Environmental Review Team Report

Czaczkes Property

Sprague, Connecticut

R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report

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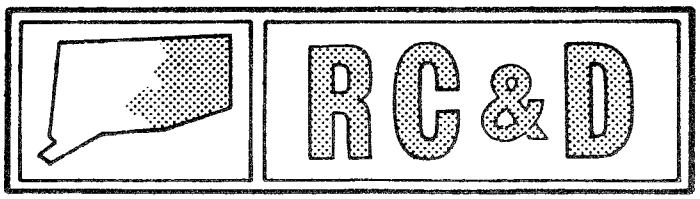
Sprague, Connecticut

September 1984

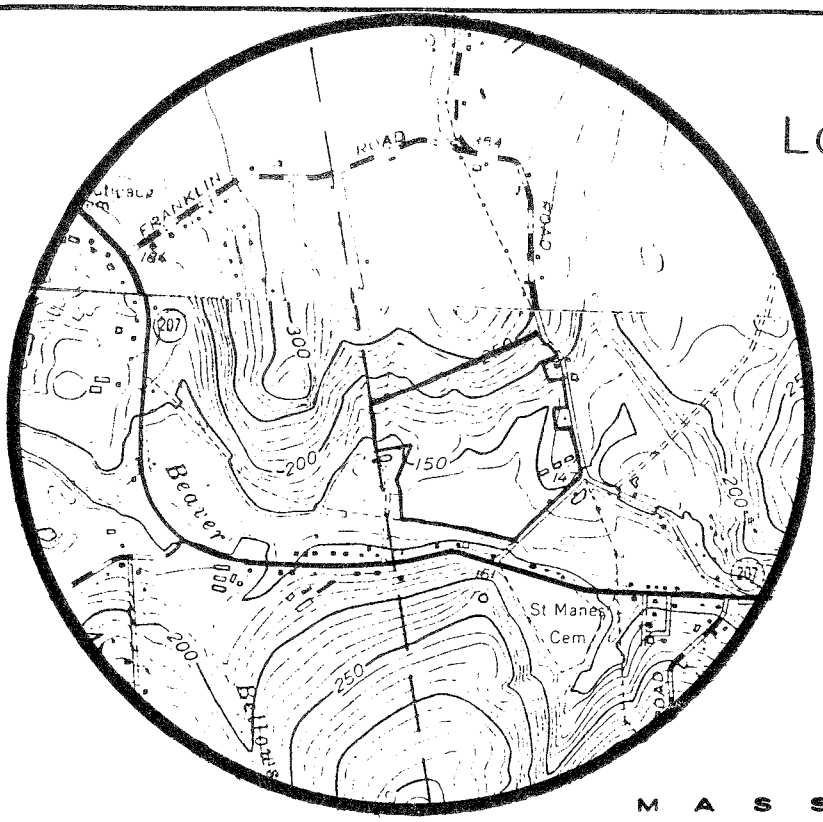


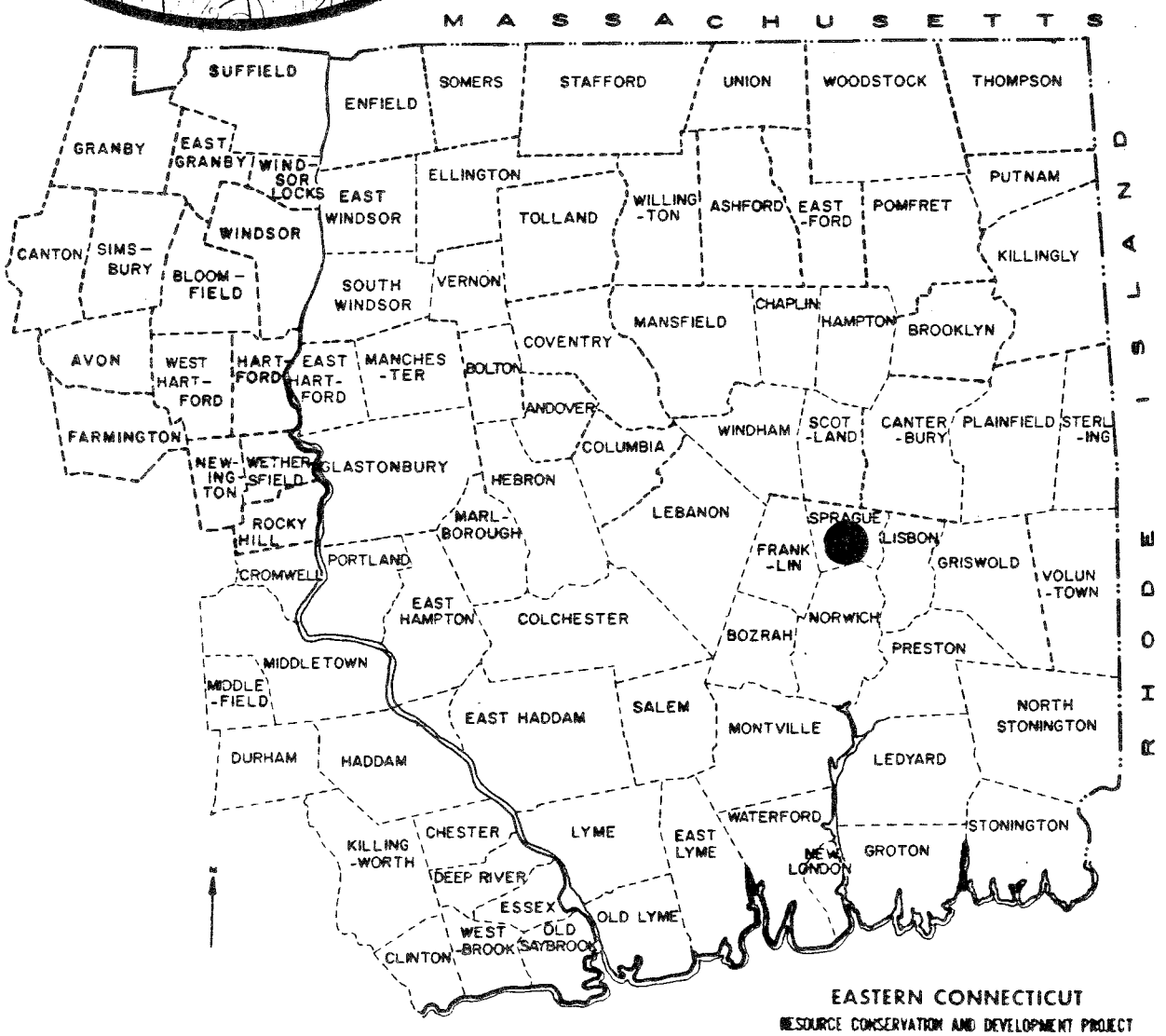
Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

CZACZKES PROPERTY
SPRAGUE, CONNECTICUT





EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
CZACZKES ZONE CHANGE
SPRAGUE, CONNECTICUT

This report is an outgrowth of a request from the Sprague Planning and Zoning Commission to the New London County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval as a project measure. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist of the United States Department of Agriculture (USDA), Soil Conservation Service (SCS). Reproductions of the soil survey map as well as a topographic map of the site were distributed to all ERT participants prior to their field review of the site.

The ERT that field checked the site consisted of the following personnel: Mike Schaefer, Soil Conservationist, Soil Conservation Service (SCS); Liz Rogers, Soil Conservationist, (SCS); Bill Warzecha, Geologist, Department of Environmental Protection (DEP); Pete Merrill, Forester, (DEP); Don Capellaro, Sanitarian, State Department of Health ; Tom Seidel, Regional Planner, Southeastern Connecticut Regional Planning Agency; and Jeanne Shelburne, ERT Coordinator, Eastern Connecticut RC&D Area.

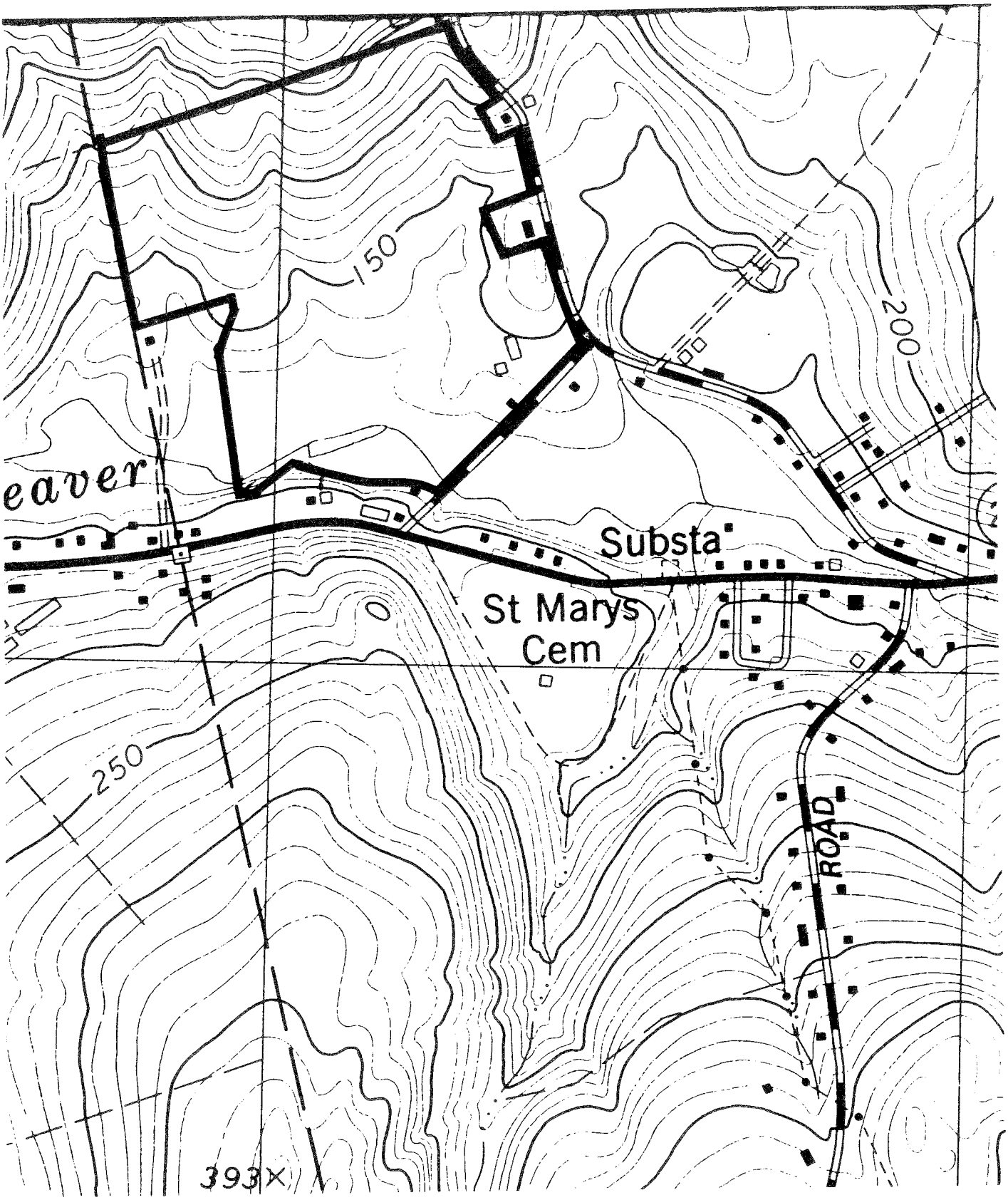
The Team met and field checked the site on Thursday, June 7, 1984. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Sprague. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Project Committee hopes you will find this report of value and assistance in making your decisions on this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, Box 198, Route 205, Brooklyn, Connecticut 06234, 774-1253.

Topography	Site Boundary	0 660' scale	N



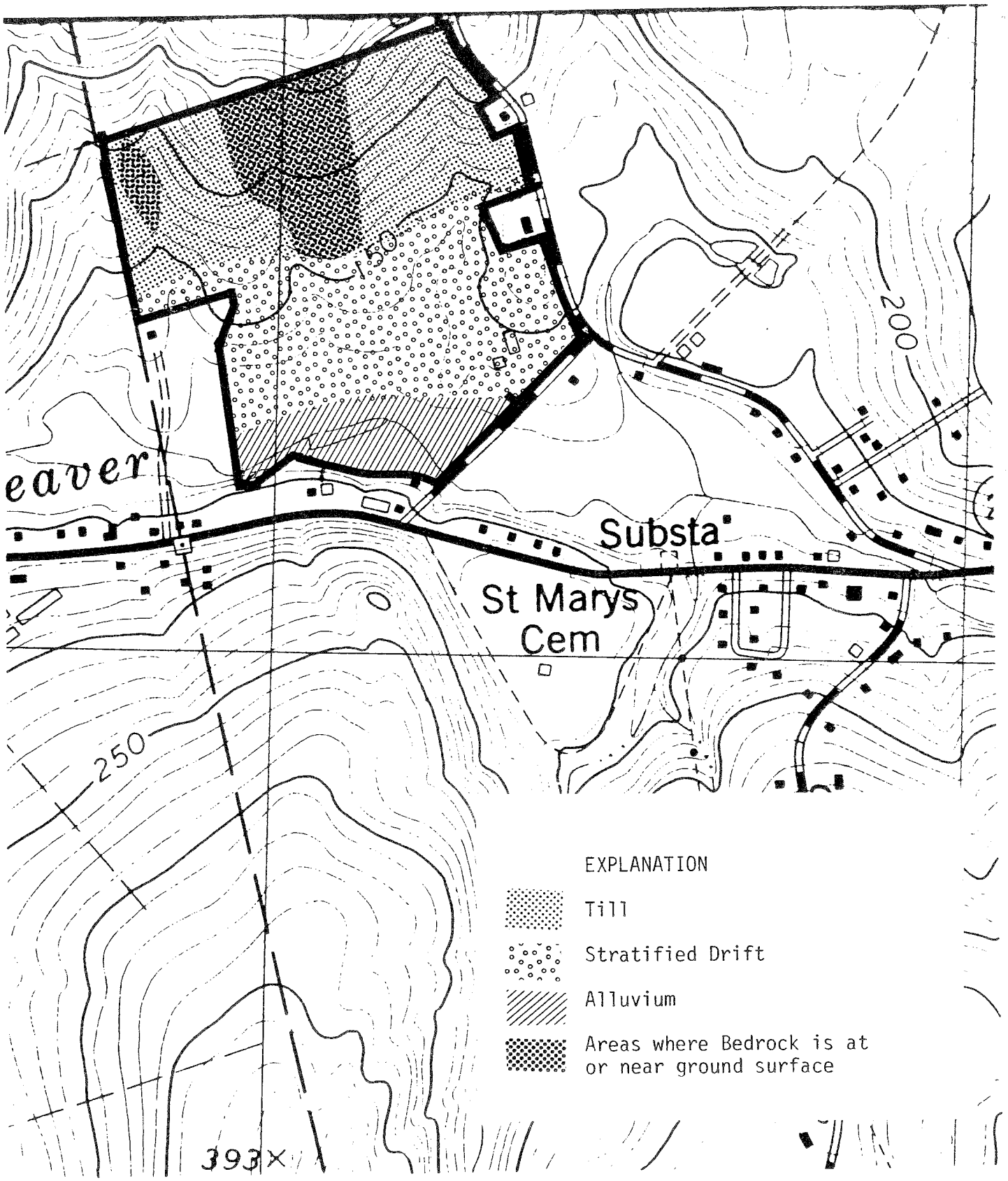
INTRODUCTION

The Eastern Connecticut Environmental Review Team was aksed to prepare an environmental assessment for a proposed zone change in the Town of Sprague. The study site was approximately 67 acres in size and is located north of Route 207 and west of Franklin Road. The property is presently owned by Harry Czaczkes.

The site is being considered for a rezoning from low density to medium density development. No firm plans have been made for the type of development which may take place on this site, however, a mix of elderly housing and single family housing has been discussed. On-site facilities such as wells and septic systems will be needed for future development of this parcel, unless the developer chooses to extend the municipal sewer and water lines into the site. Franklin Road provides access to the parcel.

The Team is concerned with the impact of the proposed zone change and subsequent development on the natural resource base of the site. Although many severe limitations to development can be overcome with proper engineering techniques, these measures can become costly, making a proposal financially unfeasible for a developer. Site limitations are discussed in detail in the following sections of this report. They include regulated wetland soil areas, shallow depth of soil to bedrock and bedrock outcrops. The comments which follow, address the site in a general manner, should a zone change be granted and definite plans for the property be proposed, the Team would be available to evaluate these plans in a more detailed manner if the Town Commissions desire.

Surficial Geology



ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY/GEOLOGY

The Czaczkes property is ±67 acres in size and is located in the western section of Sprague off of Franklin Road and LaCroix Road. As shown on the topographic map, slopes on the property are gentle to moderate. The southern half of the site is characterized by an undulating open field terrain. The topography in this area is controlled largely by the surficial geologic deposits (sand and gravel), which cover this area. Moderate slopes predominate in the northern half of the parcel. The topography in this area is controlled largely by the underlying bedrock which is visible in many locations.

Beaver Brook, a tributary to the Shetucket River, traverses the southern limits of the property in an east-west direction. A small farm pond is located in the eastern portion of the property.

Maximum and minimum elevations on the site are ±140 feet and 260 feet above mean sea level.

The property is located entirely within the Norwich topographic quadrangle. A bedrock geologic map (GQ-144, by George L. Snyder) and a surficial geologic map (GQ-165, by Penelope M. Hanshaw and George L. Snyder) for the quadrangle have been published by the U.S. Geological Survey.

Snyder classifies the bedrock underlying or cropping out on the site as Canterbury gneiss. The rock consists of medium grained gneiss composed primarily of the minerals quartz, oligoclase, microline and biotite. Minor minerals include epidote and muscovite. "Gneisses" are cyrstalline rocks, in which thin bands of platy minerals (micas) alternate with layers of more rounded mineral grains (quartz and feldspar).

Bedrock outcrops are exposed mainly in the northern parts of the site. The outcrops are visible primarily in the areas delineated as HrD (Hollis-Charlton rock outcrop complex) and CrD (Charlton-Hollis) on the accompanying soils map. Depth to bedrock on the property ranges from zero in rock outcrop areas to probably not much more than ten feet at various points in between the outcrops throughout the remainder of the site (Source: Connecticut Water Resources Bulletin No. 11 Shetucket River Basin).

Three types of surficial geologic materials cover the property: till, stratified drift and alluvium. Surficial geologic materials refer to those unconsolidated mineral and organic deposits that overlie bedrock. Till, which is a non-sorted, non-stratified glacial sediment, covers the northern portions of the site. It consists of rock particles and fragments of widely varying shapes

and sizes. Till was deposited by the glacier without subsequent re-working by meltwater streams. The upper few feet in the till is generally sandy, loose and stony but at depth becomes less stony, finer-grained and compact. Thicknesses of till are generally thin throughout the property ranging between zero and ±10 feet.

Stratified drift covers the southern portions of property. It is composed of rock materials that were washed and re-worked by meltwater stream from a mass of stagnant glacier ice. Because the rock materials were transported and laid down by meltwater streams, they are commonly sorted and stratified (layered). The main components of stratified drift include boulders, gravel, sand and silt. The total thickness of the stratified drift is not known, but it is probably not much more than 10 feet. It is likely to be thickest along Beaver Brook in the southern parts of the property.

Overlying the stratified drift deposits along Beaver Brook are alluvial deposits. Alluvium consists of gravel, sand and silt which are recent deposits along the Brook. These deposits are delineated by the symbol Ro (Rippowam) on the soils maps.

Other areas on the site which are seasonally wet and/or which are wet throughout most of the year, include the areas denoted by the symbol Rn (Ridgebury, Leicester, Whitman soils) and Rc (Raypol) respectively on the soils map. Development and/or disturbances in these areas should be avoided, if possible.

If the desired zone change from R-1 (40,000 square feet) to R-Z (20,000 square feet) is granted, the developer would be required to extend the Town's public sewer line to service the subject parcel. The sewer line presently terminates about 2,000 feet east of the site on Rt. 207. If the line is extended, it appears the most favorable route would be along the old trolley line right-of-way. Running sewer lines across any drainage way, or watercourse is an area of special concern; disturbed areas should receive protection from any running water.

The extention of the public sewer line will eliminate the need for on-site sewage disposal systems. This should effectively eliminate any foreseeable risk of substantial groundwater contamination. However, if the public sewer line is not extended, on-site septic systems would be required. Some of the geological limitations on the site for installation of on-site septic systems include: (1) the moderate slopes in the northern portions of the site, (2) shallow soil depth to bedrock conditions in scattered areas throughout the northern sections (primarily in HrD and CrD areas on the soils map), (3) the presence of well-drained sand and gravel soils in the southern portions of the site, which commonly have rapid seepage rates and which may offer limited opportunity to renovate sewage; and (4) the presence of till-based soils which may have seasonally high water tables and which commonly have slow percolation rates. In addition, wetness and frost action may be encountered with some of the till-based soils. This will be of concern in the construction of roads, driveways and building foundations. As a result, consideration should be given to the installation of building footing drains. An area of special concern with regard to the installation of sewers, waterlines and electric lines is the possibility of "cut back cave-ins" in the sand and gravel soils, Myb, HkC, Afb and Nn on the soils map, in the southern

half of the parcel. The trenches in these sandy and gravelly soils should have the pipes and conduit placed and backfilled as soon as possible after excavation. Proper shorings of sides should be accomplished in trenches over five feet deep.

The occurrence of bedrock at or near ground surface in the northern portions may be a hindrance in terms of development. For example, there is a chance that blasting may be required in order to establish the internal road network system in the area mentioned above.

It is recommended a detailed erosion and sediment control plan be formulated and followed throughout implementation of the project.

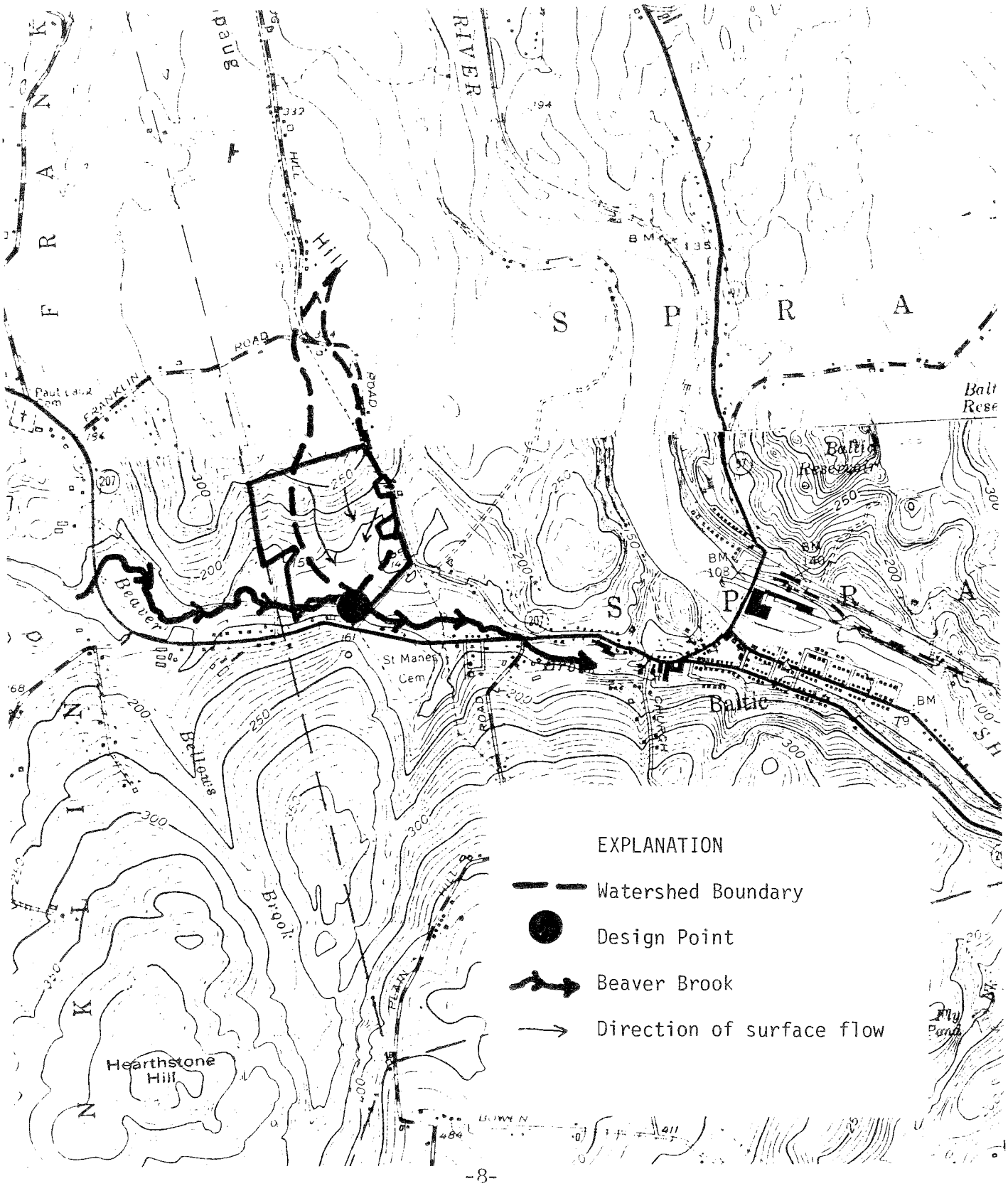
HYDROLOGY

The site lies within the watershed of Beaver Brook. The surface and groundwater on the parcel flow generally downslope toward local discharge areas. The local discharge areas on the site include intermittent as well as permanent drainage channels. Water is routed through these channels toward Beaver Brook. Based on soil mapping information, wetland soils tend to parallel the intermittent as well as perennial watercourses on the site. Development and/or disturbance of these areas should be avoided.

Development of the site as discussed will lead to increase in the amount of surface runoff produced during periods of precipitation. The increases will arise from the conversion of permeable soils to impermeable surfaces (roof tops, paved roads and parking areas, etc.), and from the removal of vegetation. The added runoff could cause increased overland and stream-channel erosion, and it could increase the peak flows of the streams on the site. These issues should be addressed by an erosion-and-sediment control plan. This plan should be followed during the construction phase, and by establishing some type of run-off control device, such as a detention basin. The applicant's engineer stated on the day of the field review that the farm pond in the eastern section of the site may be potential detention basin for the site and depending on final plans, possibly another detention basin would have to be constructed on the parcel.

It is possible to estimate the magnitude of the runoff increases that would occur under the existing R-1 zone (40,000 square feet) and under the desired R-2 zone (20,000 square feet). The estimates below are based on the runoff curve number method, as outlined in SCS Technical Release No. 55. For the purpose of analyzing the increase in storm water runoff from the property, it was assumed approximately 40 acres of the total 67 acres would be developed. Also, a design point or point of outflow on Beaver Brook and its respective drainage areas was chosen by the Team's hydrologist. Since there was no finalized plan and/or site plan to determine the amount of impervious surfaces created by paved roads and parking areas, these computations, therefore, do not account for potential access roads and/or parking areas. Depending upon the amount of paved road or parking areas created, the curve number and ultimately, the runoff depths for each or the rainfall amounts would be expected to increase. Estimates are provided for 24-hour rainfall amounts that would be expected to occur in any given year. These rainfall events are the 10, 20, 50, and 100 year storms having, respectively,

Drainage Areas



a 10 percent, 4 percent, 2 percent, and 1 percent probability of occurring.

AVERAGE STORM FREQUENCY	10 year	25 year	50 year	100 year
Runoff before development in inches	1.44"	1.88"	2.30"	2.87"
Runoff after development under R-1 zone (low density)	1.81"	2.31"	2.76"	3.39"
Percent Increase	26%	23%	20%	18%
Runoff after development under R-2 zone (medium density)	1.88%	2.39%	2.85%	3.49%
Percent Increase	31%	27%	24%	22%

The increases shown in the table above are significant enough under the R-1 or R-2 zone, to merit the careful consideration of stormwater management on the site. It is suggested that the applicant be required to submit detailed hydrological information once development plans are finalized. This information should include pre- and post-development runoff estimates from the site for the 10, 25, 50, 100 year storm events. Detailed design specifications for all stormwater detention basins should be submitted and reviewed by all appropriate town officials. In addition, it is further suggested the project engineer take a close look at downstream culverts on Beaver Brook to determine if they can handle post development flows from the site.

SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. The soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitation chart indicates the probable limitations of each of the soils for on-site sewage disposal, buildings with basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication, New London County Soil Survey Report, can aid in the identification and interpretation of soils and their uses on this site. "Know Your Land: Natural Soil Groups for Connecticut" can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

Soil series typical of this site include the Agawam series, the Charlton-Hollis series, the Hinckley series, the Hollis-Charlton-rock outcrop complex, the Merrimac series, the Ninigret series, the Raypol series, the Ridgebury, Leicester and Whitman complex, the Sutton series, and the Rippowam series. These

soils and their physical properties are described in detail below.

AfB-Agawam fine sandy loam, 3 to 8 percent slopes

This gently sloping, well drained soil is on stream terraces and outwash plains. Permeability of the Agawam soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. This soil warms up and dries out rapidly in the spring. Unless limed, the soil is strongly acid or medium acid. This soil is well suited to cultivated crops.

CrC-Charlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes

This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. The soils of this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium or rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is medium or rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stoniness and rock outcrops generally make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughty. The hazard of erosion is moderate to severe.

CrD-Charlton-Hollis fine sandy loams, very rocky, 15 to 45 percent slopes

This moderately steep to steep complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is rapid or very rapid. Charlton soils warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is rapid or very rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils are not suited to cultivated crops. Stoniness and rock outcrops make the use of farming equipment impractical. The Hollis soil has a shallow rooting depth and is droughty.

HkC-Hinckley gravelly sandy loam, 3 to 15 percent slopes

This gently sloping and sloping, excessively drained soil is on stream terraces, outwash plains, kames, and eskers. Permeability of the Hinckley soil is rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is low. Runoff is medium or rapid. Hinckley soil warms up and dries out rapidly in the spring. Unless limed, it is strongly acid or medium acid. This soil is suited to cultivated crops. Hinckley soil is droughty, and irrigation is needed. The hazard of erosion is moderate or severe.

HrD-Hollis-Charlton-Rock outcrop complex, 15 to 45 percent slopes

This moderately steep to very steep complex consists of somewhat excessively drained and well drained soils and Rock outcrop on glacial till uplands. Stones and boulders cover 1 to 8 percent of the surface. These soils and Rock outcrop in this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used.

Permeability of the Hollis soil is moderate or moderately rapid above the bedrock. The available water capacity is low. Runoff is rapid or very rapid. Hollis soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

Permeability of the Charlton soil is moderate or moderately rapid. The available water capacity is moderate. Runoff is rapid or very rapid. Charlton soil warms up and dries out rapidly in the spring. It is strongly acid or medium acid.

These soils in this complex are not suited to cultivated crops. Stoniness and the Rock outcrop make the use of farming equipment impractical. The hazard of erosion is severe.

MyB-Merrimac sandy loam, 3 to 8 percent slopes

This gently sloping, somewhat excessively drained soil is on stream terraces, outwash plains, kames, and eskers. Permeability of the Merrimac soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. Merrimac soil warms up and dries out rapidly in the spring. Unless limed, it is strongly acid or medium acid. This soil is well suited to cultivated crops. It is droughty during the drier periods in summer.

Nn-Ninigret fine sandy loam

This nearly level to gently sloping, moderately well drained soil is on outwash plains and stream terraces. Slopes range from 0 to 5 percent.

The Ninigret soil has a seasonal high water table at a depth of about 20 inches. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is high. Runoff is slow or medium. Ninigret soil warms up and dries out slowly in the spring. Unless limed, it is strongly acid or medium acid. This soil is well suited to cultivated crops.

Rc-Raypol silt loam

This nearly level, poorly drained soil is on stream terraces and outwash plains. The Raypol soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. The available water capacity is high. Runoff is slow. Raypol soil warms up and dries out slowly in the spring. It is very strongly acid or strongly acid above a depth of 40 inches and strongly acid through slightly acid below a depth of 40 inches. This soil is suited to cultivated crops.

Rn-Ridgebury, Leicester, and Whitman extremely stony fine sandy loams

These nearly level, poorly drained and very poorly drained soils are in drainageways and depressions of glacial till upland hills, ridges, plains, and drumloidal landforms. Stones and boulders cover 8 to 25 percent of the surface. These soils were mapped together because there are no major differences in use and management. The Ridgebury soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow or slow. Ridgebury soil warms up and dries out slowly in the spring. It is strongly acid through slightly acid.

The Leicester soil has a seasonal high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is very slow or slow. Leicester soil warms up and dries out slowly in the spring. It is very strongly acid through medium acid.

The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow, or the soil is ponded. Whitman soil warms up and dries out very slowly. It is very strongly acid through slightly acid.

These soils are not suited to cultivated crops. Stoniness makes the use of farming equipment impractical.

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

This gently sloping, moderately well drained soil is on upland glacial till plains, hills, and ridges. The Sutton soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is medium. Sutton soil warms up and dries out slowly in the spring. Unless limed, it is strongly acid or medium acid in the surface layer and subsoil and strongly acid through slightly acid in the substratum. This soil is well suited to cultivated crops.

Ro-Rippowam fine sandy loam

This nearly level, poorly drained soil is on flood plains of major streams, rivers, and their tributaries. The Rippowam soil has a seasonal high water table at a depth of about 6 inches. It is subject to frequent flooding. Permeability is moderate or moderately rapid in the surface layer and subsoil

and rapid or very rapid in the substratum. The available water capacity is moderate. Runoff is slow. Rippowam soil warms up and dries out slowly in the spring. It is strongly acid or medium acid but has a medium acid layer within a depth of 40 inches. This soil is suited to cultivated crops.

If wetland or shallow to bedrock soil areas are avoided, the site lends itself to medium density development, if sewers are used rather than on-site septic disposal. The areas mapped as Agawam, Hinckley and Merrimac have rapid permeability in the substratum. A potential groundwater pollution problem exists in these areas due to poor filtration of septic effluent. The higher the housing density, the higher the probability of a problem being encountered.

In areas mapped as Charlton-Hollis, test pits will be needed to determine where suitable pockets of soil are located for development. These areas should support on-site septic systems with a minimum of problems, except in steeply sloping areas.

Careful consideration must be given to any final plans developed for the area to insure that the proposed activities are well engineered. A carefully planned and implemented erosion and sediment control plan is necessary to protect both on-site and off-site soil and water quality. The New London County Soil and Water Conservation District, Soil Conservation Service staff is available for technical assistance in preparing such a plan.

VEGETATION

There are only three major vegetation types involved in this property. The areas labeled #1 on the accompanying vegetation map, are presently hay fields. They have been actively managed for hay production. The change in housing density would only make the grass areas smaller. Without the proper planning, the only real problem would be an increase in storm water runoff.

Areas shown as #2 are abandoned pastures and fields that contain some grass areas, but the area is filling in with red cedar, hickories, black birch and red maple. High density housing would remove most of the tree cover, which would not be a high economic loss, but it would change the appearance of the site and would be detrimental to the wildlife that now inhabits the area.

Area #3 is the most heavily wooded portion of the site. The present forest cover consists of black oak, white oak, scarlet oak, pignut hickory, shagbark hickory, black birch, and red maple. Not only would high density housing remove most of the tree cover, but due to the numerous outcroppings of bedrock, the residual trees that might be left would be highly subject to blowdown because of the very shallow soils. High density housing in this area would create real problem with the present tree stand; the only safe trees to leave would be those that were in the deeper soils between the bedrock outcrops. Even low density housing (1 acre lots) should be planned very carefully on these steep shallow soils. The area seems more suitable to even larger lots (two or more acres in size). These would allow more choice in the actual house location and would be less disruptive to the forest stand.

Vegetation

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scale

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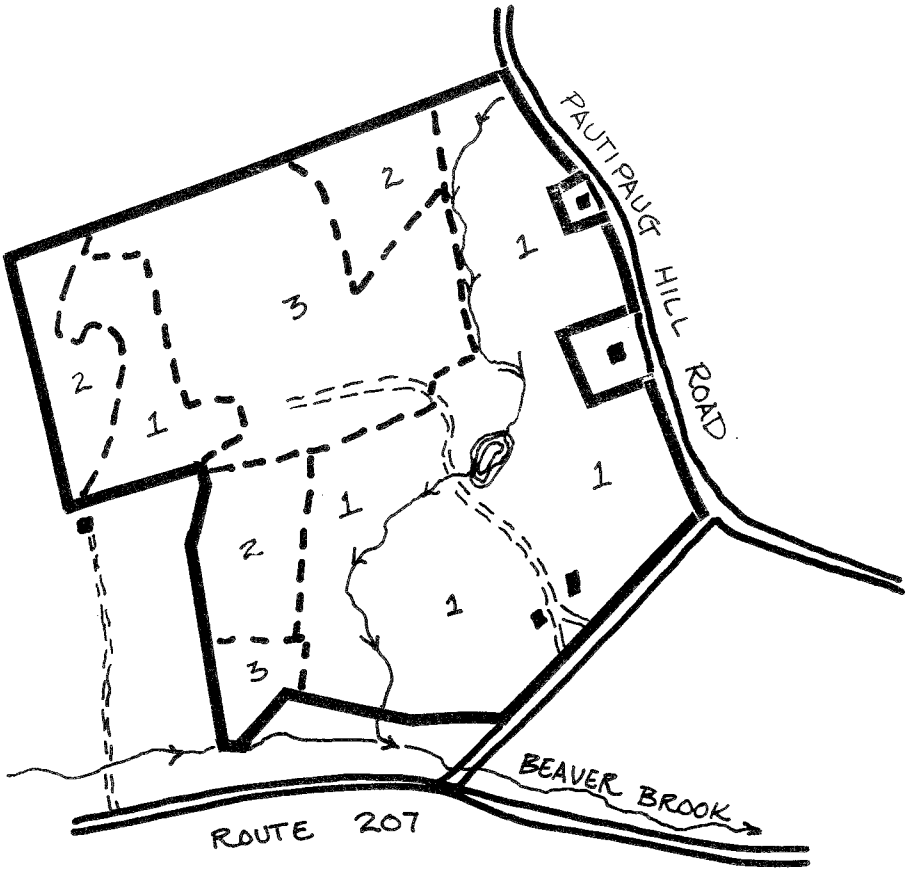


WATER SUPPLY

According to the project engineer, the site would probably be served by on-site well or wells. The municipal water supply line presently terminates at M.S. Chambers Company on Rt. 207 approximately 4,000 feet east of the property. The applicant should consider contacting the Sprague Water and Sewer Authority in order to determine whether or not extending the municipal water supply line to serve the site might be more feasible than developing an onsite well or wells.

The potential for large volume groundwater yields to a well or wells depends on the hydrogeologic characteristics (thickness and texture of deposit, and proximity to and size of watercourse) of the stratified drift (sand and gravel) deposits which will be tapped. It is not known if the stratified drift on the southern part of the site possess those hydrogeologic conditions for producing large volumes of water. Therefore, the applicant may want to consider drilling an exploratory well or wells in the area underlain by stratified drift to assess the aquifer potential. It should be noted coarse grained stratified drift has the ability to transmit groundwater rapidly but it also is more likely to allow contaminants to reach and diminish the quality of the groundwater. As mentioned earlier the thickness of the stratified drift on the site is probably not much more than 10 feet (Source: Connecticut Resources Bulletin No. 11). If so, this relatively thin blanket of stratified drift would probably be limited for producing a high yielding well.

Another potential water source for the parcel is the underlying bedrock. Water is transmitted through the bedrock almost entirely by way of an interconnected series of fractures (cracks). The amount and natural quality of groundwater obtainable from a given bedrock well therefore depends, to a large extent, on the number and size of water-bearing fractures intersected and on the specific rock formation through which the fractures pass. Most bedrock wells are capable of supplying small but sustainable yields of groundwater. According to Connecticut Resources Bulletin No. 11, 90% of those wells tapping bedrock in the Shetucket River Basin yeild at least 3 gallons per minute (gpm). Few wells yields more than 50 gpm and only on rare occasions have wells been drilled that were "dry holes."

The quality of groundwater at the subject parcel should be satisfactory. There is a chance moderate to excess concentrations of iron and/or manganese may be present in the water. As a result, it may be necessary to filter the water so that iron and/or manganese levels are reduced.

Since the water supply serving the potential development would be classified as a public water supply (a water supply well used or made available by a water company to two or more consumers), approval for the well location(s) is to be obtained from the Public Water Supply Section of the State Department of Health Services. Water quality, yield data along with plans for pumpage, storage and distribution would also be reviewed and approved by that section. Therefore, it is recommended that the applicant contact the section as soon as possible to discuss the water supply matter.

A well completion report for a well serving a residential home on LaCroix Road reported a yeild of 15 gpm. This well was drilled to a depth of 75 feet below ground surface.

WASTE DISPOSAL

Although the Town of Sprague does have public sewerage facilities, the area in question is not presently served by public sewers. Therefore, development of the property would either necessitate the use of on-site sewage disposal or the extension of public sewers. In regard to the latter, it is understood the sewer line is about 2,000 feet from the property. It is further understood that town regulations require the use of municipal sewers in those cases where the land is zoned for and multifamily housing is to be developed. If public sewers were extended, the property in total may possibly accommodate over 90 housing units. Public sewers would take care of the sanitary waste disposal problem while seemingly also allowing more flexibility in locating a possible well site(s) for a community water supply.

In regard to possible on-site subsurface sewage disposal, the soils on the lower portions of this property, excluding watercourses or any associated wetlands, appear to be well drained. Some areas, however, are probably subject to a high seasonal ground water level. Subsurface sewage disposal systems in this area should be kept shallow and spread out in order to be elevated above the maximum water table and to lessen the potential for ground water pollution. In general, one acre lots or larger should be capable of supporting the volume of sewage discharged by a single family residence without any significant associated water quality problems.

The upper terrain due to slope, stoniness and/or shallow underlying rock, would be more difficult for sewage disposal purposes. Of particular concern would be the depth to underlying bedrock. Adequate on-site testing would be needed in order to locate areas where the rock would not be a major limiting factor. The bottom area of any sewage leaching system is to be located a minimum distance of 4 feet above bedrock. Also, due to the slope, runoff and erosion would be more pronounced.

Generally, the Team Sanitarian has reservations on changing the zone for the entire parcel without a more detailed and comprehensive investigation and plan for the area. It may be possible to rezone a portion of the property to a higher density without compromising the sanitary facilities or environmental qualities of the parcel.

PLANNING CONCERNS

Surrounding land uses are low-density residential, along Pautipaug Hill Road, and undeveloped land. Residential uses are also found along Rt. 207 to the south of the site. At the intersection of LaCroix Road and Rt. 207 is a retail greenhouse-nursery. Access to the site is from either LaCroix Road or Pautipaug Hill Road off of Rt. 207. The village of Baltic is located about one mile east of the site along Rt. 207.

No existing traffic counts are available for town roads. The 1982 DOT traffic log indicated an average daily traffic count of 2,400 vehicles on Rt. 207 between the Franklin town line and Pautipaug Hill Road. CONNDOT's data indicate a volume/capacity ratio of 0.1429 for this same section of Rt. 207.

A ratio of 0.75 is considered congested and 1.25 is considered the intolerable threshold, so the road is well below the problem traffic levels. The peak-hour volume under this analysis is 220 vehicles per hour and the road has a capacity of 1,540 vehicles per hour.

Most likely not all of the sixty-seven acres in this site will be developed because land will be set aside for wetlands, roads, open space, storm drainage control, and water supply facilities. If one assumes these items will require about one-third of the site, this leaves about forty-five acres for development. The most intensive use which could occur under a R-2 zoning classification is a multifamily development. In a R-2 zone, the Sprague Zoning Regulations allow four multifamily dwellings per acre. This means that about 180 units could be built. Data published by CONNDOT* indicate that an apartment complex can be expected to generate 6.8 weekday trips per unit. Of this number, 8.0% can be expected to occur during the morning peak hour, and 10.2% during the evening peak hour. On this basis, a 180 unit project could be expected to generate 1,224 trips of which 98 would take place during the morning peak hour and 125 during the evening peak hour.

The addition of this evening peak of 125 to the current peak of 220 vehicles per hour on Rt. 207 referred to above results in a new peak hour volume of 345 vehicles which is still well below the capacity of 1,540 vehicles per hour.

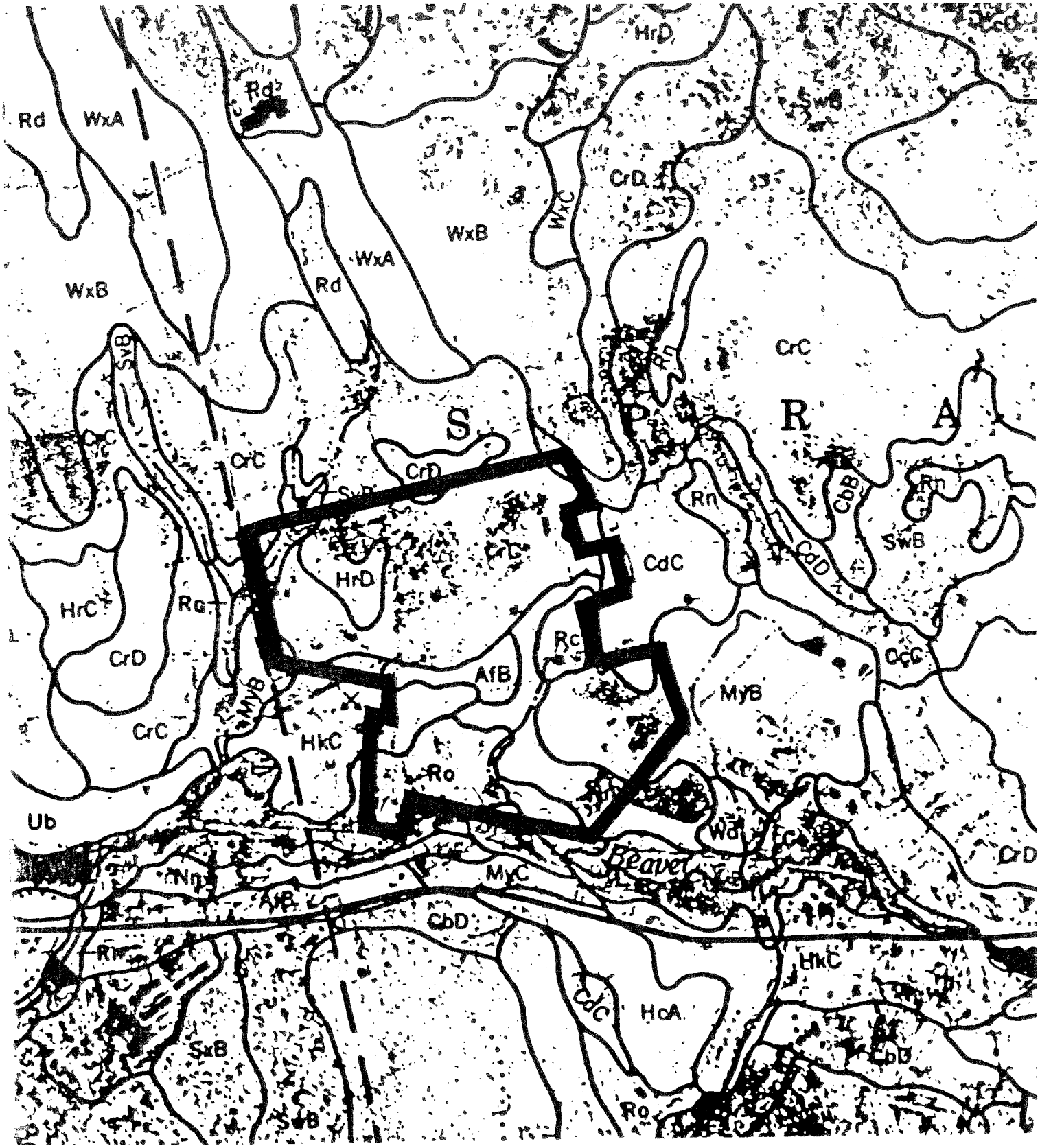
If it is the intent of the owner to develop part of the property for multi-family and part for single family, then the above numbers will change. For instance, if only 50 units of multifamily housing were to be developed, total new trips would be 340 daily with an evening peak of 35 trips. If the balance of the land remaining after 50 multifamily units are constructed were developed for single family homes, about 30 homes could be built. The CONNDOT Trip Generation Study referred to above indicates that a residential subdivision can be expected to generage 10.6 weekday trips per unit with an evening peak of 10.1% of average daily traffic. Thirty units could be expected to generate 318 daily trips with an evening peak of 32 trips.

If the owner intends to complete a mixed single/multifamily development, then it would be advisable to define the area for multifamily units and apply for a zone change to R-2 for only this area, since single family homes with on-site septic systems can be constructed in the existing R-1 zone.

*Trip Generation Study of Various Land Uses, Supplement A, by Israel Zevin. Connecticut Department of Transportation, 1975.

Appendix

Soils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Rc
AfB
MyB
MyB
CrC
HkC
Ro
Ub
Wd
Beaver
CrD
MyC
AfB
CbD
HkC
CdC
HcA
SxB
Ro

ERT - SPRAGUE, CT. - Limitations

Soil Symbol	Soil Name	BUILDING SITE DEVELOPMENT: Dwellings w/o Basements	Dwellings w/Basements	Local Roads and Streets	Lawns and Landscaping	SANITARY FACILITIES: Septic Tank Absorption Fields	Footnote
AfB	Agawam	Slight	Slight	Slight	Slight	Severe:poor filter	(1)
CrC	Charlton	Moderate:slope	Moderate:slope	Moderate:slope	Moderate:slope, large stones.	Moderate:slope	*
CrC	Hollis	Severe:depth to rock	Severe:depth to rock	Severe:depth to rock	Severe:thin layer.	Severe:depth to rock	*
CrD	Charlton	Severe:slope	Severe:slope	Severe:slope	Severe:slope	Severe:slope	*
CrD	Hollis	Severe:slope, depth to rock	Severe:slope, depth to rock	Severe:slope, depth to rock	Severe:slope, thin layer.	Severe:slope, depth to rock	*
HkC	Hinckley	Moderate:slope, large stones	Moderate:slope, large stones	Moderate:slope, large stones	Severe:small stones	Severe:poor filter	
HrD	Hollis	Severe:slope, depth to rock	Severe:slope, depth to rock	Severe:slope, depth to rock	Severe:slope, thin layer	Severe:slope, depth to rock	*
HrD	Charlton	Severe:slope	Severe:slope	Severe:slope	Severe:slope	Severe:slope	*
HrD	Rock outcrop	-	-	-	-	-	
MyB	Merrimac	Slight	Slight	Slight	Slight	Severe:poor filter	(1)
Nn	Ninigret	Moderate: wetness	Severe: wetness	Moderate:frost action, wetness	Moderate: wetness	Severe:wetness, poor filter	(1)
Rc	Raypol	Severe: wetness	Severe: wetness	Severe:wetness, frost action	Severe: wetness	Severe:wetness, poor filter	(2)
Rn	Ridgebury	Severe: wetness	Severe: wetness	Severe:wetness, frost action	Severe: wetness	Severe:percs slowly, wetness	*(2)
Rn	Leicester	Severe: wetness	Severe: wetness	Severe:wetness, frost action	Severe: wetness	Severe:wetness	* (2)
Rn	Whitman	Severe: ponding	Severe: ponding	Severe:frost action,ponding	Severe: ponding	Severe:percs slowly ponding	* (2)
Ro	Rippowam	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding,wetness, frost action	Severe: wetness, flooding	Severe:flooding, wetness, poor filter	(2)
SvB	Sutton	Moderate: wetness	Severe: wetness	Moderate: frost action, wetness	Moderate: wetness	Severe:wetness	(1)

(1) = Prime farmland. (2) = Wetlands. * = See description of the map unit for composition and behavior characteristics.

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for devel opment. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum o time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

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.

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 activitis. 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, and a statement identifying the specific areas of concern the Team should address. When this request is approved by the local Soil and Water Conservation District and the 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 Jeanne Shelburn (774-1253), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, P.O. Box 198, Brooklyn, Connecticut 06234.