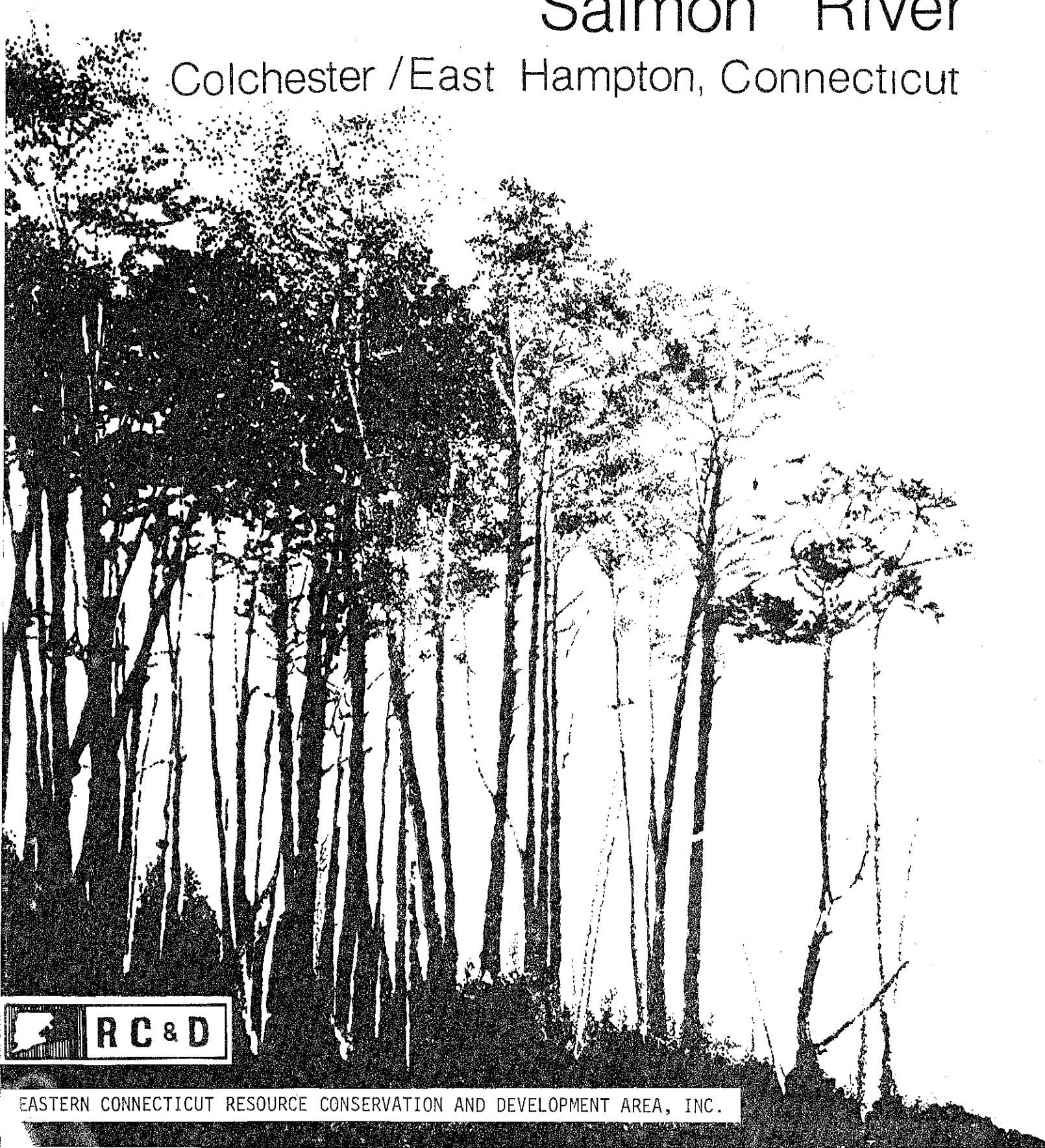


Environmental Review Team Report

Salmon River

Colchester / East Hampton, Connecticut

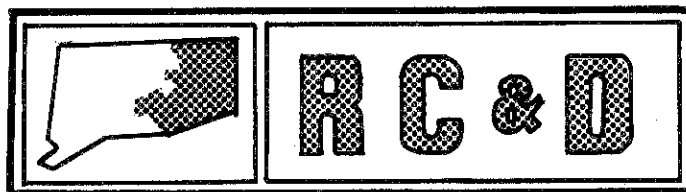


EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team
Report
on

Salmon River
Colchester / East Hampton, Connecticut

April 1980



eastern connecticut resource conservation & development area

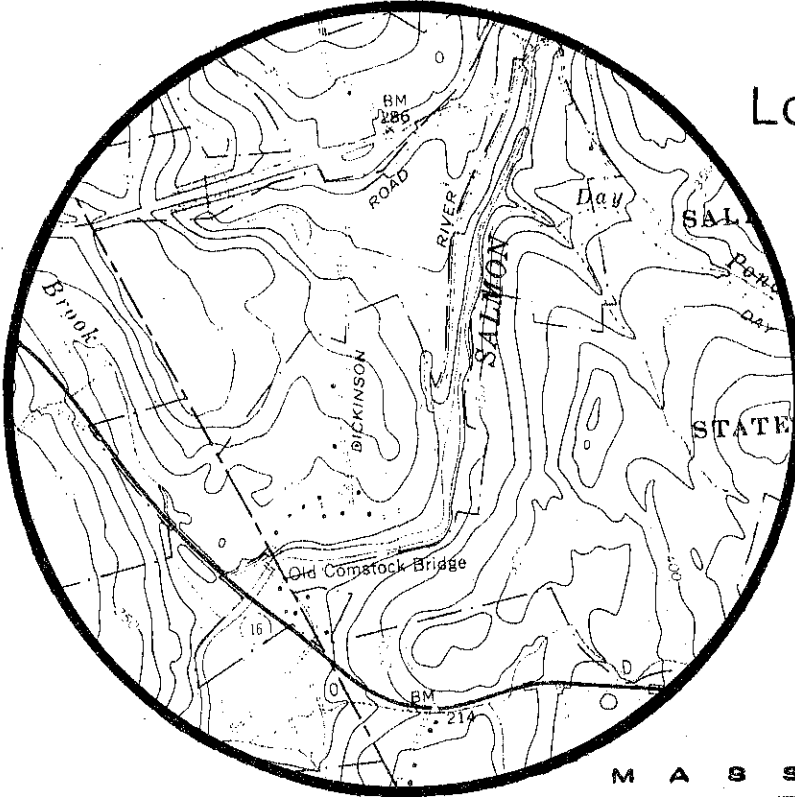
environmental review team

139 boswell avenue

norwich, connecticut 06360

Location of Study Site

SALMON RIVER
COLCHESTER/EAST HAMPTON, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT

ENVIRONMENTAL REVIEW TEAM REPORT
ON
SALMON RIVER
COLCHESTER/EAST HAMPTON, CONNECTICUT

This report is an outgrowth of a request from the State Department of Environmental Protection - Land Acquisitions Unit 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. The request was approved and the measure was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

The ERT that field-checked the site consisted of the following personnel: Gary Domian, District Conservationist, Soil Conservation Service (SCS); Rob Rocks, Forester, Connecticut Department of Environmental Protection (DEP); Michael Zizka, Geologist, DEP; Gerhard Amt, Regional Planner, Southeastern Connecticut Regional Planning Agency; Jim Dunn, Regional Planner, Midstate Regional Planning Agency; Andy Petracco, Recreation Specialist, DEP; Charles Phillips, Fisheries Biologist, DEP; Joseph Risigo, Wildlife Biologist, DEP; Dave Miller, Climatologist, Cooperative Extension Service (EXT), Pam Adams, Open Space Acquisitions, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, December 13, 1979. Reports from each contributing 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. As requested by the State, this report, which identifies the existing resource base of the Salmon River, shall constitute the environmental assessment portion of the open space application for Federal Department of the Interior, Heritage Conservation and Recreation Service funds to assist in the development of this property.

The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.

DESCRIPTION OF THE PROPOSAL

The Connecticut Department of Environmental Protection Open Space Acquisition Unit is considering the acquisition of a number of privately owned parcels adjacent to the Salmon River and within the Salmon River State Forest Area. The project area is located in the southeastern portion of Connecticut in the Towns of Colchester, East Haddam, and East Hampton. The Salmon River and surrounding State Forest have been highly rated for their scenic beauty and outstanding recreation values. The acquisition of additional land will serve to enhance the recreational capabilities of the entire area. For ease of identification the parcels have been numbered and are shown on an accompanying map.

The acquisition would take place as the property is placed on the market and negotiations are completed with the land owners. The Open Space Acquisition Unit expects the transactions to occur over a period of two to three years.

The project is designed to better fulfill the recreational needs of the general public. The 1978 State Comprehensive Outdoor Recreation Plan points out that the demand for open space and recreational land with water access is rapidly increasing. Growing fuel and travel costs are among the reasons forcing people to seek out recreational opportunities closer to home. The Department of Environmental Protection proposes to meet the State's needs by placing a high priority on acquiring land which will provide a variety of outdoor experiences. Property with stream or lake access, as well as good hunting and fishing potential, has been given the highest priority. The parcels in the Salmon River area more than meet the aforementioned criteria.

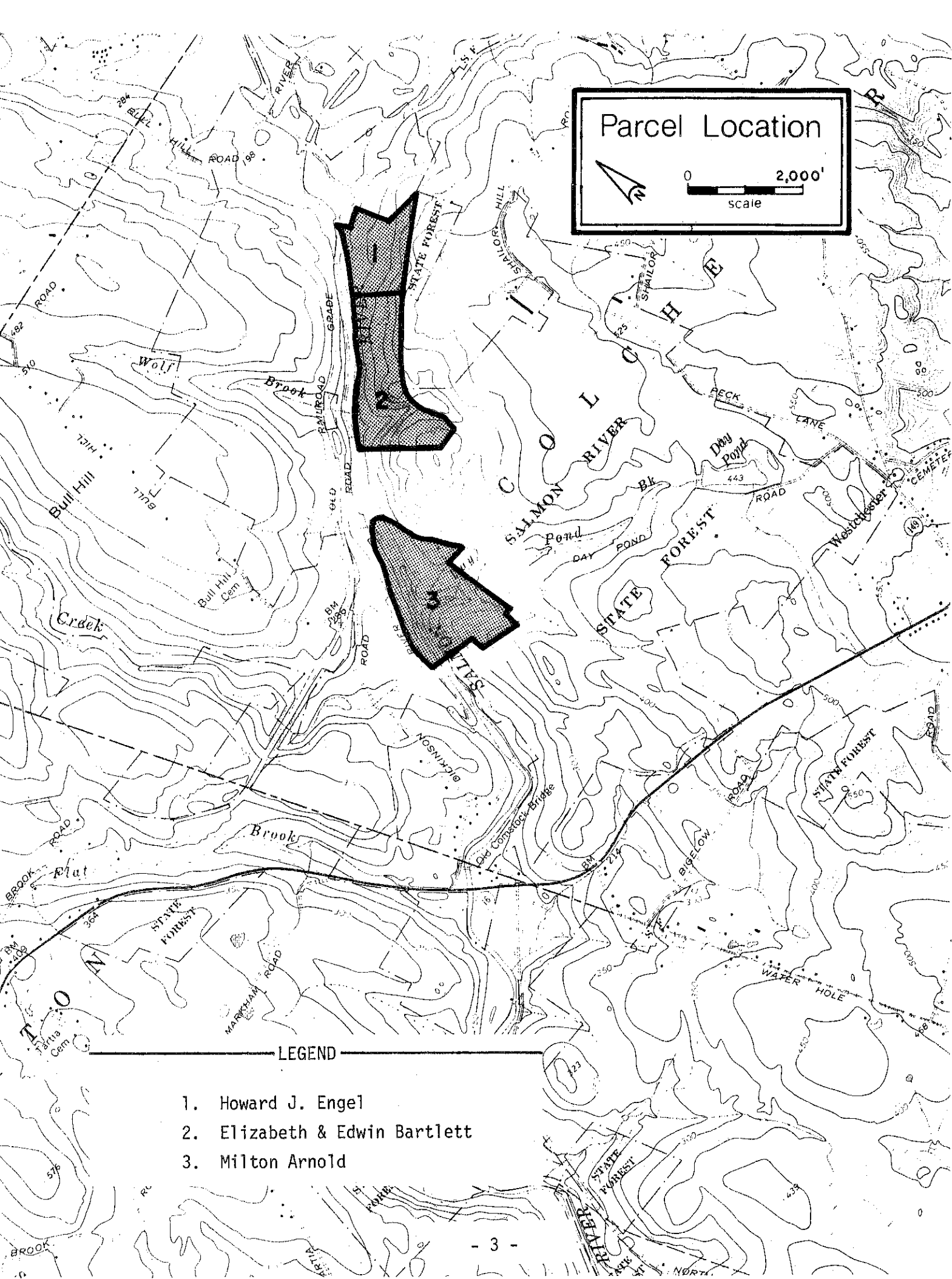
DESCRIPTION OF THE ENVIRONMENT

PAST/PRESENT LAND USES

The Salmon River has a long history of industrialization. In the 1700's mills began to appear along the river. Many tributaries were impounded in order to provide water power to run the mills. By the mid-1800's the number of mills had grown to such large proportions that the available flow could not supply the necessary power to operate each factory. As a result, some mills were forced to operate during the day while others operated at night. Eventually all of the mills closed and by 1930 there were no industries utilizing the watershed for energy.

In the early 1930's the State Parks and Forest Commission initiated the purchase of lands for conservation and management purposes. The earliest management work was performed by the Civilian Conservation Corps (CCC) between 1935 and 1940. The focus was on streams and trout habitat improvement, and pole thinning as a means of forest management. The positive effects of the CCC can still be seen today. The CCC is responsible for constructing the Veterans' Area of the Blackledge River, a meandering stretch of river designed for use by the handicapped; repairing the Comstock Covered Bridge, one of the three covered bridges remaining in the State; and refurbishing the dam at Day Pond State Park.

Today, the Salmon River State Forest contains 6102[±] acres and provides a wealth



Parcel Location

0 2,000'

scale

LEGEND

1. Howard J. Engel
2. Elizabeth & Edwin Bartlett
3. Milton Arnold

Parcel Location

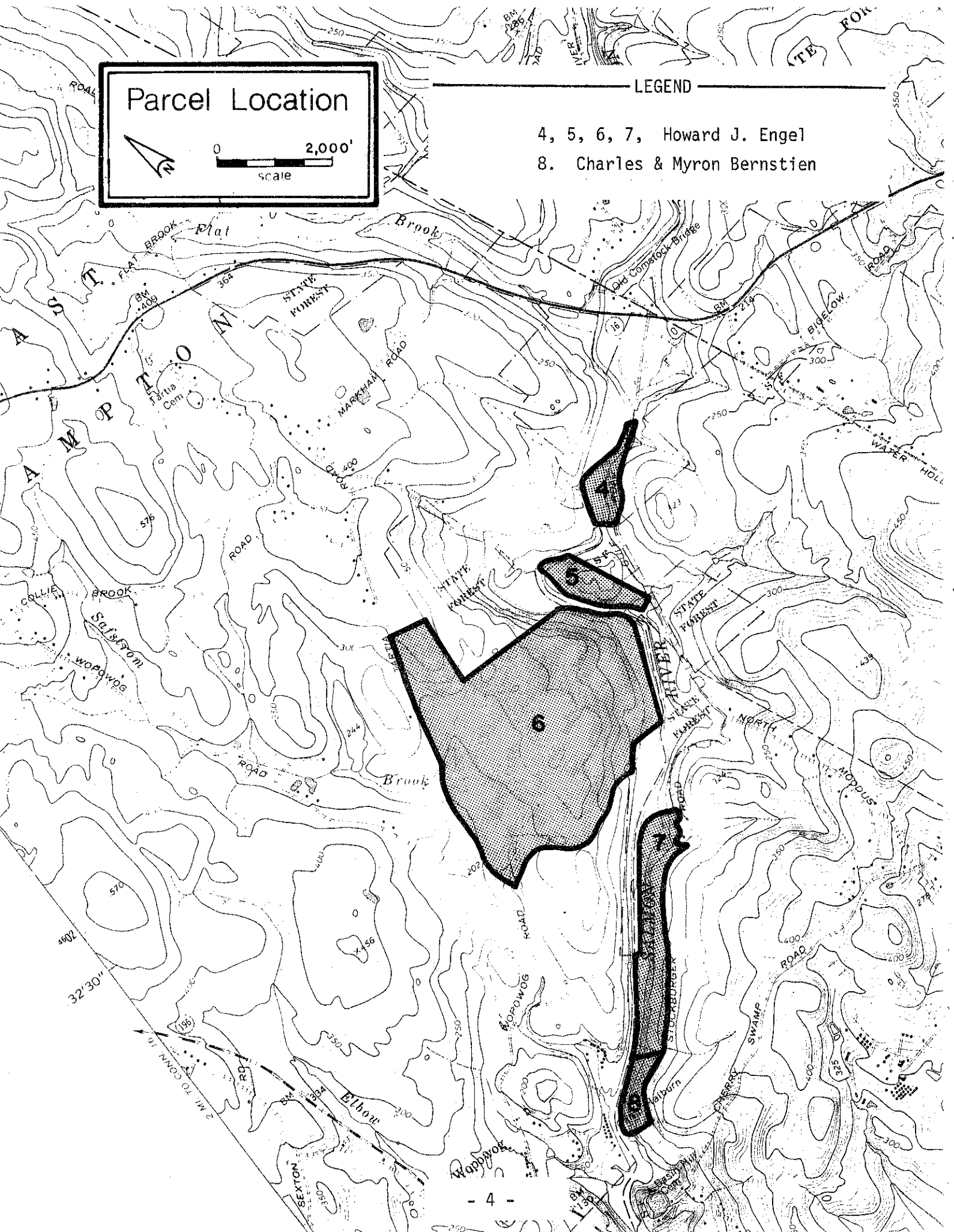


0 2,000'
scale

LEGEND

4, 5, 6, 7, Howard J. Engel

8. Charles & Myron Bernstien



of both active and passive recreational opportunities. Among the most popular activities at Salmon River State Forest are hunting, fishing, canoeing, and hiking. Other activities include picnicking, baseball games, horseback riding, cross country skiing, trapping, and wood cutting. Three times a year, motor-cycle endurance races are held at the forest by special permit. This type of activity is not encouraged by Forest Managers due to noise and wear on the trails.

SOCIO-ECONOMIC CONDITIONS

The proposed acquisitions are located in an area of the state that is very sparsely developed. The three towns involved (Colchester, East Haddam, and East Hampton) have an average density of only 152 persons per square mile. This has been influenced in part by the very irregular topography throughout large areas of each of the towns. The land in the vicinity of the Salmon River is particularly rugged and the tree-covered hills contain only occasional residences.

The remote locations of the eight parcels make them unsuitable for anything except very low intensity uses. All are lacking in paved road access and utilities. The great distance of the parcels from established urban settlements make it unlikely that this area will experience development pressures in the foreseeable future.

The following table shows recent population trends and projections for the three towns containing the proposed acquisitions.

POPULATION
Trends and Projections

<u>Town</u>	<u>1970 Population</u>	<u>1978 Population</u>	<u>% '70-'78 Increase</u>	<u>1990 Projected Population</u>	<u>2000 Projected Population</u>
Colchester	6,603	7,900	19.6%	9,313	9,883
East Haddam	4,474	5,200	16.2%	5,600	5,902
East Hampton	7,078	7,999	18.7%	9,408	9,967

Sources: 1970 Census of Population.
1978 Connecticut State Health Department Population Estimates.
1990 and 2000 Projections of the Connecticut State Office of Policy and Management.

According to the 1970 Census, non-white population in the three towns were as follows:

Colchester	134 (2%)
East Haddam	32 (1%)
East Hampton	95 (1%)

Per-capita income in this area of the state was lower in 1975 than the average for the state as a whole. The state-wide average of \$5,571 compares with \$4,110

for Colchester, \$5,176 for East Haddam, and \$4,909 for East Hampton.*

Although there are small commercial centers scattered throughout each of the three towns containing the proposed acquisitions, none is a major employer of area residents. The wage-earners residing in these communities find employment in the major urban areas of Hartford, Norwich, New London, and Middletown, all of which are accessible by good highways.

TRANSPORTATION ROUTES

As previously discussed, direct access to the eight parcels is via an existing dirt roadway or unimproved roadway. Outside of the immediate study area, access can be gained by State Routes 16 and 66.

TOPOGRAPHIC CHARACTERISTICS

All of the eight sites reviewed border on Salmon River. In several places, a wide to very narrow strip of flat land adjoins the river and forms part of its floodplain. In some locations, however, the land rises steeply away from the river. Parcels 1, 2, 3, and 8 contain little flat floodplain area; the remaining parcels include a significant floodplain. Steep to moderately steep, irregular topography dominates the rest of the sites, with the exception of parcel 5. In that parcel, and in portions of parcels 1, 3, 6, and 7, small plateau-like areas are found in proximity to the river.

Scenic ravines containing permanent or intermittent brooks are found in parcels 2 and 3. Parcel 3 contains three such ravines, the most dramatic of which is traversed by Day Pond Brook. Parcel 2 contains one large ravine.

SURFACE/SUBSURFACE GEOLOGIC CHARACTERISTICS

All eight parcels are located within the Moodus topographic quadrangle. A bedrock geologic map (Connecticut Geological and Natural History Survey Quadrangle Report No. 27, by L. Lundgren, Jr., L. Ashmead, and G.L. Snyder, 1971) and a surficial geologic map (U.S. Geological Survey Map GQ-1205, by D.W. O'Leary, 1975) of that quadrangle have been published.

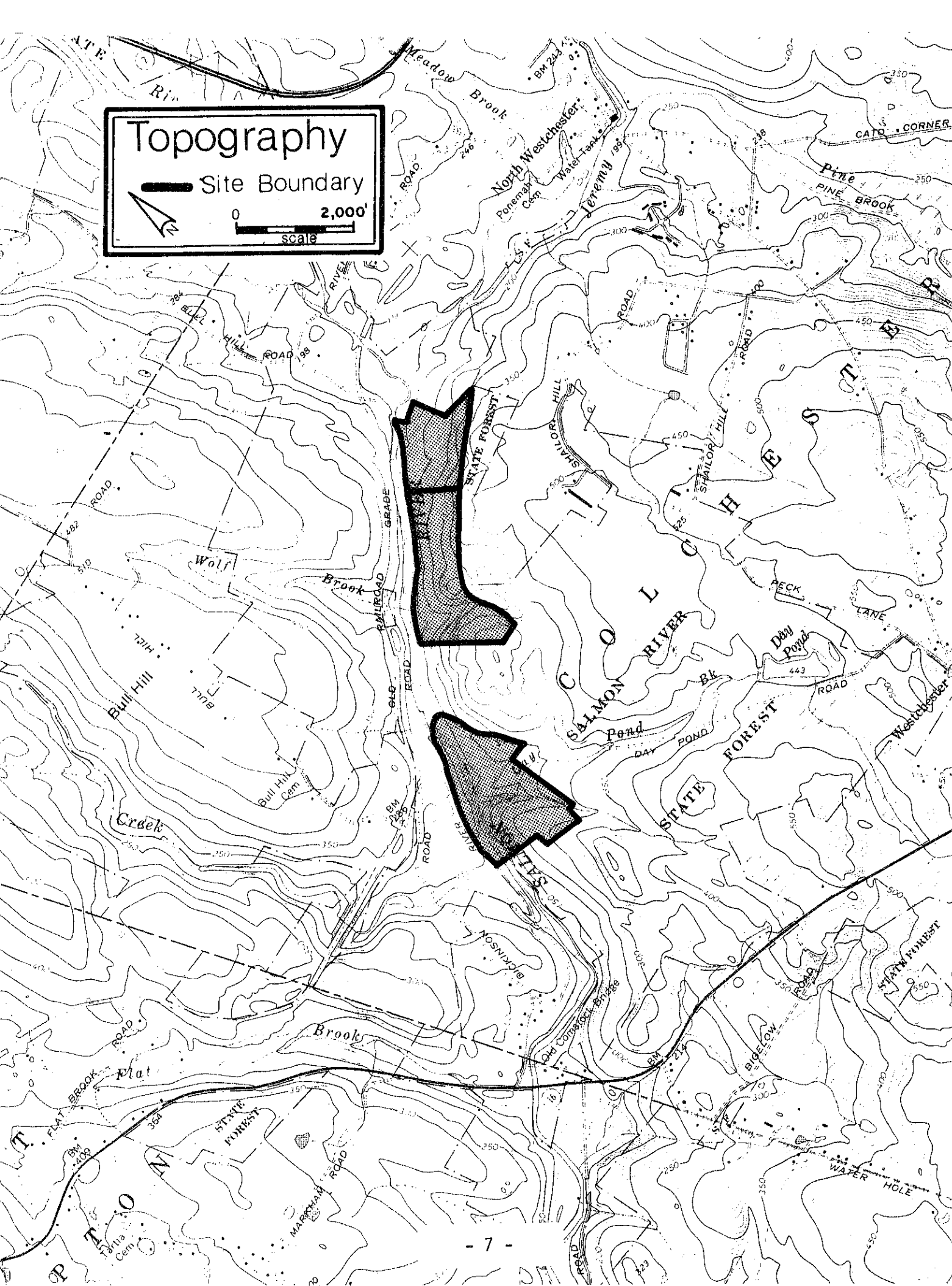
Bedrock cropping out on or underlying parcels 3-8 is classified as part of the Hebron Formation. This formation consists largely of well-bedded layers of brownish gray, quartz-biotite-plagioclase schist and greenish gray calc-silicate gneiss. Bedrock in parcels 1 and 2 is classified as part of the Brimfield Schist. This formation is principally a gray or rust-stained garnetiferous biotite-muscovite schist with subordinate sillimanitic schist, garnetiferous quartz-biotite schist, garnetiferous calc-silicate granofels, and amphibolite.

* Connecticut Market Data, 1979, Connecticut Department of Economic Development.

Topography

— Site Boundary

0 2,000'
scale

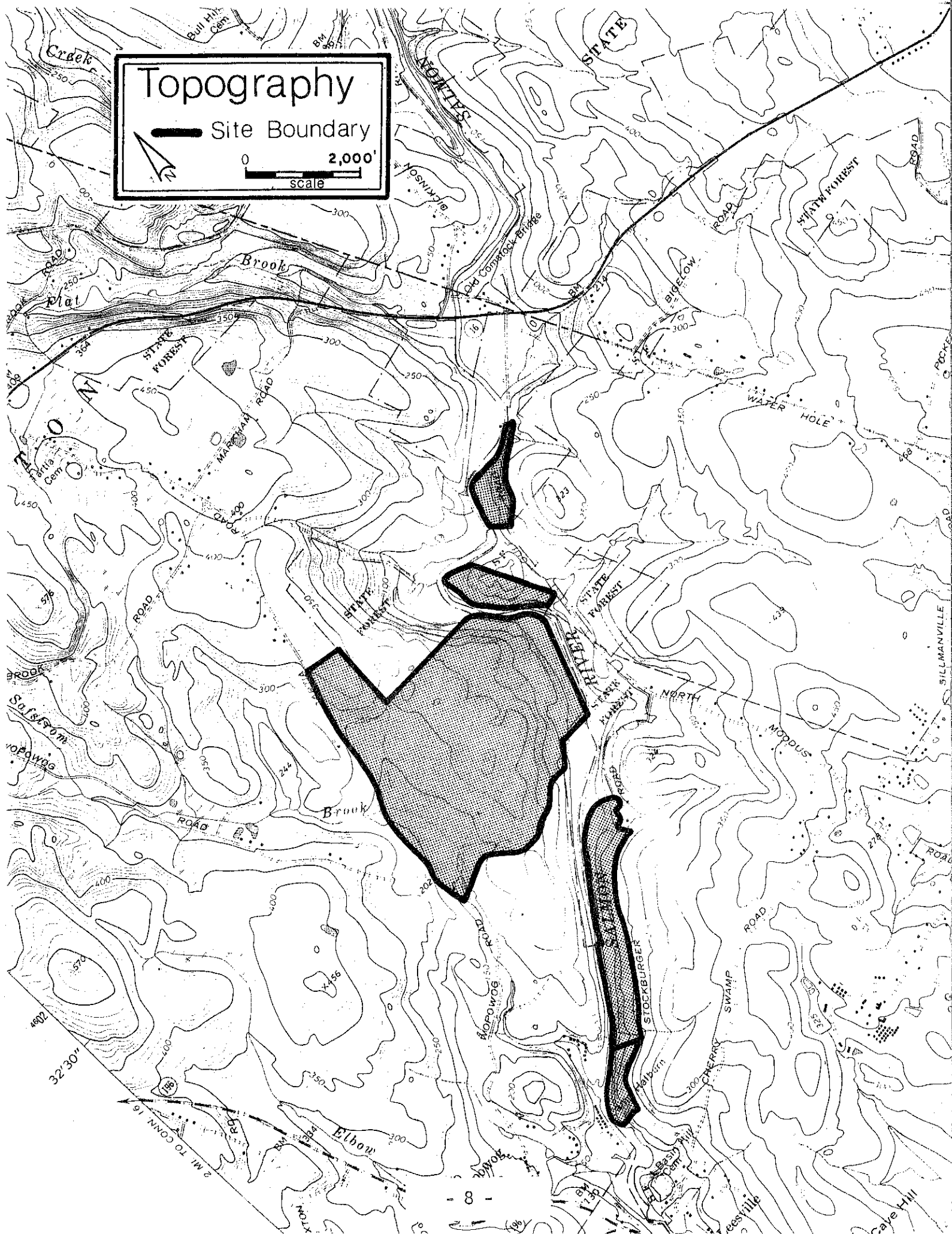


Topography

— Site Boundary



0 2,000'
scale





The surficial geology of the parcels is shown in an accompanying illustration, as adapted from U.S.G.S. Map GQ-1205. Five basic types of surficial materials are designated: till, stratified drift, stream terrace sediments, alluvium, and swamp sediments. Till consists largely of rock particles and fragments that were deposited directly from a preexisting sheet of glacier ice. The ice, which acted like a bulldozer as it passed over the former land surface, collected materials ranging in size from clay to huge boulders. Till, therefore, is a complex mixture of these varied components. Stratified drift is also composed of glacially transported rock materials, but it differs from till in the respect that the components of the stratified drift were sorted and deposited by meltwater. In the various parcels of study, the stratified drift consists chiefly of yellowish-brown to yellowish-gray, medium to coarse sand and poorly sorted gravel, with local minor varved gray silty clay and brownish red clay layers, and local yellowish-gray silty sand beds several feet thick. In parcels 3-7, pink, fine, well-sorted sand, silty sand, and well-sorted gravel commonly form a cap 3 to 15 feet thick on these deposits. Stream terrace sediments consist of post-glacially deposited sand, gravel, silt, and clay lying on terraces above the level of modern floodplains. Alluvium is composed of recently deposited stream channel and floodplain deposits of silt, sand, and gravel with occasional clay and organic matter. Swamp sediments are composed of sandy to clayey silt, peat, and organic debris that were deposited in areas of stagnant or sluggish water.

SOILS

In referring to the Soils Map in the Appendix to this report, it is important to note that while soil symbols for a soil series may differ from county to county, the soils for that series are the same. For example, Canton and Charlton fine sandy loam with (B) 3 to 8 percent slopes, is shown as soil symbol 6B in Middlesex County, while in New London County, the same soil is shown on the map as 11B. The interpretations for the soils are the same in most cases.

The sloping to steeply sloping landforms highest in the landscape are occupied by Charlton-Hollis very rocky, fine sandy loams and Hollis fine sandy loam-Rock Outcrop complex. The mapping unit symbols are 17LC, 17LD, and 17ZC and 17ZD respectively. The letter "L" signifies very rocky surface conditions and "Z" signifies an extremely rocky surface condition with bedrock outcroppings. In the Charlton-Hollis mapping unit, the letter "C" indicates a slope of 3 to 15 percent and "D" indicates a slope of 15 to 45 percent. In the Hollis-Rock Outcrop complex mapping unit, the letters "C" and "D" indicate similar slope conditions. The Charlton soils formed in glacial till derived mainly from schist and gneiss. The soils are well-drained. Charlton soils have moderate to moderately rapid permeability. These soils have medium to rapid surface runoff.

The Hollis soils formed in glacial till derived mainly from schist and gneiss. The soils are shallow with bedrock within 10 to 20 inches of the surface. Drainage is well-to somewhat excessively well-drained. Hollis soils have moderate or moderately rapid permeability. Surface runoff is medium to very rapid.

Rock outcrop consists of exposed, weathered and unweathered granite, gneiss, and schist bedrock. Rock outcrops range from few to many.

The sloping to steep landforms down from the bedrock-controlled landforms are occupied by Canton-Charlton fine sandy loams. The mapping unit symbols are 11B (6B), 11XB (6XB), 11XC (6XC), 11D, and 11MD. The mapping units in parentheses are the mapping units from Middlesex County. The letter "X" denotes very stony conditions, while the letter "M" denotes extremely stony conditions. In the Canton and Charlton mapping unit, the letter "B" denotes a 3 to 8 percent slope, "C" an 8 to 15 percent slope and "D" a 15 to 25 percent slope in the non stony mapping unit and 15 to 35 percent in the extremely stony mapping unit. The Canton soils formed in a fine sandy loam mantle underlain by gravelly sandy glacial till, derived mainly from gravel and gneiss. The Charlton soils are the same as previously described.

The nearly level to gently sloping landforms are occupied by Woodbridge very stony fine sandy loam. The soils are designated by the symbol 31XB. The symbol "X" denotes very stony surface conditions. The symbol "B" denotes a 0 to 8 percent slope. The Woodbridge soils formed in compact glacial till. The soils are moderately well-drained. These soils have moderate permeability in the surface layer and subsoil, slow to very slow permeability in the substratum (fragipan). The soils have a seasonal high water table at 18 to 24 inches. Woodbridge soils have slow to rapid surface runoff.

The gently sloping to sloping landforms are occupied by Woodbridge and Rainbow extremely stony soils. Rainbow soils are silt loams and the Woodbridge soils are fine sandy loams. The Woodbridge and Rainbow soils are designated by the mapping unit symbol 31MC. The symbol "M" denotes extremely stony surface soil conditions and the symbol "C" denotes a 3 to 15 percent slope. Both soils formed in compact glacial till. The soils are moderately well-drained. They have moderate permeability in the surface layer and subsoil, and slow to very slow permeability in the substratum (fragipan). The soils have a seasonal high water table at 18 to 24 inches. Woodbridge and Rainbow soils have slow to rapid surface runoff.

Wetlands in the upland glacial till soils are occupied by Ridgebury, Leicester and Whitman extremely stony fine sandy loams. The soils are designated by the mapping unit symbol 43M. The symbol "M" indicates extremely stony surface conditions. The Ridgebury and Whitman soils formed in compact glacial till; the Leicester soils formed in friable glacial till. The Ridgebury and Leicester soils are poorly drained and the Whitman soil is very poorly drained. The Ridgebury and Whitman soils have moderate to moderately rapid permeability in the surface layer and subsoil and slow or very slow permeability in the substratum (fragipan).

The Leicester soils have moderately rapid permeability throughout. The seasonal high water table for Ridgebury and Leicester soils is at or near the surface 7 to 9 months of the year. The Whitman soil has a high water table at or near the surface 9 to 10 months of the year. Whitman soils have high runoff potential. Runoff is slow to medium in Ridgebury soils and slow in Leicester soils. This soil is designated as a wetland soil and is regulated under Public Act 155.

The nearly level to steep terraces or outwash plains are occupied by Hinckley gravelly sandy loam. The soils are designated by the mapping unit symbols 60A, 60C and 60D (158D). The symbols "A" denotes a 0-3 percent slope, "C" a 3 to 15 percent slope and "D" a 15 to 35 percent slope. Hinckley soils formed in water-sorted outwash. The soils are excessively drained and have rapid permeability

in the surface layer and subsoil and very rapid permeability in the substratum. Runoff is slow.

Agawam fine sandy loams occupy the nearly level and gently sloping outwash plains and stream terraces. The soils are designated by the mapping unit symbol 69B. The symbol "B" denotes a 3 to 8 percent slope. The soils formed in water-sorted sands. Agawam soils are well-drained. The soils have moderately rapid permeability in the surface layer and subsoil, and rapid permeability in the substratum. Agawam soils have medium surface runoff.

Merrimac sandy loams occupy the nearly level, gently sloping, and sloping stream terraces, outwash plains, kames, and eskers. The soils are designated by the mapping unit symbol 70B. The symbol "B" indicates a 3 to 8 percent slope. The soils formed in water-sorted outwash. The soils are somewhat excessively drained. Merrimac soils have moderately rapid or rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. Merrimac soils have slow to medium surface runoff.

Windsor loamy sands occupy nearly level and gently sloping stream terraces and outwash plains. The soils are designated by the mapping unit symbol 67A. The symbol "A" denotes a 0 to 3 percent slope. The soils formed in glacial outwash. The soils are excessively drained. Windsor soils have rapid or very rapid permeability. These soils have slow to medium surface runoff.

Level or nearly level pockets and depressions on glacial outwash plains and terraces are occupied by Scarborough mucky loamy sand. The soils are designated by the soil mapping unit symbol 75. Scarborough soils formed in sandy glacial outwash deposits. The soils are very poorly drained and have rapid or very rapid permeability. The high water table is at or near the surface 9 to 10 months out of the year. Surface runoff is slow. This soil is designated as a wetland soil and is regulated under Public Act 155.

The low lying nearly level areas along drainage ways on stream terraces and outwash plains are occupied by Raypol silt loam. The soils are designated by the soil mapping unit symbol 464. Raypol soils formed in silty deposits less than 40 inches thick, over sand and gravel. The soils are poorly drained and have moderate permeability in the surface layer and subsoil, and rapid or very rapid permeability in the substratum. The high water table is at or near the surface 7 to 9 months of the year. Runoff is slow. This soil is designated as a wetland soil and is regulated under Public Act 155.

According to the U.S. Department of Agriculture classification criteria for Prime Farmland Soils, the following soils are classed as Prime Farmland soils:

- (6B, 11B) Canton and Charlton fine sandy loams.
- (60A) Hinckley gravelly sandy loam.
- (67A) Windsor loamy sand.
- (69B) Agawam fine sandy loam.
- (70B) Merrimac sandy loam.

CLIMATIC CONDITIONS

The sites for proposed acquisition are in the southeast hills climate region of Connecticut. The climate is influenced by the proximity of Long Island Sound, but it shows some of the more extreme characteristics of the inland hills. When low-pressure weather systems bring southerly airflow from the sound, the area experiences humid maritime conditions. When high-pressure systems prevail, the area experiences relatively cool dry weather, which is the general condition during the fall season.

The sites are located in the narrow, steep-sided Salmon River Valley and therefore experience the valley circulation of up-valley flows (southerly) during the day and down-valley (northerly) flows at night with rather intense thermal inversions.

Mean annual temperature	49°F
Annual Heating Degree Days	6000
Precipitation (mean annual)	
evenly distributed by month	48 inches
Average annual snowfall	40 inches
Average length of frostfree season	170 days

The frostfree season is considerably shorter in the valley than the 170 days shown above for exposed area.

Most of the land in question is on 15-30% east and west facing slopes. The solar radiation flux density received on these slopes varies from approximately 500 calories per square centimeter per day in July to 130 calories per square centimeter per day in December.

WATER RESOURCES

The eastern half of parcel 6 and all of the other parcels drain more or less directly into Salmon River. The western half of parcel 6 drains into Safstrom Brook, which flows into Salmon River approximately 4000 feet south of the parcel. Hence, the use of any of the parcels may have an impact on the river's water quality. Salmon River was selected for special protection from sewage discharge under Connecticut General Statutes Section 25-26a.

Bedrock and till-covered areas in the various tracts have a limited potential for water supplies. The majority of wells in such areas tap bedrock and yield less than 10 gallons per minute (gpm). Stratified drift areas often allow moderate to high-yielding wells to be established, but the potential for such wells on the sites under study is unclear. Most of the stratified drift is found on steeply sloping land, which may physically preclude the establishment of a well. In those relatively level stratified-drift areas that exist (in parcels 5 and 6, for instance), it may be necessary to penetrate several tens of feet of sand and gravel just to reach the water table. This may add greatly to the expense of such a well, both in terms of drilling and pumping costs. It may, however, be possible to establish a high-yielding well on the floodplain areas of parcels 4, 5, 6, or 7. Parcel 5, in particular, appears to have, in its floodplain area, gravelly materials that would be favorable for a high-yielding well. Any site would have to undergo

further examination and testing before a definite analysis of its water-supply potential could be made.

The natural quality of the groundwater in any of the parcels would be expected to be generally good. High iron and/or manganese concentrations often are found in water withdrawn from wells tapping the Brimfield Schist, the formation that underlies parcels 1 and 2. Because of the variable mineralogic content of the metamorphic rocks in eastern Connecticut, it is possible that high concentrations of iron, manganese, or other elements may be found in water withdrawn from areas of Hebron. Formation rocks as well. The probability of obtaining mineralized water from stratified drift wells depends upon the source of the sediment. Most of the Salmon River watershed contains bedrock of the Hebron Formation; hence, most of the local stratified drift probably was derived from that unit. Nevertheless, the presence of reddish-brown sand, pebbles, and cobbles indicate that part of the sediment was derived from rocks as far away as the upper Connecticut River valley. In general, however, the bedrock and stratified drift in parcels 3-8 would have the least likelihood of producing objectionably mineralized groundwater. If high iron or manganese concentrations are found, it may be possible to reduce them to acceptable levels through the use of special filters.

Floodprone areas are approximately coextensive with the areas of alluvium, as designated on the accompanying surficial geologic map. In those portions of the valley where no alluvium is shown, there probably is only a narrow strip of land on either side of the river that would be subject to occasional flooding.

FISH RESOURCES

The proposal by the Connecticut Department of Environmental Protection's Open Space Acquisition unit to purchase these important parcels along the Salmon River is of inestimable value to natural resource conservation in the State of Connecticut.

The action is designed to protect the Salmon River Watershed's water quality. In addition, this action would improve access for fire control and fish stocking (22,000 trout annually) and assist in controlling illegal access and abuses of state forest lands, i.e. unauthorized recreational vehicle usage, illegal camping, etc.

The action is closely related to the Connecticut DEP Anadromous Fisheries program which seeks to restore herring and Atlantic salmon runs to the Salmon River. Acquisition of these parcels would enable the department to carefully control and monitor a recreational salmon fishery if the fish become numerous enough to support a fishery.

The watershed is characterized by steep slopes throughout the areas being considered for purchase. Improper techniques of resource development or utilization in these areas could have very harmful effects on the river. The recommended purchases would help to provide a buffer strip to protect the river from erosion and sedimentation as a result of any improper land uses on adjacent properties.

The fish population in the project area consists of stocked brook, brown, and rainbow trout, native brown and brook trout in much lower numbers, dace, suckers, redbfin pickerel, sunfish, darters, shiners, and killifish. Insect life is abundant, with Trichoptera and Ephemeroptera the most important groups.

The water itself is slightly acid in pH, averaging 6.4, and shows moderate to low conductivity for Connecticut waters averaging 96 UMHOS, at 80°C.

WILDLIFE

The wildlife habitat within the upper Salmon River Drainage Basin provides good potential carrying capacity for most of the forest-associated wildlife, including furbearers indigenous to Connecticut.

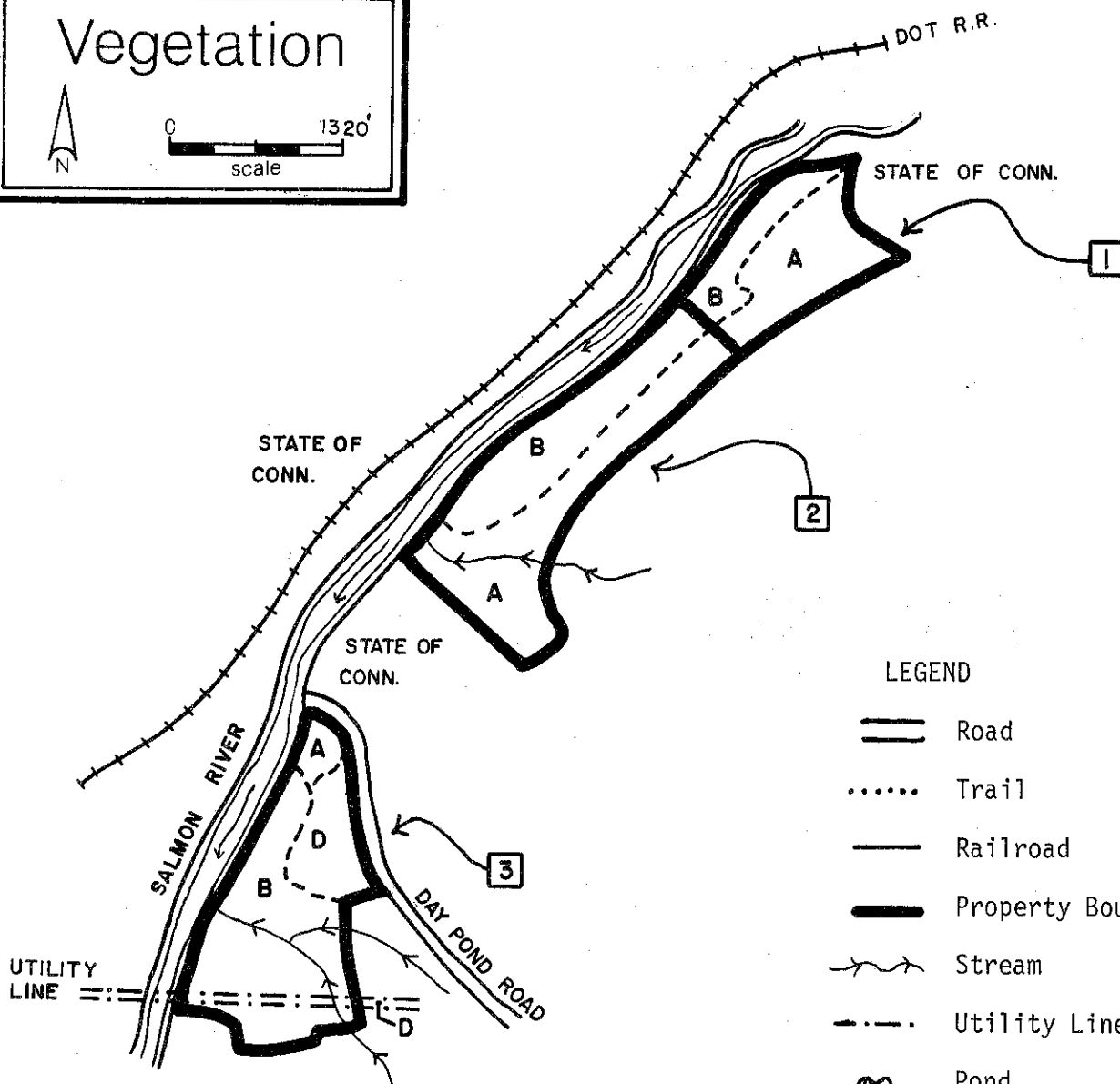
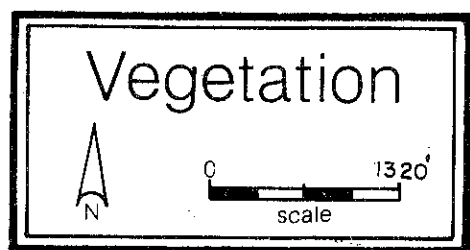
Inspecting the sites from a wildlife viewpoint indicates that the Arnold acreage provides the most diverse habitat. This property would be most desirable for purchase.

The reverting old fields provide excellent nesting and brooding cover. Forest openings such as these are generally lacking in the forest complex of the surrounding area. The vegetative composition and availability of water provide the necessities for good wildlife management. The relative isolation of this parcel would imply a minimum of undue disturbances to wildlife.

VEGETATION

Vegetation types in the area of potential acquisition can be categorized as follows:

- Type A. (Mixed Hardwoods) - There are approximately 217 acres of mixed hardwoods present on seven of the eight parcels considered. This vegetation type is dominated by pole to sawlog-size white oak, black oak, and black birch, with occasional yellow birch, sugar maple, red maple, white ash, and American beech. Stocking levels are quite variable, ranging from understocked to overstocked. Understory vegetation consists mainly of hardwood tree seedlings, white pine seedlings, and hemlock seedlings with bluebeech, witchhazel, mapleleaf viburnum and, in some places, dense mountain laurel. Huckleberry, grasses, poison ivy, and club moss dominate ground cover vegetation.
- Type B. (Hemlock) - Pole and sawlog size hemlock with scattered white oak, black oak, black birch, yellow birch, and American beech are present in these fully-stocked stands which total 214 acres. The sparse understory present is dominated by hardwood and hemlock seedlings. The hemlock area in parcel #2 has recently received a heavy harvest of sawlog-size trees. The erosion problems generated by poor location of main haul roads on steep slopes during this harvest have not yet been completely rectified.
- Type C. (Plantation) - 19 acres of over-crowded sapling to pole-size red pine and sapling size white and Norway spruce are present within parcel #6. Most of the trees have extremely small crowns and are declining in health and



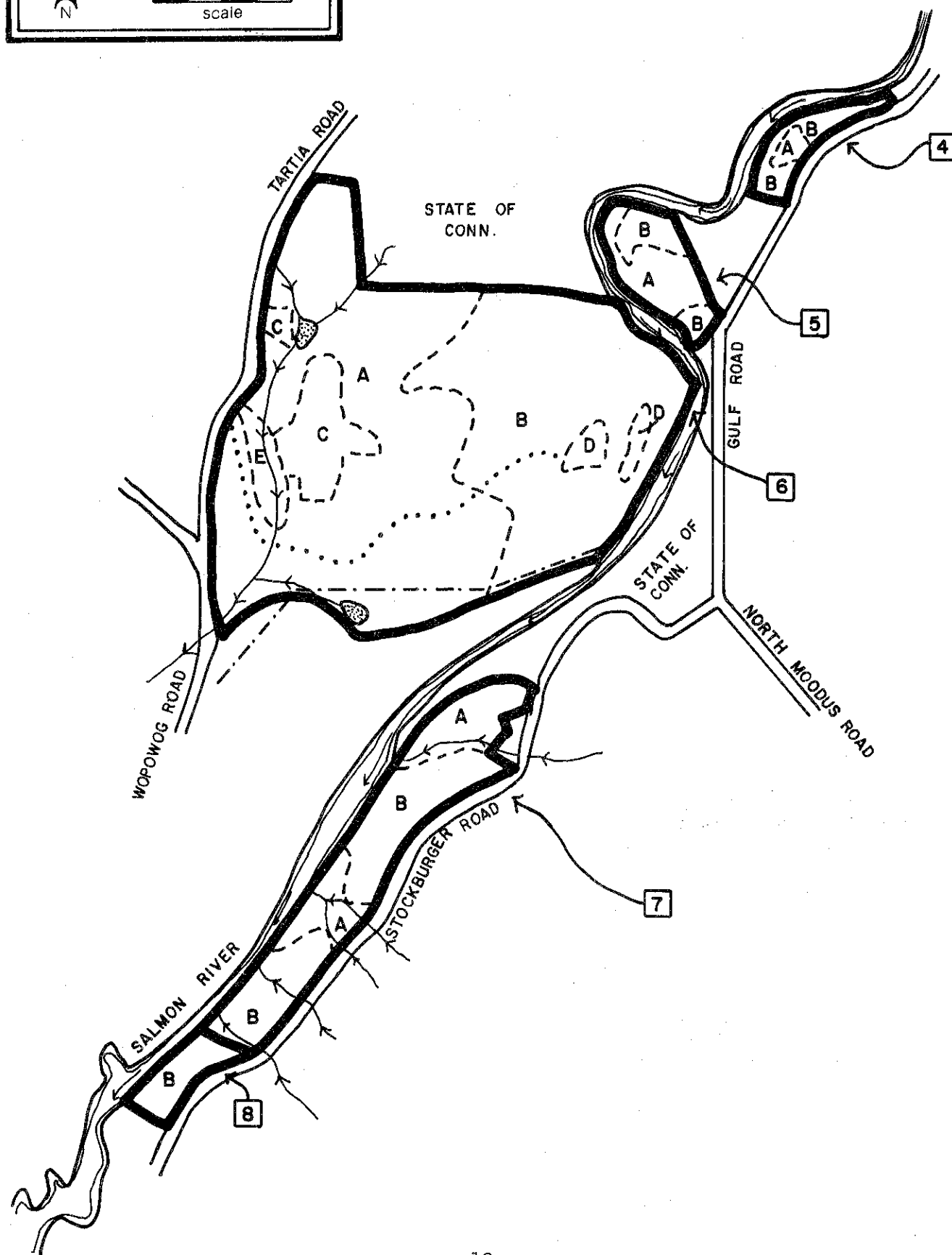
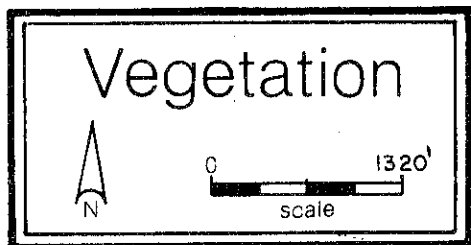
LEGEND

- Road
- Trail
- Railroad
- Property Boundary
- Stream
- Utility Line
- Pond
- Vegetation Type Boundary

VEGETATION TYPES*

- TYPE A Mixed hardwoods, under to over-stocked, pole to sawlog-size, 217-acres.
- TYPE B Hemlock, fully-stocked, pole to sawlog size, 214-acres.
- TYPE C Plantation, over-stocked-sapling to pole, 19-acres.
- TYPE D Old field, understocked, sapling-size, 16-acres.
- TYPE E Hardwood swamp, under-stocked, sapling to pole-size, 6-acres.

* Seedling-size = trees less than 1 inch in diameter at breast height (dbh).
 Sapling-size = trees 1 to 5 inches in dbh.
 Pole-size = trees 5 to 11 inches in dbh.
 Sawlog-size = trees 11 inches and greater in dbh.



vigor. Sugar maple seedlings are becoming established throughout all of the red pine stands. In their present condition these stands are very susceptible to degradation by disease, insects, and adverse weather condition.

Type D. (Old Field) - This 16-acre understocked stand contains sapling-size eastern red cedar and quaking aspen with seedling size white oak, black oak, and black birch. Occasional highbush blueberry, mountain laurel, bayberry, barberry, staghorn sumac, and old field juniper are also present. Ground cover is dominated by grasses, goldenrod, steeplebush, and scattered milkweed.

Type E. (Hardwood Swamp) - This 6-acre stand is made up of sapling to pole-size red maple in clumps along with occasional white ash and yellow birch. Beaver activity is responsible for this stands understocked condition. The understory, where present, is dominated by highbush blueberry, red-stemmed dogwood, sweet pepperbush, and speckled alder. Tussock sedge and skunk cabbage form the ground cover in this area.

DISTRIBUTION OF VEGETATION TYPES THROUGH PARCELS

	Parcel #1	#2	#3	#4	#5	#6	#7	#8
Mixed Hardwoods	17-acres	30-acres	4-acres	2-acres	11-acres	137-acres	16-acres	
Hemlock	10 "	19 "	37 "	10 "	7 "	93 "	29 "	9 acres
Plantation						19 "		
Old Field			11 "			5 "		
Hardwood Swamp						6 "		
Total Acres	27	49	52	12	18	260	45	9
Grand Total =	472 acres							

ENVIRONMENTAL IMPACT

EFFECT ON LAND USE

Acquisition as proposed will have no impact on existing land uses.

EFFECT ON SOCIO-ECONOMIC CONDITIONS

Acquisition of these parcels should cause no appreciable change in socio-economic conditions. It would limit the possibility of gravel excavation by private individuals.

EFFECT ON TRANSPORTATION ROUTES

Purchase of these properties will not cause a significant change in use or condition of roads in this area.

HISTORIC/ARCHEOLOGICAL RESOURCES

The State Historic Commission recognizes numerous sites in the Salmon River area which have archaeological or historic significance. Many of the sites are listed or eligible to be listed on the National Register of Historic Places. The Historic Commission feels that State purchase of land as addition to State forest will aid the Historic Commission in protecting the land. The Historic Commission feels that the proposed acquisitions will have no effect on the historic or archaeological resources. The Historic Commission does stipulate that if any development is proposed within the State-owned lands, a site specific survey would have to be completed prior to the project start.

The Salmon River Valley has a rich heritage which can easily be traced back to prehistoric Indian camps. There are several sites which are currently under study in the Salmon River Watershed. The location of the sites will be released when the archaeological survey has been completed.

Many of the more recent features which are eligible to be listed on the National Register are related to the Air Line Railroad which was opened for travel in 1873. The railroad operated for 87 years before the last run was made in 1960. The railroad served the area from Boston to New York. Willimantic, Middletown, and New Haven were among the larger Connecticut towns through which the railroad passed.

The following four structures are of great interest to the Historic Commission and are eligible to be listed on the National Register of Historic Places.

Lyman Viaduct, an iron trestle bridge built in 1873, was the second largest grade crossing on the Boston and New York Air Line Railroad, exceeded in length only by the swing bridge over the Connecticut River. It is 1,135 feet long and 137 feet in height. In 1912-1913 the entire trestle was filled in to strengthen it for accommodation of heavier, faster locomotives.

To the south and east, from the top of the viaduct, is a sweeping view of the Salmon River Valley in Colchester.

Rapello Viaduct, was built at approximately the same time as the Lyman Viaduct. It is 1,380 feet long and 60 feet high. The trestle is constructed of iron and terminated on stone abutments.

The Rapello Viaduct spans Flat Brook, another tributary to the Salmon River. The Rapello was also buried during 1912-13 with sand-fill to strengthen the structure for the faster, larger trains.

Stone Arch Bridge. This bridge located in Colchester, is constructed in the key stone arch style from Portland arkosic sandstone. It creates an overpass across River Road. The structure is dated 1887 indicating it was built after the railway was in operation. The bridge is visually attractive from both directions on River Road.

Warren Truss Bridge. This bridge spans the Blackledge River in Colchester which, at the crossing, is 65± feet wide. The truss is an iron structure supported by massive brownstone abutments. The top of the truss is approximately 50 feet

above the Blackledge River bed. There is approximately 32 feet of clearance between the water surface and the lower members of the truss.

Perhaps the most significant historic feature in the Salmon River area is the Comstock Bridge, one of the three remaining covered wooded bridges in Connecticut. Comstock's Bridge spans the Salmon River at the boundary of Colchester and East Hampton. The main span is a covered one-lane bridge measuring 12 feet wide and 80 feet long. It is approximately 15 feet above the river. It is considered significant due to the rarity of covered bridges and the uniqueness of its construction during its time period between 1840 and 1868. It was listed on the National Register of Historic Places in 1975.

There are many other features in the watershed area such as cellar holes and factory foundations which have historic significance. They are too numerous to describe in detail at this time. The State Historic Commission has not sought a determination of eligibility for listing on the National Register for most of these structures. These features are listed on the State Historic Commission's inventory.

EFFECT ON WATER RESOURCES

Acquisition of any of the eight parcels by the state for use in passive recreation or forest management should have no detrimental impact on water resources. On the contrary, such acquisition should ultimately prove beneficial in protecting the quality of Salmon River.

EFFECT ON VEGETATION

State acquisition of any or all of these parcels will have no negative impact on vegetation. Acquisition will allow the following state uses:

- #1. Managing the property for multiple uses. These areas, if acquired, will be covered under the Salmon River Multiple-Use Management Plan, which has been drafted for the Salmon River State Forest. As time and manpower become available, these parcels, where the resource base permits, will be managed to provide multiple uses such as passive recreational opportunities, wildlife habitat, and forest products. Areas of parcels which are extremely fragile due to excessive slopes or fragile soil types will be left in "natural" vegetation. Attempts to mitigate on-going erosion problems in these fragile areas may be made to reduce impact on the water quality of Salmon River.
- #2. Controlling the use and abuse of several unpaved roads for the purpose of erosion-control and maintenance. Of particular importance is Day Pond Road. Erosion problems on this road have reached a critical level as a result of unrestricted public use and lack of proper maintenance through the years. Acquisition of Parcel #3 would put this road under the jurisdiction of DEP for control of use and maintenance.
- #3. Reserving this property for open space, thus eliminating the future potential for subdivision and/or intensive development. Development of

this area could cause considerable negative impact on the water quality of Salmon River and its tributaries.

- #4. Prescribing and regulating timber harvesting practices. With this control, harvesting practices such as those practiced on Parcel #2, which leave the forest in an unstable or unhealthy condition and contribute to erosion and sediment problems, could be avoided. Any harvesting practices after state acquisition would follow state regulations and comply with the priorities set forth in Salmon River State Forest Multiple-Use Management Plan.

EFFECT ON SOILS

All the parcels reviewed are well-suited to the type of recreation planned. With no further development planned for parking lots and roads, there will be no new erosion and sediment problems. There are several areas where erosion has taken place along access roads used for logging and in the areas where large amounts of fill were removed.

Diverting water from the poorly kept logging trails is necessary, as is controlling the flow of runoff and dispersing the runoff. Five ways of doing this and establishing new roads are:

1. The use of pipe culverts
2. Broad based drainage dips
3. Open top culverts
4. Water breaks
5. Outsloping

To insure that a minimum amount of sediment carried from the road surfaces by water does not reach the stream systems, it is recommended that a sediment trap or pool be installed at the outlet ends of these features. This will also prevent erosion near the outlets.

An excellent erosion and sediment control guide called "Woodlands of the Northeast - Erosion and Sediment Control Guides" is available at Soil Conservation Service offices in each Soil and Water Conservation District. The booklet is prepared by the U.S. Department of Agriculture, Soil Conservation Service, and the U.S. Forest Service.

Guidelines for establishing trails are just as important as those for establishing forest roads. Trails should follow the countour of the land, to prevent the trail from wearing down and acting as a stream channel for runoff water. Water has to be diverted from trails in critical areas by means similar to those used in diverting water from roads. When trails must go up slope, the use of drainage dips and water breaks is essential.

Seeding down old logging roads no longer in use is also a good practice, as is mulching the roads and skid trails. Seeding mixtures used should be suitable for shady areas and very strongly acid soils. Reclaiming old borrow areas (gravel pits for example) is often difficult because of deep cuts and steep slopes with exposed sands and gravels. One alternative to stabilizing these difficult areas, is to divert runoff water, preventing further erosion on the embankment, and then

to close the pit to further use. This will allow native vegetation to revegetate the exposed slopes. The disadvantage to this alternative is that the slopes may not be aesthetically pleasing for a number of years. The other alternative is to cut back the slopes to a gentle grade, cover with topsoil, and then revegetate. The disadvantage to this alternative is that it may not be practical or cost-efficient in remote areas. An evaluation will have to be done on a site-by-site basis.

The Soil Conservation Service, through the New London County Soil and Water Conservation District, is available to assist in planning erosion and sediment control practices in woodlands.

RECREATION POTENTIAL

Extensive (diffuse) rather than intensive recreational use is being proposed for the area. Regarding the recreational potential of these lands, they collectively lend themselves to the establishment of hiking trails, cross-country ski trails, river access for fishing, and hunting where there is sufficient distance from residences. Access to the northern parcels (1-3) is primarily by foot, although unwanted vehicle use is occurring.

On an individual basis, the 8 tracts have additional potential for the following:

Tract 1 & 2 - no distinctive features or potential setting them apart.

Tract 3 - fairly accessible; more readily exploitable for recreation use; former mill site (historic/educational/interpretive considerations), scenic cascade. It would be recommended that the plateau/field be kept relatively open by mowing for wildlife considerations and for informal picnicking.

Tract 4 - informal camping is now occurring in this area; potential exists for a small picnic site with a few tables along the river.

Tract 5 - scenic; confluence of small stream and the Salmon River; remains of a stone structure on either side of a small stream and along a spur road to the river. Small plateau above this site is steeply sloped down to the stream and river and has the potential for a small attractive picnic area.

Tract 6 - largest tract; by virtue of size alone, this property would probably offer the widest range of use options. Those options could include firewood and sawlog harvest, wildlife management programs, and recreational programs which could be wide-ranging depending on site suitability.

Tract 7 & 8 - very steeply sloped to the river and offering no distinctive features.

Tracts 4-8 can be reached by car and have, at the minimum, access via a gravel road.

Without having made a thorough inspection of all eight parcels, the one appearing to have the greatest potential for immediate recreational development is the Arnold (#3) tract. The reverting open field plateau along the gravel road would be a suitable picnic or camping area. The gravel access road connecting this tract to Day Pond State Park is not suitable for vehicle passage without being upgraded. The topography is steep and well-vegetated with hardwoods and hemlocks, and includes a very scenic cascade along a stream feeding into the Salmon River.

Remnants of a sluice and waterwheel foundation were seen on the site. Water had apparently been diverted from the stream above the cascade to feed an overshoot waterwheel driven mill. The combination of natural beauty, historical aspects (former mill site), fishing in the nearby Salmon River, and proximity to Day Pond State Park (within one mile and accessible by foot over the aforementioned gravel road-Day Pond Road) make this property appear suitable for recreational development as an adjunct to Day Pond State Park.

Maintaining the relative openness of the field on the plateau, by mowing, would enable informal picnicking on this grassy area. If the gravel road were upgraded to enable public and service vehicle access, further development of the site would then be possible. If picnic tables were then installed, they should probably be few in number and as unobtrusive and rustic as possible. Large scale recreational development of the tract is not advocated in the interest of retaining the inherent natural beauty with minimal disruption.

The large Engel tract (#6) appears to offer the most potential for forestry operations because of its size, gentler slopes, and accessibility by paved road. The deciduous trees could help meet the demand for firewood by the public which is partly being met by issuance of cutting permits on state lands. Meeting the need for firewood and sawlogs through selective cutting will result in ultimate stand improvement and can be tied into area development for other programs.

State ownership of a larger proportion of the riverside land would enhance the possibility of establishing a designated hiking trail along the east bank of the Salmon River with Day Pond State Park or the Comstock Covered Bridge as possible take-off points.

As indicated, large scale recreational development is not being advocated. Modest expansion of recreational opportunities can, however, be incorporated in an overall plan for management of this area. Items such as new or expanded parking areas for fishermen and hikers, for canoe launch and retrieval areas, and small picnic sites might be possible. Construction of such facilities could be tied into a timber sale, whereby a hikers' and fishermen's parking lot, for example, is built on a former log-yarding site or area clear-cut because of high stand mortality. Manpower limitations will in any event probably dictate that any new or expanded facilities installed have minimal maintenance requirements.

MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

Care should be taken to maintain the stream bank trees. The removal of these trees would expose excessive amounts of water surface to direct sunlight and raise the water temperature significantly (possibly 5 to 10°F), thus decreasing the quality of the fish habitat.

IRREVERSIBLE COMMITMENTS OF RESOURCES

There would not necessarily be any irreversible or irretrievable commitments of geologic or hydrologic resources involved in state acquisition and maintenance of the parcels. It may be useful for the state in the future to mine some of the stratified drift deposits for road fill or other needs. Parcels 5 and 6 afford the best opportunities for sand and gravel extraction. Of course, private ownership of these parcels presents similar opportunities for mining; the difference resulting from state ownership would simply be that the resources would be used, if at all, to further state programs rather than private interests.

ALTERNATIVES TO THE PROPOSED ACTION

The alternative to state ownership of the parcels would be continued private control. Since most of the parcels (the only possible exception being the western part of parcel 6) could be developed for residential or commercial purposes only with extreme difficulty, it is unlikely that any such development will occur. This does not mean that state ownership would have no effect on environmental factors: private owners, being obligated to pay taxes on the land, may wish to make the land financially productive in ways other than development. This may take the form of wholesale logging or sand and gravel mining, either of which could lead to substantial erosion of the steep slopes and sedimentation in the river. The pressure for such detrimental use of resources will become greater in the future as fuel prices continue to rise, making wood a more appealing alternative, and as sand and gravel resources in the state become depleted.

SHORT TERM VS. LONG TERM PRODUCTIVITY

Protection of this important system now will enable it to remain a valuable natural resource for the people of Connecticut in perpetuity.

CONSULTATION AND COORDINATION

The following agencies have been notified and asked to comment on the project proposal through the A-95 Review Process. No adverse comments have been received to date.

Federal Agencies

USDA Soil Conservation Service

State of Connecticut

Department of Environmental Protection
Office of the Commissioner
Region III Headquarters
Open Space Acquisition
Parks and Recreation
Property Management

Wildlife
Fisheries
Planning and Coordination
Department of Transportation
Department of Health
Commission on Human Rights and Opportunities
State Historic Commission
Office of Policy and Mangement

Towns of Colchester and East Hampton

Board of Selectmen
Planning and Zoning Commission
Conservation Commission

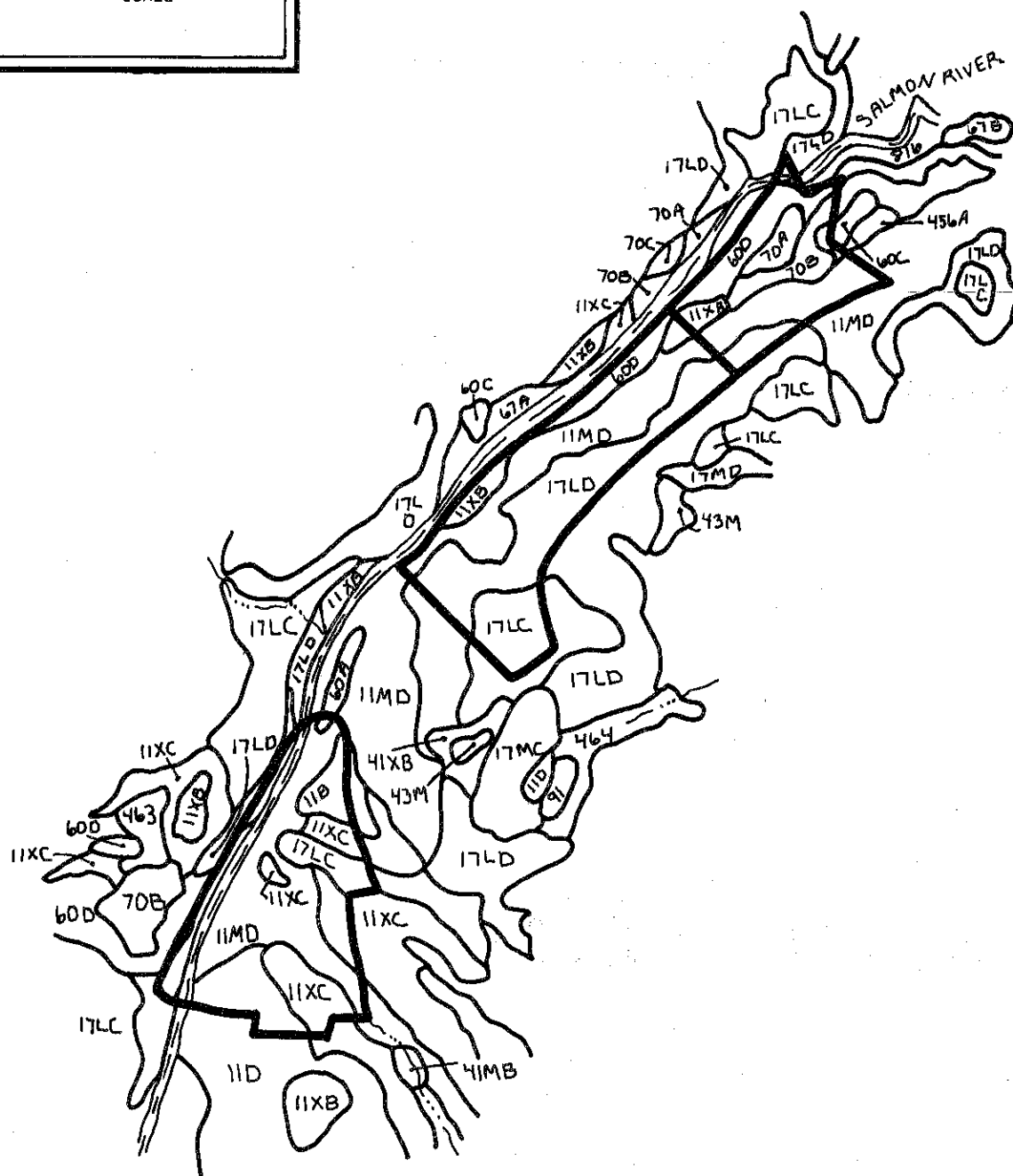
Southeastern Connecticut Regional Planning Agency
Environmental Review Team (Eastern Connecticut Resource Conservation
and Development Area).

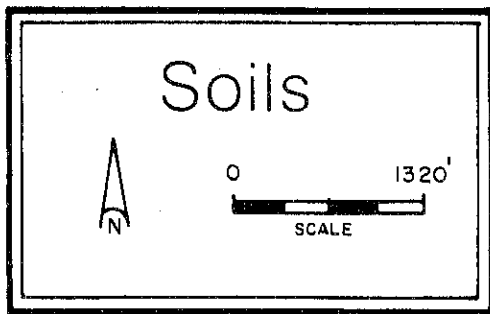
The general public has been notified of the proposal through newspaper articles. No controversy has been generated as a result of these articles.

Appendix

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SCALE





SALMON RIVER
COLCHESTER, EAST HADDAM, EAST HAMPTON

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Soil Symbol	Principal Limiting Factor	Urban Use Limitations*			
			Camp Areas	Picnic Areas	Paths and Trails	
Canton-Charlton	6B		1	1	1	1
Canton-Charlton	6XB	Large stones	2	1		2
Canton-Charlton	6XC	Large stones, 2 slope	2	2		2
Canton-Charlton	11B		1	1		1
Canton-Charlton	11D	Slope	3	3		2
Canton-Charlton	11XB	Large stones	2	1		2
Canton-Charlton	11XC	Slope, large stones	2	2		2
Canton-Charlton	11MD	Large stones, 3 slope	3	3		3
Charlton-Hollis	17LC	Slope, large stones	2	2		2
Charlton-Hollis	17LD	Slope	3	3		2
Hollis Rock outcrop	17ZC	Large stones, 2 slope	2	2		2
Hollis Rock outcrop	17ZD	Large stones, 3 slope	3	3		2
Woodbridge	31XB	Percs slowly	2	1		2
Woodbridge-Rainbow	31MC	Large stones, 3 slope	3	2		3

SALMON RIVER
COLCHESTER, EAST HADDAM, EAST HAMPTON

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

<u>Soil Series</u>	<u>Soil Symbol</u>	<u>Principal Limiting Factor</u>	<u>Urban Use Limitations*</u>			
			<u>Camp Areas</u>	<u>Picnic Areas</u>	<u>Paths and Trails</u>	
Ridgebury-Leicester	43M	Stones, wetness	3	3	3	
Hinckley	60A	Sandy, small stones	2	2	2	
Hinckley	60C	Sandy, small stones	2	2	2	
Hinckley	60D	Slope	3	3	2	
Windsor	67A	Too sandy	2	2	2	
Agawam	69B		1	1	1	
Merrima	70B		1	1	1	
Hinckley	158	Slope	3	3	3	
**Raypo1	464	Wetness	3	3	3	
**Scarboro	754	Wetness	3	3	3	

* Limitations: 1=s1ight, 2=moderate, 3=severe.

** Wetness

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 activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

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

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, 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 (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.

