE VIEWS

Somers, Connecticut

Review Date: MAY 12, 1988

Report Date: JULY 1988



ENVIRONMENTAL REVIEW TEAM

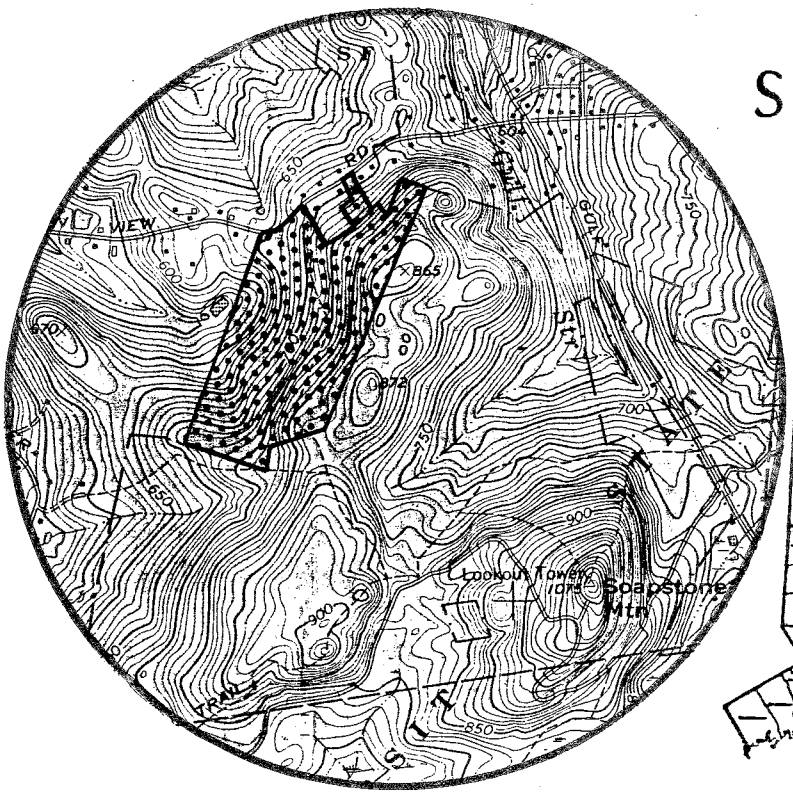
PO BOX 70

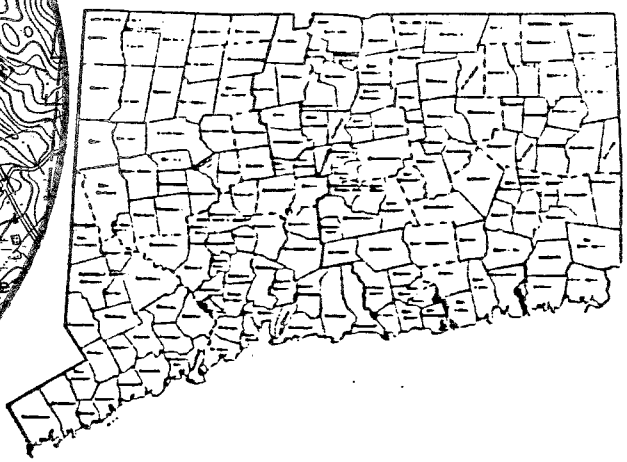
HADDAM, CONNECTICUT 06438

Site Location

SOAPSTONE VIEWS SUBDIVISION

SOMERS, CONNECTICUT





EASTERN CONNECTICUT

RESOURCE CONSERVATION

& DEVELOPMENT AREA

ENVIRONMENTAL REVIEW TEAM REPORT
ON
SOAPSTONE VIEWS SUBDIVISION
SOMERS, CONNECTICUT

This report is an outgrowth of a request from the Somers Conservation Commission to the Tolland 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 Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, May 12, 1988. Team members participating on this review included:

Jim Parda	--Forester- DEP, Eastern District
Joe Neafsey	--District Conservationist - U.S.D.A., Soil Conservation Service
Tony Sullivan	--Planner- CT Office of Policy and Management
Elaine Sych	--ERT Coordinator - Eastern CT RC&D Area
Bill Warzecha	--Geologist - DEP, Natural Resources Center

Prior to the review day, each Team member received a summary of the proposed project, a list of the Town's concerns, a location map, a topographic map, and a soils map. During the field review the Team members were given plans and additional information. The Team met with, and were accompanied by the Town Planner, Town Engineer, Town Sanitarian, members of the Conservation Commission, the developers and their engineer and their geologic/soils consultants. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project--all final decisions and conclusions rest with the Town and landowner. 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. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

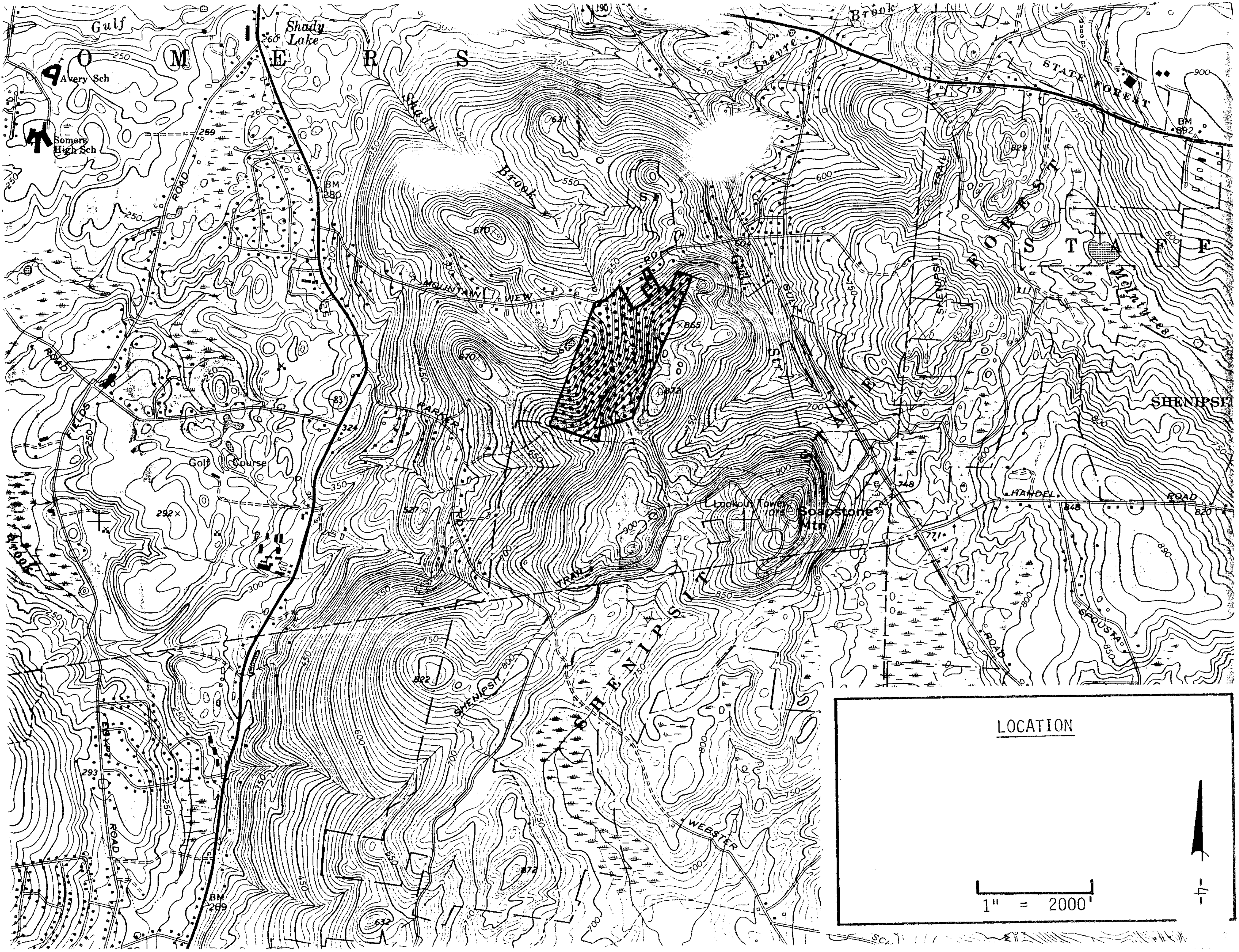
The Eastern Connecticut RC&D Executive Committee hopes you will find this report of value and assistance in making your decisions on this proposed subdivision.

If you require any additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P. O. Box 70
Haddam, CT 06438
(203) 345-3977

TABLE OF CONTENTS

TABLE OF MAPS AND CHARTS


LOCATION
1" = 2000'
S O M E R S
Avery Sch
Somers High Sch
Gulf
Shady Lake
Shady Brook
Brook
STATE FOREST
S T A T E   F O R E S T
McIntyres
SHENIPSIT
S H E N I P S I T
Lookout Tower
Soapstone Mtn
MOUNTAIN VIEW RD
PARKER RD
HANDEL ROAD
SPOUSTA
WEBSTER
EGYPT ROAD
FIELDS ROAD
Golf Course
TRAIL
Gulf
BM 892
BM 280
BM 269

1. INTRODUCTION AND SETTING

The Eastern Connecticut Environmental Review Team has been asked to assist the Conservation Commission in a review of the proposed Soapstone Views Subdivision. This report contains information about the natural resource base of the site and highlights areas of concern along with recommendations to mitigate potential problems. This report should help the Commission to determine the suitability of this site to support the subdivision.

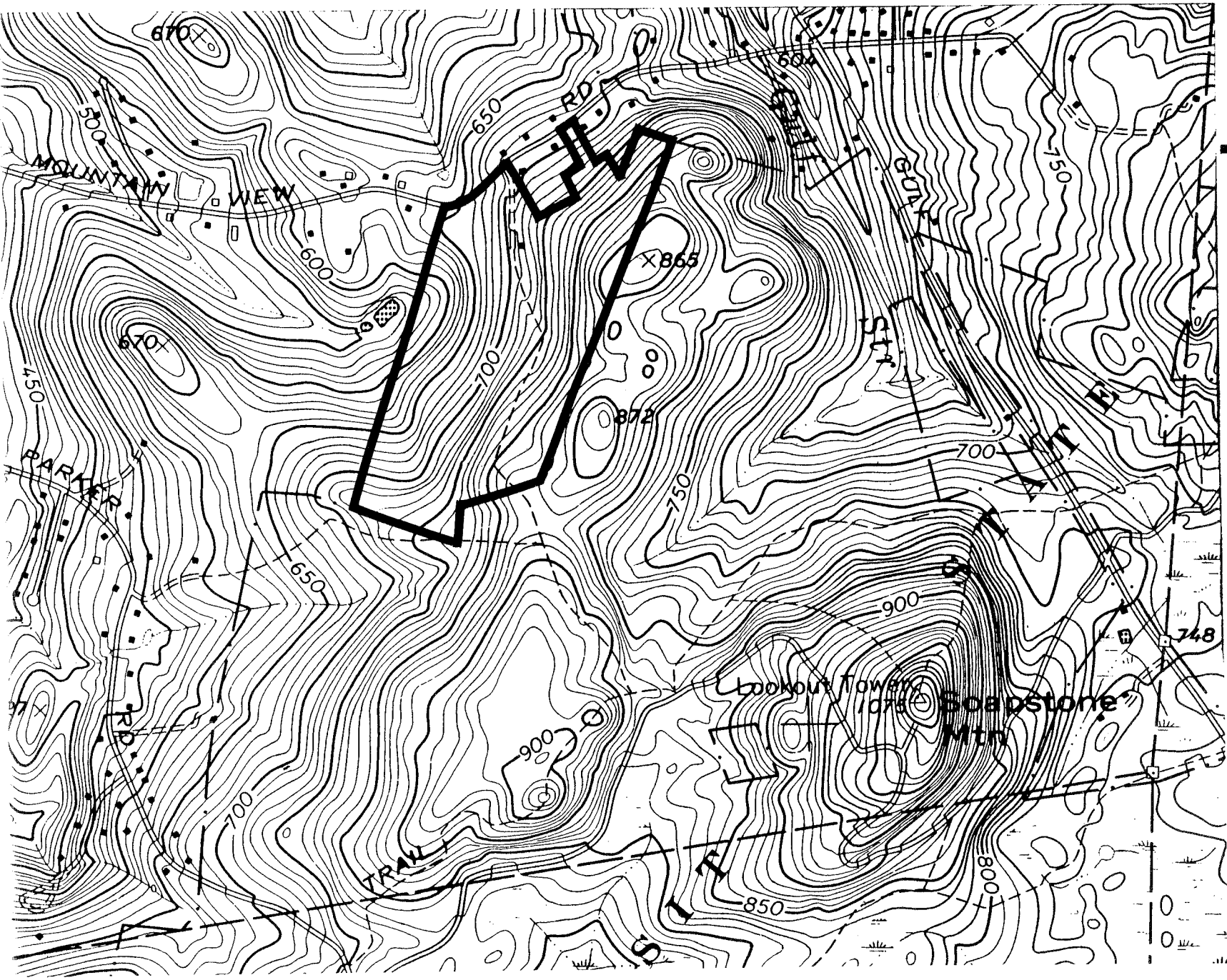
The site, 94.55 acres in size (this figure includes the Ladd Property) is located in the southeast corner of Somers. The site abuts Mountain View Road on the north, private undeveloped land on the west and Shinipsit State Forest on the south and east. An improved woods road traverses the central part of the site. Soapstone Mountain (elevation 1075 above mean sea level) lies southeast of the site.

The site is located within an area which requires a minimum of 40,000 square feet or about 1 acre for residential development. According to present plans, the proposed 64 lots will range in size from 1 acre to 5.7 acres and will average 1.3 acres. Approximately 7,660 lineal feet (1.45 mile) of road is planned. The proposed homes will be served by on-site water supply wells and on-site sewage disposal systems.

2. TOPOGRAPHY

The site, which is mostly wooded, slopes moderately westward. Bedrock is inferred to be at or near the ground surface throughout the site. As a result, it controls the topography of the site. The highest point on the site, which is 865 feet above sea level, is represented by the rear portions of lots 23 and 24. The lowest elevation on the site, which is about 520 feet above mean sea level is represented by the rear portions of lot 2.

The new access roads called Forest Edge Drive, Cold Spring Run and Old Mountain Road will cover about 5.27 acres of the site, most of which comprises wooded land. The latter also includes three proposed cul-de-sac spurs. The present road layout indicates that regulated soils (inland-wetlands) will be crossed in four areas. It should be noted that setback buffers of 50 feet and 100 feet are mandated by Town regulations from building structures and septic systems, respectively. A cursory review of present plans indicates that the anticipated locations of septic systems for several lots are closer than the 100 foot setback. The problem of suitable areas for septic systems becomes a concern,



TOPOGRAPHY

Approximate Site Boundary

Scale 1" = 1000'

particularly if the affected lots are only an acre in size. Obviously, more soil testing will be required in these areas with the possibility of combining lots to make larger ones, so that required separating distances are maintained.

3. GEOLOGY

The entire site is encompassed by the Ellington topographic quadrangle. A bedrock geologic map (QR-4, by Glendon E. Collins) and a surficial geologic map (GQ-965, by Roger Colton) for the quadrangle have been published by the Connecticut Geological and Natural History Survey and U. S. Geological Survey, respectively, John Rodger's **Bedrock Geological Map of Connecticut** was also referenced for the purpose of this report.

As mentioned earlier, bedrock is at or near ground surface throughout the site. Collins identifies two types of bedrock underlying the parcel; Glastonbury Gneiss and massive mafic rock associated with the Middletown Formation.

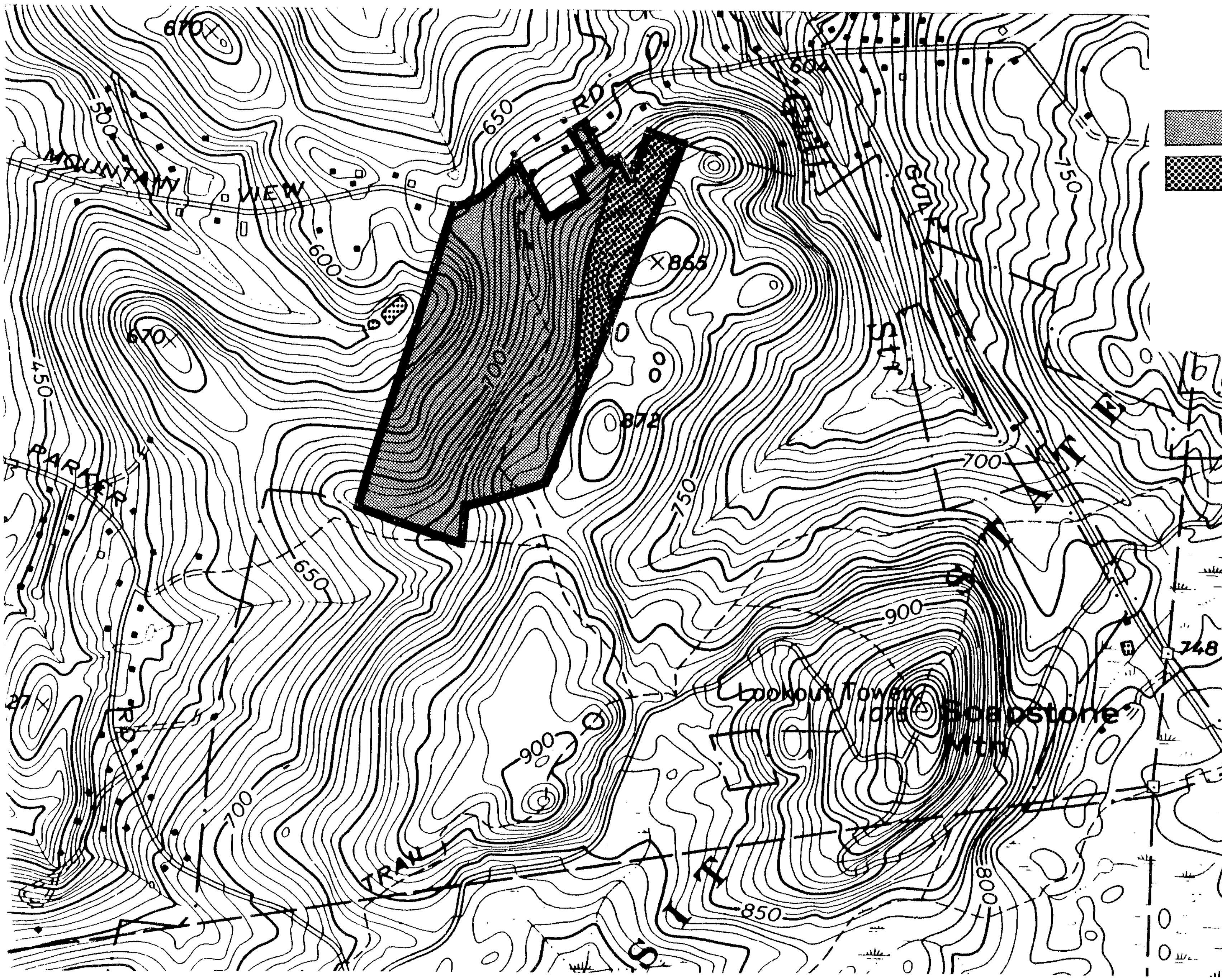
The eastern limits of the site are underlain by a dark, coarse-grained massive amphibolite and mafic rock (rock composed of magnesium bearing minerals; dark-colored). These rocks are associated with the massive mafic rocks of Middletown Formation. The term "amphibolite" refers to a dark, metamorphic rock primarily composed of the minerals hornblende and plagioclase feldspar.

Glastonbury Gneiss, in contact with the mafic rocks in the east central portions of the site, also underlies the remainder of the site. These rocks consist primarily of gray, medium to coarse grained, massive to well-foliated gneisses.

Both "gneisses" and "amphibolite" are metamorphic; that means the rocks have been subjected to great temperatures and pressures within the earth's crust. Geologists believe the rocks formed during the Ordovician geologic period, 438 to 505 million years ago.

The underlying bedrock is the principal source of water to residences throughout Somers. It will also be the source of domestic water to proposed houses in the subdivision. (Also, see Geologic Development Concerns and Water Supply Sections of this report.)

The entire parcel is covered by glacial sediments called till. Till consists of a poorly sorted mixture of rock fragments and particles deposited directly by glacier ice. Rock fragments and particles found in the soil are derived largely from the local bedrock (gneisses and amphibotites). According to geologic mapping data and deep test hole data supplied by the project engineer, the till is generally shallow (9 feet or less) throughout the site.

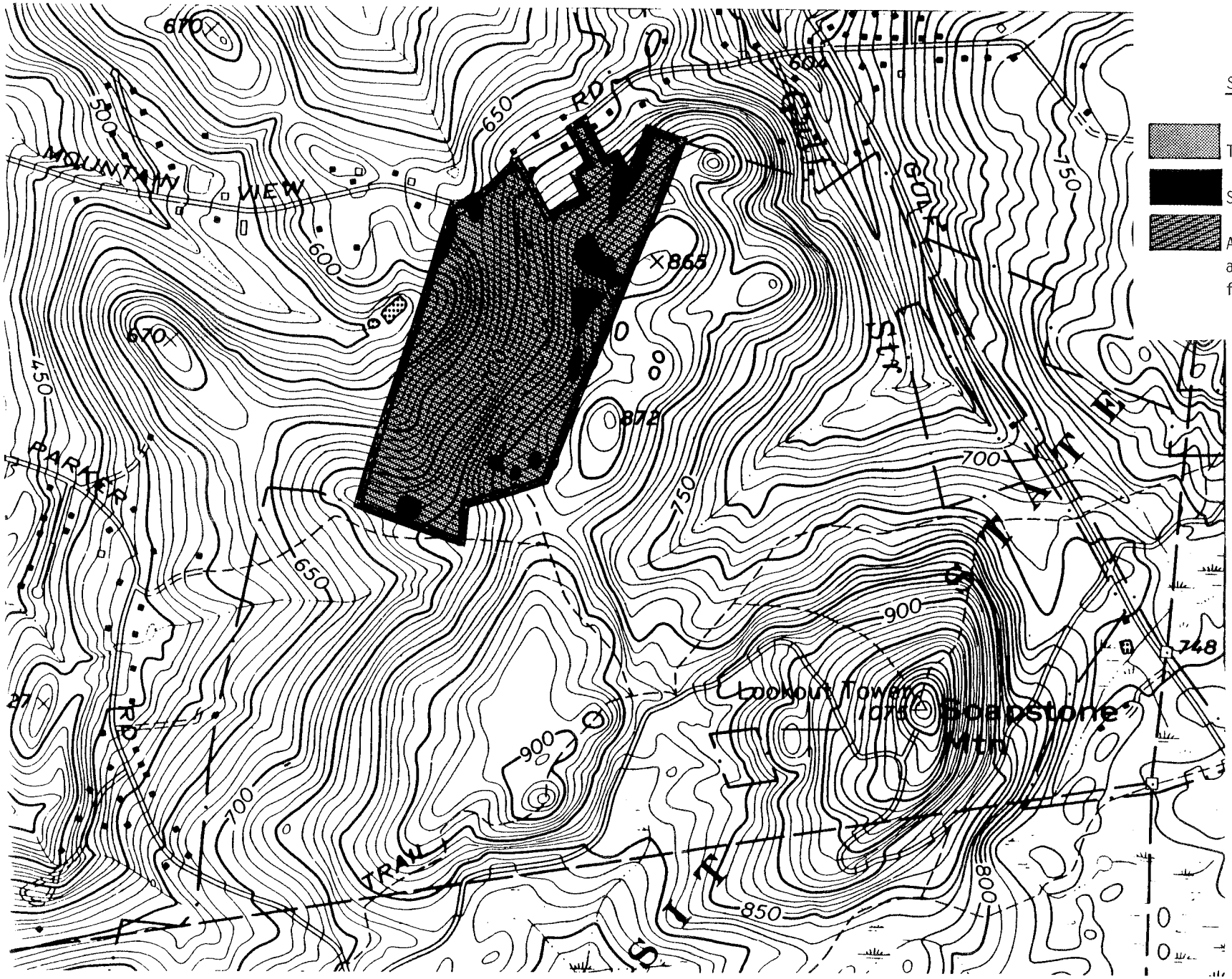


BEDROCK GEOLOGY

Glastonbury Gneiss

Dark, coarse grained, massive amphiboilite and mafic rock

Scale 1" = 1000'


SURFICIAL GEOLOGY
Till
Single rock outcrops
Area where bedrock is at or near ground surface
Scale 1" = 1000'
MOUNTAIN VIEW
PARKER
TRAIL
Lookout Tower
1075
Sandstone Mtn
748
865
872
604
670
500
600
650
700
750
800
850
900
450

Due to the mode of deposition, the texture of the till varies across the site. Generally speaking, the till in the eastern part of the site is sandy and loose to moderately loose. The western parts are characterized by deeper soils that have a compact zone about 1.5 to 2.0 feet below ground surface. The presence of the compact soil zone causes the upper two feet to become saturated with groundwater causing a seasonally high water table, soil mottling, and slow percolation rates. Seasonally high water tables can present problems in terms of interference with leaching systems, wet basements and seeps in deep cuts, which can result in mass movement of soils (slumping).

The boundary for regulated inland-wetland soils have been delineated mainly in the western limits. Regulated soils for the most part parallel seasonally drainageways on the site and are narrow.

4. GENERAL SOILS INFORMATION

The information contained in the Soil Survey of Tolland County, CT appears to be adequate for planning purposes. If the Commission requires additional information it is suggested that the applicant retain the services of a qualified private soil scientist to review the information contained in the Soil Survey of Tolland County, CT, examine conditions in the field and provide the Commission with a verified map and up to date interpretive information for the site.

5. WETLAND BOUNDARIES

Wetlands on this site were identified in the field by a private soil scientist. Several wetland areas on the parcel have flagging but the boundaries were not located on the plot plan. Because of time constraints it was not possible to verify this information. On future submittals it is suggested that the Commission require that the applicant have a qualified private soil scientist delineate wetland boundaries in the field. The boundaries should be flagged and numbered sequentially. This information should then be surveyed onto the plan map. The soil scientist should then review and sign a statement on the map(s) certifying that the information is substantially correct. The certification statement should be similar to the following: "The wetland soils on this site were identified in the field using the criteria required by Connecticut P.A. 72-155 as amended by Conn. P.A. 73-571, Conn. P.A. 87-338 and P.A. 87-533. The boundaries of these soils and of identified watercourses are accurately represented on the plot plan." This statement should be signed by the soil scientist who performed the field work.

If this procedure is followed and discrepancies are found, the Tolland County Soil and Water Conservation District can on request review the submitted information for adequacy.

United States Department of Agriculture

Soil Conservation Service

Tolland County USDA-SCS
24 Hyde Avenue
Rockville, CT 06066
887-3881

Scale 1" = 1320'

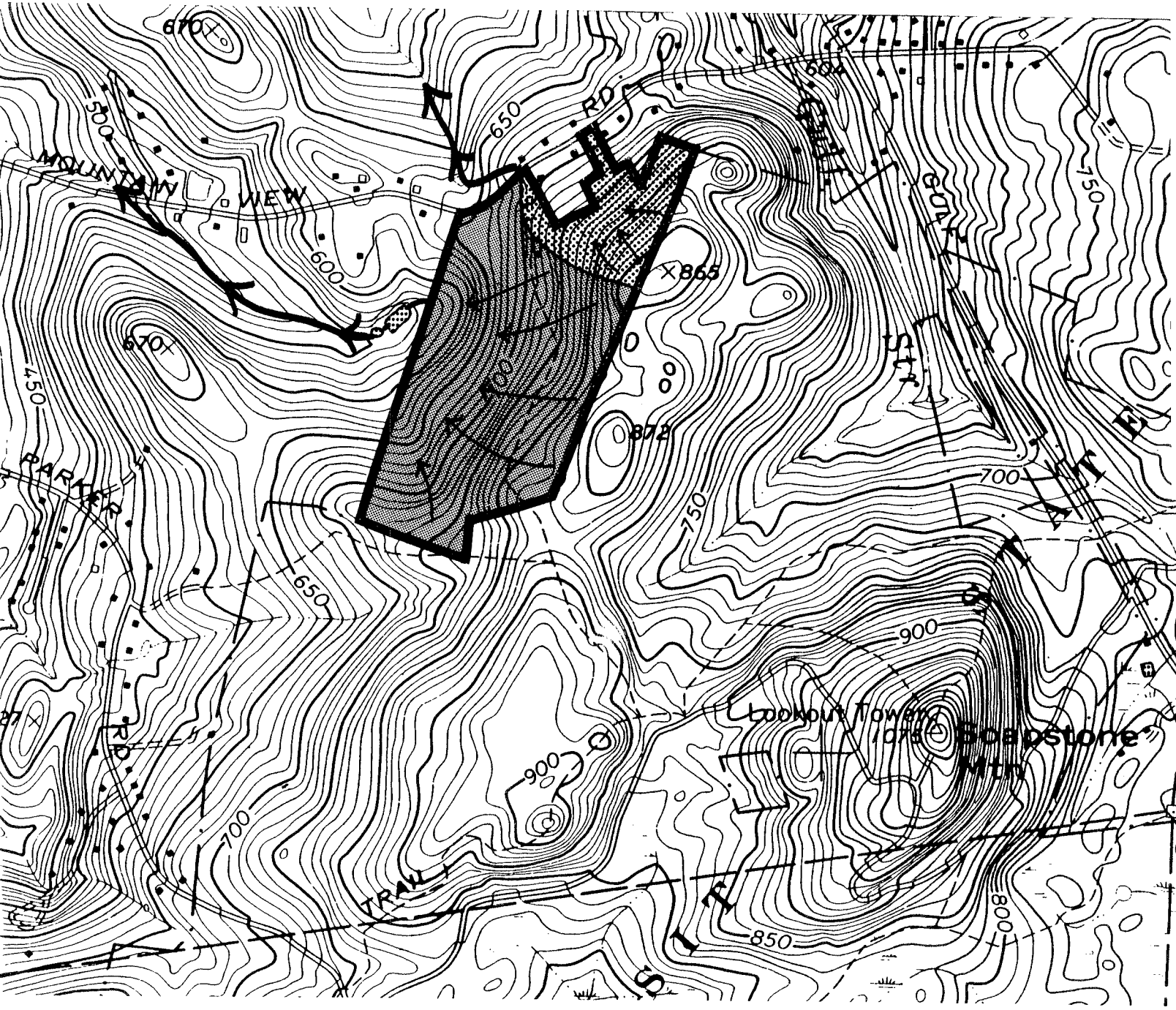
6. SOIL EROSION AND SEDIMENT CONTROL PLAN

Soils on this site are subject to severe erosion. The potential for off-site damages from sediment is high and downstream areas adjacent to the stream are subject to severe bank erosion from increased runoff. A detailed soil erosion and sediment control plan which includes measures to control stormwater runoff must be developed and implemented for this site. The plan should be site specific and include measures for each lot proposed including driveways, homesites, and septic systems. Inspection of the site to ensure compliance with the plan should be given the highest priority by the Town. The plan should be developed using the criteria contained in the Connecticut Guidelines for Soil Erosion and Sediment Control (1985). The Tolland County Soil and Water Conservation District would appreciate the opportunity to review this plan for adequacy prior to final approval.

7. HYDROLOGY

Surface drainage within the site can be divided into two areas. Surface runoff emanating from the northern part flows generally to the northwest toward Mountain View Road. It is routed by concrete pipe under the road and ultimately to Shady Brook, a Gulf Stream tributary. The central part of the site drain generally westward toward the ponds (proposed detention area) on the adjoining Ladd Property or the outlet stream for the ponds. The outlet stream for the pond is a tributary to Abbey Brook. Generally speaking, groundwater throughout the site parallels surface drainage. The site lies within an area classified by DEP Water Compliance as GA/GA/GAA. This means that groundwaters are within the area of influence of private and potential public water supply wells. The groundwater is presumed to be suitable for direct human consumption without need for treatment and is designated for future use as a public water supply source.

Development of the site for residential use would be expected to lead to increases in the amount of runoff shed from the site. The amount of increases will depend upon the extent of development, the impervious surfaces created the amount of vegetation removed or preserved. The two major concerns with increased runoff is the potential for flooding of downstream areas and streambank erosion. In order to determine the affects of post development runoff, the applicant's engineer needs to produce a stormwater management plan, which includes pre- and post-development hydrologic calculations. These calculations have not been provided to date (6/22/88). Once the stormwater drainage plans and computations have been completed, the Town's engineer and/or a consulting engineer or hydrologist familiar with road drainage, detention basins, pipe sizing, etc., should review the plan.



WATERSHED BOUNDARY

Land area within site that drains to Shady Brook.

Land Area within site that drains to ponds on Ladd property.

Direction of surface flow.

Watercourses showing direction of flow.

Scale 1" = 1000'

Because of the hydrologic position, the applicant's staff noted on the review day that consideration is being given to using the Ladd Pond as a detention basin. Based on existing topography, it appears that runoff from the central and southern parts of the site would be captured by the pond. This represents almost 100 acres of watershed area. If runoff from the northern limits (land area that drains to Shady Brook) is diverted to the pond's watershed, then the watershed area will be greater than 100 acres. Since the detention basin will collect waters from a watershed area of 100 acres or more in size, a diversion permit may be required by DEP's Water Resource Unit. Robert Gilmore (566-7220) should be contacted regarding this matter. A diversion permit may also be required if a streamcourse is relocated. For example, if surface runoff from the northern part of the site were intercepted by road drainage into the Ladd Pond watershed, then a diversion permit may also be required. Finally, it is also suggested that the applicant's technical staff contact DEP's Dam Safety Unit (566-7245) regarding the dam proposed for the detention basin. Close examination of downstream residential structures and road culverts is warranted.

Another concern with increased runoff is the potential for streambank erosion and gulleying. In view of the moderate to steep slopes,silty soils and existing high water quality of surface water in the area, the potential for erosion related problems would be expected to be high, especially if a comprehensive erosion and sediment control plan is not developed for the subdivision.

In order to protect the quality of water in drainageways on the site, considertion should be given to the installation of a temporary sediment pool(s) during construction phases. If the sediment pool is constructed, it should be located on upland soils rather than wetland soils. This will help to minimize wetland disturbances. If the primary purposes of a detention basin is to minimize erosion and sedimentation, the peak discharge from the 2-year and 10-year frequency, 24 hour duration, Type III distribution storms should be analyzed.

If a detention basin(s) is considered to minimize flooding conditions, the peak discharge from a 2-year, 10-year and 100-year frequency, 24 hour duration Type III distribution storm should be analyzed. In regard to the latter, the project engineer should reference Connecticut's Guidelines for Soil Erosion and Sediment Control. Close examination of all downstream culverts, particularly under Mountain View Road is warranted. Drainage pipes and culverts will need to be properly sized. The erosion and sediment control measures called for under the plan should be shown on the final subdivision plan.

8. STORMWATER RUNOFF

No information was provided on the effect of stormwater on downstream areas. Runoff calculations and were not submitted for review by team members. These calculations, an assessment of downstream effects and plans for control of stormwater should be developed and submitted for review. Calculations should be developed using the appropriate method selected from Chapter 9 of the Connecticut Guidelines for Soil Erosion and Sediment Control (1985). Designs for sediment basins and stormwater detention bains must use the criteria and standards found in the Guidelines. The Tolland County SWCD would appreciate the opportunity to review these calculations and design prior to final approval. A checklist for review of stormwater runoff calculations is included in this report. (Please see following pages)

CHECKLIST FOR REVIEWING
REPORTS USING TR-55 ANALYSIS

1. _____ Watershed Map at a scale of 1" = 500' or larger. Show watershed boundary, subarea boundaries, and subarea names or numbers. (Optional - show Tc, CN, and Drainage Area for each subarea on the map) Contour maps must include some additional area outside the property line boundaries.

2. _____ Large scale map showing different soils within each subarea and subarea boundaries. May also be used to measure drainage areas. Could also show Tc calculation path used for each subarea.

3. _____ Tabulation sheet or computer printout showing Curve Number and Time of Concentration calculations for each subarea. Drainage areas, Hydrologic Soils Groups, and Land Use areas should be documented from soils maps or other references.

4. _____ Tabulation sheet showing calculations and equations used for any storage estimates to design a detention basin or other misc. calculations.

5. _____ TR-55 printout showing graphical or tabular peak discharge calculations. Include printouts for both pre-development and post development conditions. The printout showing the design of a detention basin should be included. These printouts should document the zero discharge increase for all required storms.

6. _____ The written report should state the initial conditions and storm frequencies to be analyzed. Include a summary table showing the pre-development, post development, and designed system peak discharges for all design frequencies. Show a sketch of the structure outlet system with elevations and dimensions.

CHECKLIST FOR REVIEWING
REPORTS USING TR-20 ANALYSIS

1. _____ TR-20 Watershed Map at a scale of 1" = 500' or larger. Show subarea boundaries, cross section locations and numbers, structure locations and numbers, and subarea names or numbers. (Optional - show Tc, CN, and Drainage Area for each subarea on the map) Contour maps must include some additional area outside the property line boundaries.

2. _____ Large scale map showing different soils within each subarea and subarea boundaries. May also be used to measure drainage areas. Could also show Tc calculation path used for each subarea.

3. _____ Tabulation sheet or computer printout showing Curve Number and Time of Concentration calculations for each subarea. Drainage areas, Hydrologic Soils Groups, and Land Use areas should be documented from soils maps or other references.

4. _____ Tabulation sheet showing calculations and equations used for structure stage-discharge-storage volumes and cross section elevation-discharge-area calculations.

5. _____ TR-20 printout showing input listing and a minimum output of the summary tables. The minimum required output is listings and summary tables for the pre-development, post develpment, and post development with control for all required storms. These runs must document the zero discharge increase for all required storms.

6. _____ The written report should state the initial conditions and storm frequencies to be analyzed. Include a summary table showing the pre-development, post development, and designed system peak discharges for all design frequencies. A "fullprint" printout of the TR-20 run is not needed in the report, only the input and summary tables. The fullprint output can be attached as extra material.

9. GEOLOGIC DEVELOPMENT CONCERNS

In terms of the proposed 64 lot subdivision, the major geologic limitations which occur on the site and which warrant close examination are the following:

(1) those lots where bedrock is at or near ground surface;
(2) areas of moderate to steep slopes;
(3) the presence of till (hardpan) soils, which have moderately slow percolation rates and elevated groundwater tables. As mentioned earlier, these two condition result from the silty and more compact soil zone which develops below the rooted and surficial weathered zones.
(4) the presence of regulated soils (inland-wetlands), especially with respect to the Town's 100 foot setback requirement from septic system areas and building structures.

It seems likely that the geologic limitations mentioned above will weigh heaviest on the ability to provide adequate subsurface sewage disposal system serving homes in the subdivision. In addition, if certain measures are not taken, they will be a hindrance during road construction and placement of house foundations and driveways, of particular concern is road, driveway and foundation construction in cut areas characterized by "hardpan soils" and/or where the bedrock surface is encountered.

Based on soil mapping data and subsurface data supplied by the applicant's engineer, it seems likely that special engineered design plans will be required for most, if not all lots in order to surmount the limitations mentioned above. For example, improvements such as intercepting drains and/or elevating areas designated for leaching systems with suitable fill material will be required for lots with high groundwater conditions or shallow to bedrock conditions. Sufficient exploratory work is warranted on the lots that are characterized by shallow to bedrock conditions. With respect to areas of thin soil coverage and "hardpan" layers, leaching systems shall be kept shallow, relatively large and spread out with the contours to encourage lateral dispersal. This may be difficult to overcome on the long, narrow lots (lots 34-38). Every effort should be made to keep leaching systems in areas where slopes do not exceed 25 percent.

The presence of bedrock at shallow depths, especially in the eastern limits, suggests that blasting may be required in order to place driveways, foundations, septic systems and roads. Any blasting that takes place on the site should be done very carefully and under the strict supervision of people experienced with the newest technology in blasting techniques. This will hopefully help to reduce the chance for undue seismic shock and potential damage claims. In this regard, it is also wise to conduct a pre-blast survey of the area. Generally speaking, it is only when blasting is conducted without regard to seismic shock or air-blast impacts that there are problems on surrounding properties.

The potential for seasonally high water tables associated with the "hardpan" soils suggests that building footing drains be installed around homes. This will hopefully protect basements from getting wet during the winter and spring months. It is possible that the building footing drains can be connected to intercepting drains (curtain drains). The project engineer should address where each curtain drain will be located and where they will be discharged so that they do not cause problems such as gulleying, well contamination or interference with on-site or neighboring septic systems. This should be determined prior to subdivision approval.

Since there is a potential for many lots to utilize intercepting drains, the separation distance between septic systems on abutting lots becomes critical. Upgrade lots may have to be widened so that their sewage disposal systems are at least 50 feet away from downgrade curtain drains.

Road construction on "hardpan" soils, (seasonal seeps and high water tables) particularly in cut areas, can be problematic if not properly addressed. Construction or roads in cut areas should have a good gravel subbase and underdrains on either side of the road. They are also extremely difficult to stabilize. This is due to seepage of water over the "hardpan" layer. This water creates an unstable condition just below the seepage line. The weight of the unstable soil causes the soil to flow down the slope. Once this begins, the slope is very difficult to stabilize. The establishment of a good vegetative cover is practically impossible on these eroding slopes. Besides the unsightly conditions, the eroded soil must be removed from the base of the slope. Examples of this condition are evident on road cuts along many of the interstate highways in Connecticut.

Based on the site plans distributed to Team members on the review day, the access road will need to cross regulated wetland soils and/or watercourses in four areas. All crossings appear to be narrow, but closely spaced seasonal drainways paralleled by wetland soils.

Although undesirable wetland road crossings are feasible provided they are properly engineered. The road should be constructed adequately above the surface elevation of the wetlands. This will allow for beter drainage of the road and also decrease the frost heaving potential for the road. Road construction through wetlands should preferably be done during the dry time of the year and should include provisions for effective erosion and sediment control. Any unstable organic or mucky material should be removed and replaced with a permeable road base material. Finally, culvert(s) should be properly sized and located so as not to alter the water levels in the wetland or cause flooding problems.

Because these soils are classified as inland-wetland soils in Connecticut they are regulated under Public Act 155. Any activity which involves modification, fillings, removal of soils, etc., will require a permit and ultimate approval by the Town's Inland Wetland Commission. In reviewing a proposal, the Commission needs to determine the impact that the proposed activity will have on the wetlands. If the Commission determines that the wetland is serving an important hydrological or ecological function and that the impact of the proposed activity will be significant, they may deny the activity altogether or, at least, require measures that would minimize the impact.

10. WATER SUPPLY

Present plans indicate that the proposed house lots for the subdivision be served by individual on-site wells. The underlying bedrock will be the likely source of water to the wells. Although not prolific aquifers, the crystalline bedrock beneath the site is generally capable of yielding quantities of water adequate for most domestic uses. A yield of 3-5 gallons per minute is generally desired for residential use. The site lies within the Upper Connecticut River basin and according to Water Resources Bulletin #24, the yield of 28 wells tapping crystalline rocks ranged from 0.7 to 25 gallons per minute. With a median yield of 9 gallons per minute or more.

In general, private wells should be located on the high side of lots with proper separating distances from on-site sewage disposal systems and other potential sources of pollution, particularly buried fuel storage tanks. Wells must also be properly separated from water impoundments, watercourses and drains and be protected from surface runoff and erosion problems.

Properly constructed drilled wells will generally afford the greatest level of protection against possible sources of pollution. Also, drilled wells usually allow for more flexibility in actual site placement. All wells are to be installed by persons who are state licensed for drilled wells. The town sanitarian needs to inspect the proposed well sites and issue a permit for each well in the subdivision. The sanitarian must ensure that all sections of the State Public Health Code, State Well Drilling Board Rules and Regulations and local ordinances have been followed. Provided this is done, there should be little chance of water quality or quantity problems, except those that occur naturally.

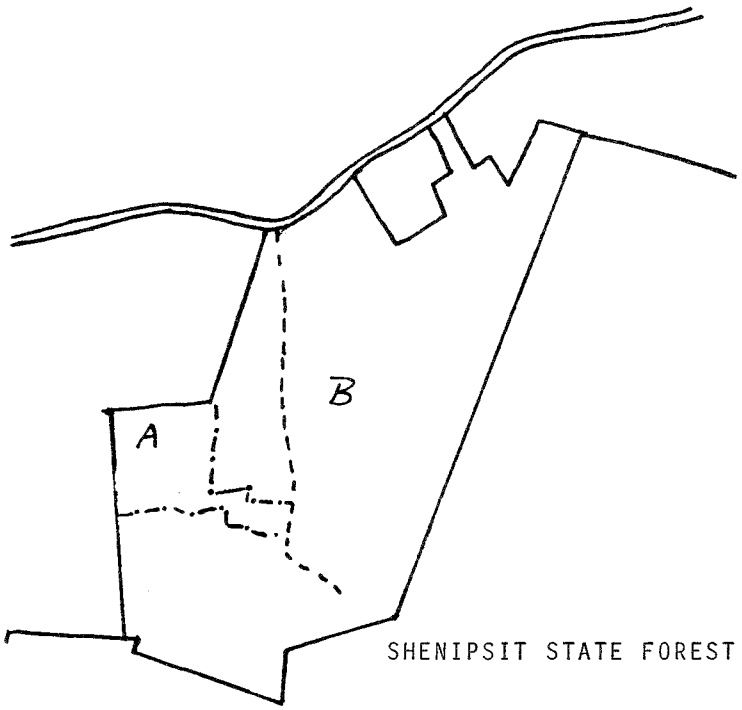
The natural quality of groundwater in this area should be good. However, there maybe a chance that elevated iron levels could affect well water quality.

11. VEGETATION

Description

The tract proposed for development is approximately 100 acres and 95 acres are occupied by a mixed hardwood forest. Trees on this site include red maple, black birch, white ash, yellow birch, sugar maple, white birch, scattered white pine and hemlock. In small wetlands, where soil moisture concentrates, the trees are predominantly red maple and yellow birch. Understory vegetation includes fern, viburnum, witch hazel, spicebush and blackberry. Another 5 acres are old field type occupied by scattered mixed hardwood trees and grasses. The overall condition of trees on this site is poor. Most trees exhibit at least one, if not several of the following afflictions: Mechanical logging damage, shoestring root rot, nectria or strumella canker, over crowding/surpression, broken crowns, hollow/rotten, lightning injury,

VEGETATION MAP



TYPE A: Old Field

TYPE B: Mixed Hardwood

Scale 1" = 1000'

Boundary (Approximate) ————————

Type Boundary —·—·—·—

Town Road ═══════

Gravel Road — — — — — —

lean, two-lined chestnut borer, and windthrown. The healthiest, high vigor, aestically pleasing trees were removed in a harvest about 1985. The trees on-site now are in poor health, low vigor and dying more than they are growing. They are however providing soil stability on the steep slopes of hardpan soil. Forested land reduces the impact of precipitation and runoff, moderates the effects of adverse weather conditions and reduces erosion, sedimentation, siltation, and flooding.

Aesthetic Considerations

Trees are very sensitive to the condition of the soil within the entire area under their crowns and around their root system. Development practices near trees such as excavation, cutting, filling and grading for road building and structures and compaction from equipment usage disturbs the balance between soil aeration, soil moisture level, and soil composition. Disturbances to soil near trees causes a decline in tree health and vigor resulting in mortality within three to five years. Older and/or larger trees and low vigor trees are more readily affected by the negative impact of construction and related activities. Mechanical injury to trees from equipment can also cause mortality. The trees on this parcel are already in a stressed condition from past practices and are more susceptible to mortality from construction practices than healthy forest trees would be. The trees on site are also poor specimens aesthetically. Several large trees are hollow, deformed, cracked or have broken tops. Smaller diameter poletimber have logging damage, root rot or broken, deformed crowns from logging or weather damage. Dead trees on site after construction and near houses reduce the aesthetic quality of the area, may become hazardous, and are expensive to remove near buildings, roads and utility lines.

There are few, if any, large healthy trees on this site to work into a final site plan for the subdivision for aesthetic and shade value. Although research has shown that trees on the houselot may enhance the value of the houselot few if any trees on this site are aesthetically pleasing enough to enchance a houselot or safe enough structurally to stand alone in the open (see limiting conditions) without breaking off or blowing down. Houselots would have to be completely cleared of all trees. Any as far back from the edge of the building as the height of the tallest tree plus 10% of the present height to allow for growth. This will create openings of about three fourths of an acre for houselots. Neither the tree nor its root system should be disturbed during clearing either by excavation or filling over. Roots and branches must be left intact to minimize mortality. Retaining trees in groups, or islands lowers the possibility of soil disturbance and mechanical injury. The islands or individual trees that are to be left should be designated and clearly marked off prior to development.

Limiting Conditions and Potential Hazards

Windthrow and tree breakage is a potential hazard on this site due to the past condition of the forest, which was a very crowded, near mature, oak stand, and because of the seasonally saturated hardpan soils. Trees which grow in a forested condition rely on each other for stability, wind firmness, and side support. On this site, openings which allow wind to pass through, rather than over, the trees will result in uprooting and crown breakage from high winds (snowstorms and thunderstorms), lightning (isolated trees on high ground) and winter ice storms. Openings larger than one-fourth acre are susceptible tothis damage especially when soil is saturated. Exposed trees would need 5-10 years to adapt to the change in their environment. The safest trees to leave on site would be any of the 20-30 foot tall hardwoods or softwoods that appear to be well-formed and healthy.

Fully vegetated forest soils are very absorptive and have good soil holding capacity to prevent erosion and sedimentation. By disturbing these highly absorptive soils with clearing, stumping and excavating for houselots and driveways on these greater than 15% slopes, overland flow and the potential for erosion will greatly increase. To build just 50 houses, nearly 50 acres of once forested soil will be exposed to wind and rain. Erosion and sedimentation plans are strongly recommended during construction. After construction, lawns, roads and driveways present a permanent problem. Their construction removes the all important humus and litter layer on the forest floor to buffer the impact of heavy precipitation. The resulting soil compaction and loss of the protectant litter prevents rain and snow melt from soaking into the soil rapidly. This causes water to collect and run over the road surface or exposed soils of a gravel driveway. The run off moves faster on these types of steeper slopes, rapidly building erosive power, tearing soil loose, rutting driveways and leaving mud on public roads. Avoid rutting driveways and leaving mud on public roads. Avoid driveways that go straight up slopes in excess of 10%. Install water diversions at least every 40-75 feet on 10%-20% slopes. The steeper the slope the closer the diversions.

Summary

Development should proceed cautiously on this site due to the steep slopes, hardpan soil and overall poor condition of the trees. Stormwater run off should be accurately calculated and prepared for. Equipment operators must be made aware of the importance of protecting tree root systems and trees from mechanical injury to avoid soil compaction, retain the balance of air and moisture in the soil and minimize the spread of root rots that cause mortality in trees. Leaving individual trees on houselots should be avoided except in some rare instances where a suitable tree is available. Planting shade trees after construction is probably more suitable for this site. A forester in the

private sector should be consulted to work with the developer on an overall vegetation plan. Private foresters names are available on request from the Connecticut Bureau of Forestry at 295-9523.

12. PLANNING CONSIDERATIONS

Although one acre zoning is the standard in the area of Soapstone Mountain and for the majority of vacant residential land in Somers, it may be inadequate for septic systems, well locations and house locations all on one acre lots in areas of difficult terrain and marginal soil conditions. If the Town and the applicant find that all these systems cannot be provided for on one acre lots, when no sewer systems or water systems are available, some consideration should be given to zoning regulations that give bonuses or concessions when larger than minimum lot sizes are part of an application.

The application for subdivision approval on this site, if two parties are involved, should be carefully reviewed. If one of the parties is dissatisfied with the approval granted and withdraws his part of the application, then all the worked performed by the Planning Commission could be negated. It might be wise for the Commission to bind both parties to the decision that is rendered.

Reservations of some of this property, either for recreation or as an addition to the State Forest, should be priority for the Commission for many reasons, it will establish the intent of the Commission to enforce the provisions of its regulations. It will set a precedent that will determine the Town's future plans to provide recreational areas in the outlying parts of Town. Also, it will set the tone for future applications, the intention of which is that applications which most closely adhere to the spirit of all of the Town's subdivision regulations are those that the Commission wants to entertain.

About The Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialsits, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area --- an 86 town region.

The services of the Team are available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.