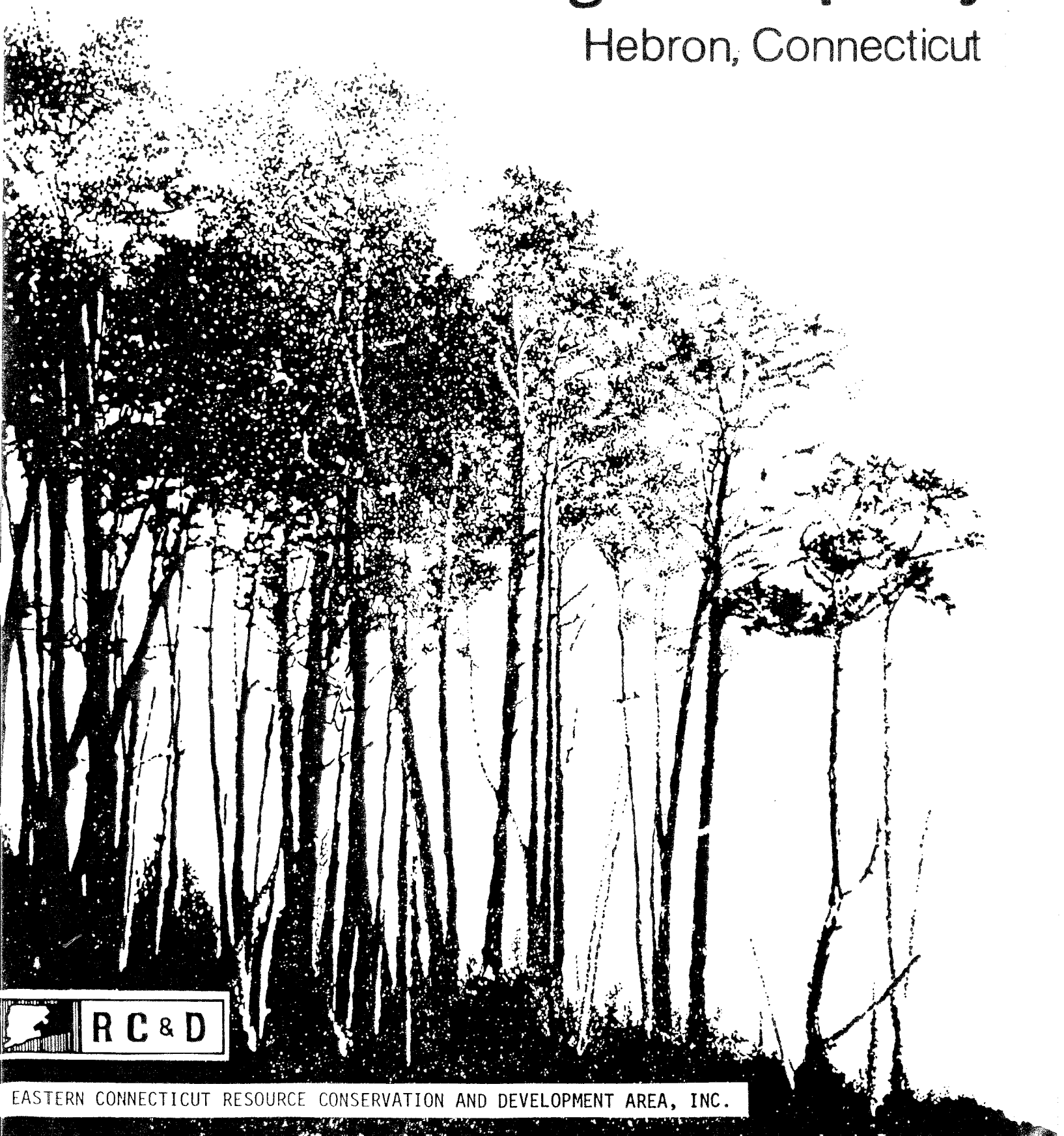
Environmental Review Team Report

Ostrager Property

Hebron, Connecticut



R C & D

EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report

Ostrager Property

Hebron, Connecticut

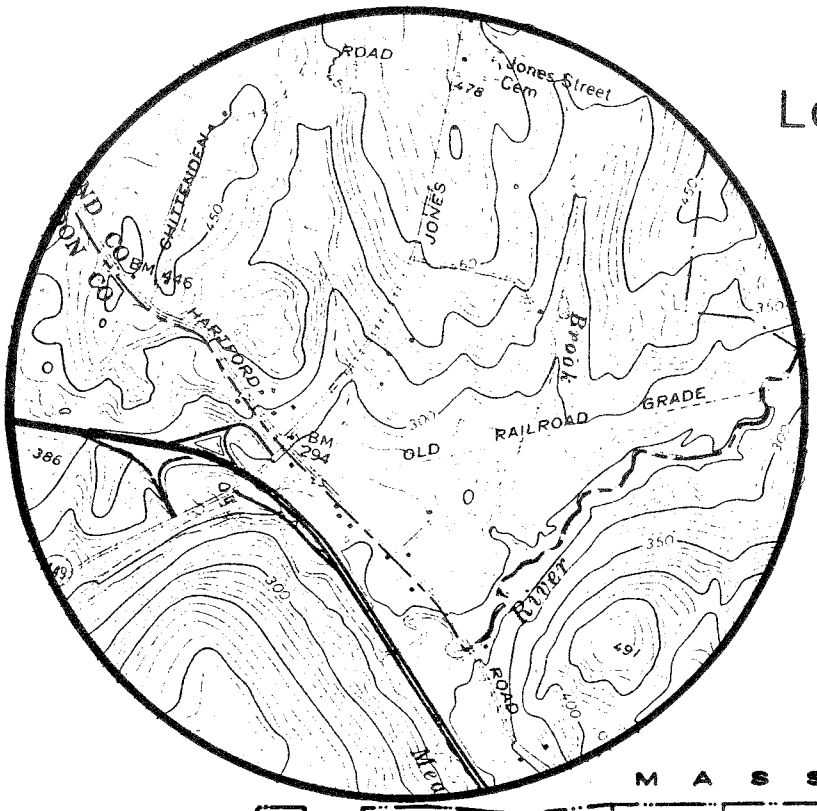
June 1984

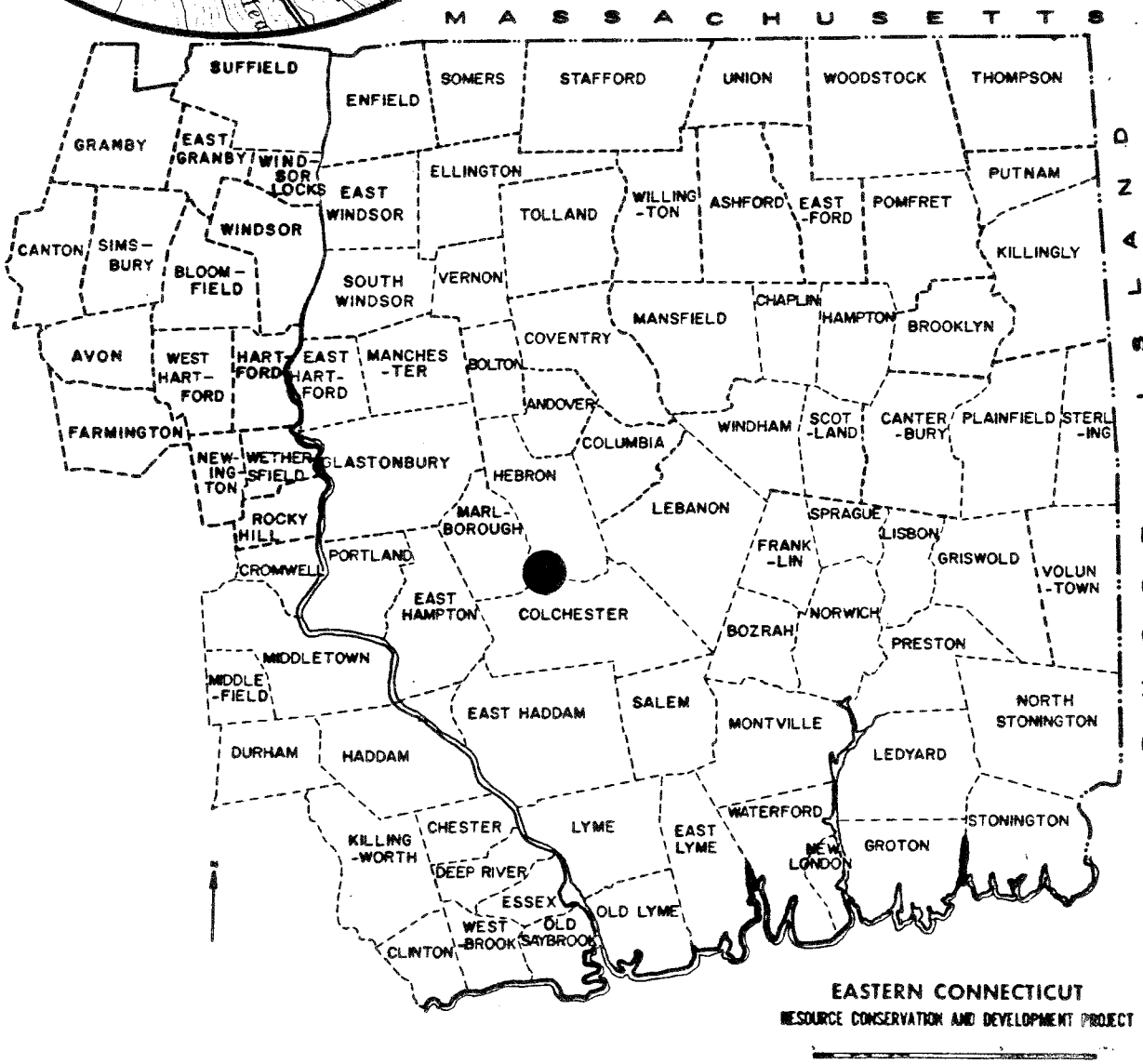
Eastern Connecticut Resource Conservation & Development Area

Environmental Review Team
PO Box 198
Brooklyn, Connecticut 06234

Location of Study Site

OSTRAGER PROPERTY
HEBRON, CONNECTICUT





ENVIRONMENTAL REVIEW TEAM REPORT
ON
OSTRAGER PROPERTY
HEBRON, CONNECTICUT

This report is an outgrowth of a request from the Hebron Economic Development Commission to the Tolland 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: Joyce Palmer, Soil Conservationist, SCS; Al Roberts, Soil Scientist, SCS; Bill Warzecha, Geologist, DEP; John Rook, Wildlife Biologist, DEP; Ted Willeford, Sanitarian, State Department of Health; Christopher Singley, Planner, Capitol Region Council of Governments; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field-checked the site on Thursday, March 29, 1984. 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 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 Hebron. 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 Area 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, RT 205, Brooklyn, CT 06234, 774-1253.

Topography	Site Boundary	0 660' scale	N

INTRODUCTION

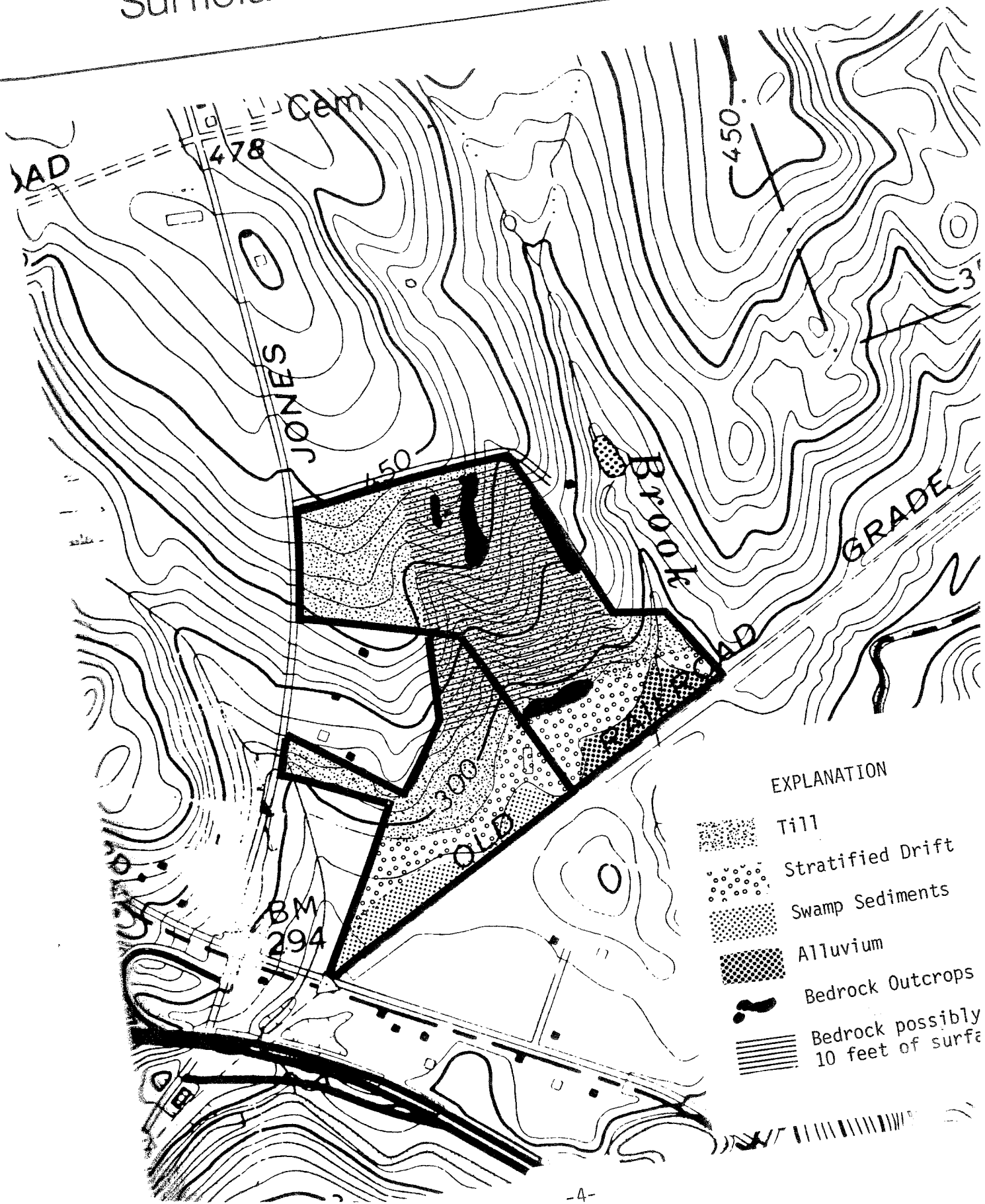
The Eastern Connecticut Environmental Review Team was asked to prepare a natural resource inventory and site evaluation for an industrially zoned property in the Town of Hebron. The study site is composed of two contiguous parcels (2B, 2C) owned by Murray Ostrager. The property is bounded on the west by Jones Street, on the south by an old railroad right-of-way and on the north by a private right-of-way (dirt road). Total acreage for the study site is approximately 62 acres.

Although no development plans have been prepared for the site, the Town is interested in the site's potential for industrial development. The parcel is located within ½ mile of an interchange with Route 2 and is also within ½ mile of the Colchester Public Sewer. Presently, there is no public water supply or public sewer line extending into the site.

The study site is steeply sloping on its western side, sloping in a southern direction from Jones Street to the abandoned railroad right-of-way. The site has been excavated for local fill in its central section. In some areas the groundwater table has been intercepted, resulting in several ponds. Two lower field areas, where excavation has not occurred, appear to have been recently used as pasture land or for hay production. The upper, steeper slopes are forested at present.

The Team is concerned with the impact of this postential industrial development on the natural resource base of this site. Although many severe limitations to development can be overcome by proper engineering techniques, these measures can become costly making a project financially unfeasible for a developer. The Ostrager properties have a number of limitations to development which are discussed in more detail in the following sections of this report. Three of the most severe limitations posed by this site are steep slopes, shallow soils and lack of vehicular access. Mitigating measures are discussed in this report, however, substantial financial investment may be required of the developer.

Surficial Geology



ENVIRONMENTAL ASSESSMENT

TOPOGRAPHY

The Ostrager property consists of two contiguous parcels of land which have a combined acreage of approximately 63 acres. It is located in southern Hebron and is bordered on the west by Jones Street, on the south by an old railroad grade and on the north by a driveway off of Jones Street. Senate Brook, the principal watercourse on the site traverses the eastern limits of parcel 2B.

Land rises gently northwest from the old railroad grade to the central portions where slopes are moderate. Slopes in the northern limits of parcel 2B are predominantly gentle. Elevations on the site rise from about 275 feet above mean sea level, along the old railroad grade, to about 450 feet above mean sea level along the northern property line, a difference of about 175 feet in elevation.

Based on visual inspection of the site, portions of the property designated as SwB (Sutton soils) on the accompanying soils map have been disturbed extensively in recent years. It is presumed that these surficial (overburden) deposits were used for local fill.

GEOLOGY

The site is encompassed entirely by the Moodus topographic quadrangle. A bedrock geologic map of the quadrangle (QR-27) by Larry W. Lundgren and Lawrence P. Ashmead, has been published by the Connecticut Geological and National History Survey. A surficial geologic map of the quadrangle (GQ-1205), prepared by Dennis W. O'Leary, has been published by the U.S. Geological Survey. Both maps are available for purchase or review at the Department of Environmental Protection Natural Resource Center in Hartford.

Bedrock outcrops are visible on the site mainly (1) in the areas designated as HrE (Hollis soils) on the soils map, (2) in areas disturbed as a result of the former excavation operation, and (3) in scattered areas throughout the northern parts of parcel 2B. QR-27 classifies the bedrock underlying or cropping out on the parcels as a subunit of the Hebron Formation. This rock unit consists of interbedded gneisses and schists. The "schists" are brownish gray, metamorphic rocks (geologically altered by great heat and pressure) which are composed primarily of the minerals quartz, biotite and plagioclase. The term "schist" refers to rocks where the aligned minerals are layered, giving the rock a slabby appearance. The "gneisses" are also metamorphic rock and are composed primarily of calc-silicate minerals such as quartz and feldspar. Micas are also a common component. "Gneisses" are rocks commonly characterized by a "banded" appearance which results from flaky, platy or elongate minerals (i.e., micas) alternating with layers of

more granular minerals, quartz and feldspar. The gneiss and schists grade into one another in this rock unit and they are often seen together in a single exposure. Depth to bedrock ranges from zero where bedrock outcrop to probably not much more than 10 feet throughout the two parcels.

The Ostrager property is covered largely by till. Till is a glacial sediment that was deposited directly from a mass of ice. Clay, silt, sand, gravel, and rounded or angular boulders are mixed together in varying proportions in the till. Sand is generally the dominant component, although compact silty layers or clusters are also characteristic. The upper 3-5 feet of the till are normally loose or only moderately compact, but at greater depths the till may become siltier and tightly compact. Small scattered outcrops in the northern portions of the property and in areas where surficial (overburden) deposits have been excavated, suggests that the till is generally less than 10 feet thick throughout.

Another type of glacial sediment found along the old railroad grade to the south is stratified drift. Stratified drift deposits consist of well-sorted to poorly sorted sand, gravel, and silt. These materials were deposited by melt-water streams flowing from wasting masses of glacier ice. The deposits are generally layered (stratified), but in many places the layering may be contorted. These features indicate that the sediments were built up against the ice, and that they collapsed when the ice melted away. Stratified drift deposits are identified by the symbol MyB (Merrimac soils) on the accompanying soils map.

Thickness of the stratified drift on the property probably range from a few inches at the fill/stratified drift contact to not more than 10 feet. In scattered areas throughout the site, till, stratified drift, or bedrock is overlain by swamp deposits. Swamp sediments, which are designated by the symbol Wd (Walpole) on the soils map, consists of partly decomposed organic matter mixed with sand, silt, and clay. Seasonally wet areas, which are designated by the symbol Lg (Leicester, Whitman, and Ridgebury soils) lie principally along intermittent drainage channels and are characteristically very stony.

Another type of surficial deposits found on parcel 2B along the old railroad grade is alluvium. "Alluvium," which is designated by the symbol (Am) on the soils map, consists of stream channel and flood-plain deposits of silt, sand and gravel. These deposits may contain local clay beds and organic matter.

All of the above mentioned soils, Wd, Rn and Am, are regulated wetland soils under Public Act 155. Wetlands serve many valuable hydrological purposes, such as: (1) they act as natural retention areas, reducing downstream flood flows during storms; (2) they are capable of trapping sediments from upstream areas; and (3) through biochemical processes, wetlands can change water quality often resulting in cleaner water. For these and other reasons, wetland filling should be avoided where possible. In some instances, however, a small amount of wetland filling may be necessary and justifiable (e.g., wetland filling for a road crossing). Without a specific plan, it is difficult to assess the risks involved in permitting a portion of a wetland area to be filled. In many instances, a particular act of filling may not, in itself, significantly reduce the flood storage capacity of a wetlands. On the other hand, a series of small fills or the filling in of portions of wetland may lead to substantial detriment, such as flooding and potential erosion problems downstream.

If wetlands are proposed to be filled or modified, it is recommended that the developer first submit a detailed analysis of the potential effects of the modification together with a detailed plan of the proposed project for review by appropriate town commissions.

Development Concerns

The geologic characteristics of the two parcels of land range from moderately suitable to poorly suitable for industrial development. It appears the major limiting geologic factors, which may pose problems with regard to industrial development include (1) moderate slopes in the central portions of the parcels, (2) the generally shallow to bedrock condition throughout the northern portions of the property (parcel 2B) as well as in areas where bedrock has been encountered due to the former soil excavation operation on the site (predominately in the southern parts of parcel 2B), and (3) the presence of till-based soils, which are commonly very stony in the upper few feet and, which, due to its compact nature and relatively low permeability may contain seasonally high groundwater tables. These geologic limitations will weigh most heavily on the ability to provide adequate subsurface sewage disposal, unless a public sewer line is extended to serve the property. They may also hamper the construction of interior roads and building foundations. Also, where bedrock is at or near ground surface, there is a chance that blasting may be necessary. If blasting did occur in moderately sloped areas, it is recommended that a comprehensive erosion-sediment control plan be prepared and followed closely since the potential for serious erosion problems are high in these areas. Although good planning and engineering may surmount some of the geological limitations on the site, it seems likely that a sound development in the poorly suited areas would require substantial land preparation costs.

The open fields on parcel 2C, which are delineated by MyB on the soils map and which may include the area designated as GeC, appears to have the best potential for development primarily due to the gentle to moderate slopes and soil conditions (exact thickness of soil in this area is unknown). Discharges from small or moderately sized septic systems would probably be acceptable in this area, assuming the systems were properly designed and installed.

It should be pointed out the stratified drift deposits (MyB soils) are commonly highly permeable. As a result, any pollutants that are disposed directly or otherwise make their way into the ground will have little opportunity to be renovated by the soil components. However, natural dilution by infiltrating precipitation will be increased. Moreover, the availability of public sewer facilities on old RT 2 (Hartford Road) would decrease the liklihood of ground pollution.

If the public sewer line is not extended, detailed soil investigations (deep pits, percolation tests) should be conducted throughout the site in order to determine whether or not lots are suitable for on-site sewage disposal.

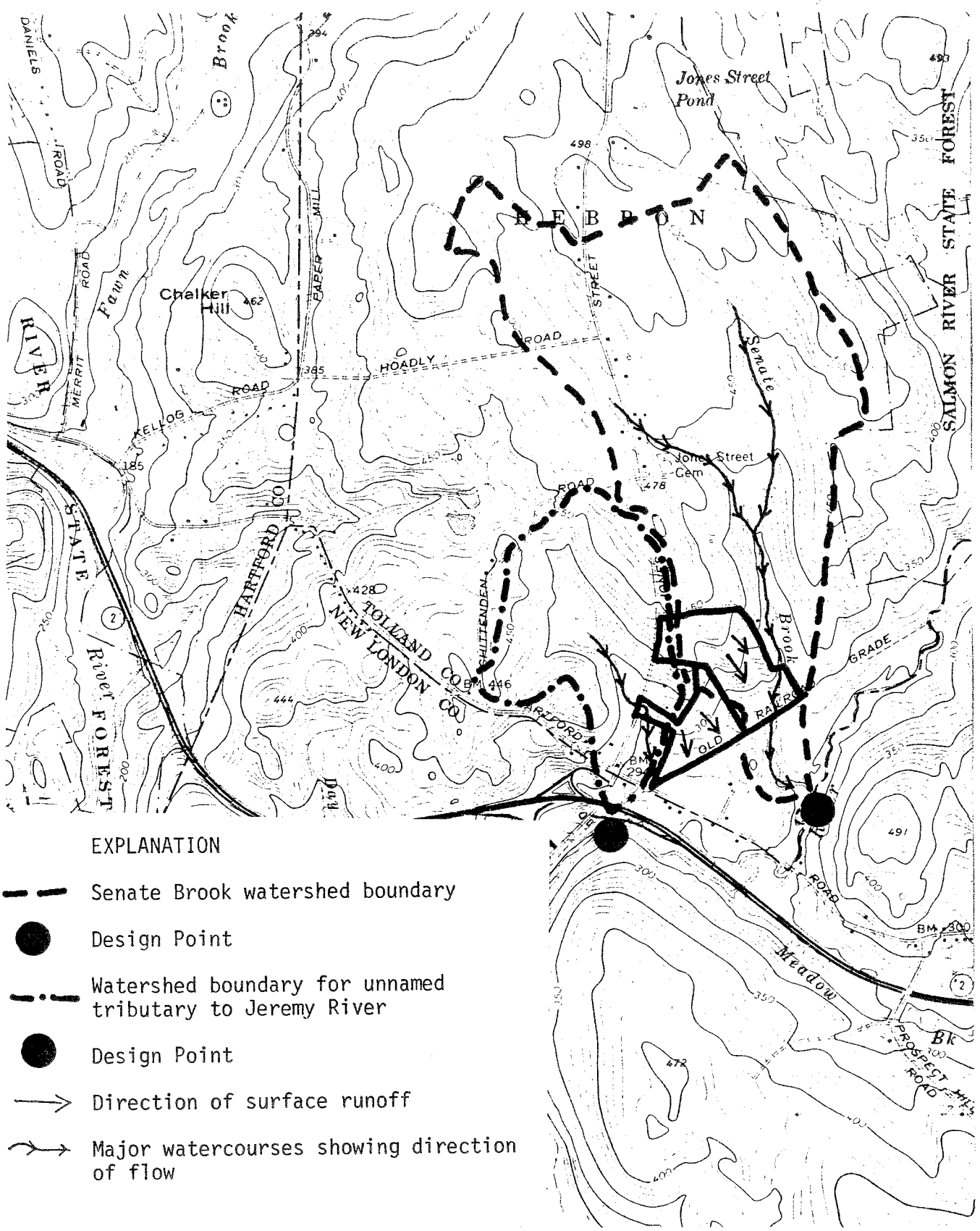
Although the northern limits of parcel 2B, fronting along Jones Street, may have some development potential, the geologic conditions (shallow bedrock, presence of till based soils, wetness) would probably restrict this area to low density use.

If this land is developed an an industrial park, it is recommended that potential industries for the park be evaluated as to the type of possible wastes

Drainage Areas

0 2000'
Scale

N



EXPLANATION

- Senate Brook watershed boundary
- Design Point
- Watershed boundary for unnamed tributary to Jeremy River
- Design Point
- Direction of surface runoff
- Major watercourses showing direction of flow

they may generate and the methods for handling and disposing of such wastes. There may be a potential industry which could post too great a threat for the geology and topography of the site without having public sewer available.

It does not appear that any of the land would be ideally suited for major waste water discharges.

HYDROLOGY

All but about 5 acres of parcel 2C lie within the watershed of Senate Brook. The Senate Brook watershed drains an area of approximately 550 acres or .86 square miles. The Brook, which flows in a southerly direction in the southeast corner of the parcel, is a tributary to Jeremy River, south of the parcels. It is the principal watercourse found within the parcel. Several intermittent drainages were visible in the southern portions of parcel 2C in the area disturbed by the former soil excavation operation. These intermittent channels were probably created as a result of the operation. Also created in this area are two small surface water bodies.

Most surface runoff in parcel 2B flows by sheetflow southward until it is intercepted by the man-made drainage channels along the old railroad bed. Once it reaches this channel, it flows generally northeastward to Senate Brook, ultimately into Jeremy River.

A small, 2.5 acre portion of parcel 2B drains southwestward to the unnamed brook traversing the part of parcel 2B which extends to Jones Street.

Development of the site as an industrial park would increase the amount of runoff during periods of rainfall. These increases would result from soil compaction, removal of vegetation, and placement of impervious surfaces (roof tops, driveways, etc.) over the soil. Since the industrial park uses would tend to require more impervious surface areas (for parking lots and bigger buildings), the runoff increases for this type of development would tend to be higher than for residential development. Therefore, if an industrial park is developed on the two parcels, it is recommended that a detailed engineering study of the pre- and post-development from the areas be prepared for Town review prior to any development. Also, a comprehensive erosion and sediment control plan, including runoff control measures should be developed. In this regard, consideration may be given to utilizing the existing ponds on parcel 2C as stormwater detention basins.

In order to protect the local water resources, it would be desirable to prevent the use of the property by industrial firms which would need to dispose of large quantities of waste water.

SOILS

A detailed soils map of this site is included in the Appendix to this report accompanied by a chart which indicates soil limitations for various urban uses and detailed soils descriptions. 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 for each of the soils for on-site sewerage, buildings with basements, buildings without basements, streets and parking, and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication Soil Survey, Tolland County, Connecticut, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soils Groups for Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

Soil series typical of this site include the Canton-Charlton series, the Charlton-Hollis series, the Ridgebury, Leicester and Whitman series, the Merrimac series, the Sutton series, the Walpole series and Alluvial land. Detailed descriptions of these soil types follow:

Alluvial Land. This land type consists of recent alluvium that varies in texture and drainage. The component soils occur in such an intricate pattern that it is not feasible to map them separately at the scale used. Most areas are cut by old stream channels and are well drained to moderately well drained on the low ridges and poorly to very poorly drained in the low spots. Generally, narrow strips along the streams consist of sandy or sandy and gravelly riverwash. This land type is made up largely of soils of the Ondawa, Podunk, Rumney, and Saco series. All are subject to flooding.

Canton and Charlton fine sandy loams. These sloping, well drained soils are on glacial till upland hills, plains, and ridges. The mapped acreage of this undifferentiated group is about 55 percent Canton soil, 25 percent Charlton soil, and 20 percent other soils. Mapped areas consist of either Canton soil or Charlton soil, or both. These soils were mapped together because there are no major differences in use and management.

Typically, the Canton soil has a very dark grayish brown, fine sandy loam surface layer 8 inches thick. The subsoil is dark yellowish brown, fine sandy loam and sandy loam 16 inches thick. The substratum is grayish brown gravelly sand to a depth of 60 inches or more.

Typically, the Charlton soil has a very dark grayish brown, fine sandy loam surface layer 8 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown fine sandy loam 21 inches thick. The substratum is grayish brown fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of well drained Narragansett, Paxton, and Montauk soils and moderately well drained Sutton soils.

Permeability of the Canton soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is rapid. This soil warms up and dries out rapidly in the spring. Unless limed, the soil is strongly acid or medium acid.

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

These soils are suited to cultivated crops. However, the hazard of erosion is severe. Minimum tillage and the use of diversions, grass waterways, and cover crops help to control erosion.

These soils are suited to trees. Machine planting is practical.

The major limiting factor for community development is steepness of slope. On-site septic systems need careful design and installation to prevent effluent from seeping to the surface in areas downslope from the leaching system. Quickly establishing a plant cover and using mulch and netting, temporary diversions, and sediment basins help to control erosion during construction.

Charlton-Hollis fine sandy loams. This gently sloping to sloping complex consists of somewhat excessively drained and well drained soils on glacial till uplands. Rock outcrops cover up to 10 percent of the surface. Stones and boulders cover 1 to 8 percent of the surface. The soils of this complex are so intermingled on the landscape that it was not practical to separate them in mapping at the scale used. This complex is about 55 percent Charlton soil, 20 percent Hollis soil, and 25 percent other soils and rock outcrops.

Typically, the Charlton soil has a very dark grayish brown, fine sandy loam surface layer 3 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown fine sandy loam 26 inches thick. The substratum is grayish brown fine sandy loam to a depth of 60 inches or more.

Typically, the Hollis soil has a very dark brown, fine sandy loam surface layer 2 inches thick. The subsoil is dark brown and dark yellowish brown fine sandy loam 15 inches thick. Hard, unweathered bedrock is at a depth of 17 inches.

Included with these soils in mapping are small areas of well drained Canton, Narragansett, Paxton, and Montauk soils; moderately well drained Sutton and Woodbridge soils; and poorly drained Leicester soils. Many small areas have bedrock at a depth of 20 to 40 inches.

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

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

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

These soils are suited to trees. Stoniness and rock outcrops hinder machine planting in many places. Windthrow is common the the Hollis soil because of the shallow rooting depth.

The major limiting factor for community development is the shallow depth to bedrock. Extensive onsite investigations are often needed to locate a suitable site for an on-site septic system. On-site septic systems need special design and installation to prevent effluent from seeping to the surface in areas downslope from the leaching system. Excavations require blasting in many places. Quickly establishing a plant cover and using mulch and netting, temporary diversions, and sediment basins help to control erosion during construction. Stones and boulders need to be removed for landscaping. The Hollis soil has a shallow rooting depth to bedrock and is droughty. Rock outcrops provide attractive settings for homes in many places.

Merrimac sandy loam. This gently sloping, somewhat excessively drained soil is on stream terraces, outwash plains, kames, and eskers. Typically, this Merrimac soil has a very dark grayish brown, sandy loam surface layer 8 inches thick. The subsoil is dark yellowish brown and yellowish brown sandy loam 19 inches thick. The substratum is light olive brown gravelly coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Hinckley and Windsor soils, well drained Agawam soils, and moderately well drained Sudbury soils. Included areas make up about 15 percent of this map unit.

Permeability of the Merrimac soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The available water capacity is moderate. Runoff is medium. Merrimac soil warms up and dries out rapidly in the spring. Unless limed, it is strongly acid or medium acid.

This soil is well suited to cultivated crops. It is droughty during the drier periods in summer. The hazard of erosion is moderate. Minimum tillage and the use of cover crops help to control erosion.

This soil is suited to trees. Machine planting is practical.

On-site septic systems function with normal design and installation, but they pollute the groundwater in places. Slopes of excavated areas are unstable. Lawns require watering in the summer. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

Ridgebury, Leicester, and Whitman extremely stony fine sandy loams. These nearly level, poorly drained and very poorly drained soils are in drainageways and depressions of glacial till upland hills, ridges, plains and drumloidal landforms. Stones and boulders cover 8 to 25 percent of the surface.

The mapped acreage of this undifferentiated group is about 35 percent Ridgebury soil, 30 percent Leicester soil, 20 percent Whitman soil, and 15 percent other soils. Some mapped areas consist of one of these soils, and other areas consist of two or three. These soils were mapped together because there are no major differences in use and management.

Typically, this Ridgebury soil has a black, fine sandy loam surface layer 4 inches thick. The subsoil is gray and brown, mottled fine sandy loam 16 inches thick. The substratum is very firm, brittle, grayish brown, mottled sandy loam to a depth of 60 inches or more.

Typically, this Leicester soil has a very dark gray, fine sandy loam surface layer 6 inches thick. The subsoil is dark grayish brown, grayish brown, and pale olive, mottled fine sandy loam 26 inches thick. The substratum is light olive gray, mottled gravelly fine sandy loam to a depth of 60 inches or more.

Typically, this Whitman soil has a black, fine sandy loam surface layer 9 inches thick. The subsoil is dark grayish brown, mottled fine sandy loam 7 inches thick. The substratum is very firm, brittle, grayish brown, mottled fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of moderately well drained Rainbow, Sutton, and Woodbridge soils and very poorly drained Adrian and Palms soils. A few areas in the southeastern part of the county have a silt loam surface layer and subsoil. Many small areas have fewer stones on the surface.

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

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

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

These soils are not suited to cultivated crops. Stoniness makes the use of farming equipment impractical. The erosion hazard is slight. Maintaining a permanent plant cover helps to control erosion.

These soils are suited to trees. Stoniness makes the use of machine planting impractical, and woodland roads are difficult to construct in most places. Windthrow is common because of the shallow rooting depth above the high water table.

The majority limiting factors for community development are the high water table and the slow or very slow permeability in the substratum. On-site septic systems need special design and installation, and sites generally require extensive filling. Slopes of excavated areas slump when wet. Foundation drains help to prevent wet basements. Stones and boulders need to be removed for landscaping. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

Sutton very stony fine sandy loam. This nearly level to gently sloping, moderately well drained soil is on upland glacial till plains, hills, and ridges. Stones and boulders cover 1 to 8 percent of the surface.

Typically, this Sutton soil has a very dark grayish brown, fine sandy loam surface layer 4 inches thick. The subsoil is yellowish brown, dark yellowish brown, and dark brown, mottled fine sandy loam and sandy loam 29 inches thick. The substratum is olive brown, mottled sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Canton, Charlton, and Narragansett soils; moderately well drained Woodbridge and Rainbow soils; and poorly drained Leicester soils. A few areas in the southeastern part of the county have a silt loam surface layer and subsoil. Included areas make up about 10 percent of this map unit.

The Sutton soil has a seasonal high water table at a depth of about 18 inches. Permeability is moderate or moderately rapid. Runoff is slow or medium. Sutton soil warms up and dries out slowly in the spring. It is strongly acid or medium acid in the surface layer and subsoil and strongly acid through slightly acid in the substratum.

This soil is not suited to cultivated crops. Stones and boulders make the use of farming equipment difficult, and stone removal is costly. Wetness hinders the use of farming equipment early in spring and late in fall. Artificial drainage helps to dry the soil earlier in the spring. The hazard of erosion is slight or moderate. Maintaining a permanent plant cover helps to control erosion.

This soil is suited to trees. Machine planting is hindered in many places by the stoniness.

The major limiting factor for community development is the seasonal high water table. On-site septic systems need special design and installation to prevent effluent from seeping to the surface. Foundation drains help to prevent wet basements. Lawns are wet and soggy in the fall and spring. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

Walpole fine sandy loam. This nearly level, poorly drained soil is on stream terraces and outwash plains. Typically, this Walpole soil has a very dark brown, fine sandy loam surface layer 6 inches thick. The subsoil is dark brown and dark grayish brown, mottled sandy loam 15 inches thick. The substratum is grayish brown and olive brown, mottled loamy sand, sand, and coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Sudbury and Ninigret soils, poorly drained Raypol soils, and very poorly drained Scarboro soils. Many areas have a loamy sand or sand subsoil. Included areas make up about 15 percent of this map unit.

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

This soil is suited to cultivated crops. Wetness hinders the use of farming equipment in spring and fall. Artificial drainage is needed. The hazard of erosion is slight. Minimum tillage and the use of cover crops help to control erosion.

This soil is suited to trees. Wetness hinders machine planting when the soil is wet. Woodland roads are wet and soft in the spring and fall. Windthrow is common because of the shallow rooting depth above the high water table.

The major limiting factor for community development is the seasonal high water table. On-site septic systems need special and often unusual design and installation, and areas commonly require extensive filling. In places, on-site septic systems pollute the groundwater. Steep slopes of excavations are unstable. Foundation drains help to prevent wet basements. Lawns are wet and soggy in the fall and spring. Quickly establishing a plant cover and using mulch, temporary diversions, and sediment basins help to control erosion during construction.

Development Concerns

Parcel 2B is not suited for commercial/industrial development. The steep slopes on the northwest and central part of the parcel have severe limitations for commercial buildings and developing an access road. Bedrock outcrops are common on the steep slopes and present severe limitations for commercial building. The soils in the lower eastern section of the parcel have moderate limitations and they, too, are not very suitable for development. These soils are moderately well drained and may need corrective measures installed before any development occurs. Diversions below the steep slopes would be needed to safely divert and dispose of surface runoff, and tile drainage would be needed to intercept groundwater seeping out of the cut sopes. A tile drainage system could be easily planned and tied in with the storm water system.

Parcel 2C also has many of the same severe limitations as 2B. The severe slopes and bedrock outcrops on the northwestern section of the parcel are not suitable for development.

The soil types on the idle hayland are identified as prime farmland. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage and fiber. These soils have few limitations for commercial building and are well drained to somewhat excessively drained.

Access to parcel 2C would involve crossing a wetland. Disturbance of a wetland should be avoided, or at least kept to a minimum. Wetlands are a very poor area to install access roads due to severe frost action that could occur.

Stormwater Management

A detailed stormwater management and runoff control plan should be developed for the project. This should include access roads and parking lot storm drains and any measures necessary to control hillside runoff.

Erosion and Sediment Control

A detailed erosion and sediment control plan should be developed and implemented for the site. The plan should be integrated into the stormwater management plan. The Connecticut Erosion and Sediment Control Handbook is an

excellent guide for plan development.

Neither site appears to be compatible with the proposed use. If developed, a detailed site plan should be developed that implements measures to alleviate water management problems and control erosion on the slopes of the site.

On request, the Tolland County Soil and Water Conservation District can provide technical assistance to the project engineer on development or review of erosion and sediment control and stormwater management plans.

WILDLIFE CONCERNS

The Ostrager Property is composed of two contiguous parcels; site 2C is approximately 22 acres in size and is largely made up of two agricultural fields. Multiflora rose and sumac are found on the field edges. Site 2B is approximately 41 acres. Mixed hardwood forest consisting of white oak, red oak, black oak, red maple, sugar maple, beech, musclewood and yellow birch make up the majority of this site. A few cedar trees are also scattered throughout this stand. Site #2 also consists of a cleared area which includes a small pond.

A variety of wildlife species will use this area. The woodlands supply nesting sites for birds and small mammals while providing mast (acorns, nuts) for wildlife such as deer, squirrels and wild turkey. Open areas, such as the farm fields, are valuable by attracting insects which in turn provide food to wildlife. Brushy field edges, consisting of such shrubs as the rose and sumac found in this area, are an important source of cover, browse and nest sites. The pond is an important source of water, however, it would be more beneficial if surrounded by more protective vegetation. Wildlife signs noted on this area included deer scats, tracks and browse, the sighting of various songbirds and a pheasant, and the remains of a pheasant.

WATER SUPPLY

There are no public water facilities presently available to the Ostrager property. Therefore, bedrock would undoubtedly be the principal, if not sole, source of water. Sand and gravel aquifers may have potential for high yielding wells, depending upon certain hydrogeologic conditions such as the saturated thickness of the deposits and proximity to watercourses. However, it does not appear as though the stratified drift found on the property would possess the qualities for a high yielding well, primarily due to limited thickness (about 10 feet) of the deposit. Bedrock wells are commonly capable of supplying small but reliable yields of groundwater. Groundwater moves through bedrock by way of an interconnected fracture system. Most wells that penetrate 150 to 200 feet of bedrock will intersect enough fractures to supply at least 2 or 3 gallons per minute. In some cases, wells may fail to intersect any water-bearing fractures resulting in a "dry hole." On the other end of the spectrum, there are some very highly fractured zones known as faults where high producing wells have been developed. There is no practical way of predicting whether any particular location will be good for drilling a well.

A survey of 314 bedrock based wells in the lower Connecticut River basin (see Connecticut Water Resources Bulletin No. 31) indicate that more than 80 percent of those wells that were drilled into a rock type similar to that found on the site, yielded 3 gallons per minute or more, and 90 percent yielded nearly 2 gallons per minute or more. Only 10 percent of the wells yielded ±18 gallons per minute or more. Prospective industrial park users requiring a substantial amount of water would probably necessitate the drilling of more than one well in order to meet its peak daily demand. It should be noted that short-term daily needs for high flow rates might be met by a low-yielding well in conjunction with a water storage tank.

The quality of groundwater would be expected to be generally good. The crystalline bedrock underlying the site, especially the "schist" zone, is generally high in iron and manganese. As a result, undesirable high levels of iron and/or manganese may occur in well water drawn from the site. There are several types of filters available to combat this problem.

It is recommended that the Town use considerable caution in allowing development of the shallow to bedrock areas on the site since a serious risk of well pollution could accompany such development.

SEWAGE DISPOSAL

The soils on the lower portions of this property appear to be relatively permeable, but there is a high seasonal groundwater table. Subsurface sewage disposal systems in this area would have to be kept relatively shallow to keep them above the maximum water table. On many areas of this site it may be necessary to elevate the leaching systems somewhat in fill. This is particularly true of parcel 2B, from which soil has been excavated. Industrial development of this property should be limited to commercial or manufacturing activities which do not generate significant volumes of toxic wastes, in order to protect existing wells in the area and the adjacent Salmon River, which is a prime fishing area.

This property is located within a half mile of the Colchester public sewer lines in the Westchester area. It is quite possible that ultimately this industrial area could be connected into the Colchester sewer system, particularly if sewage disposal problems arise in the future.

PLANNING CONCERNS

The Commission should assess the need for industrial development in Town, if they have not already done so, before they embark on a thorough inventory of potential sites. Secondly, the Commission should address the issue of whether or not Hebron is a viable location for industry and, if so, which particular industries or activities are appropriate for the Town. It seems premature to develop an industrial land inventory before these two preliminary steps are taken.

While this property is not ideally suited to industrial development, it is probably one of the most suitable areas for industrial development in the Town of Hebron, primarily because of its proximity to an exit from Route 2 and to the Colchester public sewer system. Ultimately, the Local Planning and Zoning Commission

may wish to consider extending the industrial zone to the area south of the old railroad right-of-way. This property appears well suited for industrial development, and may contain sand and gravel deposits which could be used for regrading purposes on other areas of the industrial site.

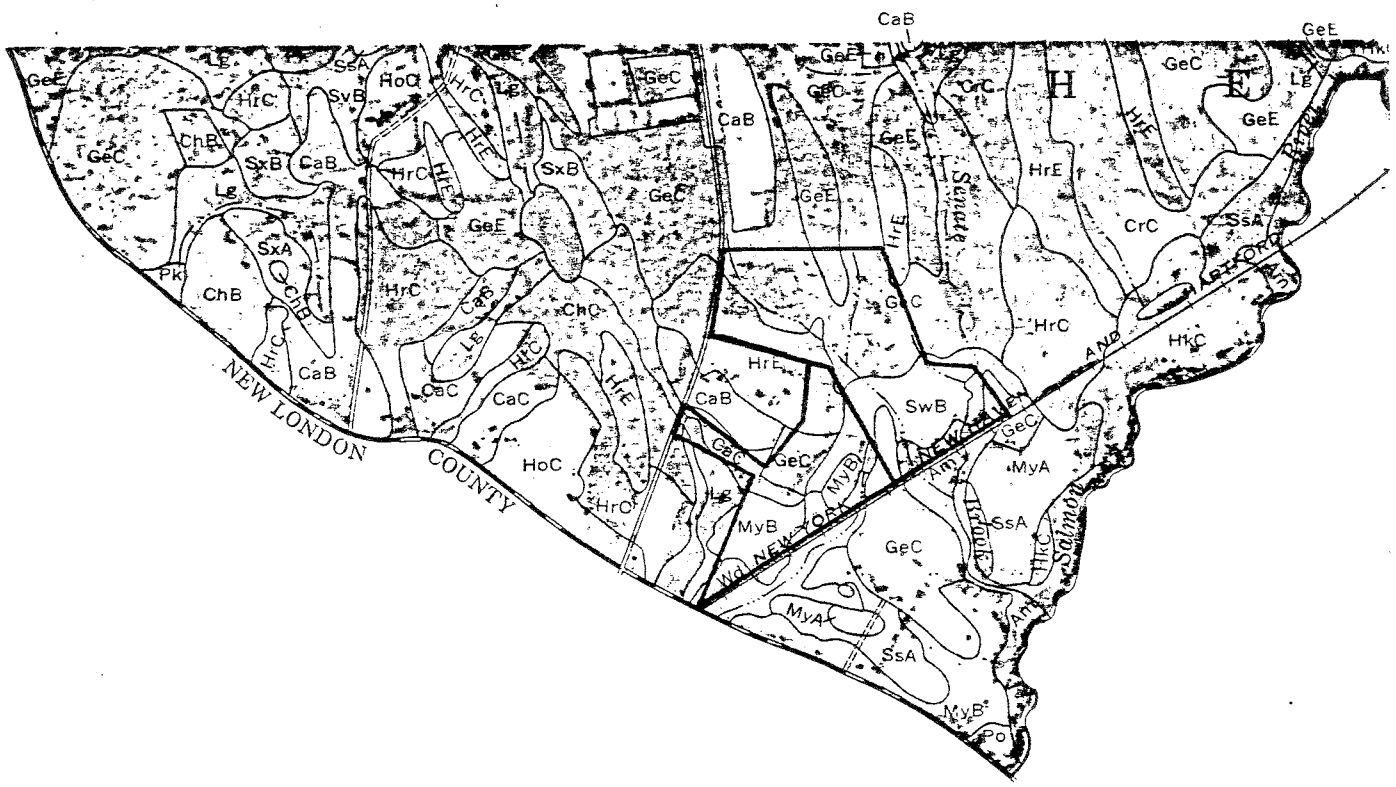
The State Department of Transportation (CONNDOT) owns the old railroad right-of-way. It is unlikely that they would be willing to sell the right-of-way. However, town officials may wish to contact that agency regarding the possibility of developing an access road which could be used both by the industrial park and for a fishing access to the Salmon River. Access is a major concern for this site as steep topography near Jones Street prohibits easy access to the property.

Appendix

Soils

0 1320'
scale

N



INTERPRETATIONS FOR INDUSTRIAL DEVELOPMENT
HEBRON, CONNECTICUT

SOIL MAP SYMBOL AND SOIL NAME	DWELLINGS WITHOUT BASEMENT	DWELLINGS WITH BASEMENTS	LAWNS AND LANDSCAPING	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS
*Am - Alluvial land	Severe-flooding, wetness	Severe-flooding, wetness	Severe-wetness flooding	Severe-flooding wetness	Severe-flooding, wetness, frost action
CaC -					
Canton	Moderate-slope	Moderate-slope	Moderate-slope	Severe-slope	Moderate-slope
Charlton	Moderate-slope	Moderate-slope	Moderate-slope	Severe-slope	Moderate-slope
ChC -					
Canton	Moderate-slope	Moderate-slope	Moderate-large stones, slope	Severe-slope	Moderate-slope
Charlton	Moderate-slope	Moderate-slope	Moderate-large stones, slope	Severe-slope	Moderate-slope
GeC -					
Canton	Moderate-slope	Moderate-slope	Moderate-large stones, slope	Severe-slope	Moderate-slope
Charlton	Moderate-slope	Moderate-slope	Moderate-large stones, slope	Severe-slope	Moderate-slope
GeE -					
Canton	Severe-slope	Severe-slope	Severe-slope	Severe-slope	Severe-slope
Charlton	Severe-slope	Severe-slope	Severe-slope	Severe-slope	Severe-slope
HrE -					
Charlton	Severe-slope	Severe-slope	Severe-slope	Severe-slope	Severe-slope
Hollis	Severe-slope, depth to rock	Severe-slope, depth to rock	Severe slope, thin layer	severe-slope depth to rock	Severe-depth to rock, slope

Soils mapped as GeC and GeE are interpreted as Canton and Charlton soils.

INTERPRETATIONS FOR INDUSTRIAL DEVELOPMENT
HEBRON, CONNECTICUT

SOIL MAP SYMBOL AND SOIL NAME	DWELLINGS WITHOUT BASEMENT	DWELLINGS WITH BASEMENTS	LAWNS AND LANDSCAPING	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS
*Lg - Ridgebury	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness, frost action
Leicester	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness, frost action
Whitman	Severe-ponding	Severe-ponding	Severe-ponding	Severe-ponding	Severe-frost action, ponding
#MyB - Merrimac	Slight	Slight	Slight	Slight	Slight
SwB - Sutton	Moderate-wetness	Severe-wetness	Moderate-large stones, wetness	Moderate-wetness, slope	Severe-frost actio
*Wd - Walpole	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness	Severe-wetness, frost action

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

SOIL INTERPRETATIONS FOR URBAN USES

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

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

Slight Limitations

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

Moderate Limitations

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

Severe Limitations

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

About the Team

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

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

PURPOSE OF THE TEAM

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

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

REQUESTING A REVIEW

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

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