Environmental Review Team Report

# Cherenzia Property

North Stonington, Connecticut

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EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report

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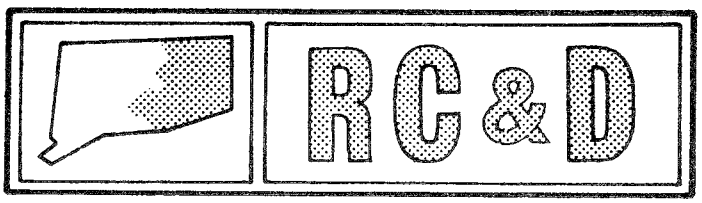
## North Stonington, Connecticut

August 1984

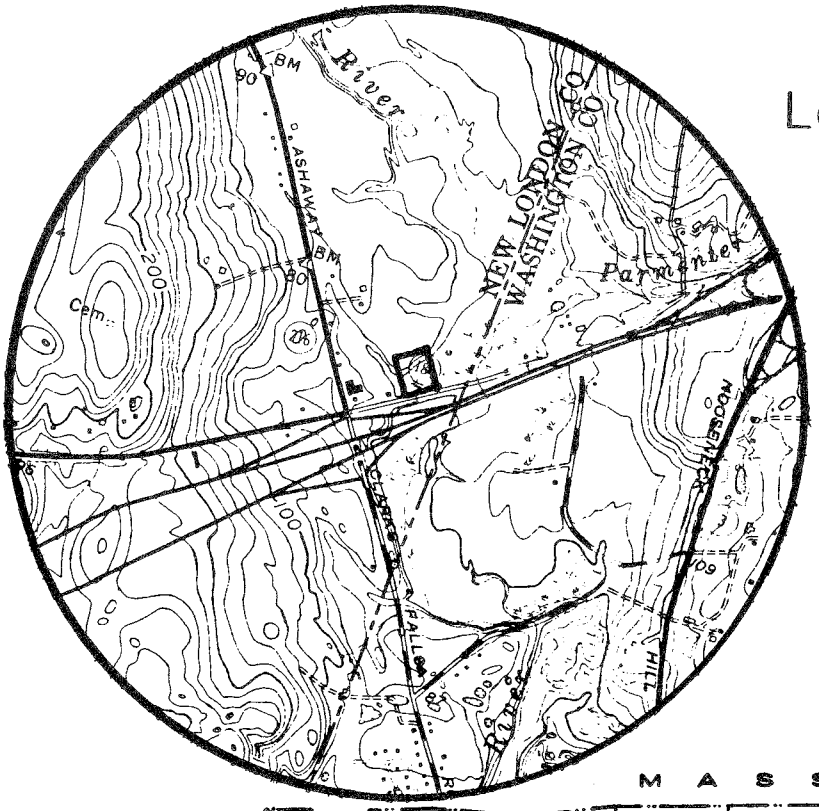


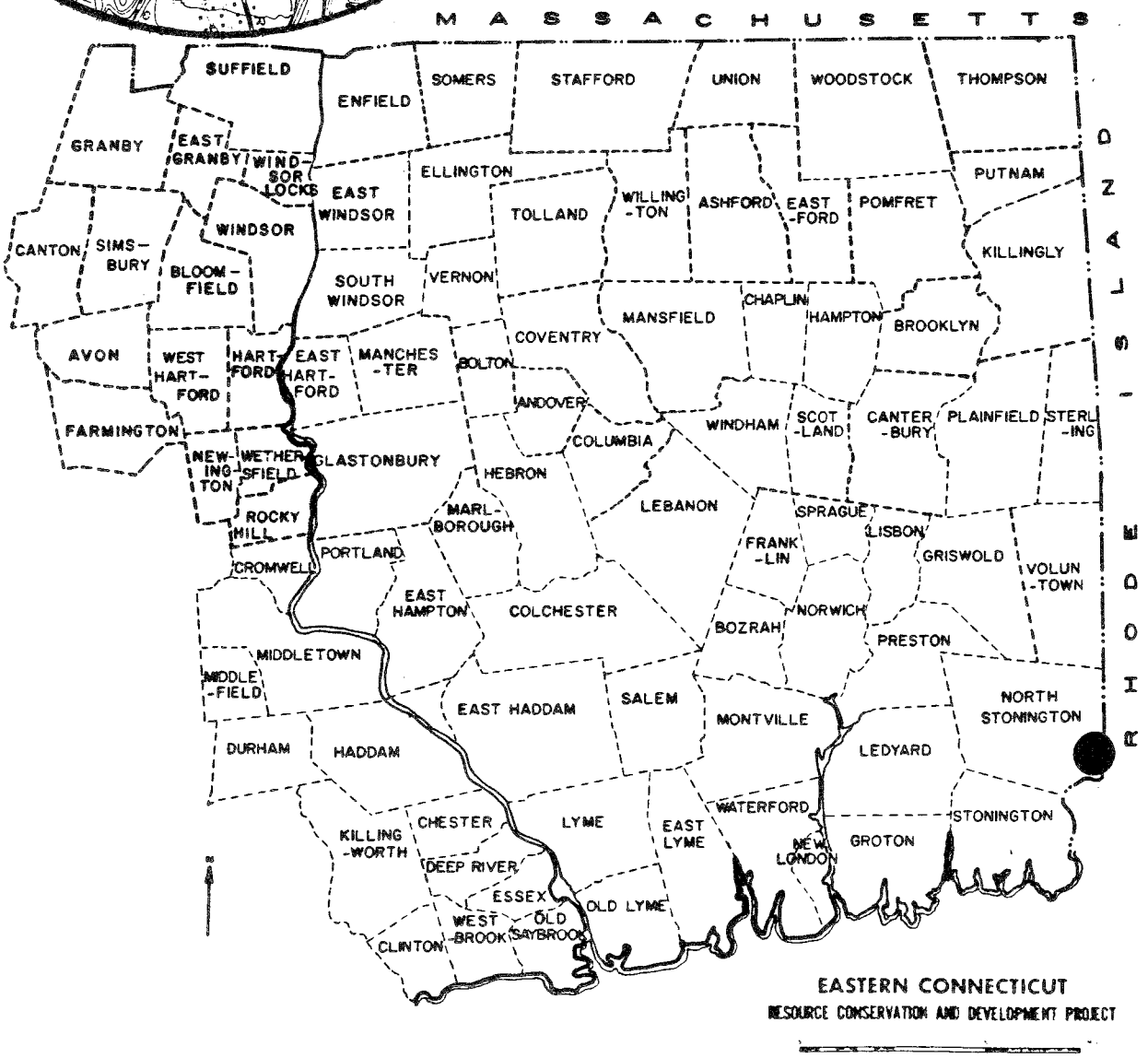

Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

# Location of Study Site

CHERENZIA PROPERTY
NORTH STONINGTON, CONNECTICUT



# ENVIRONMENTAL REVIEW TEAM REPORT
# ON
# CHERENZIA PROPERTY
# NORTH STONINGTON, CONNECTICUT

This report is an outgrowth of a request from the North Stonington Conservation 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: Barry Cavanna, District Conservationist, Soil Conservation Service (SCS); Bill Warzecha, Geologist, Department of Environmental Protection (DEP); Kevin Grady, Forester, DEP; Judy Wilson, Biologist, DEP; Charles Storrow, Regional Planner, Southeastern Connecticut Regional Planning Agency; Dave Cherico, Sanitary Engineer, DEP; Don Capellaro, Sanitarian, State Department of Health; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

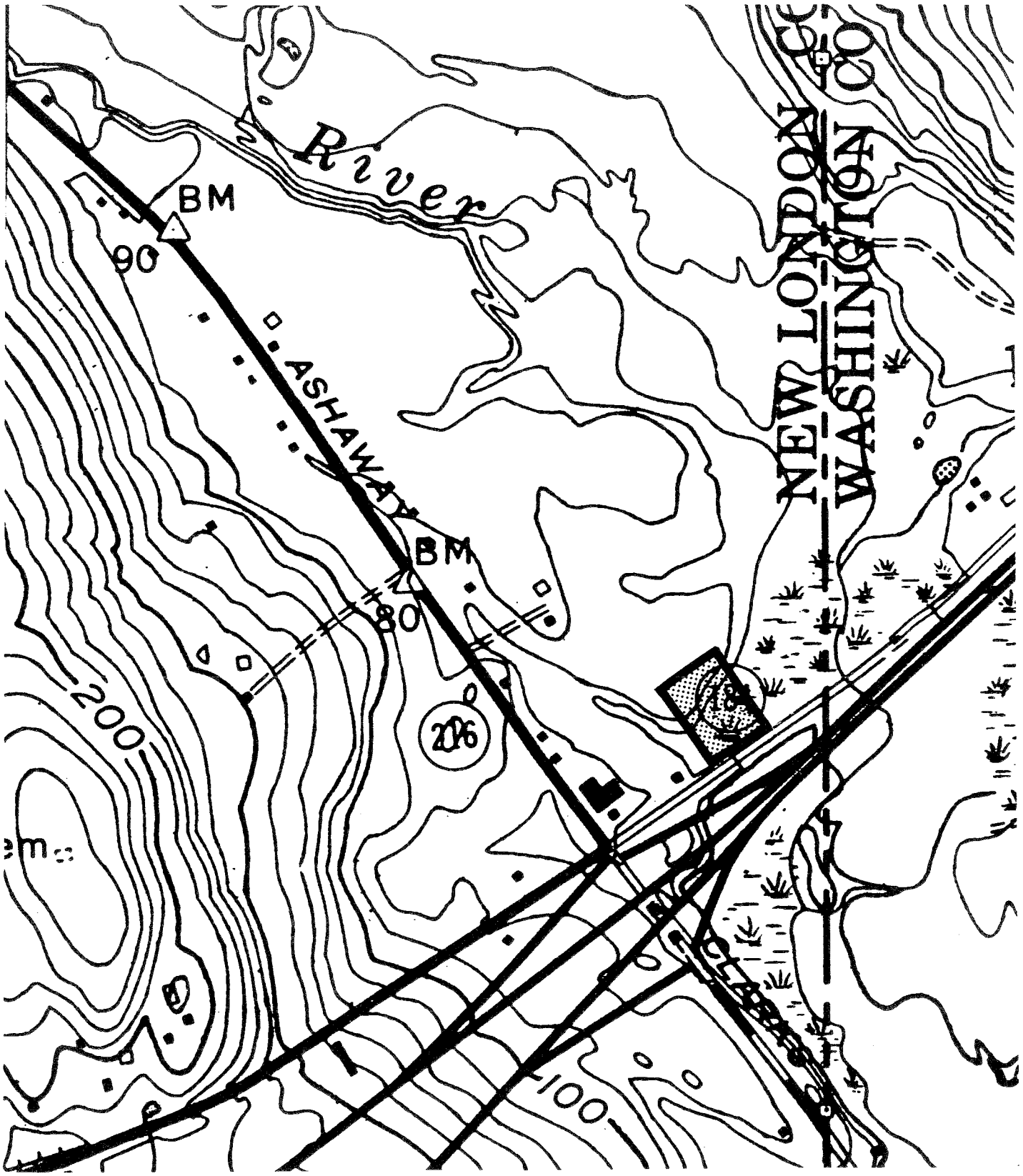
The Team met and field checked the site on Tuesday, June 14, 1984. Reports from each Tem member were sent to the ERT Coordinator for review and summarization for the final report.

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 suggest considerations that should be of concern to the developer and the Town of North Stonington. 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, P.O. Box 198, Brooklyn, Connecticut 06234, 774-1253.

| Topography | Site Boundary | 0 660' scale | N |
|---|---|---|---|



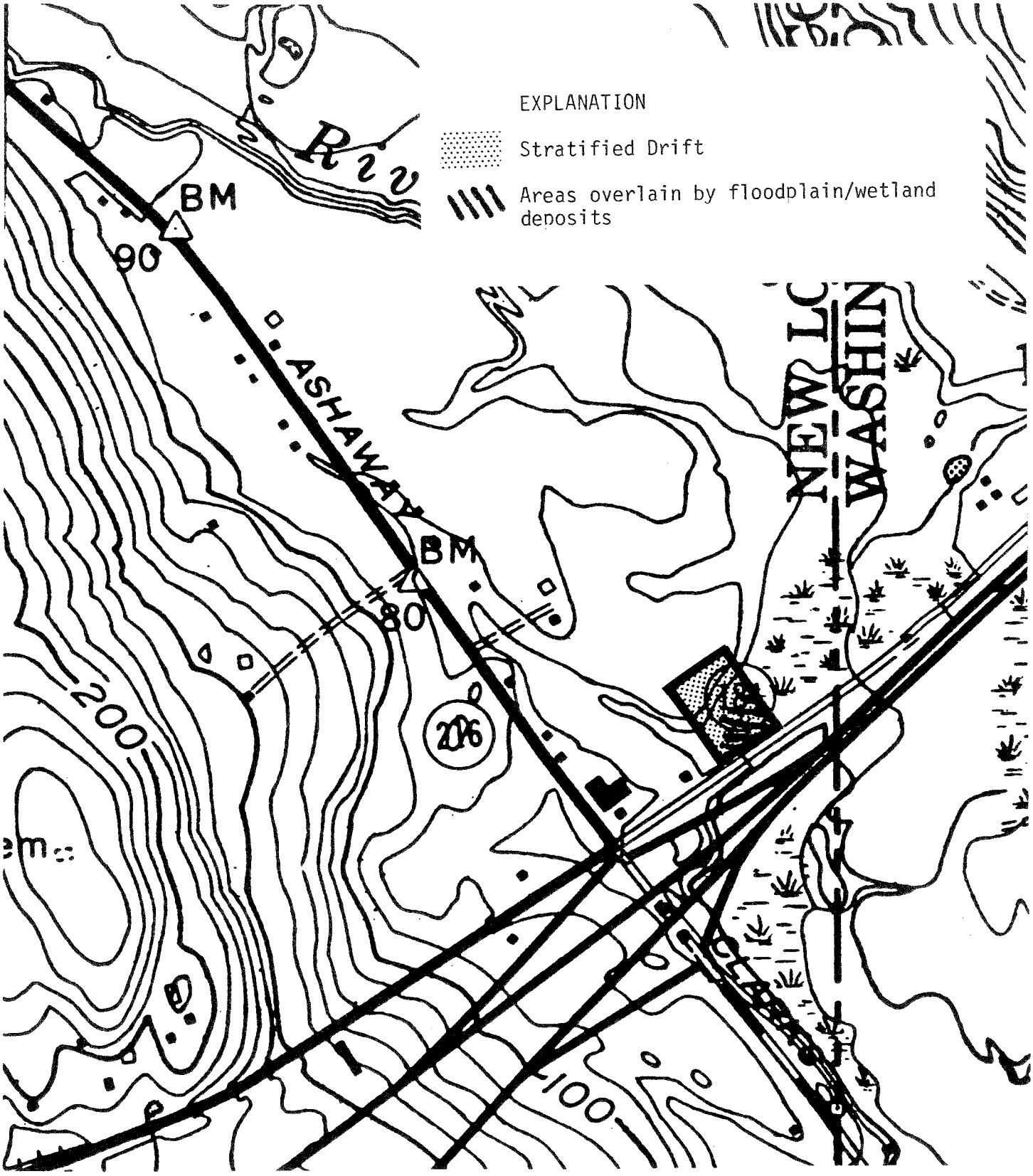
# INTRODUCTION

The Eastern Connecticut Environmental Review Team was asked to prepare an environmental assessment for a proposed hotel/motel complex in the Town of North Stonington. The site is approximately 4 acres in size and is located on the northwest side of Route 626 (an extension of Route 184) about 520 feet southwest of the Connecticut/Rhode Island state border. The property is presently in the private ownership of Salvatore E. Cherenzia. Preliminary plans have been prepared by Cherenzia and Associates, a Westerly, Rhode Island engineering firm.

Preliminary plans show a 50 unit motel complex located at the northern edge of the property. This proposed motel would be served by an on-site septic system and an on-site well(s). In order to gain access to this section of the site, the property will have to be regraded and a portion of the wetland near the roadway will have to be filled. The developer estimates that approximately one acre of the site will be covered with impervious surfaces. Although this is the developer's optimum proposal, they have indicated a willingness to "scale down" or consider other uses of the site if the resource base does not allow for this type of development.

The Team is concerned with the impact of this 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 project financially unfeasible for a developer. Natural limitations to development and possible mitigation measures have been discussed in detail in the following sections of this report.

# Surficial Geology



## ENVIRONMENTAL ASSESSMENT

### TOPOGRAPHY

The ±4 acre parcel of land is located on the northwest side of Route 626 (an extension of Route 184) about 520 feet southwest of the Connecticut/Rhode Island state border. Wetlands, which comprises about 38 percent of the site, dominate the southeast corner of the property. From the wetland area, the land surface rises sharply to the rear portion of the parcel. The topography at the rear portion is generally flat and is controlled by the surficial deposits (stratified drift), covering the site. Maximum and minimum elevations are approximately ±70 feet and ±60 feet above mean sea level.

The subject site is located within the Ashaway topographic quadrangle. A bedrock geologic map (GQ-403) prepared by Tomas Ferninger and a surficial geologic map (GQ-712) by J. P. Schafer for the quadrangle have been published by the U.S. Geological Survey. Both maps are available for purchase or review at the Department of Environmental Protection's Natural Resources Center in Hartford.

### GEOLOGY

No bedrock exposures are visible on the parcel of land. Map GQ-403 classifies the bedrock underlying the site as Potter Hill Granite Gneiss. The rock consists of a fine-to-medium grained, orange to pink, strongly foliated granitic gneiss. It is composed of the minerals microcline, quartz, oligoclase, biotite, magnetite, and minor muscovite.

The term "gneiss" refers to a crystalline, metamorphic rock, geologically altered by great heat and pressure deep within the earth's crust which has a streaked or banded appearance. The banding occurs when thin layers of elongate or flaky minerals alternate with layers of granular minerals. The exact depth to bedrock is not known. However, it may be as much as 80 feet below ground surface throughout much of the site.

Those unconsolidated materials, surficial deposits, overlying bedrock on the site consists of stratified drift and alluvium. The stratified drift is composed of rock materials that were washed by meltwater from an ice sheet which covered the area 10,000-12,000 years ago. Sand and gravel are the major components of the stratified drift. Because the stratified drift was reworked by the meltwater streams, they are commonly well sorted and are bedded according to particle grain size. The stratified drift is exposed in an excavation northwest of the site. The upper 3 to 15 feet of the deposit is dominated by gravel-sized sediments, while at depth the material is graded into finer gravel or sand-sized particles. The exact thickness of the stratified drift on the site is unknown. However, Connecticut Resources Bulletin No. 16 suggests the deposits are at least 80 feet thick throughout the property.

Alluvial deposits cover approximately 38 percent of the site in the southern portions. These deposits, which are delineated by the symbol Sf (Scarboro soil) on the accompanying soil map consists of silt, sand, gravel and boulders found in the flood plains of Ashaway River. A thin cover of partly decayed organic material mixed with clay, silt and fine sand overlies the alluvium. The applicant proposes to fill in a ±one acre portion of the flood plain-wetland system, which is regulated by state statute.

As was indicated on the review day, both an on-site sewage disposal and water supply system would be required to serve the property. Although the topographic plan made available to Team members indicates a proposed motel complex for the site, the project engineer stated there may be other potential uses for the property which might include a warehouse, light industrial use, office building, etc.

Based on visual inspection and soil mapping data, it appears the rear of the portion of the property would be the most suitable area for development. This is mainly due to the presence of deep sandy and gravelly soils, flat slopes and relatively dry conditions (deep water table). Steep slopes in the central portions of the site and the presence of wetlands in the front part of the site, make these areas less favorable and possibly unsuitable for development.

Detailed soil testing should be conducted on the site preferably in the proposed leaching area in order to determine soil conditions, depth to groundwater table, percolation and/or permeability conditions, and direction and rate of groundwater movement. Once the testing is completed, the project engineer should then be able to determine the capacity of the soils on the site to accept sewage effluent as well as to determine an acceptable density of development for the site.

It should be pointed out that although the sandy and gravelly soils are favorable for the construction of an on-site sewage disposal system, they are also highly porous by nature. As a result, any pollutants that find their way into the ground will have little opportunity to be renovated by the soil components. On the other hand, natural dilution by infiltrating rainfall will be increased. It may be necessary to increase the lateral separating distances between septic leaching system(s) and on-site well(s) as well as neighboring wells to minimize potential pollution problems.

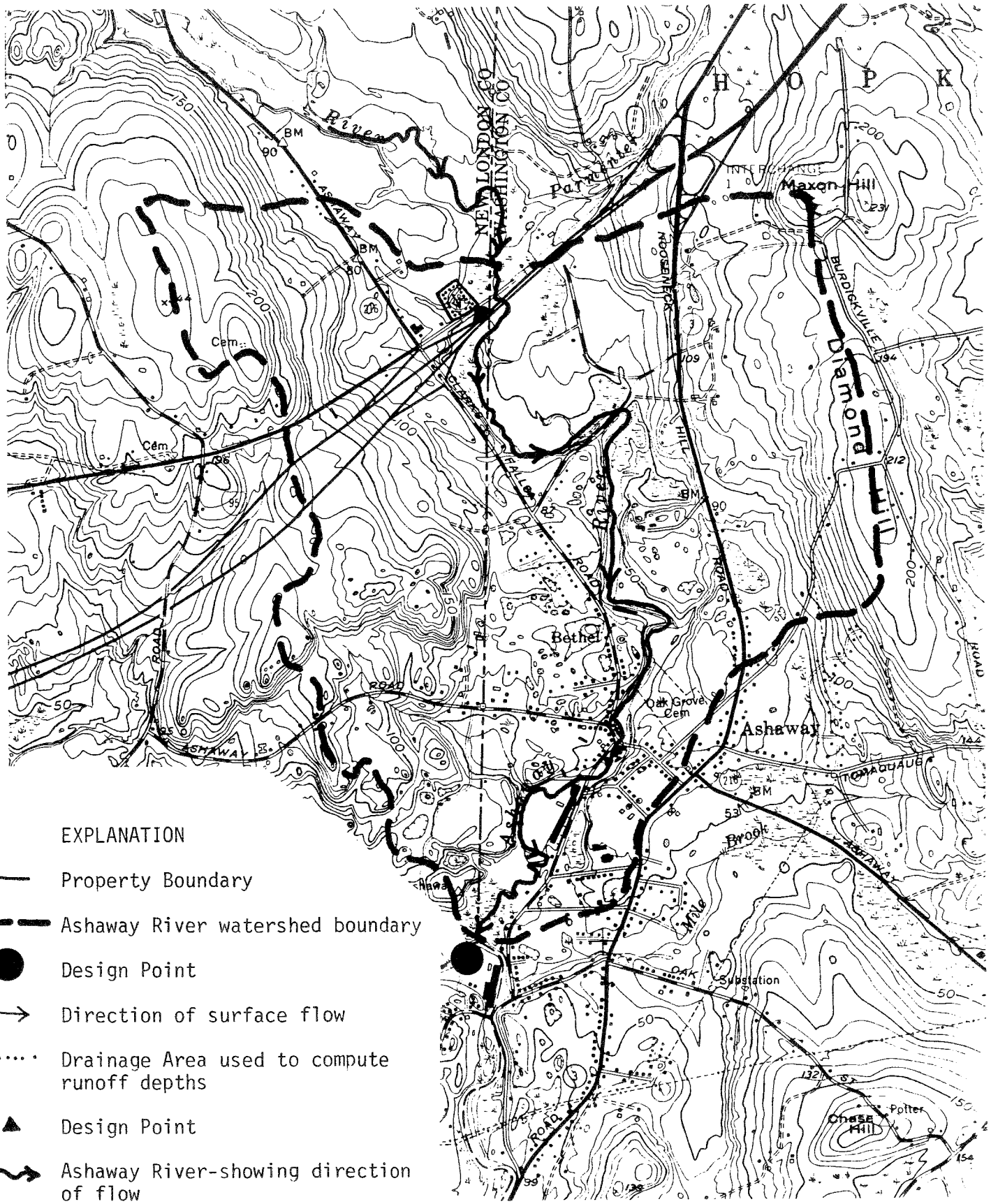
## HYDROLOGY

The site lies within the watershed of Ashaway River. Precipitation falling on the site is absorbed by the highly permeable soils. Once it reaches the ground, it moves downward until it reaches the water table. It then begins to move slowly by the force of gravity through the porous soils towards a local discharge area, where it seeps out into the wetland area and/or spring to become part of the surface water. Surface water in the wetland area is routed under Route 626 through a ±48 inch culvert which is located at the eastern corner of the property. Once it passes under Route 626 and Interstate 95, it flows generally southward into the Ashaway River. Based on visual inspection of the wetland, it appears during the wet time of year and/or during heavy precipitation. Surface water may flow eastward into the Ashaway River rather than being intercepted by the ±48 inch culvert mentioned above.

# Drainage Areas

0 660'
scale

N



Development of the site is expected to cause an increase in the runoff flows from the site. These increases will arise mainly from the creation of impermeable surfaces such as rooftops and paved driveways and parking areas over highly permeable soils. According to the project engineer, at least one acre of the site would be covered with impermeable surfaces.

It is possible to estimate the post development runoff depths for storms of various magnitudes (e.g., 10-year, 24-hour storm, etc.) by using simplification of a method outlined in Technical Release No. 55, published by the Soil Conservation Service, U.S. Department of Agriculture. The method involves the determination of runoff curve numbers for a given watershed. These numbers relate runoff to rainfall in the watershed on the basis of soil types and current and proposed land usage. For the purposes of analyzing the runoff depths likely to occur under the present proposal, a design point and its corresponding watershed was chosen (See Drainage Area Map.). The watershed shown is based upon a particular design point and delineates all the land from which surface runoff ultimately reaches that point. It should be pointed out, however, the project engineer may use other acceptable methods (i.e., rational method) available to him for calculating runoff changes.

The results of the Team geologist's calculations, shown below, for the design point chosen, should be considered "ball park" figures with regard to runoff volumes. The calculated percentages of increase should be fairly close, however.

Runoff depth increases under the present proposal are as follows:

| | 10-year 24-hr. storm | 25-year 24-hr. storm | 50-year 24-hr. storm | 100-year 24-hr. storm |
|---|---|---|---|---|
| Before Development | .75 | 1.05 | 1.3 | 1.7 |
| After Development | 1.51 | 1.97 | 2.39 | 2.98 |
| Percent Increase | 101% | 88% | 84% | 75% |

Estimates are recorded in inches.

These increases are significant and underscore the need for judicious stormwater management on the site. Under present plans, the applicant wishes to fill in ±1.0 acres of the wetland which presently provides natural runoff retention. By filling in the wetland, the valuable storage capacity of water in the wetland will be reduced, forcing the excess water to flow downstream sooner than it otherwise would.

It is recommended the applicant be required to submit detailed hydrological information on pre- and post-development runoff volumes and peak flows from the site once the use of the site has been determined. For example, if the property was developed creating only a small area of impervious surfaces, the runoff depths may not be as significant as those shown in the table. As a result, there may

be less of an impact on the wetlands and ultimately downstream areas. Estimates should be provided for a 10, 25, 50 and 100-year design storm. Detailed design specification for all stormwater control facilities should also be submitted. The project engineer should take a close look at downstream culverts to determine if they can handle post development flows from the site.

The Town is concerned about the applicant's desire to fill in a portion of the wetlands. As mentioned earlier, wetlands serve many valuable hydrological functions. They act as a natural runoff retention basin, thereby reducing downstream flooding during storms. It should be pointed out that a Flood Hazard Boundary Map for the Town of North Stonington has been prepared by the National Flood Insurance Program. The map indicates that the wetland area on the site lies in the special flood hazard area and any change in this area is regulated by Town ordinance or zoning regulations. Wetlands also serve as an effective natural buffer and can improve water quality through various biochemical processes. In addition, they serve as habitat for waterfowl and wildlife as well as plants. For these reasons, wetland fillings should be avoided where possible.

Based on the plan submitted to Team members, it is difficult, from hydrological standpoint, to assess the risks involved in permitting the desired area of the wetland to be filled. The applicant has not provided sufficient information, i.e., septic system location, parking areas, stormwater management plan, access roads, etc., on the plan in order to assess the proposed filling and/or modification properly. For example, it may be possible to develop the site with little or no disturbance of the wetland on the site. This can only be assessed once finalized plans have been submitted. Access to the rear portion of the lot appears to be possible along western property line. This should result in minor disturbance of the wetlands.

It is suggested wetlands on the site should be flagged mapped by a certified soil scientist. Once the applicant has submitted a detailed plan for development of the site, the Town may wish to contact the Department of Environmental Protection's Water Resources Unit (Inland-Wetlands) for technical assistance in regard to this matter.

Construction of pavement, parking lots, and access drives, not only increases runoff flows from the site, but may also cause degradation to surface water in the wetlands and watercourses downstream. Runoff from these areas are polluted by numerous contaminants such as hydrocarbons, gas and oil from automobile residue, road salt, and grit. Although wetlands play an important role in cleansing surface waters through natural filtration and absorption, some of the contaminants mentioned above are simply not affected by the water cleansing mechanisms provided by wetlands.

## SOILS

A detailed soils map of this site and detailed soils descriptions are included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1,320'/inch scale to 660'/inch, 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, Soil Survey New London County, Connecticut, 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 Merrimac sandy loams, and Scarboro mucky fine sandy loam. These soils and their properties are described in detail below.

MyA Merrimac sandy loam 0 to 3 percent slopes - This nearly level, somewhat excessively drained soil is on stream terraces and outwash plains. 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 slow. 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.

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 drier periods in the summer.

MyC Merrimac sandy loam 8 to 15 percent slopes - This 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 rapid. Merrimac 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. However, the hazard of erosion is severe. This soil is droughty during the summer.

Sf Scarboro mucky fine sandy loam 0 to 3 percent slopes - This nearly level, very poorly drained soil is on stream terraces and outwash plains. Slopes range from 0 to 3 percent. The Scarboro soil has a high water table at or near the surface for most of the year. Permeability is rapid in the organic layer and rapid or very rapid in the mineral surface layer and substratum. The available water capacity is low. Runoff is very slow, or the soil is ponded. Scarboro soil is very strongly acid through medium acid. This soil is not suitable for cultivated crops because of wetness.

A detailed sediment and erosion control plan should be prepared for this proposal and should be carefully followed during construction. Technical expertise in formulating such a plan is available from the Soil Conservation Service at the New London County Soil and Water Conservation District offices.

The proposed plans call for filling in the wetland area in excess of that needed to provide access to the northern section of the site. The applicant may wish to reconsider this decision and perhaps design a pond for this area. This would improve the aesthetic quality of the parcel and also provide storage for stormwater runoff from the site.

## VEGETATION

The project as presented will have minimal negative impact to the vegetative resources on the adjacent state-owned wildlife marsh.

However, this evaluation is based on the understanding that the water level (i.e., normal groundwater level) will not deviate significantly (i.e., 2" - 4") on the wetland. If so, some species, such as the cedars, may be irreparably affected (killed).

## WILDLIFE

Wetlands are absolutely essential areas for many species of wildlife and important to all because they provide the 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 are 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 brood rearing sites for a great number of wildlife species. They provide breeding and nesting sites for waterfowl. More than 50 species of game and non-game species including beaver, bobcat, fox, mink, muskrat, opossum, white-tail dear, snowshoe hare, woodchuck, great blue herons, geese, ducks, songbirds and warblers use wetland habitat. Because of previous filling practices, there are less and less wetland areas 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. Although the impact may be minimized because the acreage being developed is small. 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. Some other species which are more adaptable to man's presence will probably remain. Some new species (possibly less desireable species) may even be attracted to the area.

If followed, these 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.

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

Landscaping

On a small acreage with a large building, 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.

A variety of trees and shrubs useful to wildlife can be planted. 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.

WATER SUPPLY

Since a public water line is not available to the site, it will be necessary to develop on-site well or wells. According to the "Ground Water Availability in Connecticut Map" by Daniel B. Mead, the stratified drift deposits on the site have potential for small to moderate yielding wells (1-100 gallons per minute); however, because there is a greater risk of well contamination if the stratified drift on the site is tapped, it is suggested bedrock-based well or wells be provided. It is expected most of the potential uses for the site, 25-30 unit motel complex or storage warehouse, would only need water well yields of 3-5 gpm.

Because the water is transmitted through the rock by means of interconnected fractures, and because the fractures are unevenly distributed, a well drilled in any particular location may intersect no fractures and be dry, or may intersect numerous fractures and be a high water producer. As a result, it is virtually impossible to predict the absolute yield of well drilled at any given location. Approximately 90 percent of the bedrock-based wells evaluated in Connecticut Water Resources Bulletin No. 15 (Lower Thames and Southeastern Coastal River Basins) were capable of supplying at least 3 gpm.

The natural quality of the groundwater should be generally good. There is a chance a well or wells may contain water which has elevated iron and/or manganese levels. As a result, it may be necessary to treat the water to correct such a problem.

A well or wells should be located at the rear limits of the site (on the high side), conservatively separated from sewage disposal systems and protected from surface runoff which may contain such contaminants as automobile residue, hydrocarbons, and/or road salt. The well or wells should be tightly sealed into the underlying bedrock as well as properly grouted. This should minimize the chances of well contamination.

Water wells designed for more than two connections would be classified as a public water supply and the necessary approval for any well locations would have to be obtained from the State Department of Health Services, Public Water Supply Section. It is recommended they be contacted as soon as possible to discuss the proposal. Water quality, yield, along with plans for pumpage storage and distribution would need to be reviewed and approved by the Public Water Supply Section.

WASTE DISPOSAL

This site is approximately 4 acres or less in size. The original proposal is to eventually develop a 50-unit hotel. At 150 gallons per bedroom, 7500 gallons of domestic sewage would be generated daily. Any flow greater than 5,000 gallons per day would require a permit from the Department of Environmental Protection, Water Compliance Unit.

To obtain a permit, an engineer for the developer would have to demonstrate that the sanitary sewage disposal system would function properly and not cause pollution. The rear of this property appears to contain a deep deposit of coarse sand. As long as this area is not totally excavated, a properly designed and constructed system should function without failure in this very permeable soil area. Though the site could probably handle 7500 gallons per day hydraulically, submittal of extensive engineer design calculations would be required to demonstrate if this site can meet the DEP permit guidelines for pollutant renovation.

The principle parameters of concern would be nitrogen and bacteria. Nitrogen at the property line or point of surface water discharge would have to be 10 mg/l or less. With a waste load of 7500 gallons per day, nitrogen dilution from this site may not meet DEP guidelines without additional treatment. In addition to nitrogen, the engineer would have to demonstrate that the site has at least 3 weeks of travel time between the system, the well serving the complex, the wetland and the property line. Extensive permeability testing and groundwater slope profile data would be required to determine bacteria renovation on this sandy site.

Sewage flow of less than 5000 gallons per day comes under the jurisdiction of the State Department of Health. A sanitarian from the State Department of Health accompanied the Team on the day of the field review and based on his visual observation and soil mapping data, the site should not present a major problem for septic effluent to leach into the ground, depending on the system location. However, because of the highly permeable soil which is in evidence, a leaching system may have an adverse effect on ground and surface water. The soil may not adequately filter and renovate the sewage effluent as it moves through the soil, particularly where the groundwater tends to be at shallow depth.

Therefore, detailed site investigation and engineering plans should be prepared for possible sewage disposal. Consideration should be given as to the density of development and projected quantity of sewage to be discharged. Keeping the total volume of sewage to be disposed of relatively low will reduce the impact. Also, elevating leaching systems as much as possible above groundwater will lessen the potential for pollution. In this respect, the actual location for a system(s) on this site could be a major concern. Because of possible detrimental affect of the nitrate level in sewage effluent of a large system to ground and surface water, a special study may also be required.

The filling of a portion of the wetland area would no doubt reduce the natural entrapment and renovating process of the wetland. Development of the property with subsequent paving of some portion of the land will result in increased runoff which could degrade surface water quality within the immediate area. The proposed cut and fill operation should be carefully evaluated in terms of where the sewage disposal area and the type of subsurface leaching system is to be actually located. The prevention of subsurface seeps of inadequately treated sewage effluent on the embankment or in surface water flow in the wetlands area is to be avoided.

## PLANNING CONCERNS

The property which is the subject of this report is about four acres in size. It is located in the southeastern portion of the Town of North Stonington on Route 184 about 600 feet east of the intersection of that highway and Route 216. The site is a very short distance from Exit 93 on Route I-95, and is located in the H-C (Highway Commercial) Zoning District. Adjacent to the site to the southwest is a large highway "truck stop" which contains a gasoline station, a restaurant and other facilities which serve trucks operating on Route I-95. That highway is a very short distance away and access to the Interstate highway is very good. The land across Route 184 from the site is wooded and vacant. It forms part of the right-of-way for Route I-95 and belongs to the State of Connecticut. The land to the east of the site is also vacant and also belongs to the State.

The principal problem which the developer of this site will face will be to avoid pollution of the wetland system which traverses the southern section of the property. This will be made more difficult than it would be in other locations because there will be no public sewage disposal system available here in the foreseeable future. The developer will also have to provide an on-site water supply system. The owners of the site have asked that the Environmental Review Team consider a fifty-unit motel on this site as an initial proposal, but they recognize that if a workable sewage disposal system for this number of units cannot be achieved, the number may have to be reduced, or else development plans may have to be shifted to some other use. The feasible capacity of the water supply and sewage disposal systems are discussed elsewhere in this report.

Development on the site will be constrained by the fact that the wetlands along the border of the property which fronts on Route 184 will have to be partly filled in order to gain access to the buildable area in the rear. The best location for the access road appears to be at the southeast corner of the site. A deep gully or possibly a pond will have to remain along the rest of the road frontage.

Thus, more than one access road does not appear feasible and any developed areas will be set back from the road. The segment of Route 184 on which the site is located is straight with no steep grades. The sight lines in both directions for such an access road would be very good.

Treatment of the remaining wetland areas as a pond would appear aesthetically desirable, and should enhance the appearance of a motel or some other commercial use.

Some uses permitted by the zoning that might not require such a large sewage disposal system are a restaurant, an automobile dealership, automotive repair, a Planned Business Development, a Research and Development facility, and a wholesale trade and warehousing facility.

The section of Route 184 where the site is located is very lightly traveled. The traffic count data published by the Connecticut Department of Transportation (CONNDOT) do not cover this section of the highway. The closest segment of the Route for which data is available is that from Route 2 to Route 49. In 1975, the average daily traffic (ADT) at that location was 1,500 vehicles per day. The figures increase as data for the segments of the highway towards the west are examined. For example, from the Stonington-North Stonington town line on Route 2 the ADT was 1,800 vehicles per day, and from Route 201 to the above town line, the figure was 2,000 vehicles per day. Thus, it seems likely that near the site which we are examining, the ADT was no more than 1,500 vehicles. If we assume that conditions at the site were identical to those in the segment of the highway from Route 2 to Route 49, then not only would the ADT be 1,500 vehicles per day, but using CONNDOT's formulas, the peak-hour traffic would be 195 vehicles in both directions. Also, CONNDOT shows the highway capacity to be 1,760 vehicles per hour. Thus, the volume to capacity ratio would be 0.1108, a very low value, which would indicate that traffic can move with little impediment.

As mentioned above, the initial development proposal for this site is a fifty-unit motel. Statistical data taken at other motels* indicate that such a facility can be expected to generate 12.3 vehicle trips per day per unit and that 8.4% of those trips will occur in the peak hour. Thus, a fifty-unit motel can be expected to generate 615 trips per day, of which 52 would occur in the peak hour. This would result in a peak-hour traffic volume of 195 + 52, or 247 vehicles per hour. Therefore, the volume to capacity ratio would increase to 0.1403, which is still a very low figure.

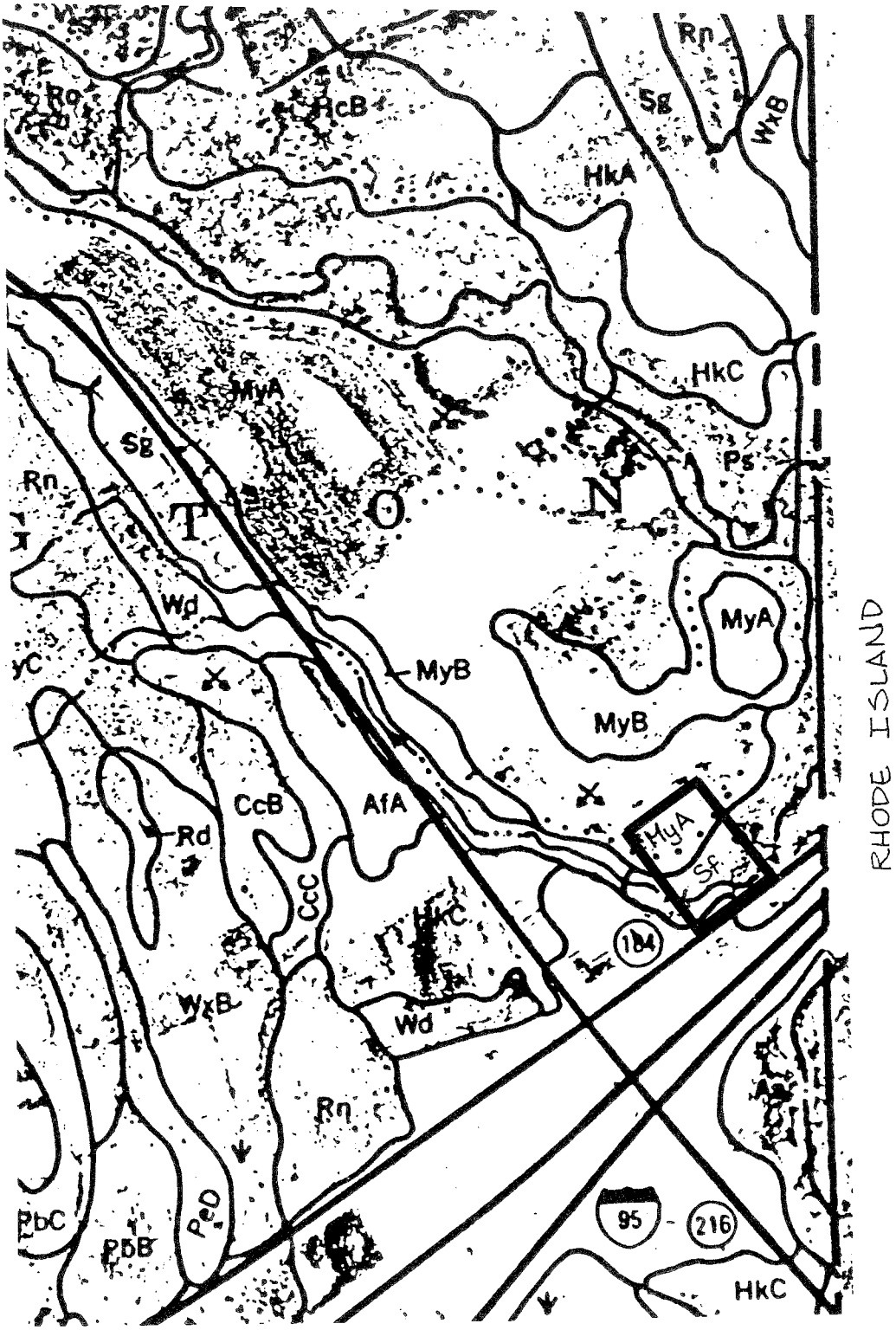
Another possible land use at this site which would be permitted by the North Stonington Zoning Regulations would be an office building. Such a building might correspond to the Planned Business Development which is allowed at this site by the Zoning Regulations. Data from the previously cited CONNDOT report indicate that such a building can be expected to generate 20.6 vehicle trips per day per 1,000 square feet of gross building floor area. A building 40 feet wide and 300 feet long would appear to easily fit on this site. The Zoning Regulations permit a building height of 30 feet. If we assume that this would allow a three-story building, the the building could have a gross floor area of 36,000 square feet. This would mean that it could be expected to generate 742 trips per day. Of these,

*Trip Generation Study of Various Land Uses, Supplement A, Israel Zevin, CONNDOT, March 1975.

14.1% or 104 trips could be expected to occur during the morning peak hour. If these 104 trips are added to the 195 trips estimated to take place under current conditions, then the peak-hour total would be 299 trips, which would give a volume-to-capacity ratio of .1698, still a very low figure but higher than the motel. It thus appears that traffic impact should not be a problem if this site is to be developed.

# Appendix

# Soils


Ro
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MyB
MyB
CcB
AfA
Rd
MyA
Sf
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HkC
184
WxB
Wd
Rn
PbC
PbB
PeD
95
216
HkC
RHODE ISLAND

| | | BUILDING SITE DEVELOPMENT | | | | | SANITARY FACILITIES | |
|---|---|---|---|---|---|---|---|---|
| Soil Symbol | Soil Name | Dwellings w/o Basements | Dwellings w/Basements | Small Commercial Buildings | Local Roads & Streets | Lawns & Landscaping | Septic Tank Absorption Fields | Sewage Lagoon Areas |
| MyA | Merrimac | Slight | Slight | Slight | Slight | Slight | Severe: Poor Filter | Severe: Seepage |
| MyB | Merrimac | Slight | Slight | Moderate: Slope | Slight | Slight | Severe: Poor Filter | Severe: Seepage |
| MyC | Merrimac | Moderate: Slope | Moderate: Slope | Severe: Slope | Moderate: Slope | Moderate: Slope | Severe: Poor Filter | Severe: Slope, Seepage |
| Sf | Scarboro | Severe: ponding | Severe: ponding | Severe: ponding | Severe: ponding, frost action | Severe: ponding, excess humus | Severe: ponding, poor filter | Severe: seepage, excess humus, ponding |

MyA Merrimac sandy loam 0 to 3 percent slopes - This nearly level, somewhat excessively drained soil is on stream terraces and outwash plains. 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 slow. Merrimac soil warms up and dries out rapidly in the spring. Unless limed, it is stongly acid or medium acid. This soil is well suited to cultivated crops. It is droughty during the drier periods in summer. This soil is capability subclass IIs.

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. This soil is in capability subclass IIs.

MyC Merrimac sandy loam 8 to 15 percent slopes - This 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 rapid. Merrimac 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. However, the hazard of erosion is severe. This soil is droughty during the summer. This soil is in capability subclass IIIe.

Sf Scarboro mucky fine sandy loam 0 to 3 percent slopes - This nearly level, very poorly drained soil is on stream terraces and outwash plains. Slopes range from 0 to 3 percent. The Scarboro soil has a high water table at or near the surface for most of the year. Permeability is rapid in the organic layer and rapid or very rapid in the mineral surface layer and substratum. The available water capacity is low. Runoff is very slow, or the soil is ponded. Scarboro soil is very strongly acid through medium acid. This soil is not suitable for cultivated crops because of wetness. This soil is in capability subclass Vw.

# 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.