Welsh Subdivision

Pinch Street & Route 14
Scotland, Connecticut

September 1985

ENVIRONMENTAL REVIEW TEAM REPORT

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

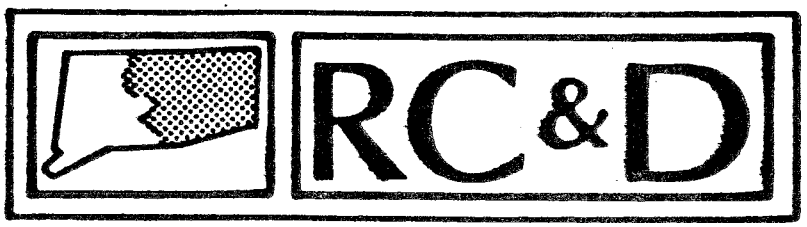
Welsh Subdivision

Pinch Street & Route 14

Scotland, Connecticut

Review Date: 7/9/85

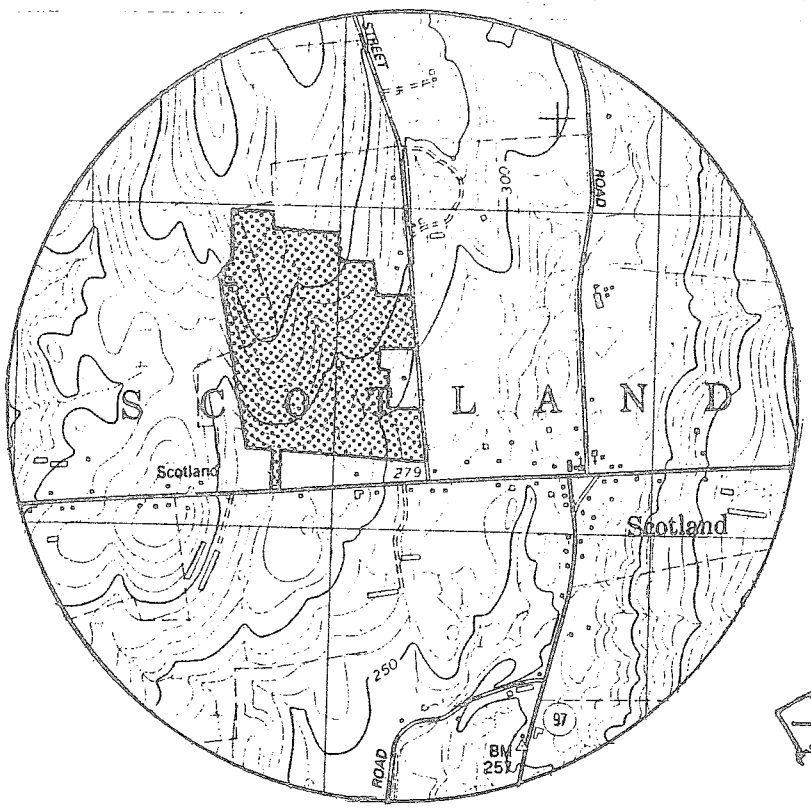
Report Date: 9/85

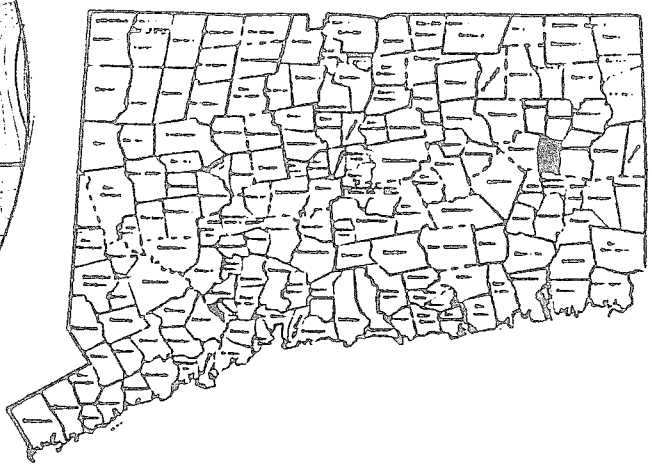


ENVIRONMENTAL REVIEW TEAM
PO BOX 198
BROOKLYN, CONNECTICUT 06234

Site Location

WELSH SUBDIVISION
Pinch Street and Route 14
Scotland, Connecticut





EASTERN CONNECTICUT

SOURCE CONSERVATION

& DEVELOPMENT AREA

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ENVIRONMENTAL REVIEW TEAM REPORT
ON
THE WELSH SUBDIVISION
PINCH STREET & ROUTE 14
SCOTLAND, CONNECTICUT

This report is an outgrowth of a request from the Scotland Planning and Zoning Commission to the Windham County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. 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 Tuesday, July 9, 1985. Team members participating on this review included:

Donald Capellaro	- Sanitarian - CT Department of Health
Howard Denslow	- District Conservationist - U.S.D.A., Soil Conservation Service
Fifi Scoufopoulos	- District Manager - U.S.D.A., Soil Conservation Service
Dick Raymond	- Forester - Department of Environmental Protection
Meg Reich	- Regional Planner - Windham Regional Planning Agency
Carol Sacknoff	- Wildlife Bureau - Department of Environmental Protection
Eric Schluntz	- Fisheries Biologist - Department of Environmental Protection
Elaine Sych	- Environmental Review Team Coordinator, Eastern CT RC&D Area
Bill Warzecha	- Geologist - DEP, Natural Resources Center
Judy Wilson	- Wildlife Biologist - Department of Environmental Protection

Prior to the review day, each team member received a summary of the proposed project, a list of the Town's concerns, a soils map and a topographic map showing the boundaries of the study site. During the field review the team members were given site plans. The Team met with, and were accompanied by members of the Planning and Zoning Commission, and the engineer and soil scientist for the applicant. 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 Project Committee hopes you will find this report of value and assistance in making your decisions on this subdivision.

If you require any additional information, please contact:

Elaine A. Sych
ERT Coordinator
Eastern Connecticut RC&D Area
P.O. Box 198
Brooklyn, CT 06234
(203) 774-1253

NOTES:
1) PROPERTY ZONED RA
2) WETLANDS SHOWN HEREON WERE "PIN-FLAGGED" IN THE FIELD BY R. RICHARD SNARSKI, SOIL SCIENTIST
3) PROPERTY LINES TAKEN FROM A MAP ENTITLED "MAP SHOWING PARCELS TO BE CONVEYED TO ROBERT F. WELSH, SCOTLAND, CONN 7/81, SCALE: 1"=100' BY TOWNE ENGINEERING INC.

N/F JOE T. MULLANEY AND ESTATE OF ELEANOR C MULLANEY

N/F GEORGE STUTZ

N/F ANTHONY SR & JOSEPHINE CAPIZZI

HIGHWAY LINE

HIGHWAY LINE

TO WILLIMANTIC

CONNECTICUT ROUTE NO

PINCH STREET

N/F FREDERICK A CLARK & HENRY W CLARK JR.

N/F MARTIN & CLARA BLOOM

N/F HAROLD KORNER

N/F MARY L. MAKER

N/F RALPH G SWEET

N/F SHIRLEY & ROBERT BERGERON

(11) AREA = 19.61 ACRES 854,121 S.F.

(10) AREA = 5.23 ACRES 227,783 S.F.

(9) AREA = 5.19 ACRES 224,249 S.F.

(8) AREA = 4.65 ACRES 202,703 S.F.

(7) AREA = 4.48 ACRES 194,994 S.F.

(6) AREA = 2.95 ACRES 1 28,481 S.F.

(5) AREA = 1.04 ACRES 45,398 S.F.

(2) AREA = 1.09 ACRES 47,603 S.F.

(4) AREA = 6.84 ACRES 298,167 S.F.

(3) AREA = 10.34 ACRES 450,266 S.F.

(1) AREA = 18.63 ACRES 811,402 S.F.

MAGNETIC NORTH JULY, 1981

*Not to Scale

WETLANDS

WETLANDS

DETAIL NOT TO SCALE

DETAIL NOT TO SCALE

THE SUBDIVISION REGULATIONS OF THE TOWN OF SCOTLAND PLANNING AND ZONING COMMISSION ARE A PART OF THIS PLAN AND APPROVAL OF THIS PLAN IS CONTINGENT ON COMPLIANCE WITH ALL REQUIREMENTS OF SAID SUBDIVISION REGULATIONS

APPROVED BY SCOTLAND PLANNING AND ZONING COMMISSION

CHAIRMAN DATE

I HEREBY CERTIFY THIS MAP AND SURVEY WERE PREPARED IN ACCORDANCE WITH THE STANDARDS OF A CLASS A-2 SURVEY AS DEFINED IN THE CODE OF PRACTICE FOR STANDARDS OF ACCURACY OF SURVEYS AND MAPS ADOPTED DEC. 10, 1975 AS AMENDED BY THE CONN. ASSOCIATION OF LAND SURVEYORS INC.

4/1/85
DATE

LEGEND
- IRON PIPE TO BE SET
- TEST PIT
- STONE WALL
- WIRE FENCE
- BUILDING LINE

FINAL SUBDIVISION PLAN

PREPARED FOR

ROBERT WELSH JR.

CONN. RTE. NO. 14 PINCH STREET

SCOTLAND CONNECTICUT

SCALE: 1" = 100' APRIL 1985

JOHN KOPKO JR. & ASSOC.
OAKDALE CONNECTICUT

SHEET # 1 OF 3

I. INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed subdivision in the Town of Scotland. The study site is located on Pinch Street and Route 14. The subdivision contains approximately 80 acres, which will be divided into 11 lots. The lots range in size from slightly over 1 acre to 19 acres. Seven of the proposed lots would be interior lots. Access to the lots will be provided off of Pinch Street and Route 14. The single family homes will be served by on-site wells and on-site septic systems.

At the present time town zoning requires a minimum lot size of two acres. In this case, however, the subdivision application was submitted in the interim period while two acres zoning was suspended, and the previous one acre minimum lot size was in effect. For the purposes of this report, it is assumed that the subdivision lots meet the minimum lot size requirements.

The subdivision plans have been prepared by John Kopko, Jr. and Associates of Oakdale, Connecticut. The property is owned by Robert Welsh.

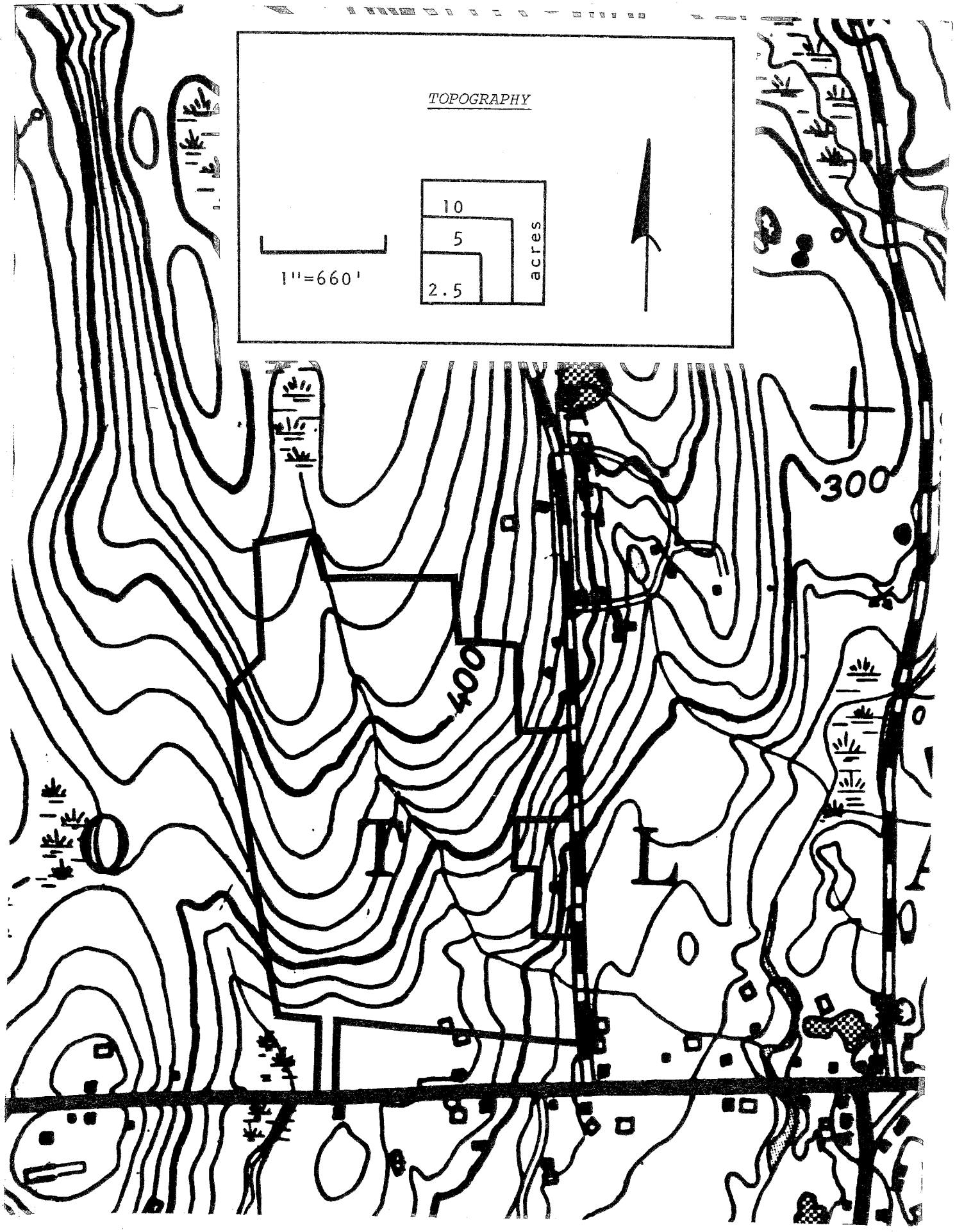
The land surface slopes moderately to the south. The chief features being open agricultural land (cornfields) and woods. The terrain is centrally cut by a diagonal crossing watercourse and associated wetlands which flow under Pinch Street. The greatest density of wetlands is concentrated near the south-eastern end of the property.

The Town is concerned with the effect that the proposed subdivision will have on the natural resource base of the site and the surrounding area. The ERT was asked to deal specifically with the impact development will have on the wetlands and drainage patterns, building suitability, water supply, sewage disposal, wildlife and vegetation disruption and land use compatibility.

II. TOPOGRAPHY AND SETTING

The proposed 11 lot subdivision is located in the central part of Scotland approximately 1/2 mile west of the center. The site is 80.05 acres in size. Access to the property will be provided off of Pinch Street and Route 14. The land surface slopes moderately to the south. Some flatter areas exist in the northern parts of the site. Most of the land in the northern half is wooded, while the southern parts comprise some cultivated farmland (cornfields).

An unnamed tributary to Merrick Brook bisects the central parts of the site. Wetland areas on the site generally parallel or offshoot this streamcourse.


TOPOGRAPHY
1"=660'
10
5
2.5
acres
300
400

These areas have been mapped by a certified soil scientist and their boundaries superimposed on the plan submitted to Team members on the field review day.

Maximum and minimum elevations on the site are about 400 feet and 290 feet above mean sea level, respectively.

III. GEOLOGY

This parcel of land is located within the Scotland topographic quadrangle. Therefore, the same geologic and soils maps referenced for the other Welsh Subdivision (Brooklyn Turnpike and Pinch Street) Environmental Review Team Report, September 1985, will apply for this subdivision also.

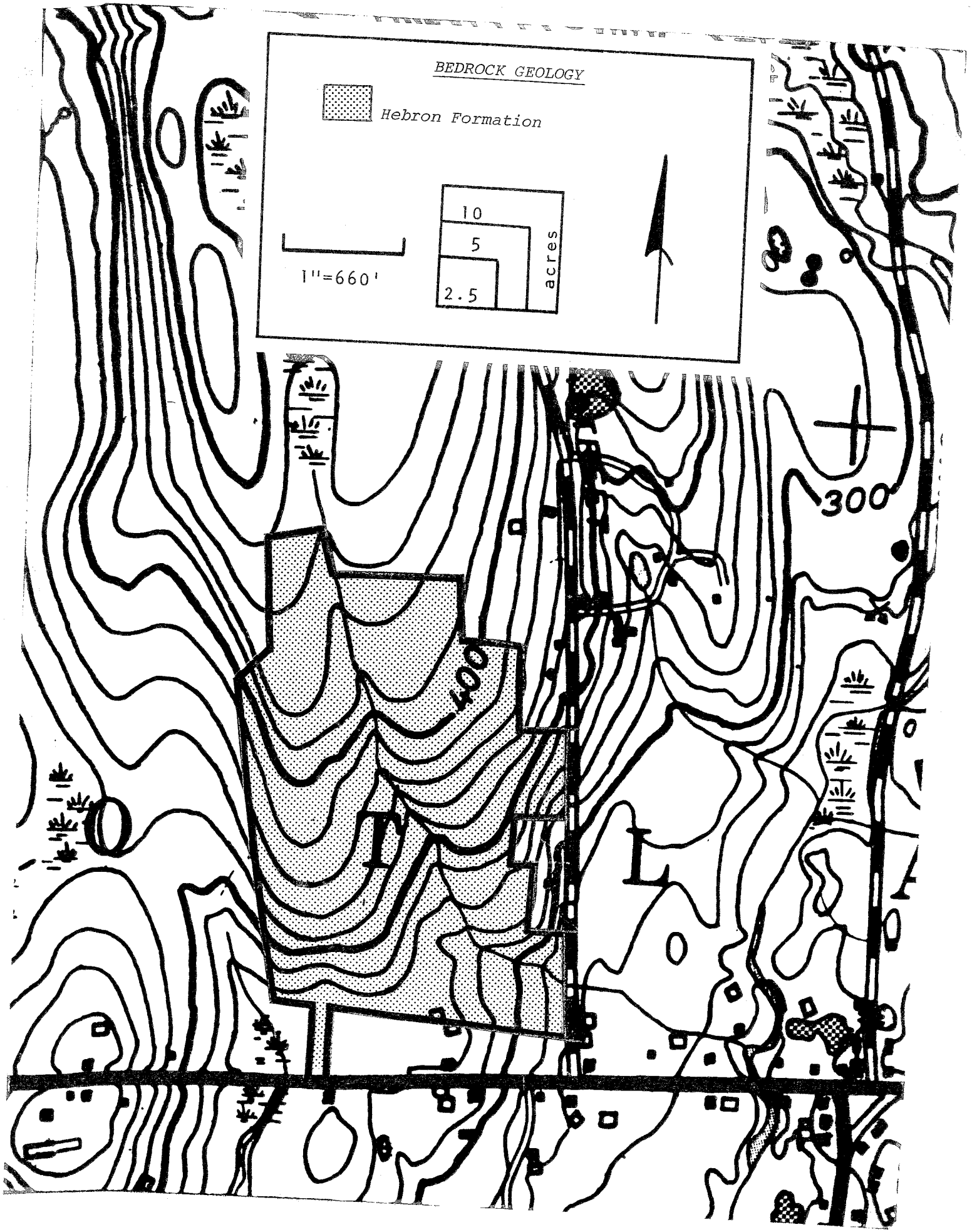
Bedrock exposures were not visible on the site during the field review. Based on deep test pit information, bedrock is closest to ground surface on Lot 11 in the western parts. a few deep test pits excavated on Lot 11 revealed bedrock at depths which ranged between 20" and 60" below ground surface.

Bedrock underlying the site has been identified as the Hebron Formation. This rock unit also underlies the eastern parts of the subdivision and was described in the previous report (Welsh Subdivision, Brooklyn Turnpike and Pinch Street, ERT Report, September 1985). The rocks consist of interlayered schist and gneisses and are composed of minerals, quartz, feldspar, micas (muscovite and biotite) as well as calcsilicate minerals. See description in the other Welsh ERT Report for detailed definitions.

The unconsolidated material overlying bedrock on the site is till. Till is a glacial sediment that was deposited directly from glacier ice. The sediment consists of varying proportions of sand, silt, gravel, clay and boulders. Particles of different sizes are generally mixed together in a very complex fashion. The exact thickness of the till on the site is not known, but it probably does not exceed much more than 10 feet in most places.

Seasonally wet areas, comprised of regulated inland-wetland soils generally parallel the unnamed watercourse bisecting the site. The other large seasonally wet area on the site covers the western part of Lot 9. These soils are delineated as Rn (Ridgebury soils) on the soils map. More permanently wet areas on the site are located in the front parts of Lots 9 and 10.

The applicant's soil scientist, who made a cursory inspection of these soils on the review day, indicated that there is a higher percentage of organic material present compared to the other inland-wetland soils found on the site. These soils are also probably deeper than the other wetland soils on the site, and standing water is probably present through most of the year in this area.


BEDROCK GEOLOGY
Hebron Formation
1"=660'
10
5
2.5
acres
300
400
L

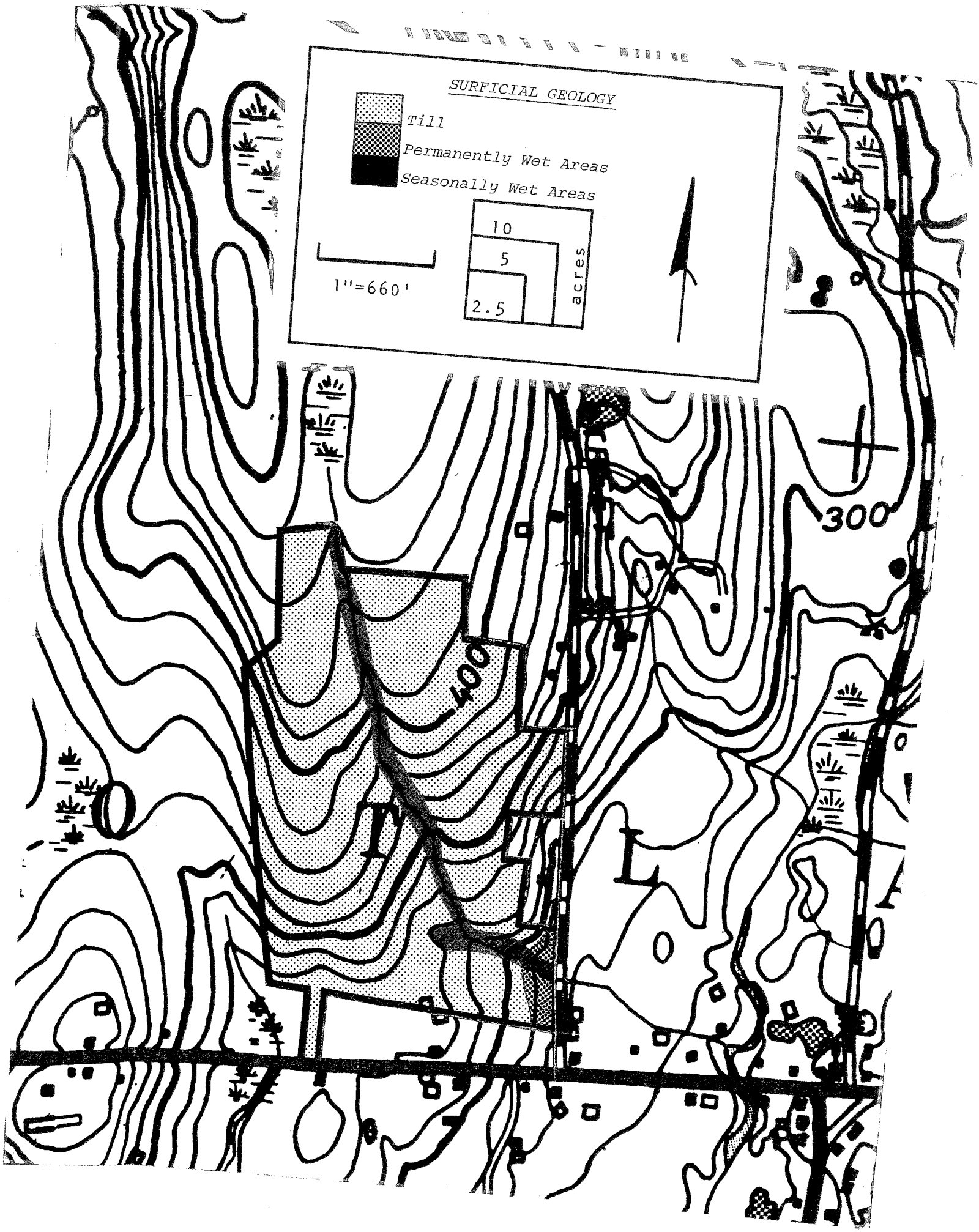
IV. GEOLOGIC DEVELOPMENT CONCERNS

The major geologic limitation of the parcel is the presence of a seasonally high groundwater table. Other geologic limitations which may be a hindrance in terms of developing the site include: (1) moderate slopes on lots 2 and 5, especially in the front portions; (2) the presence of shallow bedrock on lot 11; and (3) the permanently wet areas on lots 9 and 10.

The above geologic limitations will have greatest impact on the ability to provide adequate on-site septic systems. However, properly engineered septic systems may be able to overcome these limitations. Most lots are about 3 acres or more in size. This should allow the developer some flexibility for the placement of engineered septic systems. It should be pointed out, however, that even large lots may be difficult to develop if they have a high percentage of the geologic limitations mentioned earlier. Lots 2 and 5, which are one acre in size will need to have engineered septic systems due to the presence of seasonally high groundwater tables. Because of the moderate slopes present on these lots, the installation of a groundwater intercepting drain would appear to be feasible. This would hopefully protect the septic system from groundwater interference. In addition, there is a likelihood that proper fill material will also be needed to elevate the septic system above the high groundwater table. As a result of these potential engineering measures, lots 2 and 5 may possibly be too small in size to accommodate an engineered septic system, curtain drain, well and house, and meet all of the necessary horizontal separating distance required by the State Public Health Code or any other town regulations. The town sanitarian will need to evaluate deep test hole data very carefully for all lots, particularly the smaller ones, to determine if they can adequately accommodate an engineered septic system, well, and house.

According to deep test pit information, shallow to bedrock areas seem to be restricted to lot 11. (Test pits 21A, 22A, 23 and 26A) Other test pits (24A and 25A) on the lot indicate greater depths to bedrock. Every effort should be made to utilize areas where soils are deeper for the location of the sewage disposal system. Because lot 11 is fairly large in size, perhaps more deep test pits could be excavated in an attempt to find pockets of deeper soils. Perhaps further testing near test pits 24A and 25A, which revealed deeper pockets of soil (5' and 6'), might be worthwhile.

Permanently wet areas in the front portions of lots 9 and 10 consist of silt, clay, sand and a high percentage of decayed organic material. Standing water is present for much of the year in these areas. These areas are inappropriate for any type of development including septic systems. Under the present plans, access drives to lots 9 and 10 are presently proposed along the southern boundaries of each lot and will need to pass over the permanently wet areas mentioned above. Wetland road crossing are feasible, provided they are properly engineered. Based on present plans, it does not appear that any brooks will need to be crossed. However, if the house locations on lots 1, 3 and 4 are located west of the streamcourse, bisecting the lots, the need to cross it will be necessary. When crossing a brook, it is important to install culverts under the road that are properly sized to handle stormwater runoff during peak storms


SURFICIAL GEOLOGY
Till
Permanently Wet Areas
Seasonally Wet Areas
1"=660'
10
5
2.5
acres
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assuming full development of the total watershed acreage. In addition, roads will need to be elevated high enough from the wetlands to allow good road drainage. All unstable material, such as the wetland soils containing organic material on lots 9 and 10, should be removed before any fill material for the road is brought in. Also, in this regard, perhaps consideration should be given to possible alternate access routes to lots 9 and 10 in order to avoid the unstable soils. For example, if zoning laws permit, the access drive to lot 10 might be relocated off of Route 14 and shared with lot 11. Locating this drive along the southern boundary would barely infringe on wetland soils and also would avoid the spring location on lot 10. In addition, if the proposed access drive to lot 9 was relocated along the northern boundary, the need to cross only 50 feet of wetlands instead of 100 feet might be accomplished. A closer look at the soils along the northern boundary might also reveal less of an organic content, hence, less material to be removed. Extreme care must be taken during the excavation of these soils so that remaining wetland areas are not disturbed. Therefore, it is strongly recommended that a plan for the effective control of erosion and sedimentation accompany the finally approved plan.

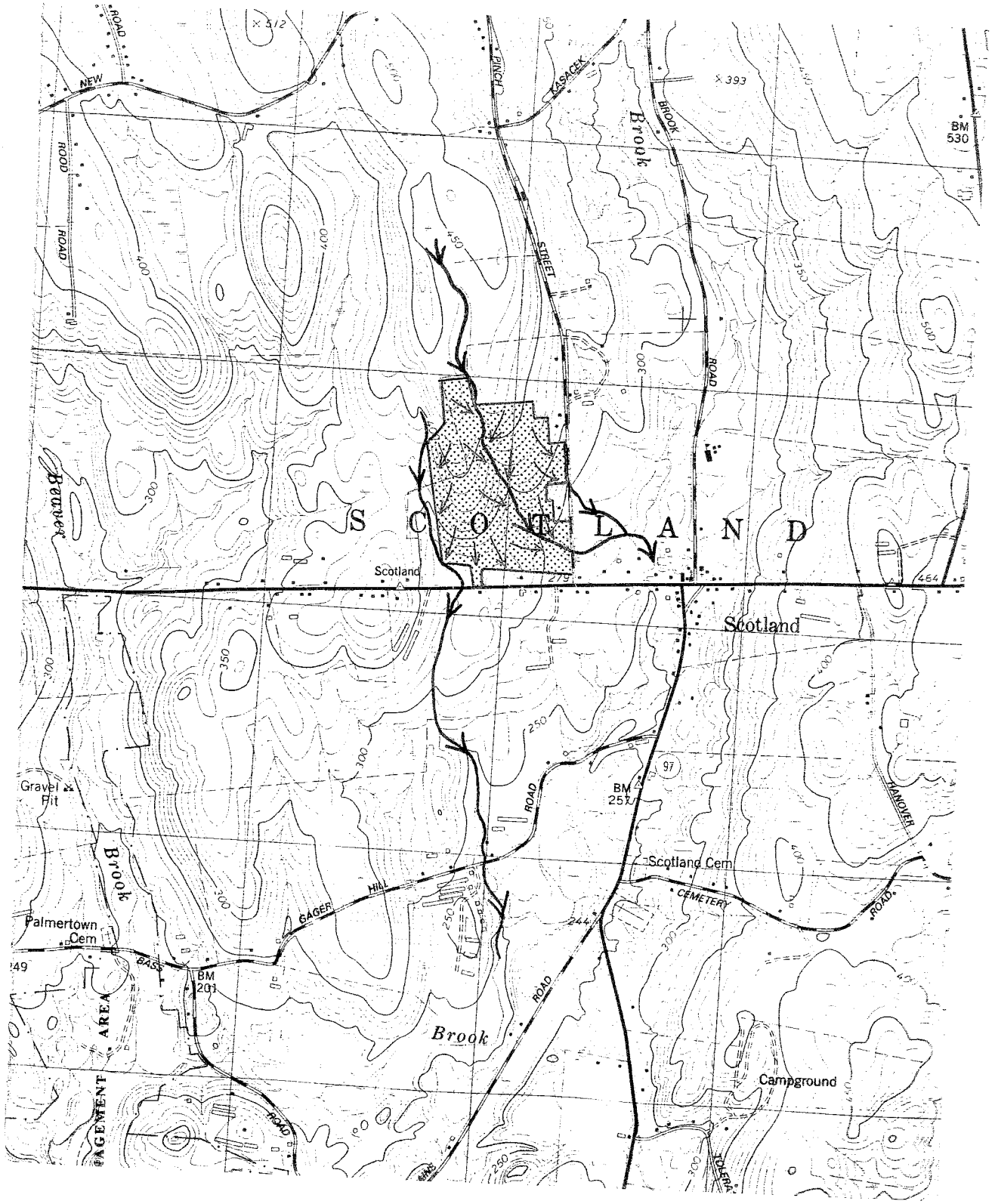
V. HYDROLOGY

The proposed subdivision site lies entirely in the Merrick Brook watershed. Surface runoff from the central and eastern parts drains either directly to the unnamed stream bisecting the site or by sheetflow towards the west side of Pinch Street. Once water reaches the drainageway parallel to Pinch Street, it flows southerly to the unnamed stream mentioned above or is intercepted by one of the culverts passing under Pinch Street. Water then flows eastward until it reaches Merrick Brook.

Surface runoff from along the western boundary of the site as well as in the southern parts drains in a southerly direction towards Route 14. Water is routed through a culvert passing under Route 14 to an intermittent watercourse. This unnamed watercourse flows in a southerly direction for about a mile before it discharges to Merrick Brook.

Development as planned will cause at least some increases in runoff volumes. However, because of the low density of the subdivision and because the development will occur in at least three separate subdrainage areas (under natural conditions), the impact of the runoff increases on flood flows should be very minor. Furthermore, once the cultivated cornfields in the subdivision are converted to lawns, a reduction in runoff would be expected.

Nevertheless, it is recommended that the project engineer develop a stormwater management plan for the site for the Town's review. A close look at all downstream culverts is advised, to determine if they can handle the projected increases in stormwater runoff.



DRAINAGE AREA

Site

Watercourses showing direction of flow

Direction of surface flow

Scale 1"=2000'

VI. WATER SUPPLY

The water needs of residential lot owners in the subdivision would be served by on-site wells. Bedrock appears to be the only suitable aquifer within the site, although a dug well in the till might be used as a source of additional supply for supplemental purposes, i.e., gardening, etc., on a particular lot. Till reservoirs, however, may dry up during droughty weather conditions, particularly where the depth of the dug well is shallow.

Bedrock generally provides small, but reliable yields of groundwater. In Connecticut Water Resources Bulletin No. 11 (Lower Thames River Basin) prepared by the U.S. Geological Survey of which the parcel is a part, are analyzed in terms of yield and water quality. Of those wells studied that tapped metamorphic rock (the type which underlies the site) 90 percent yielded 3 gallons per minute [gpm] or more. An average household usually may be adequately served by a yield of 3 gpm, or less, if ample storage is provided. Most of the residential lots should therefore be able to achieve a sufficient well water supply. There is no way to determine what the yield of a well drilled at any specific point in the parcel would be, since yields depend upon the number and size of water-bearing fractures that are intersected, and since the distribution of fractures in bedrock may be highly irregular.

In general, wells should be located to the high side of lots probably separated from sewage disposal systems or other potential sources of pollution such as buried fuel oil tanks. They must also be properly separated from watercourses or drains and be protected from surface drainage and erosion.

Properly drilled and sealed deep wells will generally afford the most protection against possible sources of pollution and have the most reliable yield, particularly during seasonal or prolonged dry periods. Of course, as there is always a possibility of very low yield or problems of insufficient supply, it is possible and prudent to have the well installed prior to the time of actual house construction. Increasing the depth of wells and/or by providing larger storage tank facilities are means by which low yielding wells can often be made to operate satisfactorily during peak demand or usage periods.

The quality of the groundwater would be expected to be generally good, but certain minerals, particularly iron and manganese, are commonly found in groundwaters. When concentrations of these minerals exceed recommended drinking standards, they can impart taste, color or other undesirable properties to water. In such cases, it is necessary to provide appropriate water treatment facilities.

Because some of the field areas are being used for corn growing, heavily fertilized agricultural acreage can be a source of nitrates in water. In general, the maximum level for nitrate in drinking water should not exceed 10 ppm. This level would be of particular concern for infants, rather than older children or adults, who might be subject to consuming water of such quality.

A commission member mentioned on the review day that the spring on lot 10 has elevated sodium levels. It was indicated that the elevated sodium levels

may be attributed to a nearby road salt storage facility. In this regard, it is recommended that proposed wells be kept upgradient and away from this area.

VII. SEWAGE DISPOSAL

As the small and rural town of Scotland does not have a municipal sewerage system, the development would be served by individual on-site subsurface sewage disposal systems.

Based on visual observations, soil mapping data and review of the engineer's soil test results, it is apparent that the parcel is not especially favorable for on-site sewage disposal. The main factor is a seasonal high groundwater level over much of the properties. This perched water condition is apparently caused by a relatively shallow compact or hardpan layer which has slow seepage or permeability, restricting the downward movement of water. Percolation tests generally indicate seepage rates in the range of 1 inch in 10-20 minutes, although the hardpan layer itself will likely have some variations in its restrictiveness. In a few lots relatively shallow ledge rock was encountered.

For the most part, conditions will warrant detailed engineered design for sewage disposal systems. Groundwater can probably be controlled by the use of curtain and footing drains and proper surface grading and drainage. Some filling in order to elevate leaching systems sufficiently above the hardpan layer and/or maximum groundwater level will also be needed to prevent interference with dispersal of sewage effluent. As a general rule, leaching systems should be kept large, shallow in better soil and spread out along the contour or slope as much as possible to facilitate the lateral dispersal of effluent. Because of slope and runoff, steps to minimize erosion during and after construction should also be implemented.

Although lot sizes are relatively large, some lots are restricted as to usable land area by the presence of considerable wetlands. In order to allow more suitable area and better spacing for facilities with less disturbing of or impact on natural conditions, consideration should be given to possibly combining a few of these lots in order to have larger and more satisfactory ones.

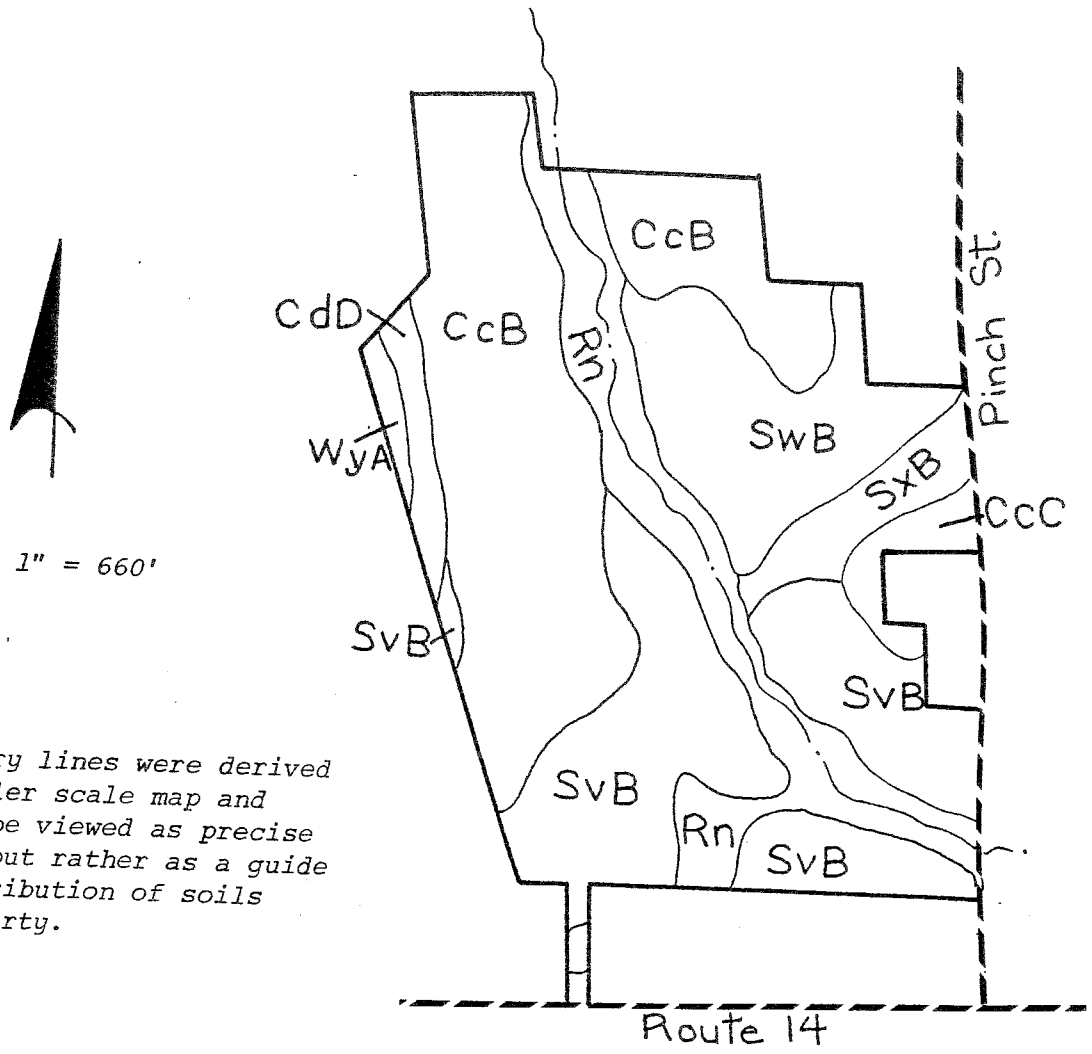
VIII. SOILS

A. BRIEF DESCRIPTIONS

The higher elevation soils are Canton and Charlton fine, sandy loams, well-drained. Moving downslope Sutton stony, fine sandy loam soils are found. These

United States Department of Agriculture
Soil Conservation Service
Agricultural Center
Brooklyn, CT 06234-0327
774-0224

Assisting the Windham County Soil and Water Conservation District



SCALE 1" = 660'

Soil boundary lines were derived from a smaller scale map and should not be viewed as precise boundaries but rather as a guide to the distribution of soils on the property.

S O I L S

CcB-Canton & Charlton very stony fine sandy loams, 3 to 8 percent slopes.

CcC-Canton & Charlton very stony fine sandy loams, 8 to 15 percent slopes.

CdC-Canton & Charlton extremely stony fine sandy loams, 3 to 15 percent slopes.

CdD-Canton & Charlton extremely stony fine sandy loams, 15 to 35 percent slopes.

**Rn-Ridgebury, Leicester & Whitman extremely stony fine sandy loams.*

**Ru-Rippowam fine sandy loam.*

#SvB-Sutton fine sandy loam, 3 to 8 percent slopes.

SwB-Sutton very stony fine sandy loam, 3 to 8 percent slopes.

SxB-Sutton extremely stony fine sandy loam, 3 to 8 percent slopes.

WyA-Woodbridge very stony fine sandy loam, 0 to 3 percent slopes.

**Designated wetland soil by Public Act 155*
#Prime Farmland soil

are moderately well drained. A seasonal higher watertable is present here. The Sutton (SvB) is prime agricultural soil. The stream flowing down through the property is a tributary to Merrick Brook. This stream flows through wetland soils Rn and Ru. These are poorly drained. The Rippowam (Ru) soil is subject to potential flooding seasonally. The rapid permeability in the substratum of this soil offers a hazard of groundwater pollution in areas used for septic tanks. The wetlands soils were flagged in the field and are located on the final subdivision plan dated April 1985. Location and set-backs of houses, wells, septic systems, etc. should be according to the flagged wetlands shown. Again, due to the mapping scale the soil map from the Windham County Soil Survey provides more general soils delineations. The soil map and a Principal Limitations Chart is within this report, as are descriptions of all the soils. (See Appendix)

The Sutton SvB soil is prime ag-land. Some of it is being farmed. Consideration should be given to keeping this area for crop production. For example, could the future owner of lot 11 rent a portion of his lot to a farmer? Or, could this area be retained some other way as open space for agricultural purposes?

B. RESOURCE CONCERNS

Access drives to lots 1 through 8 will need to climb relatively steep grades, as steep as 20% entering lot 6. And on rear lots 1, 3, 4, 6, 7, 8 driveways will be 500-600 feet long. Long drives with areas of steep inclines offer serious erosion potential, erosion of soil and/or gravel fill - down into Pinch Street. Careful layout of drives with water breaks to intercept and spread storm runoff into the woods, and stabilized cuts and fills will be important. Subsurface drainage tile may be needed as well to intercept hillside seepage. The layout and design of drives should be part of an Erosion and Sediment Control (ESC) Plan.

As the lots are presently laid out, the stream and associated wetlands crossing the rear of lots 1, 3, 4, 7, and 8 should not propose a problem. However, the stream and greater weltands on lots 9 and 10 do present limitations. The front of these lots have the potential to flood, and uphill runoff into the middle (from wetlands spot in lot 8) and rear of lot 9 offer problems. If lot 9 is to be used, muck needs to be removed near the road before a drive is developed on fill. And a designed swale needs to be installed parallel with the drive up to lot 8.* The drive to lot 9 should be as high as the road to prevent possible flooding over in the event of a major storm.

The driveway into lot 10 could be moved away from the well slightly to lessen a potential threat to it. Again, as with lot 9, the drive would need to be filled to the road elevation.

It appears the topography and wetness offer the most limitations to lot 9. And, again, the rapid permeability in the soil substratum presents the

---

*A culvert could be placed under the drive to lot 8 allowing flow into this swale. Careful grading behind a house on lot 8 may be needed to prevent a full flowing stream from coming into a backyard.

greater hazard of groundwater pollution in this area. Greater than with the upper, better drained soils.

An Erosion and Sediment Control (ESC) Plan should be prepared to show (drawings) and tell (written narrative) treatment to be used to overcome existing resource limitations. The Commission should ask what will be done and when. The Windham County Soil Conservation District will review an ESC plan if requested.

IX. VEGETATION

The subdivision may be divided into five major vegetation types. Included are 54.74 acres of mixed hardwoods, 3.76 acres of hardwood swamp, old fields of 5.82 acres, 6.15 acres of open swamp and 9.58 acres of agricultural fields.

A. VEGETATION TYPE DESCRIPTIONS

Type A (Mixed Hardwoods). Covering 54.74 acres, this overstocked pole to sawtimber-sized stand contains fair quality red oak, black oak, red maple, hickory, sugar maple, beech, hornbeam and sassafras. An understory of hardwood seedlings, raspberry, blackberry and greenbriar exists. The ground cover is formed by ferns and grasses. Desirable hardwood seedlings are beginning to become established in the openings created by harvest operations 5-6 years ago.

Type B (Hardwood Swamp). Pole-size red maple, white ash and American elm occur in this 3.76 acre overstocked stand. An understory of hardwood tree seedlings and saplings, spicebush, sweet pepperbush, and swamp azalea is present. Ground cover consists of mosses, ferns and skunk cabbage.

Type C (Old Field). This 5.82 acre stand is lightly stocked with clumps of sapling-size red maple, aspen and red cedar. Multiflora rose, raspberry and blackberry form the major ground cover. In some areas, grasses, ferns and goldenrod are present.

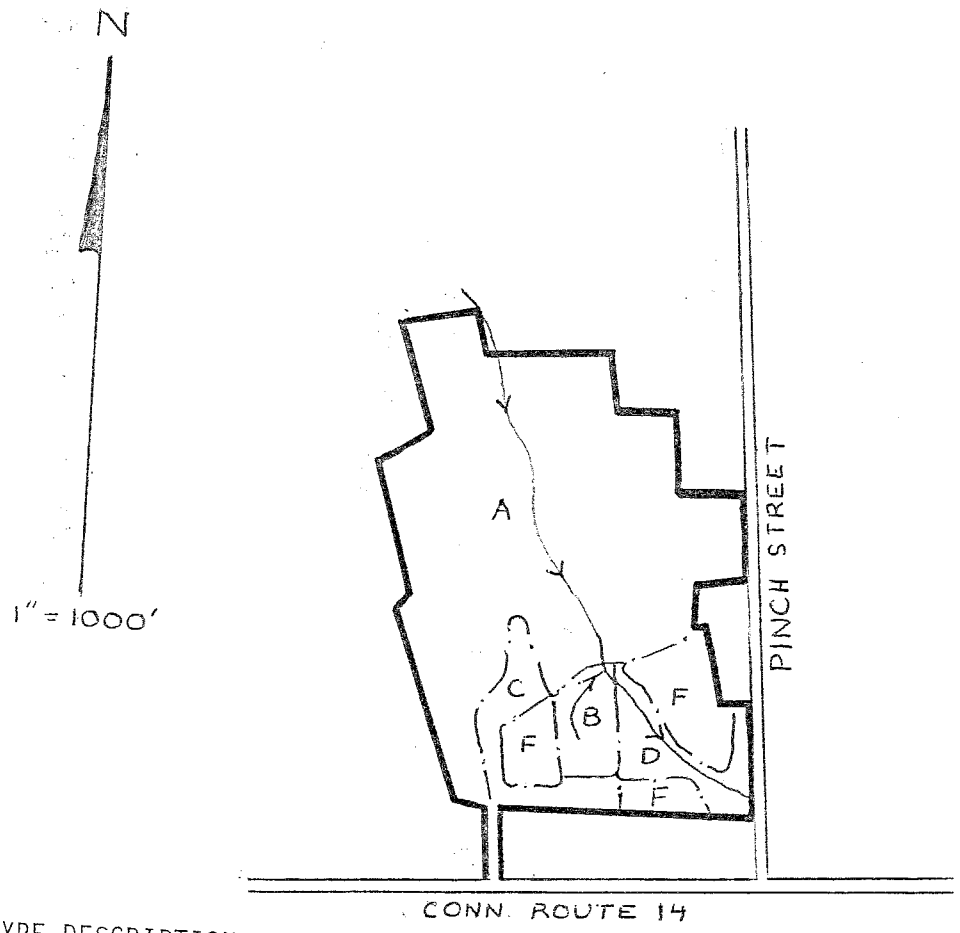
Type D (Open Swamp). Occupying 6.15 acres, this swamp meadow contains sedges, grasses, bracken, flag and goldenrod. Seedling to sapling-size red maple and elm are present together with alder, willow and highbush cranberry.

Type E (Agricultural Field). Agricultural fields in production, primarily corn, occupy 9.58 acres.

B. MANAGEMENT CONSIDERATIONS

After construction is completed, areas of remaining woodland in Vegetation Type A should be regenerated by group tree selection. Regeneration is warranted because despite the full stocking, the stocking of desirable trees is far below

VEGETATION
SCOTLAND SUBDIVISION



VEGETATION TYPE DESCRIPTION:

Type A: Mixed hardwoods, 54.74 acres, fully stocked pole to sawtimber size

Type B: Hardwood swamp, 3.76 acres, overstocked pole size

Type C: Old field, 5.82 acres, lightly stocked, sapling size

Type D: Open swamp, 6.15 acres, some seedling to sapling size

Type F: Agricultural fields, 9.58 acres

Seedling Size: Trees less than 1 inch in diameter at 4½ feet above the ground (DBH)

Sapling Size: Trees 1 inch to 5 inches in DBH

Pole Size: Trees 5 to 11 inches in DBH

Sawtimber Size: Trees 11 inches in DBH and greater

LEGEND

PROPERTY BOUNDARY

STREAM

TYPE CHANGE

ROAD

acceptable levels. With the group tree selection system, new regeneration becomes established under the protection of the residual stand during periodic partial cuttings while the stand retains some larger old trees. Within 10 years, approximately 1/5 of the larger trees should be removed in small groups. Ideally, under this system, a small percentage of the stand should be harvested every 10 years.

A high water table in Vegetation Type B will prevent harvesting with conventional equipment. Harvesting in this type, if any, will be opportunistic in nature.

Vegetation Types C and D would benefit from re-enforcement planting, however, competition from established vegetation would make planting costly and seedling survival poor. Eventually these types will become fully stocked on their own.

A public service forester or private consultant forester should be contacted to select specific areas for harvest. Revenue from the harvest will more than cover the consultant costs.

C. MITIGATING MEASURES

Trees are very sensitive to the condition of the soil within the entire area under their crowns. Development practices near trees, such as excavating, filling and grading for construction of roadways and buildings may disturb the balance between soil aeration, soil moisture and soil composition. These disturbances may cause a decline in tree health and vigor, potentially resulting in tree mortality within three to five years. Mechanical injury to trees may cause the same results. Dead trees reduce the aesthetic quality of an area and may become hazardous and expensive to remove if near roadways, buildings or utility lines.

Care should be taken during the construction period not to disturb the trees that are to be retained. In general, healthy and vigorous trees should be retained as they are more resistant to the environmental stresses brought about by construction.

Where feasible, trees should be saved in small groups or "islands." This practice lowers the possibility of soil disturbance and mechanical injury. Individual trees and "islands" of trees should be temporarily, but clearly, marked so that they may be avoided during construction.

The poorly drained soils present within the Hardwood Swamp Type limit the vegetative growth to species that are able to tolerate high moisture conditions. The red maple, while ash and American elm are able to tolerate the present site conditions, however, any adverse change in the drainage conditions could change the species composition of the area.

The loss of trees due to windthrow is a potential hazard in the Hardwood Swamp Type. The soil is saturated with water for the greater part of the year causing soil aeration to be poor. These conditions result in unstable, shallow root systems which are unable to securely anchor the trees. The potential for

windthrow is intensified by the crowded condition in the hardwood swamp.

It should be noted that any clearings made in or around this area will increase the windthrow hazard by allowing the wind to pass through rather than over this area. If possible, any clearing of vegetation in this type should be kept to a minimum.

X. WILDLIFE HABITAT

A. CONSIDERATIONS

Wetlands cover a portion of the proposed project site. Wetlands are absolutely essential areas for many species of wildlife and important to all because they provide habitat requirements needed for survival.

Not only are they important to wildlife they are important to man also. They act as water storage and absorption areas that help prevent flooding. There is usually severe inherent limitations in developing wetlands due to poorly drained unstable soil types.

Wetland habitat provides a rich variety of food, cover, nesting and brook rearing sites for a great number of wildlife species. They provide breeding and nesting sites for waterfowl, and habitat for more than 50 species of game and non-game species including beaver, bobcat, fox, mink, muskrat, opossum, white-tailed deer, and snowshoe hare. Because of previous development, there is less wetlands available for use by wildlife. Developing any small area by building on it will leave the majority of the area unavailable for wildlife to use.

Development will decrease the amount of habitat simply because the land will be occupied by physical buildings. The quality of the habitat will be decreased because an undeveloped area of land will be broken up with buildings and human activity.

Some species which require larger undeveloped areas will probably be forced out or will reduce their use of the area. They may be able to move into adjacent undeveloped areas if there is suitable habitat available and the competition with other species already occupying the area is not too great.

Other species which are more adaptable to man's presence will probably remain. Some new species may even be attracted to the area.

B. RECOMMENDATIONS

If carried out, the following wildlife recommendations can help lessen the impact to some species using the area. Some animals will leave the area but others may find it even more attractive after development.

1) Design of Development/Wetlands

The impact on wildlife of the area can be lessened to some degree if some thought is given to the development. Housing developments can be designed in two basic ways. Houses can be built on larger house lots or they can be built on small lots or in clusters, leaving open space areas. Both designs leave more open space for wildlife as opposed to having small lots and developing the entire acreage.

Probably none of the wetland areas should be developed due to the severe limitations caused by soil capabilities and the regulations governing their development. They are important to wildlife as feeding, nesting and cover areas.

A buffer area of uncut vegetation should be left along the entire length of the watercourse. This will provide food, cover and nesting sites for many species. Because the brook will remain shaded, water temperatures will not rise, making the brook uninhabitable for some species.

2) Clearing

When the initial clearing for building is done, try to leave as many trees and shrubs as possible, especially those useful to wildlife. Some useful species include:

white oak (Quercus albra)
red oak (Quercus rubra)
black cherry (Prunus serotina)
quaking aspen (Populus tremuloides)
red-osier dogwood (Cornus stolonifera)
apple (Malus spp.)

3) Landscaping

On small acreage with many buildings, landscaping can do a great deal to provide habitat and make an area attractive to wildlife. First, leave as many trees as possible around the buildings. This will not only benefit wildlife by providing food, cover and nesting sites (especially for songbirds), but will also be more aesthetically pleasing for the residents of the development.

Leave as many snag trees (standing dead trees) and den trees (trees with holes) as possible. These trees are used by insect eating birds and cavity nesting birds and mammals.

Plant trees and shrubs which are useful to wildlife and landscaping such as:

Japanese barberry (Bergeris bulgaris)
flowering dogwood (Cornus florida)
honeysuckle (Lonicera spp.)
American mountain ash (Sorbus americana)
autumn olive (Elaegnus umbellata)
winterberry (Ilex verticillata)

juniper (Juniperus spp.)
bayberry (Myrica pensylvanica)
chokecherry (Prunus virginiana)
American holly (Ilex opaca)
maple-leaved birburnum (Biburnum acerifolium)
American cranberrybush (Vernum trilobum)
red maple (Acer rubrum)
red-osier dogwood (Cornus stolonifera)
alternate leaf dogwood (Cornus stolonifera)

A variety of trees and shrubs should be used. Most species of wildlife need to have cover when they move from place to place. By leaving corridors of vegetation this will allow wildlife to utilize the area and also have access to adjacent areas. Large expanses of lawn with no trees or shrubs present should be discouraged. These factors will allow wildlife to better utilize the area and thus make it more attractive to wildlife.

XI. FISHERIES HABITAT

The intermittent stream draining the proposed subdivision may support dace. Though the fisheries value of this stretch is limited, proper erosion and siltation control measures should be taken to protect downstream areas.

The fisheries resources to be impacted by the proposed subdivision are limited. Implementation of the above stated measures will help to preserve downstream fish habitat and populations.

XII. PLANNING CONCERNS

A. RELATIONSHIP TO PLANS

1) State Plan of Conservation & Development

The State of Connecticut Conservation and Development Policies Plan, 1982-1985, recommends this area for use as a Conservation Area where prime agricultural land/soils exist, and for a rural area elsewhere in this parcel. This plan serves as a policy framework for State government planning and capital investment decisions.

Policies pertaining to these areas include:

Conservation Area -- Prime agricultural lands should be maintained for food production to the maximum extent feasible by:

a. minimizing development pressure in the placement and design of major facilities.

b. permitting irreversible conversion to other uses only when there is a demonstrated overriding need, alternative sites are not technically feasible or economically justified and the impact of irreversible converion is weighed.

Rural Areas --

A. Community Environmental Quality

Encourage the protection of natural resource characteristics and the consideration of environmental quality in State actions.

1. Encourage and assist municipalities in the use of soils, geologic surveys and other natural resource information, basin and streambelt planning techniques in developing community plans.

2. Discourage non-agricultural development on prime farmlands.

B. Economic and Human Resource Development

Limit State support and promotion of the development to those uses and densities that ensure indefinite functioning of on-lot water supply and waste disposal systems and that are consistent with a generally open, rural environment.

1. Encourage municipalities to improve their management and regulation of new development to assure compatibility with Plan policies.

2. Respond to housing needs in Rural areas through financial assistance to individual households. Where new large-scale developments are required, these projects should be encouraged in Rural Community Centers.

3. Expand the scientific management of forest lands and support forest product industries.

4. Identify forms of assistance required to continue farming.

C. Public Service and Infrastructures

Minimize the need for costly urban infrastructure facilities.

1. Encourage development regulations which will preclude the need for sewer, water and other urban infrastructure and facilities and which promote intertown or regional approaches where appropriate when needed.

2. Establish guidelines for the control of the number and location of access points along rural State highways to maintain traffic volume capacity and safety standards.

3. Undertake traffic flow improvements to existing highways as a preferred alternative to the construction of new highways.

4. In general, locate interstate highway interchanges in urban rather than rural areas to support the concentration of urban growth in those areas.

2) Regional Plan

The Windham Region Growth and Preservation Guide Plan (1981) recommends this area for Low Density Rural types of land uses. Policies which apply in this area are as follows:

. Development incentives should be provided to encourage residential development on internal parcels of land rather than along existing road frontages. Not only will the rural appearance of the region be maintained but traffic flow will be enhanced and traffic accidents reduced through having two or more residences on a single driveway instead of each individual residence having a driveway entering a state highway or town road.

. Preservation of agricultural lands and operations should be encouraged.

. Two-acre building lots should be the minimum and the prevailing lot size.

. Public services such as sewer, water and trash collection should not be available in the district.

. Large residential development projects should be discouraged in the low-density rural district. However, if such development occurs, subdivision standards for such developments should be designed to place all possible burdens for serving the residents of the proposed development on the developer (e.g., roads which at least meet town road specifications, drainage, dedication of land for recreation and perhaps additional school facilities or payment in lieu of dedication, etc.). Provision should be made for allowing small developments (e.g., through zoning incentives) to encourage the development of interior parcels.

. Very light density development and open space preservation techniques should be used to protect areas along streams, watersheds which drain to public water supply sources and scenic and historic areas.

The WRPA plan recommends 2-acre minimum lot sizes in the rural portions of the region which includes all of the Town of Scotland, in order to maintain the rural character of the area, assure indefinite functioning of on-lot sewage disposal and water supply, and to avoid the inefficient, urban-suburban sprawl which occurs at densities of between one-half and two acres.

While Scotland does currently have 2-acre zoning, a recent court case found a procedural error in originally adopting that provision. This subdivision application was submitted in the interim period while two-acre zoning was suspended and the previous one-acre minimum lot size requirement was in effect. Since that time, 2-acre zoning has been readopted. For the purposes of this review, therefore, it is assumed that the proposed subdivision lots meet the minimum

lot size requirements. Further exploration of this matter would require legal assistance which is beyond the scope of the ERT review.

3) Town Plan of Development

The Scotland Town Plan of Development indicates parts of this proposed subdivision fall within areas of prime agricultural soil. Site visits indicate some of this area is actively farmed.

The plan addresses agriculture as follows:

Issue: Agriculture

Active agriculture operations are a necessary ingredient to any attempt to control the future development in Scotland. It provides for a much sought after visual amenity, an important economical asset providing employment, a major source of revenue to the town and an alternate use of land which slows the conversion to residential use.

Policies:

Programs aimed at not only preserving farmlands, but encouraging continued operations should be supported. Furthermore, exclusive agricultural zoning, open space designation and State purchase of development rights should be encouraged.

Every effort should be supported to maintain agriculture as a viable economic enterprise in Scotland. Development should be encouraged to take place on less vulnerable land and not interfere with the efficiency of agricultural enterprises.

Implementation Strategies:

A special task force, made up of resident farmers, agricultural agencies, local elected officials and interested citizens should be appointed. Its objective should be to investigate and make recommendations which will assure healthy, stable and profitable agricultural operations.

The recommendations set forth in the report, if approved by the Commission, are to be included as a part of the "TOWN PLAN OF DEVELOPMENT." Where appropriate, zoning regulations and administrative procedures should be changed to implement the recommendations.

The plan also addresses residential development as follows:

Issue: Residential Development

Residential development if allowed to proceed in an uncontrolled manner, can change the character of a town and the quality of life of its residents. The maintenance of low housing density, rural character of the community and protection of the existing high quality water supply, are high priority goals.

Two factors bear most directly on this area of concern: (1) the likely long-term need for all development in the community to be supported by on-site water and waste water disposal systems, and (2) the overwhelming desire of residents to maintain the Town's present rural, low density character. With the anticipated slow rate of new residential development, questions of energy efficiency and savings in new utility service and road construction have little bearing on residential policies. Most new development will continue to be on existing roadways already serviced by the required utilities.

Policy:

Residential development will be encouraged at a rate consistent with the past and at a low density to ensure the permanent functioning of on-site septic disposal systems, permit new construction to blend into the rural landscape, and allow the provision of public services at reasonable rates, relative to a tax base dominated by agriculture and modest homes.

Residential development will be permitted where it will not endanger the quality of the surface and groundwater.

It is recognized that a housing shortage may present this area with a serious problem within the not too distant future. The existing zoning regulations allow for multi-family dwellings in certain instances and mobile homes for the elderly under sections 8-1(a) and 8-5(a) of the Scotland Zoning Regulations, respectively.

Implementation Strategies:

- Encourage large lot zoning.
- Strict adherence to regulations governing the installation of septic systems with adequate leaching fields.
- Review and revision of area zoned for residential development to ensure protection of environmentally sensitive areas.
- A diversity of available housing will be encouraged through the regulated conversion of larger older homes to permit apartments serving the needs of the Town's elderly and new-forming families.

4) Town Zoning and Subdivision Regulations

A small part of this proposed subdivision may lie in the Town's Aquifer Protection Zone (APZ). The large-scale map in the town clerk's office showing this area should be consulted to make a final determination. the APZ (Section 8.9 of the Scotland Zoning Regulations) regulates uses which discharge sanitary wastewater in excess of 350 gallons/acre/day (on average), underground fuel storage tanks, manure storage, agricultural operations which do not emply SCS best management practices, road salt storage, and solid waste and septage disposal sites.

For the proposed single family homes, the only provision which could apply would be restrictions on underground fuel storage, necessary only if the homes were to be heated by fuel oil. The Scotland Planning & Zoning Commission and the building inspector would need to review and approve such tanks to ensure measures are taken to prevent accidental groundwater contamination. The active agricultural use of this area for corn crops should also be reviewed to ensure best management practices for the application of manure, fertilizers and pesticides are followed.

Section 8.10 of Scotland's zoning regulations permits cluster type lot layout as an alternate optional form of development. Cluster development of this site would allow more flexibility in protecting active agricultural operations, prime agricultural soils, and wetland areas than does standard development along existing road frontage. Cluster development could allow such areas to be left undeveloped whereas in a standard lot layout along existing road frontages, as proposed, driveways will cut across wetlands, houses will be constructed on agricultural soils, and residential development will most likely preclude continued farming in the land being divided into house lots.

Cluster development, however, would also most likely require roads into the interior of the parcel (as would a standard lot layout with a new road) and result in significantly more lots than the eleven proposed. A standard subdivision with new interior roads or a cluster development on these 80± acres could result in as many as 30± two-acre lots, or 60± one-acre lots. (Assuming 15% of land area for roads and utilities and 75% of wetland area [approximately at 10± acres] unavailable for development.)

Section 4.8 of Scotland's Subdivision Regulations allow the Commission to require dedication of park or playground areas within the subdivision, in those cases where it deems necessary to the public health and welfare. A minimum of 5%, or no less than four acres, is required if the area is deemed necessary.

Improvements to the park space including grading, erosion prevention measures, thinning of trees and shrubs, seeding and cleanup may also be required. A bond for such improvements would need to be posted as required in Section 6 of the Subdivision Regulations.

The Planning & Zoning Commission must determine whether to require such open space dedication. The town's Plan of Development recommends:

Issue: Open Space

The appearance and the perception of Scotland is determined more than anything else by the presence of significant areas of active agricultural land and extensive areas of undeveloped woodland.

Large lot zoning, existing state forest and wildlife management areas, nature conservancy and town recreation property provide for the protection of a significant amount of open space.

Policies:

Every effort will be made to protect the existing open space areas against residential and industrial development and to encourage the continued use of suitable land for agricultural purposes.

Efforts to preserve the Shetucket and Little River areas and the highland areas in southern Scotland by State and private groups should be supported and encouraged.

Implementation Strategies:

Encourage the designation of open space, forestlands and agricultural property under Section 12-107 of the Connecticut General Statutes.

An open space reservation provision should be considered and used in subdivision regulations to permit the preservation of many open space areas of scenic, historic or ecological importance.

B. SURROUNDING LAND USE COMPATIBILITY

The land uses surrounding this parcel include low density residential development, undeveloped wooded land, and actively farmed cropland. The proposed subdivision (low density in nature with 11 lots on 80 acres, or an average density of development of one housing unit for every 7 1/3 acres [assuming single family homes]), would not be inconsistent with adjacent development. The proposed subdivision or indeed any residential development adjacent to active agriculture may, however, prove incompatible with surrounding land use.

Residential development adjacent to active agricultural operations in Connecticut often leads to land use conflicts "as newcomers to rural communities [find] objectionable some aspects of existing farm operations. The smell of manure and the presence of flies, noisy livestock and farm machinery, often run at inconvenient hours, barbed wire fences, and other aspects of normal farming practices" are seen as incompatible with adjacent development.* Connecticut's Right to Farm law, an outgrowth of this conflict between residential and agricultural uses, helps protect farmers from nuisance complaints and lawsuits but the inherent incompatibility between the uses remains.

C. LOT ARRANGEMENT

Proposed lots 9 and 10 have extensive wetlands across their frontage and will require permits from the Scotland Inland Wetlands Commission to cut driveways to proposed house locations. Alternate lot arrangements should be considered to eliminate the need to cross wetlands to access buildable land. As noted

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*Connecticut's Right to Farm Bill by Richard Pinkham & Jim Gibbons. Cooperative Extension Service Bulletin. 8/27/81.

previously, a cluster type of lot layout could eal more effectively with these natural resource constraints.

Proposed well locations shown on lots 4, 8, and 11 should be relocated so that the 75' setback distance required around the well does not fall into adjacent lots. No statute requires this, but it is a proper planning technique.

D. ROAD AND TRAFFIC CONCERNS

The proposed subdivision of 11 lots, if developed with single family homes, can be expected to generate about 100 to 117 vehicle trips per day.* Ultimately, the number of vehicle trips actually generated will depend upon the size and price of the homes constructed, the type, age and economic class of families who reside there, the number of vehicles they own, and the price of gasoline. U.S. Census statistics (1980) indicate Scotland residents have an average of 1.32 vehicles per household, slightly lower than the average for the state (1.48) and the ten town Windham Region (1.40).

Residents of the subdivision can be expected to commute to work in adjacent towns, or further, since Scotland, a rural agricultural town, has few employment opportunities, with no industry and minimal commercial activity.

Twenty percent of Scotland's residents are employed in town; 40% are employed outside of Scotland, but within the Windham Region; and 40% are employed outside the region. The mean travel time to work for commuters is 25 minutes. With the largest number of workers destined for Windham, Mansfield, East Hartford, and Franklin.** Adding 110 to 120 vehicle trips per day scattered throughout the day will increase traffic on Pinch Street and on Route 14, but should not tax the designed carrying capacity of either road. Route 14 is scheduled to be upgraded with the use of I-84 trade-in funds in 1988-95 according to the 1985 Connecticut Master Transportation Plan.

E. SERVICES TO SUPPORT DEVELOPMENT

The proposed subdivision of 11 house lots may be expected, if developed with single family homes, to house 11 families or about 37 people based on an average family size of 3.36 persons per family (Scotland average family size, 1980 U.S. Census). Scotland's 1980 population was 1,072 persons; population estimates as of July 1, 1984 by the CT. Dept. of Health SErvices is 1,120.

An average of 1.4 school aged children can be anticipated per three to four bedroom single family home,*** or about 15 students.

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*Based on average single family dwelling unit generating an average of: 10.6 vehicle trips/dwelling unit/weekday. Source: Trip Generation Study of Various Land Uses, Israel Zevin, ConnDOT, 1974. 10.0 vehicle trips/dwelling unit weekday. Source: Trip Generation, 3rd edition, Institute of Transportation Engin 1983.

**1980 U.S. Census.

***New Jersey County & Municipal Government Study Commission, Housing Suburbs, Fiscal and Social Impact of Multifamily Development.

This subdivision alone will not have significant impacts on the ability of Scotland's schools to accommodate these students. Scotland Center School, which houses grades K through 6, had an enrollment to 97 students as of 5/1/85. The school's six classrooms have a capacity for 125 first through sixth graders, housed in five classrooms with an average classroom capacity of 25 students, and two kindergarten sessions in the sixth classroom, or 30 students, for a total school capacity of 155 students according to the School Superintendent. Two portable classrooms, one currently used at a library, might also be available on a temporary basis. Parish Hill High School, in Chaplin, accommodates 7th through 12th graders from Hampton, Chaplin, and Scotland. The Superintendent of Schools estimates the school's capacity at 525 to 550 students. Enrollment as of 5/1/85 was 368.

Fire services in Scotland are provided by volunteer company, and police protection is provided through the Connecticut State Police, Danielson Troop D. Solid waste disposal for Scotland residents, as well as Hampton and Chaplin is available at the Donahue landfill in Hampton.

This proposed subdivision, by itself, will not tax the capacity of existing services to support this new development.

XIII. SUMMARY

TOPOGRAPHY AND SETTING - PAGE 3

The parcel is approximately 80± acres in size. It is located in central Scotland with access from Pinch Street and Route 14. It is characterized by moderate slopes with some flatter areas. The northern half is wooded, with cornfields in the south. An unnamed tributary to Merrick Brook runs through the central portion of the parcel. Wetland areas have been mapped by a certified soil scientist and they have been marked on the subdivision plan.

GEOLOGY - PAGE 5

The proposed subdivision lies within the Scotland topographic quadrangle. A combined bedrock and surficial geologic map has been published by the U.S. Geologic Survey. Bedrock under the site is Hebron Formation. Till is found overlying the bedrock. Seasonally wet areas are made up of regulated inland-wetland soils. These soils (Rn) generally parallel the unnamed stream, and are found in lot 9. Permanently wet areas are found in lots 9 and 10. (page 5)

GEOLOGIC DEVELOPMENT CONCERNS - PAGE 7

The major geologic limitation of the parcel is the presence of a seasonally high groundwater table. Other geologic limitations which may be a hindrance in developing the site include: (1) moderate slopes on lots 2 and 5, especially in the front portions; (2) the presence of shallow bedrock on lot 11; and (3) the permanently wet areas on lots 9 and 10.

The geologic limitations listed above will have the greatest impact on the ability to provide adequate on-site septic systems. Properly engineered septic systems may be able to overcome these limitations. See page 7 for specifics involving lots 2, 5, and 11.

The permanently wet areas in the front portions of lots 9 and 10 are inappropriate for any kind of development, including septic systems.

Access drives and wetland crossings are another area of concern, especially in lots 9 and 10. (page 7)

HYDROLOGY - PAGE 9

The proposed subdivision lies entirely in the Merrick Brook watershed. Development as planned will cause some runoff volume increase but because of the low density and development in three separate subdrainage areas the impact of the runoff increases on flood flows should be very minor. It is recommended, however, that the project engineer develop a stormwater management plan for the site for the town to review. A close look at all downstream culverts is advised to determine if they can handle the projected increases in stormwater runoff.

WATER SUPPLY - PAGE 11

The water needs will be served by on-site wells. Bedrock appears to be the only suitable aquifer within the site, although a dug well in the till might be used for supplemental purposes.

The quality of the water would be expected to be generally good but certain minerals, particularly iron and manganese are commonly found in groundwaters. If concentrations of these minerals exceed recommended standards, it is necessary to provide water treatment facilities. Two other concerns are: (1) nitrates from the agricultural acreage, and (2) elevated sodium levels in the spring located on lot 10. (page 11)

SEWAGE DISPOSAL - PAGE 12

Based on visual observation, soil mapping and review of the engineer's soil test results, it appears that the site is not especially favorable for septic systems. Conditions will warrant detailed entineered design for sewage disposal systems.

Some lots are restricted to usable land area because of wetlands. It is suggested that in order to allow more suitable area and better spacing for facilities that consideration should be given to combining lots in order to have larger and more satisfactory ones.

The proposed subdivision will require close supervision and inspection during actual construction in order to assure satisfactory conditions and proper water and sanitary facilities.

SOILS - PAGE 12

For brief soils descriptions see page 12 , for detailed soils descriptions and soils limitations chart, see APPENDIX.

Resource concerns are: (1) access drives to lots 1-8 because of steep, long grades and wetland crossings, (2) the lot 10 driveway should be moved away from the well to lessen the potential threat of polluting the well, (3) lots 9 and 10 because of the wetlands. See page 14 for specific recommendations.

An Erosion and Sediment Control (ESC) Plan should be prepared to show the treatment to be used to overcome the existing resource limitations.

VEGETATION - PAGE 15

The parcel may be divided into five major vegetation types. (See Vegetaion Map, page 16).

After construction is completed, areas of woodland (Type A) remaining should be regenerated by group tree selection (page 15). There will be problems harvesting Type B because of the high water table. Types C and D will become fully stocked on their own, but they would benefit from re-enforcement planting though it is costly and seedling survival is poor. A public service forester or a private consultant should be contacted to select areas for harvest, revenue from the harvest would cover the consultant costs.

Disturbances near trees from development practices may cause problems relating to tree health and mortality. CAre should be during construction not to disturb the trees that are to remain. Trees should be saved in small groups because this lowers the possibility of soil disturbance and mechanical injury. The loss of trees due to windthrow is a potential hazard in the Hardwood Swamp (Type B), clearing of this type should be kept to a minimum.

WILDLIFE HABITAT - PAGE 18

The wetlands portion of the site serves an important function for wildlife by providing habitat requirements needed for survival. Development will decrease the amount and the quality of habitat, but there are management considerations which would lessen the impact on wildlife. Thought should be given to the design of the development so that as much open space as possible is left. A buffer area of vegetation should be left along the watercourse. As many trees as possible should be left when clearing for building,

and landscaping should be done with wildlife in mind.

FISHERIES HABITAT - PAGE 20

The fisheries resources to be impacted are limited,but proper erosion and siltation measures should be taken to protect downstream areas.

PLANNING CONCERNS - PAGE 20

A. Relationship to Plans

1. State Plan of Conservation and Development (Page 20)
2. Regional Plan (Page 22)
3. Town Plan of Development (Page 23)
4. Town Zoning and Subdivision Regulations (Page 24)
   - A small portion of this proposed subdivision may lie in the town's Aquifer Protection Zone (APZ). The large-scale map in the town clerk's office showing this area should be consulted. Restrictions on underground fuel storage may apply.
   - Cluster type lot layout should be considered as an alternate form of development.
   - The Planning and Zoning Commission must determine whether or not to require open space dedication.

B. Surrounding Land Use Compatability (Page 26)

The proposed subdivision, being low in density, would not be inconsistent with adjacent development; however, this subdivision or any residential development adjacent to active agriculture may prove incompatible with surrounding land use.

C. Lot Arrangement (Page 26)

Alternate lot arrangements for 9 and 10 should be considered to eliminate the need to cross wetlands.

A cluster type of lot arrangement could deal more effectively with the natural resource constraints.

D. Road and Traffic Concerns (Page 27)

The proposed subdivision of 11 lots would add about 110 to 120 vehicle trips per day. This increased traffic on Pinch Street and Route 14 should not tax the designed carrying capacity of either road.

E. Services to Support Development (Page 27)

The proposed subdivision, by itself, will not tax the capacity of existing services (schools, fire, police and solid waste disposal) to support this new development.

Appendix

A.

Pinch Street & Route 14

Scotland, CT

Principal Limitations and Ratings of Soils for: Residential Development

SOIL MAP SYMBOL AND SOIL NAME	DWELLINGS WITHOUT BASEMENTS	DWELLINGS WITH BASEMENTS	LAWNS AND LANDSCAPING	SEPTIC TANK ABSORPTION FIELDS	LOCAL ROADS AND STREETS
CcB - Canton	Slight	Slight	Moderate-large stones	Severe	Slight
- Charlton	Slight	Slight	Moderate-large stones	Slight	Slight
CcC - Canton	Moderate-slope	Moderate-slope	Moderate-large stones,slope	Severe	Moderate-slope
- Charlton	Moderate-slope	Moderate-slope	Moderate-large stones,slope	Moderate-slope	Moderate-slope
CdC - Canton	Moderate-slope	Moderate-slope	Moderate-large stones,slope	Severe	Moderate-slope
- Charlton	Moderate-slope	Moderate-slope	Moderate-large stones,slope	Moderate-slope	Moderate-slope
CdD - Canton	Severe-slope	Severe-slope	Severe-slope	Severe-slope, large stones	Severe-slope
- Charlton	Severe-slope	Severe-slope	Severe-slope	Severe-slope	Severe-slope
*Rn - Ridgebury Leicester Whitman	Severe-wetness	Severe-wetness	Severe-wetness	Severe-percs slowly,wetness	Severe-setness,
*Ru - Rippowam	Severe-flooding	Severe-flooding	Severe-wetness	Severe-flooding, wetness,poor filter	Severe-flooding, wetness,frost action
#SvB - Sutton	Moderate-wetness	Severe-wetness	Moderate-wetness	Severe-wetness	Severe-frost action
SwB - Sutton	Moderate-wetness	Severe-setness	Moderate-large stones,wetness	Severe-wetness	Severe-frost action
SxB - Sutton	Moderate-wetness	Severe-wetness	Moderate-large stones,wetness	Severe-wetness	Severe-frost action
WyA - Woodbridge	Moderate-wetness	Severe-wetness	Moderate-large stones,wetness	Severe-wetness, percs slowly	Severe-frost action

*Designated wetland soil by Public Act 155
#Prime farmland soil

SOIL DESCRIPTIONS

CcB—Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes. This unit consists of gently sloping, well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are mostly long and narrow or oval and range from 5 to 50 acres. Slopes are mainly smooth and convex and are 200 to 400 feet long. Stones cover 1 to 8 percent of the surface. About 45 percent of the total acreage of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas of this unit consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam 21 inches thick. The substratum is pale brown gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam and sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of somewhat excessively drained Gloucester and Hollis soils, well drained Paxton soils, and moderately well drained Sutton soils. Also included are a few large, nearly level areas and a few areas that have a compact substratum at a depth of 40 to 50 inches.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderate or moderately rapid. Both soils have moderate available water capacity and medium runoff, and both are very strongly acid to medium acid.

Most areas of this unit are woodland. The soils in a few areas are used for pasture or hay. In some areas they are in community development or are used for recreation.

The soils of this unit generally are too stony for cultivation. Stone removal makes the soils well suited to cultivated crops but is difficult. The soils are well suited to use as woodland, but the Charlton soils have higher productivity than the Canton soils.

Some excavations in the Canton soils are unstable. The stones on the surface limit landscaping.

The capability subclass is VIs.

CcC—Canton and Charlton very stony fine sandy loams, 8 to 15 percent slopes. This unit consists of sloping, well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are mostly long and narrow and range from 3 to 20 acres. Slopes are mainly smooth and convex and less than 200 feet long. Stones cover 1 to 8 percent of the surface. About 45 percent of the total acreage of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas of this unit consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam about 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam 21 inches thick. The substratum is pale brown gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam and sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of somewhat excessively drained Gloucester and Hollis soils, well drained Paxton soils, and moderately well drained Sutton soils. A few areas have a compact substratum at a depth of 40 to 50 inches.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderate or moderately rapid. Both soils have moderate available water capacity and rapid runoff, and both are very strongly acid to medium acid.

Most areas of this unit are in woodland. A few areas are used for pasture and hay. Some areas are in community development.

The soils of this unit are too stony for cultivation. Stone removal makes the soils suited to cultivated crops but is difficult. The soils are well suited to woodland, but the Charlton soils have higher productivity than the Canton soils.

Slope is the main limitation of the soils for community development, especially for onsite septic systems. Slopes of excavations are unstable. The stones on the surface limit landscaping.

The capability subclass is VIs.

CdC—Canton and Charlton extremely stony fine sandy loams, 3 to 15 percent slopes. This unit consists of gently sloping to sloping, well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are oval or irregular in shape and range from 5 to 100 acres. Slopes are mostly smooth and convex and are 100 to 600 feet long. Stones cover 8 to 25 percent of the surface. About 45 percent of the total acreage of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas of this unit consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam 21 inches thick. The substratum is pale brown gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam and sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of somewhat excessively drained Gloucester and Hollis soils, well drained Paxton soils, and moderately well drained Sutton soils. Also included are a few nearly level areas and a few areas that have a compact substratum at a depth of 40 to 50 inches.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderate or moderately rapid. Both soils have moderate available water capacity and medium to rapid runoff, and both are very strongly acid to medium acid.

Most areas of this unit are in woodland. A few areas are used for pasture, and a few others are in community development.

The soils of this unit generally are too stony for cultivation (fig. 5). Stone removal makes the soils suited to cultivation but is difficult. The soils are well suited to woodland, but the Charlton soils have higher productivity than the Canton soils. The stones on the surface hinder the use of some woodland harvesting equipment.

Slope is the main limitation of the soils for community development, especially for onsite septic systems. Slopes of excavations in these soils are unstable. The stones on the surface hinder landscaping.

The capability subclass is VIIs.

CdD—Canton and Charlton extremely stony fine sandy loams, 15 to 35 percent slopes. This unit consists of moderately steep to steep, well drained soils on ridges, hills, and side slopes of glacial till uplands. The areas are mostly long and narrow and range from 5 to 30 acres. Slopes are smooth and convex and are mainly less than 200 feet long. Stones cover 8 to 25 percent of the surface. About 45 percent of the total acreage of this unit is Canton soils, 40 percent is Charlton soils, and 15 percent is other soils. Some areas consist almost entirely of Canton soils, some almost entirely of Charlton soils, and some of both. The soils were mapped together because they have no significant differences in use and management.

Typically, the Canton soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown fine sandy loam, gravelly fine sandy loam, and gravelly sandy loam 21 inches thick. The substratum is pale brown gravelly loamy sand to a depth of 60 inches or more.

Typically, the Charlton soils have a surface layer of dark yellowish brown fine sandy loam 5 inches thick. The subsoil is yellowish brown fine sandy loam 20 inches thick. The substratum is light yellowish brown and light brownish gray sandy loam to a depth of 60 inches.

Included with these soils in mapping are small areas of somewhat excessively drained Gloucester and Hollis soils and well drained Paxton soils. Also included are a few large areas where stones cover less than 8 percent of the surface and areas with a compact substratum at a depth of 40 to 50 inches.

The water table in these Canton and Charlton soils is commonly at a depth of more than 6 feet. The permeability of the Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. The permeability of the Charlton soils is moderate or moderately rapid. Both soils have moderate available water capacity and rapid runoff, and both are very strongly acid to medium acid.

Most areas of this unit are in woodland. A few small areas are used for pasture.

The stones on the surface and slope make the soils of this unit generally unsuitable for cultivation. The soils are fairly suited to woodland; the Charlton soils have higher productivity than the Canton soils. Slope and the stones hinder the use of some woodland harvesting equipment.

Slope limits the soils of this unit for community development, especially for onsite septic systems. Slopes of excavations in the soils are unstable, and the stones on the surface hinder landscaping.

The capability subclass is VIIs.

GbC—Gloucester very stony sandy loam, 8 to 15 percent slopes. This soil is sloping and somewhat excessively drained. It is on ridges and hills of glacial till uplands. The areas are mostly long and narrow or oval and range from 15 to 40 acres. Stones and boulders cover 1 to 8 percent of the surface. Slopes are mainly smooth and convex and 200 to 400 feet long.

Typically, this soil has a surface layer of very dark grayish brown sandy loam 4 inches thick. The subsoil is dark yellowish brown and yellowish brown gravelly sandy loam and loamy sand 21 inches thick. The substratum is light olive brown and light brownish gray gravelly loamy coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Hinckley soils and well drained Canton, Charlton, and Paxton soils. Also included are a few areas where stones cover less than 1 percent of the surface. Included areas make up about 15 percent of the unit.

The water table in this Gloucester soil is commonly below a depth of 6 feet. The available water capacity is low. The permeability of this soil is rapid. Runoff is medium to rapid. The soil is very strongly acid to medium acid.

Most areas of this soil are in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony and too droughty for cultivation. The soil is suited to woodland, but droughtiness causes a high rate of seedling mortality.

This soil is generally suited to community development, but slope is a limitation for onsite septic systems and the rapid permeability causes a hazard of ground-water pollution in areas used for septic tanks. Some slopes of excavations in this soil are unstable. The stones on the surface hinder landscaping.

The capability subclass is VIs.

HkC—Hinckley gravelly sandy loam, 3 to 15 percent slopes. This is a gently sloping to sloping, excessively drained soil on terraces of stream valleys and on glacial outwash plains. The areas of this soil are oval or irregular in shape and range from 5 to 200 acres. Slopes are convex or undulating and are mostly less than 200 feet long.

Typically, the surface layer is very dark grayish brown gravelly sandy loam 2 inches thick (fig. 7). The subsoil is dark yellowish brown, yellowish brown, and brownish yellow gravelly sandy loam and gravelly loamy sand 16 inches thick. The substratum is pale yellow gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils, somewhat excessively drained Merrimac soils, well drained Agawam soils, and moderately well drained Sudbury soils. Also included are a few areas of a soil with a surface layer of fine sandy loam and a few small areas with a few stones on the surface. Included areas make up about 15 percent of the unit.

The water table in this Hinckley soil is commonly below a depth of 6 feet. The available water capacity is low. Runoff is rapid. This soil has rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum, and it is extremely acid to medium acid.

Most areas of this soil are in woodland. Some areas are in cropland, and a few large areas are in community development.

Irrigated areas of this soil are well suited to cultivated crops; nonirrigated areas are fairly suited. The soil dries and warms early in the spring and is easy to till. Minimum tillage and cover crops help to minimize the moderate erosion hazard in cultivated areas.

Droughtiness makes this soil poorly suited to use as woodland; it increases seedling mortality.

This soil generally is suited to community development, but the rapid permeability imposes a hazard of ground-water pollution in areas used for septic tanks. The slopes in some excavated areas are unstable.

The capability subclass is IVs.

PdB—Paxton very stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the tops and side slopes of drumlins and large hills of glacial till uplands. The areas are mostly oval or irregular in shape and range from 3 to 50 acres. Stones and boulders cover 1 to 8 percent of the surface.

Typically, the surface layer is dark brown fine sandy loam 7 inches thick. The subsoil is yellowish brown and dark yellowish brown fine sandy loam 18 inches thick. The substratum is very firm to firm, olive brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils, well drained Charlton soils, moderately well drained Woodbridge soils, and poorly drained Ridgebury soils. Also included are a few nearly level areas and small areas that have no stones on the surface. A few large areas have a substratum of loamy sand. Included areas make up about 10 percent of the unit.

This Paxton soil has a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium. The soil has moderate available water capacity and is very strongly acid to slightly acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to cultivated crops but is difficult. Cover crops and minimum tillage help to control erosion and maintain tilth in cultivated areas.

The slow to very slow permeability of the substratum limits this soil for community development, especially for onsite septic systems. Steep slopes of excavations in this soil slump when saturated. Lawns are commonly soggy in autumn and spring. The stones on the surface hinder landscaping.

The capability subclass is VIs.

PdC—Paxton very stony fine sandy loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the side slopes of drumlins and hills of glacial till uplands. The areas are mostly oval or irregular in shape and range from 4 to 20 acres. Stones and boulders cover 1 to 8 percent of the surface.

Typically, the surface layer is dark brown fine sandy loam 7 inches thick. The subsoil is yellowish brown and dark yellowish brown fine sandy loam 18 inches thick. The substratum is very firm to firm, olive brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils, well drained Charlton soils, moderately well drained Woodbridge soils, and poorly drained Ridgebury soils. Also included are a few small areas with no stones on the surface and a few large areas that have a substratum of loamy sand. Included areas make up about 10 percent of the unit.

This Paxton soil has a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is rapid. The soil has moderate available water capacity and is very strongly acid to slightly acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes this soil suited to cultivated crops but is difficult. Maintaining a permanent plant cover helps to control erosion in cultivated areas.

Slope and the slow or very slow permeability of the substratum limit this soil for community development, especially for onsite septic systems. Steep slopes of excavations in this soil slump when saturated. Lawns are commonly soggy in autumn and spring. The stones on the surface hinder landscaping.

The capability subclass is VIs.

PdB—Paxton very stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the tops and side slopes of drumlins and large hills of glacial till uplands. The areas are mostly oval or irregular in shape and range from 3 to 50 acres. Stones and boulders cover 1 to 8 percent of the surface.

Typically, the surface layer is dark brown fine sandy loam 7 inches thick. The subsoil is yellowish brown and dark yellowish brown fine sandy loam 18 inches thick. The substratum is very firm to firm, olive brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils, well drained Charlton soils, moderately well drained Woodbridge soils, and poorly drained Ridgebury soils. Also included are a few nearly level areas and small areas that have no stones on the surface. A few large areas have a substratum of loamy sand. Included areas make up about 10 percent of the unit.

This Paxton soil has a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium. The soil has moderate available water capacity and is very strongly acid to slightly acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to cultivated crops but is difficult. Cover crops and minimum tillage help to control erosion and maintain tilth in cultivated areas.

The slow to very slow permeability of the substratum limits this soil for community development, especially for onsite septic systems. Steep slopes of excavations in this soil slump when saturated. Lawns are commonly soggy in autumn and spring. The stones on the surface hinder landscaping.

The capability subclass is VIs.

PdC—Paxton very stony fine sandy loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the side slopes of drumlins and hills of glacial till uplands. The areas are mostly oval or irregular in shape and range from 4 to 20 acres. Stones and boulders cover 1 to 8 percent of the surface.

Typically, the surface layer is dark brown fine sandy loam 7 inches thick. The subsoil is yellowish brown and dark yellowish brown fine sandy loam 18 inches thick. The substratum is very firm to firm, olive brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils, well drained Charlton soils, moderately well drained Woodbridge soils, and poorly drained Ridgebury soils. Also included are a few small areas with no stones on the surface and a few large areas that have a substratum of loamy sand. Included areas make up about 10 percent of the unit.

This Paxton soil has a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is rapid. The soil has moderate available water capacity and is very strongly acid to slightly acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes this soil suited to cultivated crops but is difficult. Maintaining a permanent plant cover helps to control erosion in cultivated areas.

Slope and the slow or very slow permeability of the substratum limit this soil for community development, especially for onsite septic systems. Steep slopes of excavations in this soil slump when saturated. Lawns are commonly soggy in autumn and spring. The stones on the surface hinder landscaping.

The capability subclass is VIs.

PeD—Paxton extremely stony fine sandy loam, 15 to 35 percent slopes. This soil is moderately steep to steep and well drained. It is on side slopes of drumlins and hills of glacial till uplands. Areas of this soil are mostly oval or long and narrow and range from 5 to 25 acres. Stones and boulders cover 8 to 25 percent of the surface.

Typically, the surface layer is dark brown fine sandy loam 7 inches thick. The subsoil is yellowish brown and dark yellowish brown fine sandy loam 18 inches thick. The substratum is very firm to firm, olive brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hollis soils, well drained Charlton soils, and moderately well drained Woodbridge soils. Also included are a few large areas where stones cover less than 8 percent of the surface and a few areas that have a substratum of loamy sand. Included areas make up about 15 percent of the unit.

This Paxton soil has a seasonal high water table perched at a depth of about 2 feet for several weeks in the spring. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is rapid. The soil has moderate available water capacity and is very strongly acid to slightly acid.

This soil is mostly in woodland. A few areas are used for pasture or community development.

This soil generally is too stony and too steep for cultivation. The soil is well suited to woodland, but the stones and slope hinder the use of some types of harvesting equipment.

Slope and the slow or very slow permeability of the substratum are major limitations of this soil for community development, especially for onsite septic systems. Steep slopes of excavations in this soil slump when saturated. Lawns are soggy in autumn and spring.

The capability subclass is VIIs.

Rn—Ridgebury, Leicester, and Whitman extremely stony fine sandy loams. This unit consists of nearly level, poorly drained and very poorly drained soils in depressions and drainageways of glacial till uplands. The areas are mostly long and narrow or irregular in shape and range from 5 to 150 acres. Slopes range from 0 to 3 percent and are mainly 100 to 300 feet long. Stones cover 8 to 25 percent of the surface. About 40 percent of the total acreage of this unit is Ridgebury soils, 35 percent is Leicester soils, 15 percent is Whitman soils, and 10 percent is other soils. Some areas of this unit consist of one of these soils, and some others consist of two or three. The soils of this unit were mapped together because they have no significant differences in use and management.

Typically, the Ridgebury soils have a surface layer of very dark brown fine sandy loam 8 inches thick. The subsoil is mottled, light brownish gray fine sandy loam 8 inches thick. The substratum is very firm to firm, grayish brown and light brownish gray fine sandy loam and sandy loam to a depth of 60 inches or more.

Typically, the Leicester soils have a surface layer of very dark brown fine sandy loam 7 inches thick. The subsoil is mottled, grayish brown and light olive brown fine sandy loam 23 inches thick. The substratum is mottled, light olive brown and grayish brown sandy loam to a depth of 60 inches or more.

Typically, the Whitman soils have a surface layer of very dark gray fine sandy loam 9 inches thick. The subsoil is gray, mottled fine sandy loam 5 inches thick. The substratum is mottled, light olive gray fine sandy loam and sandy loam to a depth of 60 inches or more.

Included with this unit in mapping are small areas of moderately well drained Sutton and Woodbridge soils and very poorly drained Adrian and Palms soils. Also included are a few areas where stones cover less than 8 percent of the surface.

The Ridgebury soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate to moderately rapid in the surface layer and subsoil and slow to very slow in the substratum. Runoff is slow. The Ridgebury soils have moderate available water capacity and are very strongly acid to medium acid.

The Leicester soils have a seasonal high water table at a depth of about 10 inches from fall through spring. The permeability of the soils is moderate or moderately rapid. Runoff is slow. The Leicester soils have moderate available water capacity and are very strongly acid to medium acid.

The Whitman soils have a seasonal high water table at or near the surface from fall through spring. The permeability of the soils is moderate or moderately rapid in the surface layer and subsoil and slow to very slow in the substratum. Runoff is slow. The Whitman soils have moderate available water capacity and are very strongly acid to slightly acid.

This unit is mostly in woodland. A few small areas are used for pasture or community development.

The soils of this unit are too stony for cultivation. The unit is suited to woodland. However, the stones on the surface and the high water table hinder the use of harvesting equipment. The water table causes a high rate of seedling mortality and restricts rooting, causing a hazard of uprooting during windy periods.

The high water table and slow to very slow permeability are major limitations of the soils of this unit for community development. Steep slopes of excavations in these soils slump when saturated. The stones on the surface restrict landscaping, and lawns are soggy most of the year.

Ru—Rippowam fine sandy loam. This soil is nearly level and poorly drained. It is on the lowest parts of the flood plains of major streams and their tributaries. The areas are mostly long and narrow and range from 5 to 100 acres. Slopes range from 0 to 3 percent.

Typically, the surface layer is very dark gray fine sandy loam 7 inches thick. The subsoil is dark brown, grayish brown, and dark grayish brown, mottled fine sandy loam 28 inches thick. The substratum is grayish brown and gray gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Pootatuck soils, poorly drained Leicester soils, and very poorly drained Saco soils. Also included are a few large areas with a surface layer and subsoil of silt loam. Included areas make up about 20 percent of the unit.

This Rippowam soil has a seasonal high water table at a depth of about 10 inches from fall through spring. The soil is subject to frequent flooding, mainly from fall to spring. It has moderate or moderately rapid permeability in the surface layer and subsoil and rapid or very rapid permeability in the substratum. Runoff is slow. The soil has moderate available water capacity and is very strongly acid to medium acid.

This soil is mostly in woodland. Some areas are in hay or pasture or are used for corn for silage.

Drained areas of this soil are suited to cultivated crops. The seasonal high water table causes the soil to dry slowly in the spring, often delaying planting and making undrained areas poorly suited to cultivation.

The soil is suited to woodland, but the water table causes a high rate of seedling mortality and restricts the e of some types of harvesting equipment for part of year.

Frequent flooding and the seasonal high water table major limitations of this soil for community velopment. Steep slopes of excavations in this soil are table, and lawns are soggy from fall through spring. rapid permeability in the substratum causes a hazard of ground-water poliution in areas used for septic tanks.

The capability subclass is IIIw.

SvB—Sutton fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is near the base of slopes and in slight depressions in glacial till uplands. The areas are mostly long and narrow or irregular in shape and range from 4 to 50 acres. Slopes are smooth and concave.

Typically, the surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is mottled, yellowish brown fine sandy loam and sandy loam 30 inches thick. The substratum is mottled, light olive brown sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton, Charlton, and Paxton soils; moderately well drained Woodbridge soils; and poorly drained Leicester soils. A few small areas have stones on the surface. Included areas make up about 15 percent of the unit.

This Sutton soil has a seasonal high water table at a depth of about 20 inches from fall to spring. This soil has moderate or moderately rapid permeability. Runoff is medium. The soil has moderate available water capacity and is very strongly acid to medium acid.

This soil is mostly used for corn for silage and hay and pasture. A few areas are in woodland, and a few are in community development.

This soil is well suited to woodland and cultivated crops. The seasonal high water table is the main limitation for crops. It causes the soil to dry slowly in the spring, restricting the use of farming equipment. Providing drainage helps to dry this soil earlier in the spring, but even drained areas remain wet for several days after heavy rains. Minimum tillage and cover crops help to maintain tilth and control a moderate erosion hazard in cultivated areas.

The seasonal high water table is the main limitation of this soil for community development, especially for homesites and onsite septic systems. Lawns on this soil are soggy in autumn and spring.

The capability subclass is IIw.

SwB—Sutton very stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is near the base of slopes and in slight depressions in glacial till uplands. The areas are mostly oval or irregular in shape and range from 3 to 50 acres. Stones cover 1 to 8 percent of the surface. Slopes are smooth and concave.

Typically, the surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is mottled, yellowish brown fine sandy loam and sandy loam 30 inches thick. The substratum is mottled, light olive brown sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton, Charlton, and Paxton soils; moderately well drained Woodbridge soils; and poorly drained Leicester soils. A few areas do not have stones on the surface. Included areas make up about 15 percent of the unit.

This Sutton soil has a seasonal high water table at a depth of about 20 inches from fall to spring. This soil has moderate or moderately rapid permeability. Runoff is medium. The soil has moderate available water capacity and is very strongly acid to medium acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stones hinder the use of farming equipment and are difficult to remove. The seasonal high water table, which causes the soil to dry slowly in the spring, is an additional limitation for crops.

The seasonal high water table is the main limitation of this soil for community development, especially for homesites and onsite septic systems. Lawns on this soil are soggy in autumn and spring.

The capability subclass is VIs.

SxB—Sutton extremely stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is at the base of slopes and in slight depressions in glacial till uplands. The areas are mostly oval or irregular in shape and range from 5 to 35 acres. Stones cover 8 to 25 percent of the surface. Slopes are smooth and concave.

Typically, the surface layer is dark brown fine sandy loam 5 inches thick. The subsoil is mottled, yellowish brown fine sandy loam and sandy loam 30 inches thick. The substratum is mottled, light olive brown sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton, Charlton, and Paxton soils; moderately well drained Woodbridge soils; and poorly drained Leicester soils. Also included are a few small areas where stones cover less than 8 percent of the surface or where slopes are more than 8 percent. Included areas make up about 15 percent of the unit.

This Sutton soil has a seasonal high water table at a depth of about 20 inches from fall to spring. This soil has moderate or moderately rapid permeability. Runoff is medium. The soil has moderate available water capacity and is very strongly acid to medium acid.

This soil is mostly in woodland. A few areas are in pasture or community development.

This soil generally is too stony for cultivation. The soil is well suited to woodland, but the stones hinder the use of some types of harvesting equipment.

The seasonal high water table is the main limitation of this soil for community development, especially for homesites and onsite septic systems. Lawns on this soil are soggy in autumn and spring.

The capability subclass is VIIs.

WyA—Woodbridge very stony fine sandy loam, 0 to 3 percent slopes. This soil is nearly level and moderately well drained. It is on the tops and lower side slopes of large drumlins and hills on glacial till uplands. The areas are mostly oval or irregular in shape and range from 3 to 30 acres. Stones cover 1 to 8 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester and Ridgebury soils. A few small areas do not have stones on the surface. Included areas make up about 15 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is slow. The soil is very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum.

This soil is mostly in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to crops but is difficult. Seasonal wetness in fall and spring is an additional limitation for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for onsite septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

The capability subclass is Vs.

WyB—Woodbridge very stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is on the tops and side slopes of drumlins and hills on glacial till uplands. The areas are mostly long and narrow or irregular in shape and range from 3 to 25 acres. Stones cover 1 to 8 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Leicester and Ridgebury soils. A few small areas do not have stones on the surface. Included areas make up about 10 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. The available water capacity is moderate. This soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium. The soil is very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to slighty acid in the substratum.

Most areas of this soil are in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to cultivated crops but is difficult. Seasonal wetness is an additional limitation of the soil for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for onsite septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

The capability subclass is VIs.

WzA—Woodbridge extremely stony fine sandy loam, 0 to 3 percent slopes. This soil is nearly level and moderately well drained. It is on the tops of large drumlins and hills on glacial till uplands. The areas are mostly oval or irregular in shape and range from 5 to 40 acres. Stones cover 8 to 25 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Ridgebury soils. Also included are a few small areas where stones cover less than 8 percent of the surface. Included areas make up about 15 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. The soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is medium. The soil is very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum.

This soil is mostly in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to crops but is difficult. Seasonal wetness in fall and spring is an additional limitation for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for onsite septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

The capability subclass is VIIs.

WzC—Woodbridge extremely stony fine sandy loam, 3 to 15 percent slopes. This soil is gently sloping to sloping and moderately well drained. It is on the tops of large drumlins and hills on glacial till uplands. The areas are mostly oval or irregular in shape and range from 3 to 60 acres. Stones cover 8 to 25 percent of the surface.

Typically, the surface layer is very dark grayish brown fine sandy loam 8 inches thick. The subsoil is mottled, dark yellowish brown and yellowish brown fine sandy loam 22 inches thick. The substratum is firm to very firm, olive gray fine sandy loam and gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Paxton soils, moderately well drained Sutton soils, and poorly drained Ridgebury soils. Included areas make up about 15 percent of the unit.

This Woodbridge soil has a seasonal high water table at a depth of about 20 inches from fall to spring. It has moderate available water capacity. The soil has moderate permeability in the surface layer and subsoil and slow to very slow permeability in the substratum. Runoff is rapid. This soil is very strongly acid to medium acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum.

This soil is mostly in woodland. A few areas are in pasture, and a few are in community development.

This soil generally is too stony for cultivation but is well suited to woodland. Stone removal makes the soil well suited to crops but is difficult. Seasonal wetness in fall and spring is an additional limitation for crops.

The water table and the slow or very slow permeability in the substratum are the main limitations of this soil for community development, especially for onsite septic systems. Lawns on this soil are soggy in the autumn and spring and after heavy rains.

The capability subclass is VIIs.

About The Team

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

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, a statement identifying the specific areas of concern the Team should address, and the time available for completion of the ERT study. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Elaine A. Sych (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.