Environmental Review Team Report

Island Road Subdivision

Stonington, Connecticut

RC&D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report

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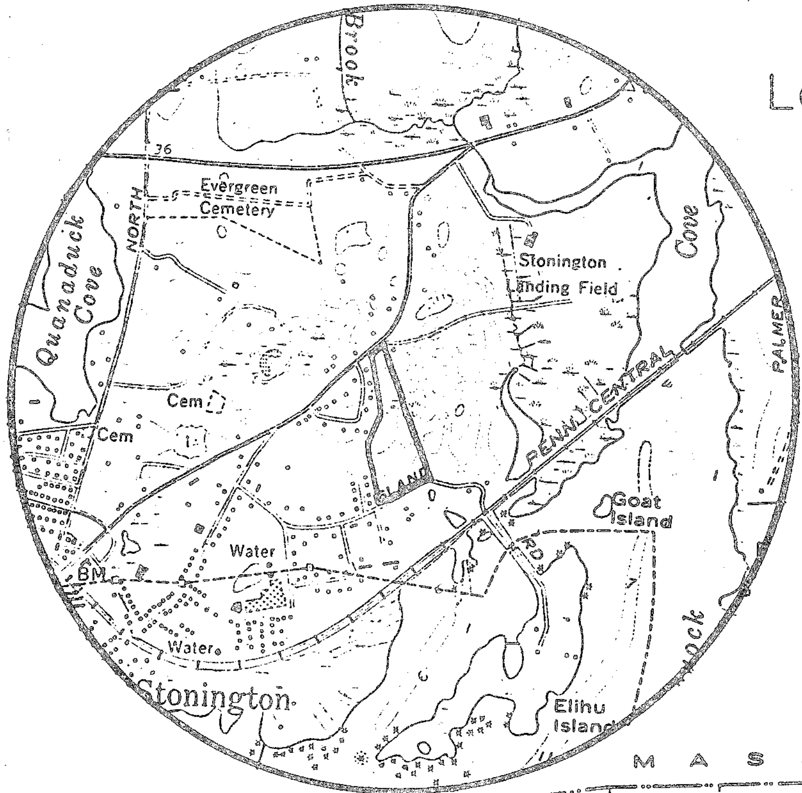
Stonington, Connecticut

March 1983

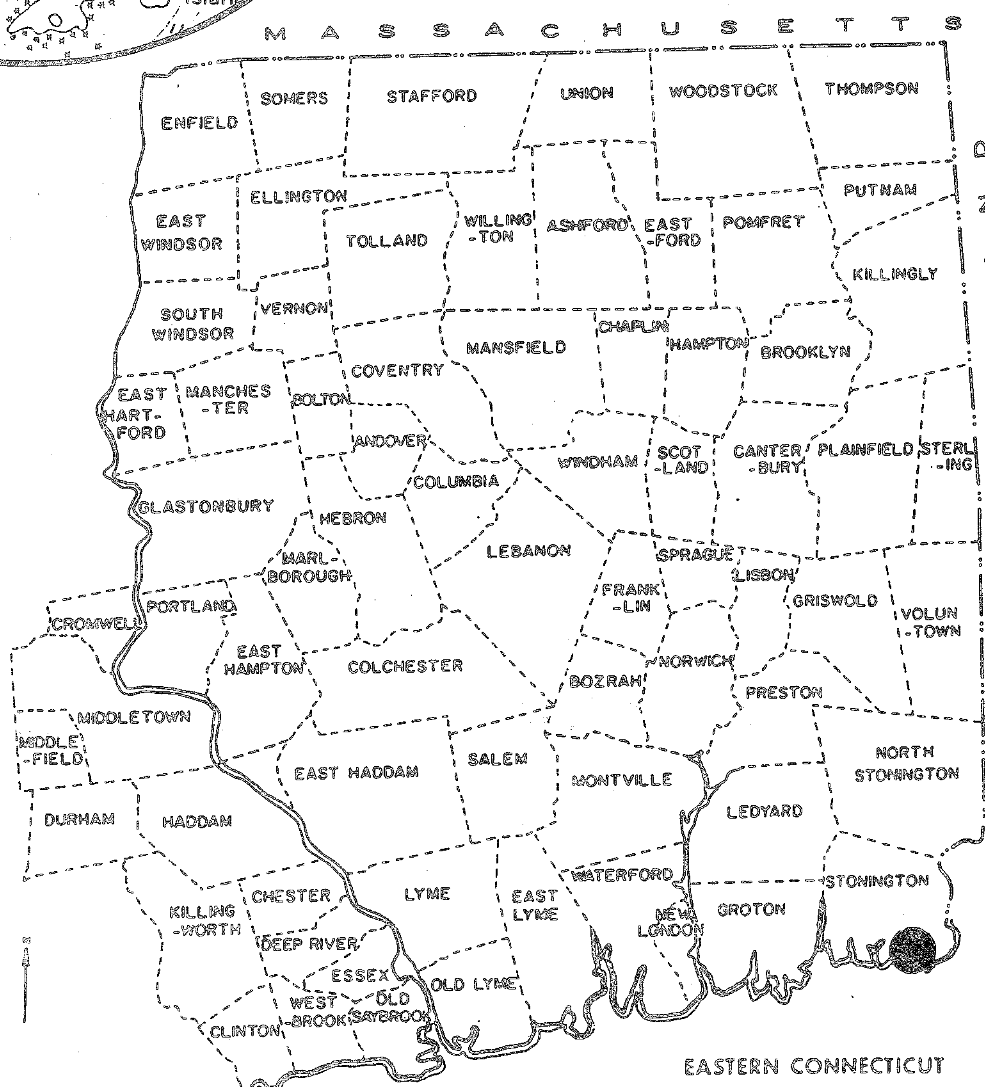
Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site



ISLAND ROAD SUBDIVISION
STONINGTON, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
ISLAND ROAD SUBDIVISION
STONINGTON, CONNECTICUT

This report is an outgrowth of a request from the Stonington Inland Wetlands 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); Don Capellaro, Sanitarian, State Department of Health; Ron Rosza, Ecologist, Coastal Area Management (DEP); Charles Storrow, Regional Planner, Southeastern Connecticut Regional Planning Agency; Stephan Lavigueur, Landscape Designer, University of Connecticut; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

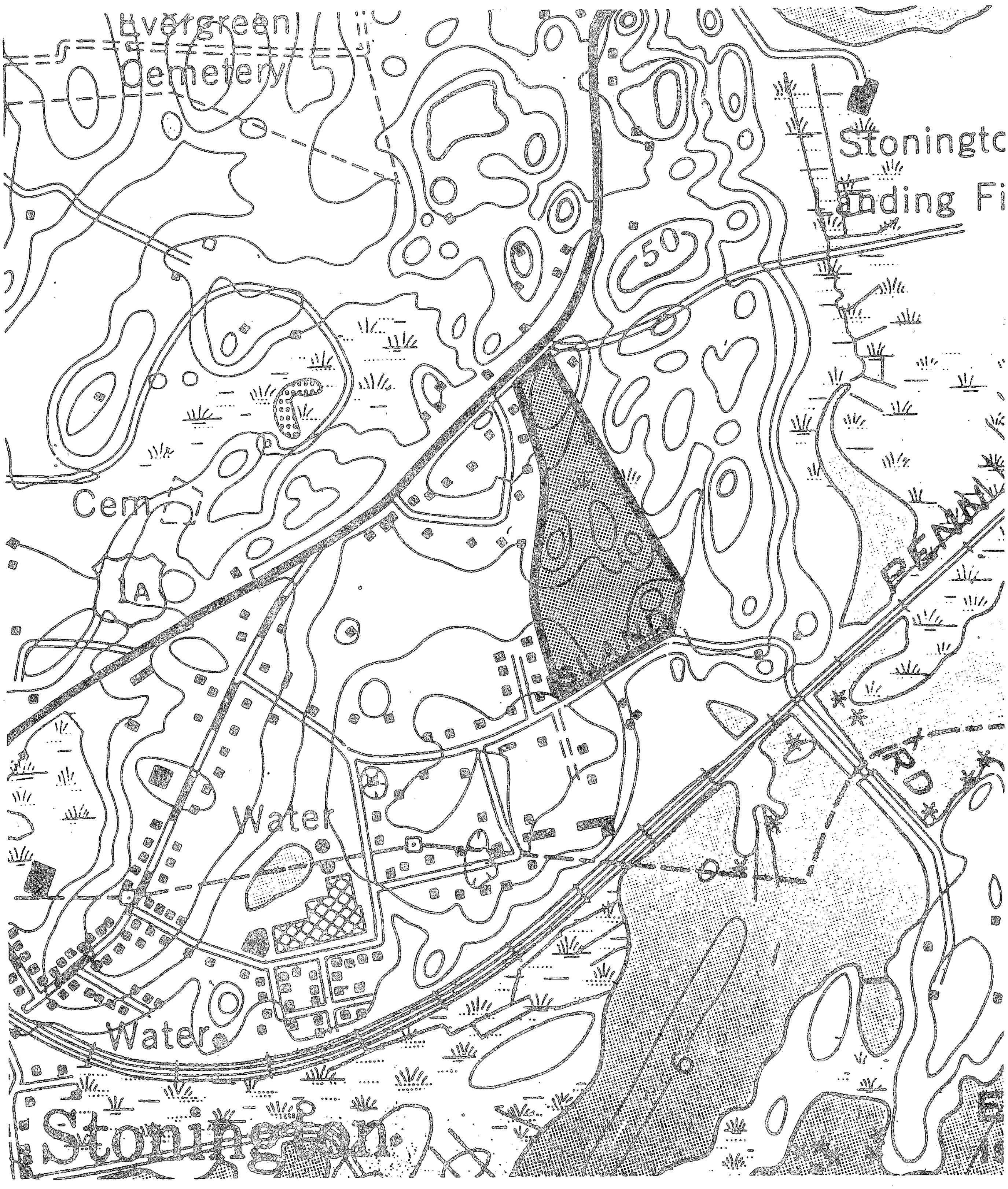
The Team met and field checked the site on Thursday, January 27, 1983. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

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 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, Eastern Connecticut RC&D Area, 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 the proposed development of the Wimpfeimer property in the town of Stonington. The site is 15 acres in size and is located between Route 1A and Island Road, near Wequetequock Cove. The Windward Company is functioning as developer for this project.

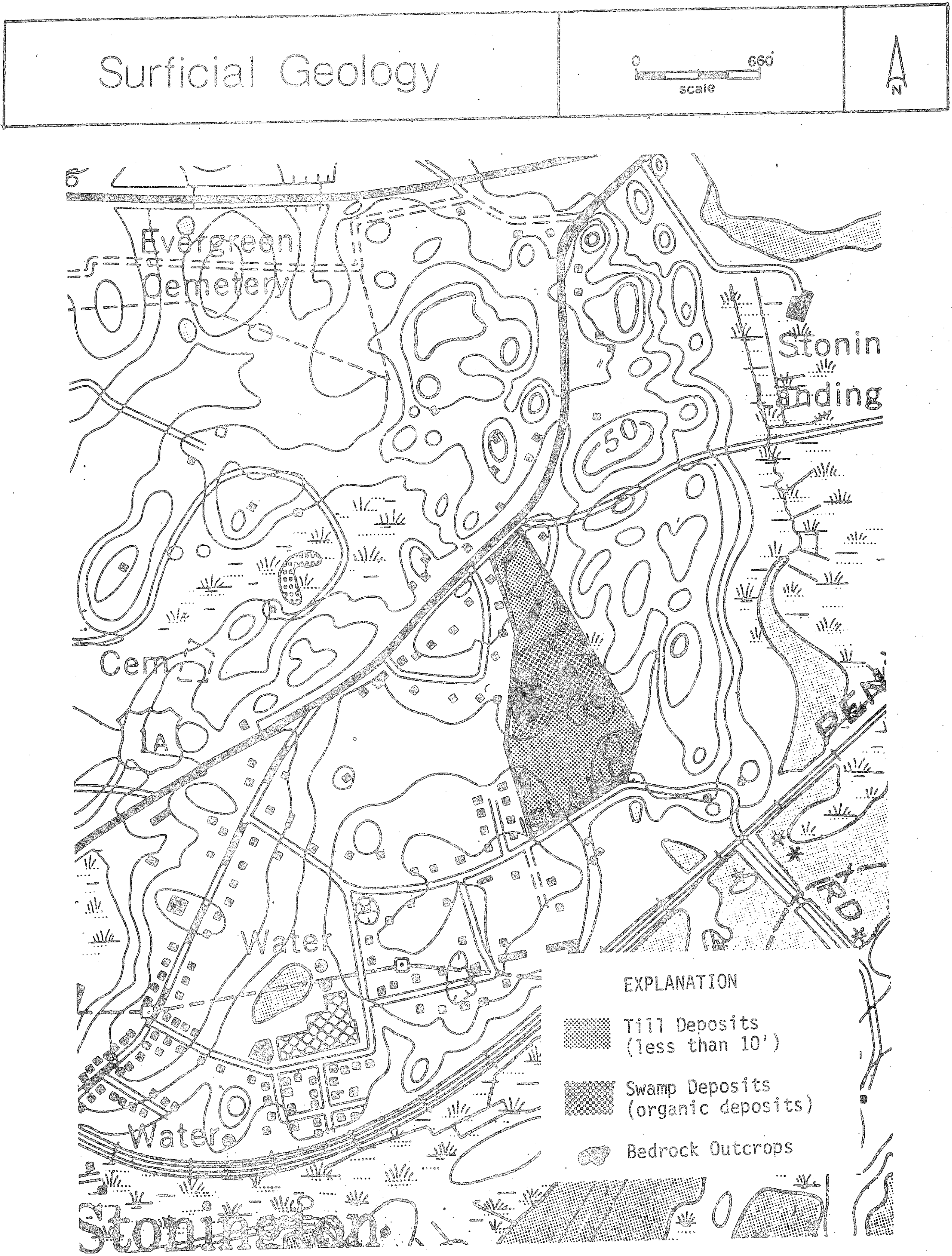
Preliminary plans show six proposed lots, ranging from one to four acres in size. All lots will be serviced by on-site wells and on-site septic systems. Four lots will have access onto Island Road and two lots will have access onto Route 1A (Elm Street). A private road is planned to cross wetland areas and provide access to the buildable portions of lots 2,3 and 4.

The site has a varied terrain, with steep slopes and stony soils. A large wetland area is centrally located on the property. The site is entirely forested at present, however the developer has discussed plans for removal of any vegetation under six inch diameter at breast height with the Team at the time of the site inspection. The property also falls partially within the Coastal Management boundary.

The Team is concerned with the effect of the proposed development on the natural resource base of this site. The Wimpfeimer property does have serious limitations to development in the form of regulated wetland areas, shallow depths of soil to bedrock, steep slopes and stony soils. Severe limitations to development, can be overcome with proper engineering methods. These practices, however, can become costly, making a project financially unfeasible for a developer.

The following sections of this report discuss the natural resource base of the site and possible impacts from the proposed development in detail. Although some Team members differ as to the number of lots which should be included in this subdivision, there is a general concensus that a reduction from the six lots shown on the preliminary plan would be favorable.

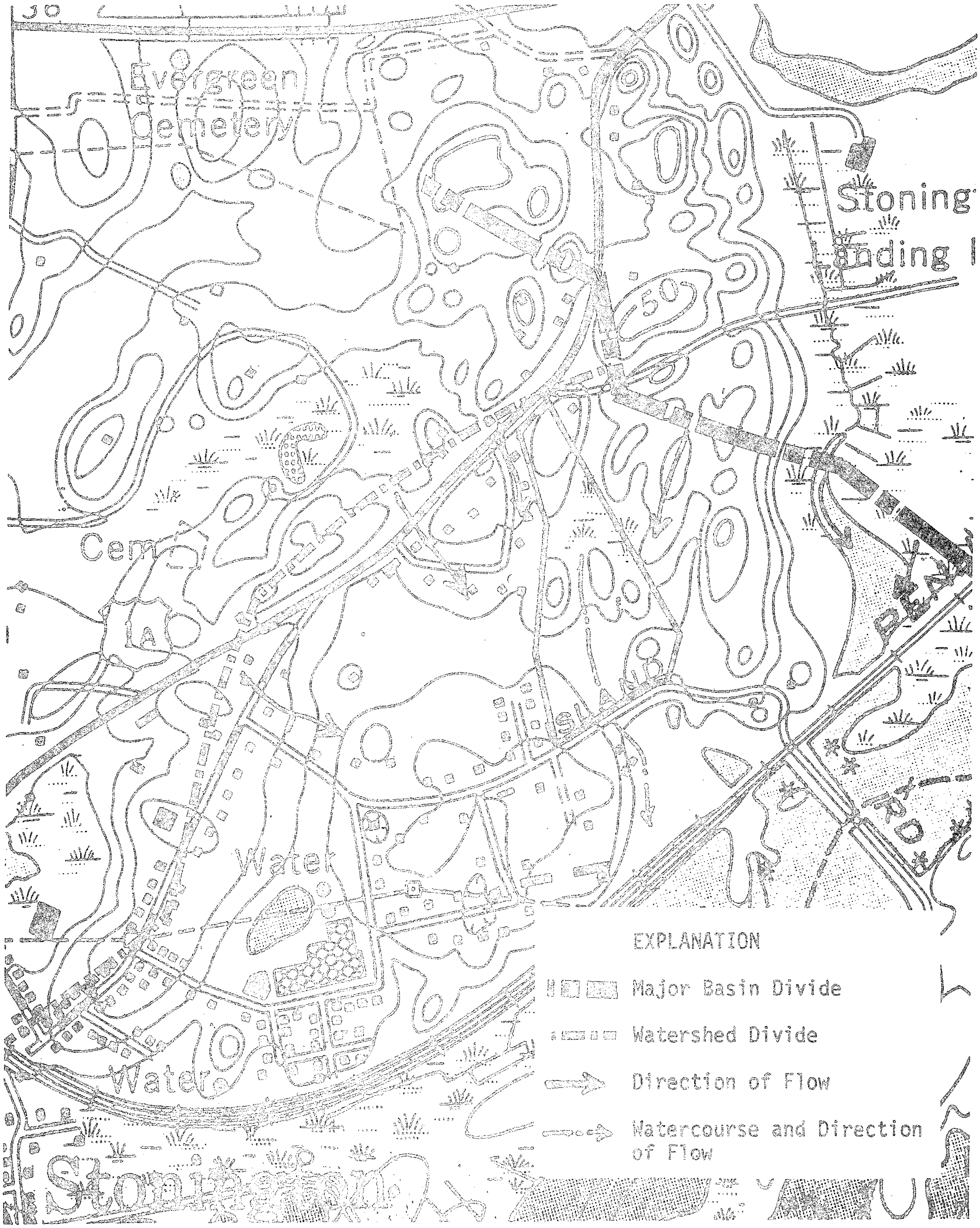
Surficial Geology



Drainage Areas

0 660'
scale

N



stratified mixture of sand, silt gravel and boulders. The texture of till will vary from sandy and loose, silty and compact and stony to non-stony.

Based on deep test hole information supplied by the prospective builder and visual observations, it is estimated that till deposits throughout the parcel are generally less than 10' thick.

As a result of the numerous bedrock exposures throughout the middle section of the property, it is recommended that the final subdivision plan delineate these areas. This will aid the town in evaluating each lot where shallow to bedrock condition may become a limiting factor, particularly with regard to the on-site sewage disposal systems. This is necessary in order to prevent contamination of wells by sewage effluent.

HYDROLOGY

The proposed subdivision contains a wide wetland area throughout the middle section of the property. Most runoff on the site flows in a southerly direction from the wetland area by sheet flow until it becomes a more defined watercourse in the front portion of Lot 3. The water course then flows through a 15" (dia.) concrete pipe under Island Road until it finally discharges into Wequetequoch Cove.

Although development of the proposed site will generate some runoff, the amount should be minimal. It appears that almost all runoff emanating from the developed areas would be retained within the parcel. The prospective developer is planning to discharge runoff from driveways, roof drains, footing drains, etc., either to the surface of the ground or into the large wetland area. It is recommended that the consulting engineer provide a detailed plan depicting how runoff will be handled in the final subdivision proposal.

The proposed access road off Island Road serving the rear portions of Lots 2, 3 and 4 is to be constructed of gravel or traprock which should not generate significant amounts of runoff. However, steps should be taken in locating an access road which will have least impact on the wetland areas. Once a location is chosen, an adequate number of pipes should be installed so that water levels throughout the wetland areas remain unchanged. The diameter of the pipes must be sized properly by the engineer.

Measures should be taken to minimize the removal of vegetation, compaction of soils and creation of impervious surfaces which increase runoff.

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

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 Interim 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.

Soils found on this site include the Adrian and Palms series, the Ridgebury, Leicester and Whitman series, the Charlton-Hollis series and the Hollis-Rock Outcrop complex. The uses and properties of these soils are described in detail below.

Adrian and Palms mucks. (91) This unit consists of nearly level, very poorly drained organic soils in depressions and along streams of outwash plains and glacial till uplands. About 45 percent of the total acreage of this unit is Adrian soils, 35 percent is Palms soils, and 20 percent is other soils. Some areas of the unit consist almost entirely of Adrian soils, some almost entirely of Palms soils, and some of both. The Adrian and Palms soils were mapped together because there are no significant differences in their use and management.

Typically, the Adrian soils have a surface layer of black and very dark gray muck 12 inches thick. The subsurface layer is black muck 21 inches thick. The substratum is gray gravelly sand to a depth of 60 inches or more.

Typically, the Palms soils have a surface layer of black muck 9 inches thick. The subsurface layer is very dark brown and black muck 21 inches thick. The substratum is gray and grayish brown silt loam and fine sandy loam to a depth of 60 inches or more.

Included with this unit in mapping are small areas of very poorly drained Carlisle, Saco, Scarboro, and Whitman soils. A few small areas have a thin, loamy surface layer.

These Adrian and Palms soils are wet most of the year. Water is on the surface for several weeks from fall through spring and after heavy summer rains. The soils have a high available water capacity. The Adrian soils have moderately rapid permeability in the organic layers and rapid permeability in the substratum. The Palms soils have moderately rapid permeability in the organic layers and moderate or moderately slow permeability in the substratum. Runoff is very slow on both soils. Both soils are strongly acid to medium acid in the organic layers and medium acid to slightly acid in the substratum.

Wetness makes the soils of this unit generally unsuitable for cultivated crops. Most areas are difficult to drain, and subsidence is a hazard in areas that are drained.

Wetness also makes the soils poorly suited to trees. It severely limits the use of equipment and causes a high rate of seedling mortality. The high water table limits rooting, causing a hazard of uprooting during windy periods.

Wetness and low strength in the organic layers limit these soils for community development, especially for onsite septic systems.

Carlton-Hollis fine sandy loams, very rocky, 3 to 15 percent slopes. (17LC) This unit consists of gently sloping to sloping, somewhat excessively drained and well drained soils on hills and ridges of glacial till uplands. Stones cover 1 to 8 percent of the surface, which is marked by a few narrow, intermittent drainageways and small, wet depressions. This unit is about 55 percent Charlton soils, 20 percent Hollis soils, 15 percent other soils, and 10 percent exposed bedrock. The Charlton and Hollis soils are in such a complex pattern that is was not practical to map them separately.

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.

Typically, the Hollis soils have a surface layer of dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown gravelly fine sandy loam 12 inches thick. Hard, unweathered schist bedrock is at a depth of 14 inches.

Included with this unit in mapping are small areas of somewhat excessively drained Brimfield soils; well drained Brookfield, Canton, and Paxton soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester soils. Also included are small areas with bedrock at a depth of 20 to 40 inches and a few large areas that have been cleared of stones.

The water table in this unit is commonly at a depth of more than 6 feet. The available water capacity is moderate in the Charlton soils and very low or low in the Hollis soils. Both soils have moderate or moderately rapid permeability and medium to rapid runoff. Both are very strongly acid to medium acid.

The stones on the surface and areas of exposed rock hinder the use of farm equipment and make the soils generally unsuitable for cultivation. Some cleared areas are suitable for pasture and some for hay.

This unit is suited to woodland production. However, the Hollis soils are droughty, and seedling mortality is high. Uprooting during windy periods is common on the Hollis soils because of the shallow rooting depth.

The areas of exposed rock and the depth to bedrock in the Hollis soils limit this unit for community development, especially as a building site or as a site for onsite septic systems. The stones on the surface restrict landscaping.

Hollis-Charlton-Rock outcrop complex, 15 to 35 percent slopes. (17MD) This unit consists of moderately steep to steep, somewhat excessively drained and well drained soils and areas of exposed bedrock. The unit is on hills and ridges of glacial till uplands in long and narrow or irreguarly shaped areas. This unit is about 35 percent Hollis soils, 30 percent Charlton soils, 15 percent exposed bedrock, and 20 percent other soils. The Hollis and Charlton soils and exposed rock are in such a complex pattern that is was not practical to map them separately.

Typically, the Hollis soils have a surface layer of dark grayish brown fine sandy loam 2 inches thick. The subsoil is yellowish brown gravelly fine sandy loam 12 inches thick. Hard, unweathered schist bedrock is at a depth of 14 inches.

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 this unit in mapping are small areas of somewhat excessively drained Gloucester soils, well drained Canton and Charlton soils, and poorly drained Leicester soils. Also included are a few areas where stones and boulders cover less than 8 percent of the surface.

The water table in this unit is commonly below a depth of 6 feet. The available water capacity is very low or low in the Hollis soils and moderate in the Charlton soils. Both soils have moderate or moderately rapid permeability and medium to rapid runoff, and both are very strongly acid to medium acid.

This unit is too stony for cultivation. The depth to bedrock in the Hollis soils, the stones on the surface, the areas of exposed rock, and the slope make the unit poorly suited to woodland and are major limitations for community development. Droughtiness causes a high rate of seedling mortality on the Hollis soils. and trees on the Hollis soils are subject to uprooting during windy periods because of the depth to bedrock.

Ridgebury, Leicester and Whitman extremely stony fine sandy loams. (43M) This unit consists of nearly level, poorly drained and very poorly drained soils in depressions and drainageways of glacial till uplands. 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 vary dark brown fine sandy loam 8 inches thick. The subsoil is mottled, light brownish gray fine sandy loam 8 inches thick. The substraum 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 that 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.

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 oe excavations in these soils slump when saturated. The stones on the surface restrict landscaping, and lawns are soggy most of the year.

Soils on this site generally have poor potential for urban development due to the presence of high water table, slope and shallow depth to bedrock. The regulated wetland line shown on the preliminary plan does not appear to accurately depict the field conditions seen by the Team at the site inspection on January 27, 1983. The actual wetland area appeared to be more extensive than shown. It is therefore suggested that the wetland line as shown by the developer be verified by a certified soil scientist.

A sediment and erosion control plan should be prepared and implemented prior to any construction disturbance on the site. This plan should follow these general principles:

* Integrate clearning and grading with layout design.

* Keep clearing to a minimum and preserve as much of the existing vegetation as possible.

* Limit grading to those areas involved in current construction activities.

* Limit the time during which unprotected graded areas are exposed to rain and wind.

* Protect disturbed areas by using stabilization measures as soon as possible.

* Plan structural and vegetative measures to control the velocity and volume of runoff, and to provide windbreaks where needed.

* Divert and convey surface runoff safely through the area with structural measures such as diversions, storm drains, channels, or waterways. Ensure runoff velocities high enough to prevent unwanted deposition and low enough to prevent erosion (although this is almost universally impossible, it is the objective of practical design compromises).

* Construct sediment traps and basins to trap sediment on site when necessary.

* Stabilize exposed soils by adhering to time limits set out in the schedule for site grading, seeding, and mulching.

* Assure adequate maintenance of structural measures and of all plantings.

The Sediment and Erosion Control Handbook, available at the New London County Soil and Water Conservation District office, can help in preparing such a plan. Technical advice from Soil Conservation Service personnel is also available if required.

VEGETATION

A thorough survey of the flora and vegetation of this site is obviously impossible in the winter. Notes were made pertaining to the more conspicuous vegetation types based generally upon the dominant tree species and habitat type. Basic vegetation types are described briefly below.

Growing upon the thin soils which mantle the bedrock knolls is the typical Oak-Huckleberry Community. Dominant trees are the Oaks, especially Scarlet (*Quercus coccinea*), White (*Q. alba*), and Black (*Q. velutina*). Associates include Beech (*Fagus grandifolia*), Pignut Hickory (*Carya glabra*) and an occasional Red Cedar (*Juniperus virginiana*). Locally dominant are the dwarf heaths such as Early-sweet Lowbush Blueberry (*Vaccinium vacillans*) and especially Black Huckleberry (*Gaylussacia baccata*). In more open areas grow the carpet forming Pensylvania Sedge (*Carex pensylvanica*) and the White Cushion Moss (*Leucobryum glaucum*). It is probably the case that the more open and sunlit areas where bedrock is exposed, will support small colonies of Hairgrass (*Deschampsia flexuosa*). Throughout these regions of bedrock outcrops, occasional tangles of Catbrier (*Smilax rotundifolia*) occur.

Slightly deeper and moist upland soils associated with the side slopes of the knolls is a more luxuriant growth of oaks. However, these zones are generally too small to accurately describe. Oaks again are dominant especially White Oak and Black Oak, and associates include Beech, Sassafras (*Sassagras albidium*), and Black Birch (*Betula lenta*). Understory small trees include Witch Hazel (*Hamamelis virginiana*) and perhaps Flowering Dogwood (*Cornus florida*). Though not studied carefully, the main shrubs are probably Maple-leaved Viburnum (*Viburnum acerifolium*) and Northern Arrowwood (*Viburnum recognitum*).

The wetland vegetation is a complex mosaic of a variety of communities. In the wetter depressions with standing water grow thickets of High Bush Blueberry (Vaccinium corymbosum). At the edges of these pools grow the trees Red Maple (Acer rubrum) and especially Sour Gum (Nyssa sylvatica).

Creekside vegetation associated with the primary creek which flows through the site were Sensitive Fern (Onochea sensibilis), Meadow Grass (Poa spp.), Blue Flag (Iris versicolor) and Sphagnum moss.

Wetland area which does not pond supports typical Red Maple swamp vegetation wherein Red Maple and Cinnamon Fern (Osmunda cinnamomea) are the dominant plants. Catbrier forms local tangles throughout the wetland particularly at the borders of pools. Of local occurrence, particularly in the more level portion of the swamp in the southwestern portion of the property are found clumps of tussock sedge (Carex stricta).

WATER SUPPLY

As the public water supply system (Mystic Valley Water) does not extend this far along Route 1A, potable water for the proposed subdivision is to be provided by private on-site wells. Due to the nature of the terrain, wells would most likely be drilled or rock wells. Each well should be located toward a relatively high portion of any lot, being properly separated from sewage disposal systems or other possible types of pollution. Of particular concern in this area is the overall presence of shallow bedrock and high ground and surface water. In general, unless there is sufficient soil depth above bedrock it may not be possible for the on-site leaching systems to substantially filter and renovate effluent before it reaches the water table or impermeable substratum.

Water from bedrock wells are transmitted mostly be means of fractures in the bedrock. Therefore, the yield of a bedrock well depends upon how many fractures it intersects and the size of the water-bearing fractures once it gains entrance to any bedrock fractures or cracks, it may travel significant distances with little or no additional treatment received. Due to the shallow depth of soil to bedrock, it may be advisable to provide greater separating distances between well sites and sources of pollution which would provide additional protection.

In addition to potential sanitary water quality problems there could also be some intrusion of brackish water as the area is near the coastline and tidal marshes. Other minerals, such as iron and/or manganese, are also commonly found in rock wells. Where such concentrations are found to be excessive and objectionable, the installation of suitable water treatment equipment may be a necessary corrective measure.

WASTE DISPOSAL

Sewage disposal in the general area and for this property depends upon the installation of satisfactory on-site subsurface disposal systems. It was indicated that at the present time municipal sewers are approximately 3/4 of a mile from the site and no extension of such is planned within the immediate future. No doubt, because of considerable exposed and shallow bedrock in the area, the installation costs for sewers would tend to be high.

It is apparent, based on visual observations, consideration of soil mapping data and soil test results, this subdivision will pose a wide range of difficulties with respect to subsurface sewage disposal. Wetlands are found over a significant portion of the property and on the higher knolls or ridges bedrock depths are considerably less than 7 feet in most cases. Also in some areas contours are erratic with limited useable area. These factors all contribute to the problems of installing adequate and satisfactory subsurface sewage disposal systems, which will function properly over an extended period of time without creating public health hazards or nuisances.

In order that bedrock not interfere with the proper operation of the leaching system it must be at least 4 feet below the bottom of the seepage area. This normally requires bedrock to be at least 7 feet below ground surface. A sufficient depth of suitable soil over the rock is also an important consideration in affording protection to ground and surface waters. The availability of naturally occurring soil within and surrounding the future leaching areas is, therefore, a major concern. As one can envision sizeable amounts of fill material would also be utilized for this project. The use of fill can and often does present problems primarily with the type of fill material and the procedures for placement and stabilization. It should not be assumed that every filled lot will necessarily be suitable for subsurface sewage disposal.

Consideration of the overall parcel for development does not seem to truly reflect the vast portions of the property which are definitely unsuitable for sewage disposal. A more realistic approach would be to consider only the possible developable portion of the property and in particular each site or lot. While it is felt that one acre lots, where various conditions are favorable, should be suitable for on-site sewage disposal and water supply wells, where most conditions, however, are less than desirable and where public sewers are not projected much larger lots should be provided.

The need for design engineered sewage systems is apparent. The question of location for the sewage system (primary and reserve areas) on each individual lot and its accordance with the various provisions of the public health code should be adequately addressed. It would also seem that additional on-site testing would be necessary as previous tests appear to be rather limited for individual sites and conditions encountered.

In conclusion this is marginal property for development without the availability of public sewers or water. Subdivision plans should warrant a careful and comprehensive review and evaluation by the town health authority.

LANDSCAPE CONSIDERATIONS

Due to the density of the existing vegetation, it can be assumed there will be a general thinning of trees, shrubs and sub-shrub species. Because of the particular character of the property it is advisable that care should be taken in the subdividing of the lots and in the planning of the units, so that the native vegetation is not disturbed to any great degree. The thinning will improve the health and vigor of the remaining vegetation and will improve the aesthetic quality of the lots, at the same time providing an adequate supply of firewood. So that desirable vegetation is not removed by mistake, trees and shrubs to be removed should be marked with a conspicuous marker.

To avoid the destruction of rare and endangered species and/or plant communities, activity surrounding the wetlands should be kept at a minimum. To maintain slopes and prevent erosion, exposed slopes should be planted with an adapted species of groundcover as soon as possible after any grading or construction. For this particular area this may include such species as Bearberry (Arctostaphylos uva-ursi), Woodbine (Parthenocissus quinquefolia), Bunchberry (Cornus recemosa), Hall's Honeysuckle (Lonicera japonica 'Halliana'), or a fast establishing and temporary turf cover such as Red Fescue (Festuca rubra), or perennial Ryegrass (Lolium perenne).

Upon completion of the construction of dwelling units, roadways and drives, proper landscape materials should be considered. Plants which will change the natural character of the existing vegetation should be avoided. Native plants adapted to this particular environment should be used to enhance the natural setting and to avoid the introduction of foreign plants, diseases and insects which may eventually change the character of indigenous plant communities. This involves an extensive list of native and naturalized plants with ornamental character that are adapted to a naturalized setting. Some highly recommended trees and shrubs that should be considered are: Mountain Laurel (Kalmia latifolia), Inkberry (Ilex opaca), Hemlock (Tsuga canadensis), Drooping Leucothoe (Leucothoe fontanesiana), several species of Cotoneaster and Barberry may be included and several species of Viburnum. Some naturalistic plants with fine flowering ability include several species of Rhododendron, such as Roseshell Azalea (Rhododendron roseum), and Sweet Azalea (Rhododendron arborescens). Other plants include Eastern Redbud (Cercis canadensis), Flowering Dogwood (Cornus florida), Kousa Dogwood (Cornus kousa), Autumn Olive (Eleagnus umbellata), and Spice Bush (Lindera benzoin).

Catbriars (Smilax Glauca) run rampant throughout the property and present a maintenance problem. The best way to treat this problem is to secure a professional state-licensed pesticide applicator to apply an herbicide such as ROUNDUP, 2-4D or a similar brush killer. This should be applied before any bulldozing or clearing operations begin. The herbicides are effective through the translocation of the herbicide through the leaves, therefore no cut back should take place until after the herbicide is applied. It should be noted that shallow dozing, harrowing or controlled burning methods are not sufficient means to control the weed. It must also be noted that since a large portion of this property is a regulated inland wetland, permission from the state (Inland Wetlands Unit, DEP) must be obtained before any persticides are applied.

Soils on the site, for the most part, indicate severe limitations to construction. The principal limiting factors being the wetness of the soil and soils that are shallow to bedrock. Over half the property is situated on soil that is regulated as wetland and the majority of the remaining acreage includes soils that consist of ledge and large stones. It is evident that if this area were to be developed as planned it may have an adverse impact on the immediate and perhaps the surrounding area as well. To avoid major fill and regrading in the wetlands it is suggested that the number of lots be limited to five and that access to these lots should be from Elm Street. This will eliminate the need to place access through the wettest areas of the property, avoiding high cost of filling and at the same time protecting the wetland area.

PLANNING CONSIDERATIONS

This property is located between Route 1A and Island Road, in the Town of Stonington, near Wequetoquock Cove and Little Narragansett Bay. It is fifteen acres in size and is proposed to be developed into six lots, one with access from Island Road, three with access from a private road leading off of Island Road, and two with access from a private road leading off of Connecticut Route 1A.

Zoning: This property is in the RA-40 District which permits single-family houses on lots of 40,000 square feet or more. Only two of the proposed lots are this minimum size. The other four range in size from 2.1 acres to 4.0 acres. This is due to the serious natural resource limitations for development of this land. The zoning also permits the private access roads that are proposed, "by prior approval of the Commission," i.e. the Planning and Zoning Commission.

Surrounding Land Uses: To the southwest, access Island Road from the property is a marina "Walker's Dock," which in the summer rents dock space to boat owners. This is the most intensive development in the immediate neighborhood. At the southwest corner, the property abuts the lots on Woodland Avenue. These lots contain single-family houses. The zoning on Woodland Avenue is RM-20. Thus the lots are smaller than those proposed. Moving to the northeast, the property of this proposed development borders on more single-family houses on Grandview Park. These are also within the RM-20 zone, but the lot sizes vary. Some are quite large.

The Wimpfeimer property has approximately 200 feet of frontage on Elm Street, to the north. Elm Street contains Connecticut Route 1A, the main access road from the Borough area of the Town to Route 1 and thus to Pawcatuck and Westerly, Rhode Island.

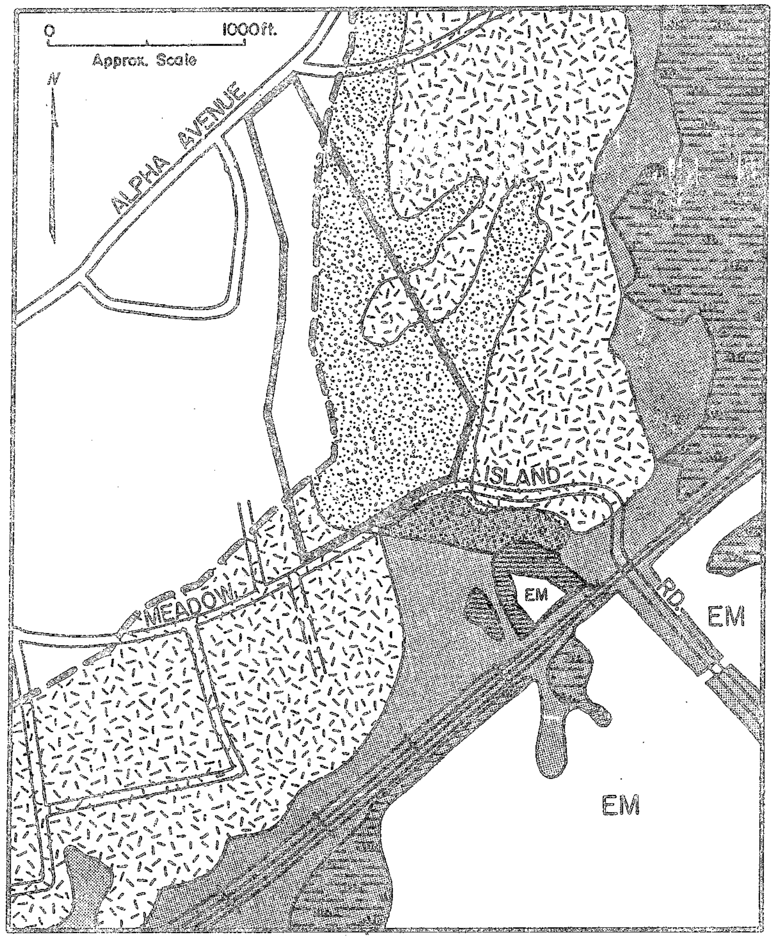
On the east, the Wimpfeimer property borders on a largely undeveloped area which is in an RC-120 zoning district. A minimum lot size of 120,000 square feet, or almost three acres is required in this district. There is one residential lot in this area bordering on the Wimpfeimer property, and with access from Island Road.

It would seem that the proposed six single-family houses on the Wimpfeimer property will have little impact on these neighbors if the natural resource limitations in the area can be overcome. The developer had laid out the proposed access drives in such a way that there should be no adverse impact from them.

Traffic: The four lots that have access from Island Road should have no important traffic impacts. However, it should be noted that the access road from Route 1A will require a permit from the Connecticut Department of Transportation. This access road should be designed with care, both to coordinate with the intersection on the opposite side of Route 1A, and to maximize the sight lines along Route 1A.

Coastal Management

COASTAL RESOURCES



FRESHWATER WETLANDS
UNDESIGNATED TIDAL WETLANDS
TIDAL WETLANDS
EM ESTUARINE EMBAYMENT
FLOOD HAZARD AREA
COASTAL BOUNDARY
SHORELANDS
PROPERTY BOUNDARY

COASTAL MANAGEMENT

As proposed at this time, the development plan for this site consists of a 6 lot subdivision and all lots will be serviced by on-site water and septic facilities. The property is located partially within the coastal boundary (see accompanying illustration) and therefore the entire subdivision is to be reviewed under the provisions of the Connecticut Coastal Management Act (CCMA). A coastal site plan review (CSPR) application must be prepared by the applicant in order to obtain a valid municipal approval under Sections 22a-105 and 22a-106 of the CCMA. The applicant must demonstrate and the Planning and Zoning Commission must find that 1) the proposal is consistent with all applicable coastal policies, 2) adverse impacts on coastal resources and future water dependent uses are acceptable, and 3) all reasonable measures to mitigate adverse impacts have been incorporated into the project. Since this site is not located on the shorefront or adjacent to tidal wetlands, the water dependancy provisions of the Act are not applicable.

For a proposal which is located partially within the coastal area, the CSPR must consider the entire property. However, for that area which is outside the coastal boundary, there are technically no coastal resources present. The review in this non-coastal area will assess the indirect impacts of proposed activities upon coastal resources located within the coastal boundary. The review within the coastal boundary is the standard CSPR.

Coastal Resource Identification

A plan or map depicting the spatial location of coastal resources on and adjacent to the site must accompany the CSPR application. Though there are no requisite criteria as to map scale and level of detail, the map should be sufficently detailed so that the Planning and Zoning Commission can adequately determine the location of proposed activities in respect to coastal resources.

As defined in the CCMA, coastal resources located on or adjacent to the property are principally Shorelands, and Freshwater Wetlands and Water courses. South of Island Road are two other coastal resources which are located adjacent to the property namely Coastal Hazard Areas and Tidal Wetlands. Adverse impacts to the Coastal Hazard Area are not likely to occur. The hydrological connection between the tidal wetland and property by means of a brook is reason to be concerned about uncontrolled sedimentation and changes in the natural freshwater flows which might result from development on this site and adversely affect the tidal wetland.

Coastal Policies

Identification of all applicable Coastal Resource and Use Policies* follows from the identification of coastal resources and the types of uses or activities proposed. Based upon the proposed subdivision plan, the applicable policies are as follows:

*Policy references are keyed to the policies of the CCMA as presented in Planning Report No. 30, Coastal Policies and Use Guidelines, Connecticut Department of Environmental Protection.

Coastal Resource Policies

General Resource IA(A-C)
Tidal Wetlands IF(A, D)
Freshwater Wetlands and Watercourses IG(A)
Coastal Hazard Areas IH(A)
Shorelands IK(A)

Coastal Use Policies

General Development IIA(A)

A tentative and partial analysis of the consistency of this project with certain policies is discussed below. Policy consistency depends in part upon the acceptability of the adverse impacts (see following section).

1. Tidal Wetland Policies

Tidal wetland is an offsite resource but one which is hydrologically connected to the project site by a freshwater creek. Significant changes to the natural freshwater flows or transport of significant quantities of sediment via the creek to this wetland as the result of subdividing the project site and ultimate construction could induce undesirable wetland modification and degradation. Designing the project so as to not cause changes to the natural hydrology of the site and incorporation of proper sediment and erosion controls should negate these concerns and generally make the proposal consistent with the tidal wetland policies.

2. Freshwater Wetlands and Watercourses Policy

First, it is evident from the site inspection that the wetland area as depicted upon the soil map is imprecise. In certain instances, wetlands of fact based upon soil type, are not included in the mapping and it may be the case that certain regions of upland may have been inadvertently included. Therefore, it is recommended that the applicant have a certified soil scientist inspect the site and flag the wetland boundaries. This will avoid any discussion of wetland boundary accuracy at future hearings and may culminate in the identification of less wetland area than is presently shown on the soils map. At this time, it appears that most activities have been located so as to purposefully avoid impacts to both mapped and unmapped wetland areas.

Generally, wetland environments should not be modified unless there is no alternative location for an activity. For example, at this time it would appear that some road crossings over wetland are necessary in order to access the developable upland portions of the site. Once it has been determined that the activity must occur, then a design should be selected which minimizes the area of wetland directly impacted. Based upon the proposed subdivision plan and the wetland boundaries as depicted upon that plan, it would appear that the applicant has attempted to minimize wetland crossings and the amount of wetland area affected. A better analysis of these impacts can be performed if soil boundaries are accurately mapped by a certified soil scientiest.

Any road crossing over wetlands should incorporate an adequate number of structures such as culverts so that all hydrological characteristics of the wetland are maintained. Failure to do so will change the current physical and biological characteristics of the wetland and may cause back-flooding. The latter would almost certainly cause death of many of the woody plants and create a deadwood swamp, a condition that is not aesthetically pleasing to most homeowners.

Uncontrolled sedimentation generated during construction could adversely affect the ecology of the wetland. Burial of plants and organisms and changes to wetland hydrology are just a few modifications which result from sedimentation. Incorporation of sediment and erosion controls, as appropriate, into the project should eliminate undesirable sedimentation into the wetland.

Assuming that the amount of wetland area affected by the road crossings are minimized, wetland hydrology is preserved, sedimentation is controlled and that on-site septic systems (see below) do not contaminate wetland or watercourses, the proposal may be consistent with the freshwater wetlands and watercourses policy.

3. Shorelands Policy

The only concern here is that development proceed in a manner which minimizes adverse impacts to coastal systems and resources. Aside from this and strictly a basic planning issue is the ultimate landscaping plan. The applicant is proposing to eliminate all small diameter trees. Instead of this wholesale removal of small trees, the desirable and showy ones such as Flowering Dogwood (if present) and Witch Hazel should be retained as much as possible. This might offset the need for future residents to purchase and plant trees like dogwood. Also, to the fullest degree possible, only native plants should be used in landscaping. The indescriminent use of non-indigenous plants only enhances the potential for displacement of native vegetation by aggressive, non-indigenous plants.

Potential Adverse Impacts

The applicant must demonstrate to the satisfaction of the Planning and Zoning Commission that any adverse impacts generated by this activity are acceptable. The following list of potential adverse impacts (as defined in Section 22a-93 of the CCMA) may be of concern with respect to this project and must be addressed in the CSPR application.

- Degrading water quality through the significant introduction into either coastal waters or ground water supplies of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.

- Degrading existing circulation patterns of coastal waters through the significant alteration of patterns of tidal exchange or flushing rates, freshwater input,....

- Degrading natural or existing drainage patterns through the significant alteration of ground water flow and recharge and volume of run-off.

- Degrading or destroying essential wildlife, finfish or shellfish habitat through significant alteration of the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significant alterations of the natural components of the habitat.

- Degrading tidal wetlands,... through significant alteration of their natural characteristics of function.

<u>Analysis of Adverse Impacts</u>

An analysis of potentially significant adverse impacts which may be generated by this proposal are presented below. The primary concerns are 1) impacts to coastal resources from uncontrolled sedimentation, 2) changes in wetland hydrology from increased stormwater runoff or road construction, 3) degradation of water and wetland quality from improperly designed on-site septic facilities, and 4) direct modification of wetland.

1. Sedimentation

In order to prevent sediments from entering the wetland, proper erosion/sedimentation controls should be in place during site preparation and construction. Where practical, natural buffers of vegetation should be maintained to trap some of the sediments transported by stormwater runoff. In those areas where natural vegetation buffers are inadequate, additional controls will be needed.

The most effective sediment control device is the fabric silt fence. Fabric silt fence is usually easy to install and is reuseable or can be resold after a project. Fence is strung between posts and most importantly, the bottom edge must be buried in a shallow trench. Silt fence will also serve as a visible barrier to construction equipment which might inadvertantly enter a fragile wetland area.

Alternatively, a combination of haybales and snow fence could be used. The latter functions mostly as a visible barrier to construction. Haybales must be staked in place and to one another, in addition the bottom inch or two must be placed into a trench in order to be effective. However, haybale systems are notoriously prone to failure when not placed properly and more importantly the bales deteriorate and collapse. If haybales are to be used as the main erosion control device, then they must be inspected regularly and deteriorated bales replaced immediately.

Proper utilization of natural vegetation buffers and erosion/sedimentation control devices such as fabric silt fence, should prevent sedimentation into wetlands and watercourses.

2. Changes to Wetland Hydrology

As noted earlier, activities which modify wetland hydrology can alter the natural characteristics and reduce the viability of freshwater and tidal wetlands. So long as the project is designed, especially road crossings, to prevent modification of wetland hydrology, this potential adverse impact should not occur.

It is unlikley that the small scale development on this site, particularly if the majority of vegetation cover is maintained, will significantly modify stormwater runoff characteristics. If for some reason, there are stormwater discharges into wetlands, these outlets should be riprapped or splash pads installed so as to prevent scouring of wetland. The small area of the access road should not generate significant volumes of water and so long as wetland hydrology is preserved through the installation of an adequate number of culverts, then leakoffs could be installed as necessary.

3. Degradation of Wetland and Water Quality from Leachates

The placement of on-site septic systems proximal to wetlands has a potential to degrade water and wetland quality. On-site septic systems must be designed so as to minimize adverse impacts upon water quality. Design of on-site septic conditions should be based upon water table conditions present during the spring months. Location of a septic system on lot #1 is a potential concern given the existing high water table, low elevation of the parcel and proximity to freshwater wetlands.

4. Wetland Degradation

Locating the access road so as to minimize direct wetland loss, prevention of siltation into wetlands, and maintenance of natural hydrologic conditions and water quality will minimize or prevent adverse impacts to tidal and freshwater wetlands. At no time should the culvert which passes under Island Road be significantly changed in design otherwise dramatic changes to the freshwater wetlands and perhaps the tidal wetland will occur. Placement of this culvert at a lower elevation or enlargment of the culvert would cause a lowering of the water table on and adjacent to the project site thereby creating an undesirable change to wetland hydrology and biota. Also, no construction equipment or machinery should be permitted within wetland boundaries.

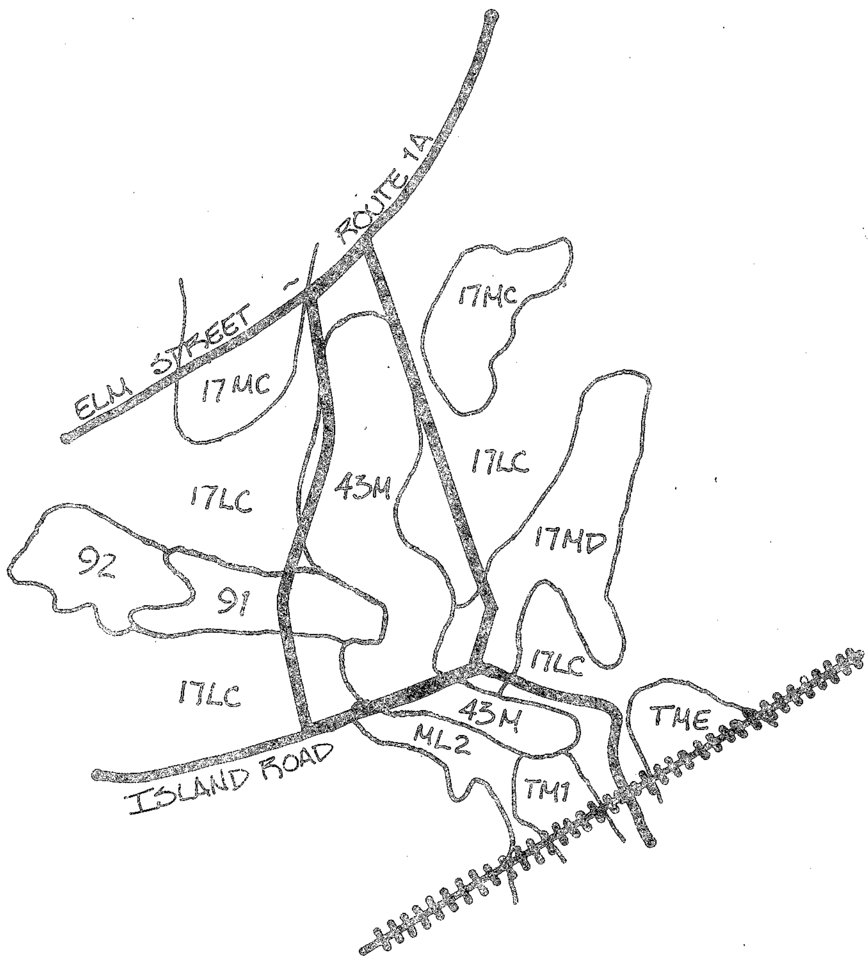
<u>Conclusions</u>

In summary, the major concerns with this proposal relate to wetland modification through changes to existing hydrologic characteristics and uncontrolled sedimentation. If the above concerns are adequately addressed, then the proposal may be consistent with the CCMA.

Aside from this, a general planning concern relates to the proposed construction of a residential structure on lot #1 given its low elevation, high water table and proximity to wetland on 4 sides. An inspection in spring or following an average rainstorm may indicate the amount of area flooded during average conditions. This is a truly marginal site for development and may require considerable filling to accommodate the proposed use and septic system. Given the site limitations here, development of this parcel should be discouraged.

Appendix

Soils	0 660' scale	N



WINDWARD SUBDIVISION
STONINGTON, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
					On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
Charlton-Hollis	17LC	5	33%	Slope, Large stones				
Charlton part					2	2	2	2
Hollis part					3	3	3	3
Charlton-Hollis	17MD	1	7%	Wetness	3	3	3	3
**Adrian-Palms	91	1	7%	Wetness	3	3	3	3
**Ridgebury, Leicester Whitman	43M	8	53%	Wetness	3	3	3	3
		15	100%					

LIMITATIONS: 1 = slight; 2 = moderate; 3 = severe

**Regulated wetland soil under P.A. 155.

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 development. 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 of 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.