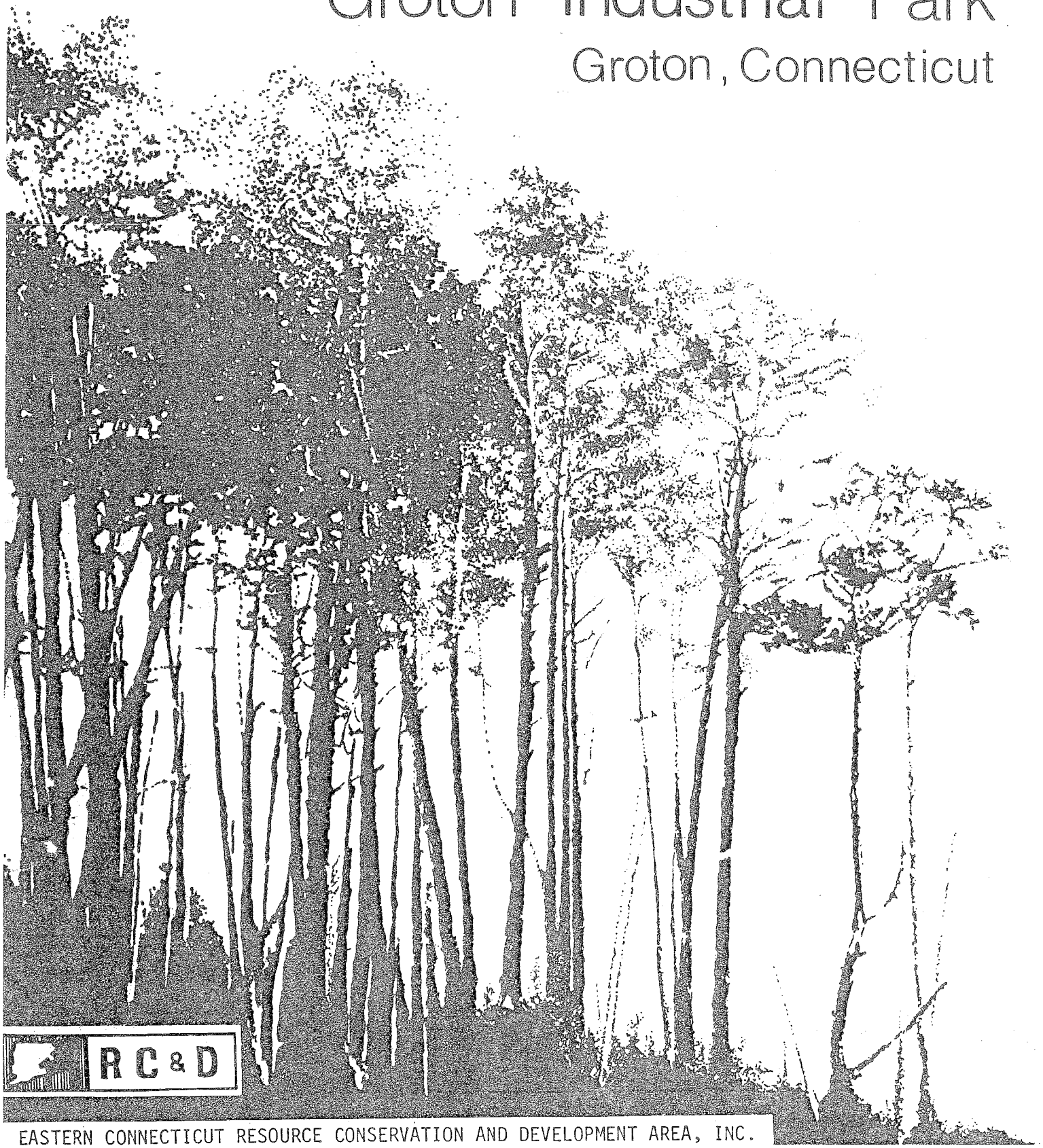
Environmental Review Team Report

Groton Industrial Park

Groton, Connecticut



RC&D

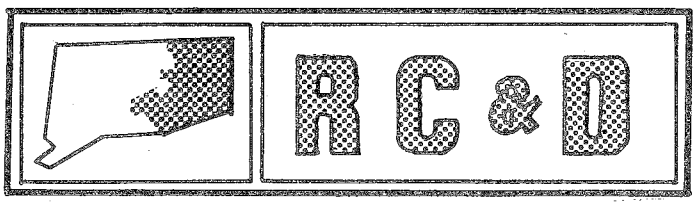
EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

Environmental Review Team Report on

Groton Industrial Park

Groton, Connecticut

November 1981

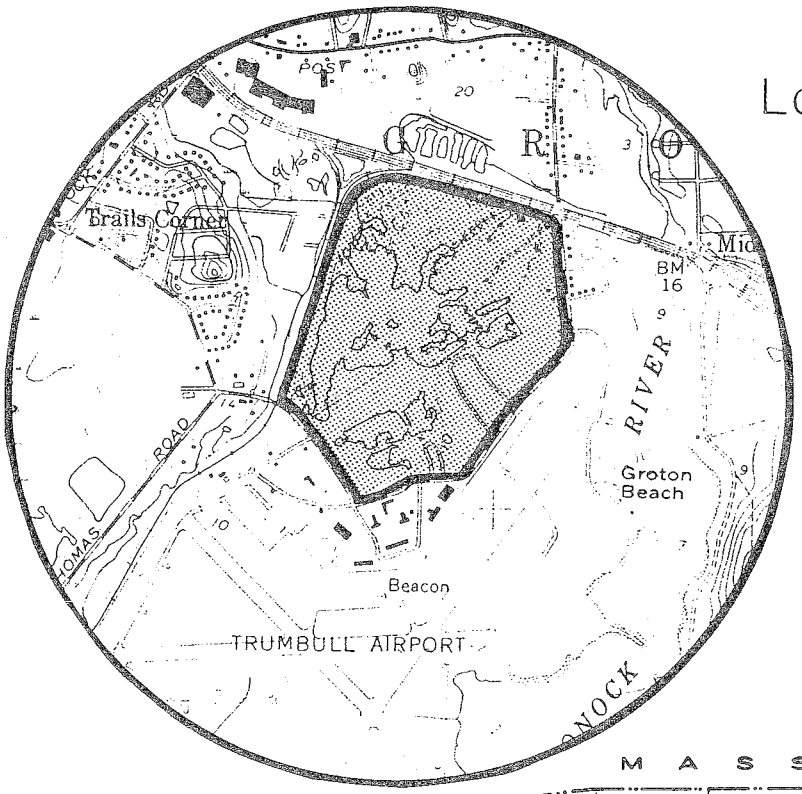


eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

GROTON INDUSTRIAL PARK
GROTON, CONNECTICUT



ENVIRONMENTAL REVIEW TEAM REPORT
ON
GROTON INDUSTRIAL PARK
GROTON, CONNECTICUT

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

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

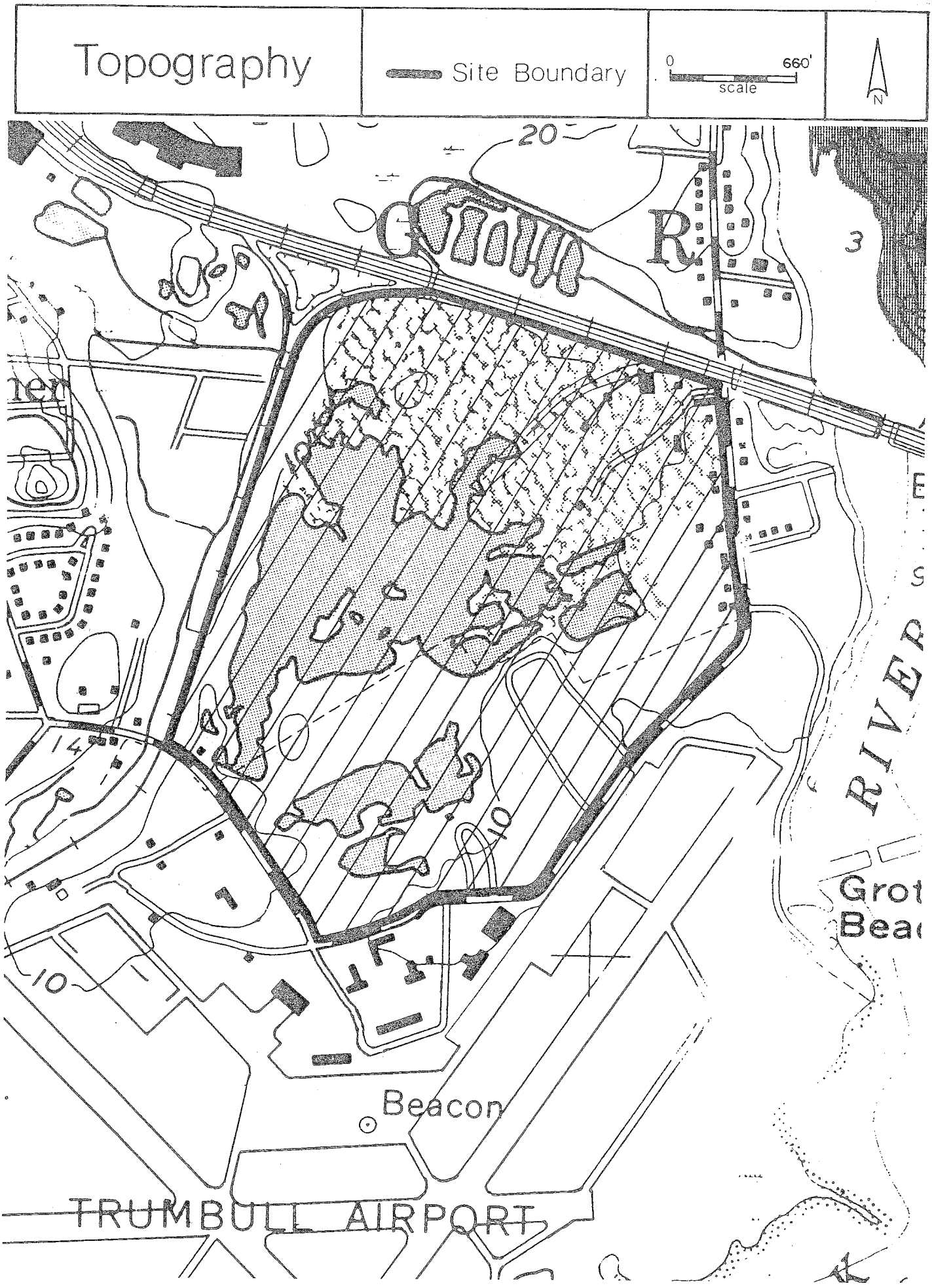
The ERT that field checked the site consisted of the following personnel: Gary Domian, District Conservationist, Soil Conservation Service (SCS); Mike Zizka, Geologist, Department of Environmental Protection (DEP); Rob Rocks, Forester, DEP; Charles Storrow, Regional Planner, Southeastern Connecticut Regional Planning Agency, Karl Lutz, Biologist, DEP;, Ron Rozsa, Plant Ecologist, Coastal Area Management, DEP; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, August 13, 1981. Reports from each Team member were sent to the ERT Coordinator for review and summarization for the final report.

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

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

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


Topography
Site Boundary
0
660'
scale
N
20
3
14
10
10
Beacon
TRUMBULL AIRPORT

DESCRIPTION OF THE PROPOSAL

The town of Groton is proposing to develop an industrial park in the south-central portion of the town. The site is approximately 100 acres in size and is located north of the Groton-New London Airport. It is situated interior to two railroad embankments, Tower Road and South Road and represents only a fragment of the formerly extensive sand and gravel plain called Poquonock Plain. Occupying a broad valley between Birch Plain Creek and Fort Hill Brook/ Bluff Point, the plain extends northward for at least four miles. Little if any of the plain's natural characteristics remain, having been intensely developed for residential development, airport facilities, sand and gravel excavation, and utilized for a public water supply watershed. Prior to its systematic development, modification and destruction, the plain supported as many as one dozen rare and endangered species, thereby representing a remarkable concentration area. Only a few of these species have survived the inroads of development in a select number of undisturbed refuges.

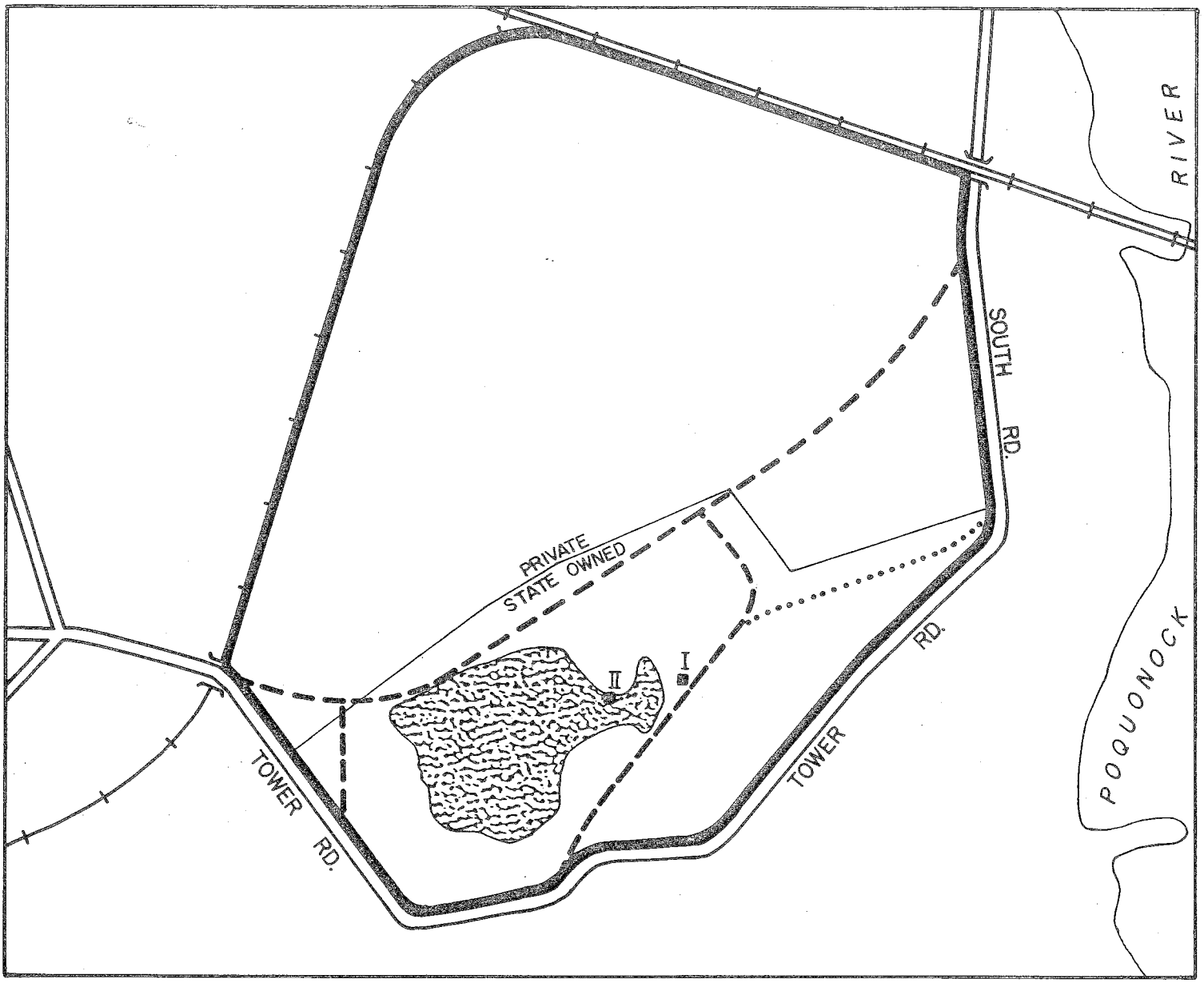
Analysis of 1934 air photos reveal that this site and its surrounding environs were undeveloped and utilized primarily for agricultural purposes. Existing at this time were the railroad embankments, an abandoned sand and gravel pit in the northwest corner (probably a source of fill for the railroad embankment) and a small, active sand and gravel operation located centrally and just south of the railroad. A rail line also existed south of the site and crossed the Poquonock River where the old embankments are situated today. The road network consisted of a small road which paralleled this railroad line eastward to the western shore of Poquonock River and ran a straight course to the current railroad underpass. Obviously, nearly all of Tower Road post dates this era. Presumably the residential section of South Road retains its former alignment.

Circa 1929, House Bill 979 was signed into law creating the State Airport Commission and providing funds for the acquisition of an airport in Groton. At that time, 275 acres of land were acquired for that purpose. By 1951, most of the airport development and the sand and gravel extraction that we see today, had been established. The road network in 1951 was similar to that existing today. The wetland depression on the state property was created by sand and gravel excavation (presumably a source of sand for the airport) sometime before 1951

Presumably the first phase of the sand and gravel operation consisted of the removal of the layer of dry sands above the water table. This created a more or less level depression between the state property/residential development and the railroad embankments. Subsequent operations required "bucket dredging" of the wet sands which created freshwater ponds of various depths and dimensions.

There are two distinct landscapes on the site; the depression resulting from the excavation of sand and gravel and the remainder comprising a more or less undisturbed dry, sand plain. The perimeter of the sand and

OWNERSHIP AND PROPOSED ROAD REALIGNMENT



0 600 ft.
Approx. Scale

N

LEGEND

PROPERTY BOUNDARY

PERMANENT REALIGNMENT

TEMPORARY REALIGNMENT

WETLANDS – STATE PROPERTY

I OSPREY NESTING PLATFORM

II OSPREY NESTING PLATFORM – PROPOSED RELOCATION

gravel operation more or less corresponds to the boundary of ML2 as depicted on the SCS soils map. Currently, most of this land designated as ML2 is below the ten foot contour elevation consisting of mostly ponds with level, wet sand areas between. When the water table is at its maximum elevation (late winter to spring), the ponds coalesce into a small lake and the wet sand areas are inundated. Average surface elevations of the ponds and wet sand areas probably range between four and five feet.

Encircling the gravel pit are areas of more or less natural sandy, outwash plain. Soils are a mixture of Sudbury, Ninigret and especially Haven soils. Elevations generally exceed ten feet.

DESCRIPTION OF THE ENVIRONMENT

PRESENT/PAST LAND USES

The area which has been identified as being within the study's boundary consists of the area bounded on the north by Conrail, on the east by South Road, on the south by Tower Avenue, and on the west by the spur from the Conrail mainline which provides access to the industrial area in the City. (See accompanying illustration.)

Up until the development of the Groton-New London Airport, which took place during World War II, the general area of this project was in agricultural use. During the period of airport construction, major sand and gravel extraction activities were initiated, primarily on the parcel of land now owned by Soneco Services, Inc., but also to a lesser extent on the land that currently forms part of the airport property.

The total area of the project consists of approximately 160 acres, and land ownership patterns are fragmented with the largest owner being Soneco Services, Inc. Their land holdings consist of $\pm$ 100 acres. The State of Connecticut owns approximately 55 acres, and the balance of the property is owned by individual residents and also by Theodore and John Ackley. Consisting of a cement manufacturing/sand and gravel operation, the most actively used portion of the Soneco site is the $\pm$ 40 acre area in the northeast corner of the study area. A small residential area consisting of less than 10 acres is located to the south of the Soneco operation, and the balance of the study area is vacant.

It is important to note that much of the vacant land, both in State ownership and in Soneco ownership, does have limitations for building development because abandoned sand and mined out gravel areas have rendered the land unusable in its existing condition. Presently, Soneco is filling the western portion of their area, and they are in the process of obtaining the necessary permits for this purpose; approximately 37 acres of wetland area is involved. The airport property owned by the State of Connecticut contains approximately 9 acres of land which is under water where filling would be required in order to render this area usable. This amounts to approximately 23% of the State land. Concerning existing land use patterns, it should be noted that an extensive land use survey has been conducted for this area which is a part of the Groton-New London Airport Master Plan Study.* The Master Plan land use information indicates

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* Groton-New London Airport Master Plan Technical Report, 1980.

TABLE 1: POPULATION TRENDS
SOUTHEASTERN CONNECTICUT REGION

	POPULATION			PERCENT CHANGE	
	1960	1970	1980	1960 - 1970	1970 - 1980
URBAN TOWNS:					
Groton	29,937	38,244	41,062	27.7	7.4
New London	34,182	31,630	28,842	- 7.5	- 8.8
Norwich	38,506	41,739	38,074	8.4	- 8.8
URBAN TOTALS:	102,625	111,613	107,978	8.7	- 3.3
SUBURBAN TOWNS:					
Colchester	4,648	6,603	7,761	42.1	17.5
East Lyme	6,782	11,399	13,870	68.1	21.7
Griswold	6,472	7,763	8,967	19.9	15.5
Ledyard	5,395	14,837*	13,735	175.0	- 7.4
Lisbon	2,019	2,808	3,279	39.1	16.7
Montville	7,759	15,662	16,455	101.9	5.1
Preston	4,992**	3,593	4,644	- 28.0**	29.3
Sprague	2,509	2,912	2,996	16.1	2.9
Stonington	13,969	15,940	16,220	14.1	1.8
Waterford	15,391	17,227	17,843	11.6	3.6
SUBURBAN TOTALS:	69,936	98,744	105,770	41.2	7.1
RURAL TOWNS:					
Bozrah	1,590	2,036	2,135	28.1	4.9
Franklin	974	1,356	1,592	39.2	17.4
North Stonington	1,982	3,748	4,219	89.1	12.6
Salem	925	1,453	2,335	57.1	60.7
Voluntown	1,028	1,452	1,637	41.2	12.7
RURAL TOTALS:	6,499	10,045	11,918	54.4	18.6
REGIONAL TOTALS:	179,060	220,402	225,666	23.1	2.4

* 11,649 exclusive of military personnel
** Includes Norwich State Hospital Patients

the land use patterns both within the study area as well as within a radius of a mile from the site.

EXISTING SOCIO-ECONOMIC CONDITIONS

Groton is one of the three most intensively developed, or urban towns in Southeastern Connecticut Planning Region. This eighteen-town area in the southeastern corner of the state contains two other so-called urban towns: New London and Norwich. These municipalities constitute the major employment centers of the region, and of the three, Groton is the principal industrial center. Groton contains not only the plant of the Charles Pfizer Company, a major manufacturer of pharmaceuticals, but that of General Dynamics Corporation, one of the two builders of submarines for the U.S. Navy.

Table 1 presents the population trends in the region since 1960, and these are illustrated in Figure 3. We have not shown any population projections here because the projections made before receipt of the 1980 Census data have become obsolete, and no analysis of the Census data has yet been made in order to establish new projections. However, the data on past trends do provide some insight into the future. Table 1 and Figure 3 show that the dramatic overall growth rate in the region in the 1960's has slowed, but not yet stopped. However, of the urban towns, Groton is the only one that has not declined.

The growth in Groton's population corresponds with the growth of industrial activity since 1960, notably at the Electric Boat Division of General Dynamics. This industrial growth has led to the employment situation illustrated in Figure 4. Here it can be seen that Groton truly does dominate manufacturing employment within the New London-Norwich Labor Market Area, but is outstripped by both New London and Norwich in non-manufacturing employment.*

Even though Groton dominates industrial employment in Southeastern Connecticut, both the region and the town are experiencing a need for diversification of employment. This is because such a large portion of the manufacturing employment is provided by a single employer engaged in defense work. Defense employment is highly cyclical due to fluctuations in the defense budget in manufacturing in Groton in 1978 (See Figure 4), 18,600 or 84 percent were employed at the Electric Boat Division. These figures do not include the civilian employees at the U.S. Naval Submarine Base, which in 1980 totalled 1,635.

One of the principal objectives of this project, the proposed industrial park at the Groton-New London Airport, is to aid in the fulfillment of the need for economic diversification, both in the town of Groton and in Southeastern Connecticut as a whole.

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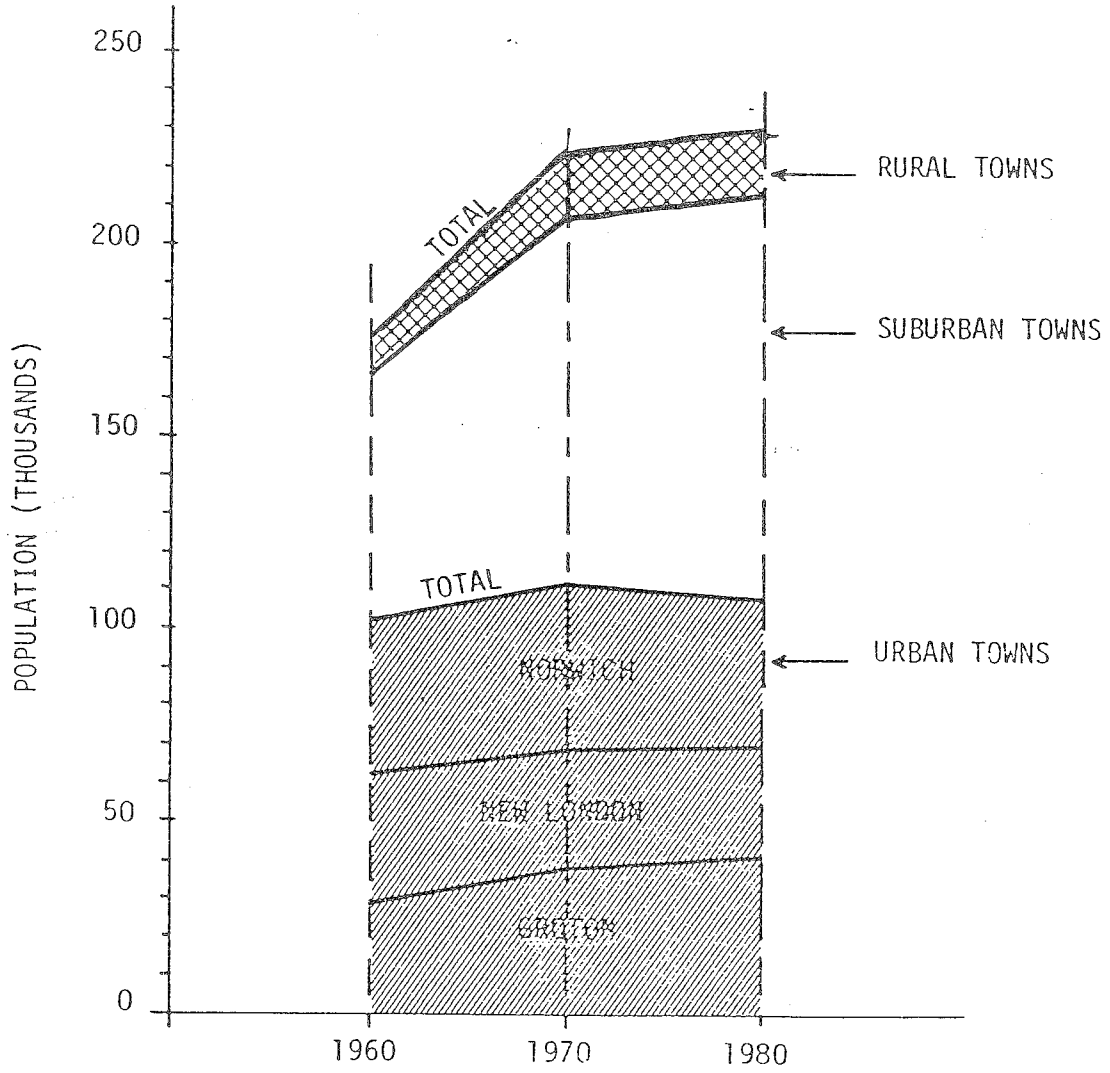
* Figure 4 shows not the Southeastern Region, but the New London-Norwich Labor Market Area, which has slightly different boundaries, but serves adequately to illustrate the important trends of interest. The New London-Norwich Labor Market Area does not contain Colchester which is included in the Southeastern Connecticut Region, but does include Lyme and Old Lyme which are not included in the region.

FIGURE 3: POPULATION TRENDS
1960 - 1980
SOUTHEASTERN CONNECTICUT REGION



SOURCES: 1960 US Census
1970 US Census
1980 US Census-Preliminary Final Counts

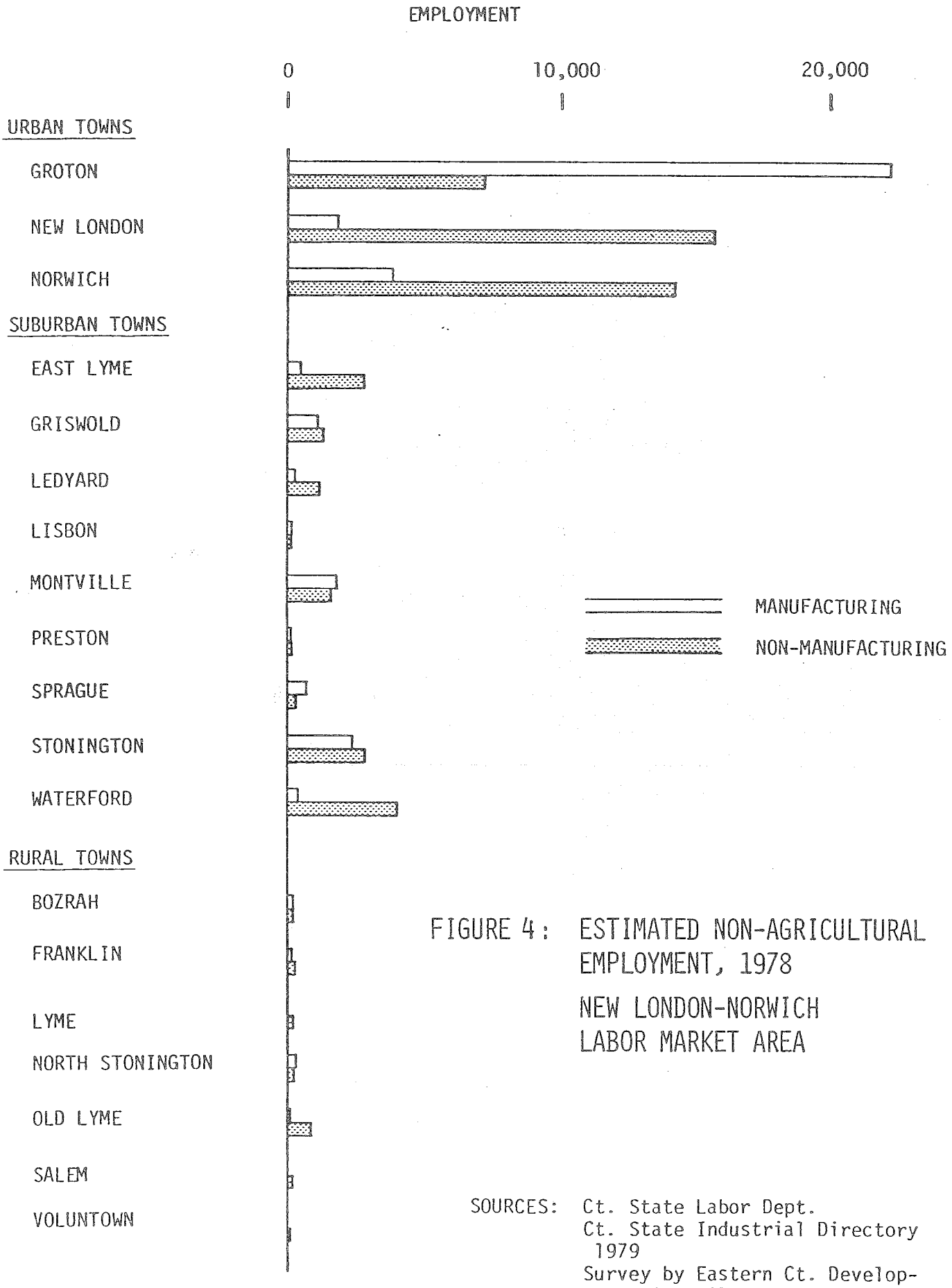
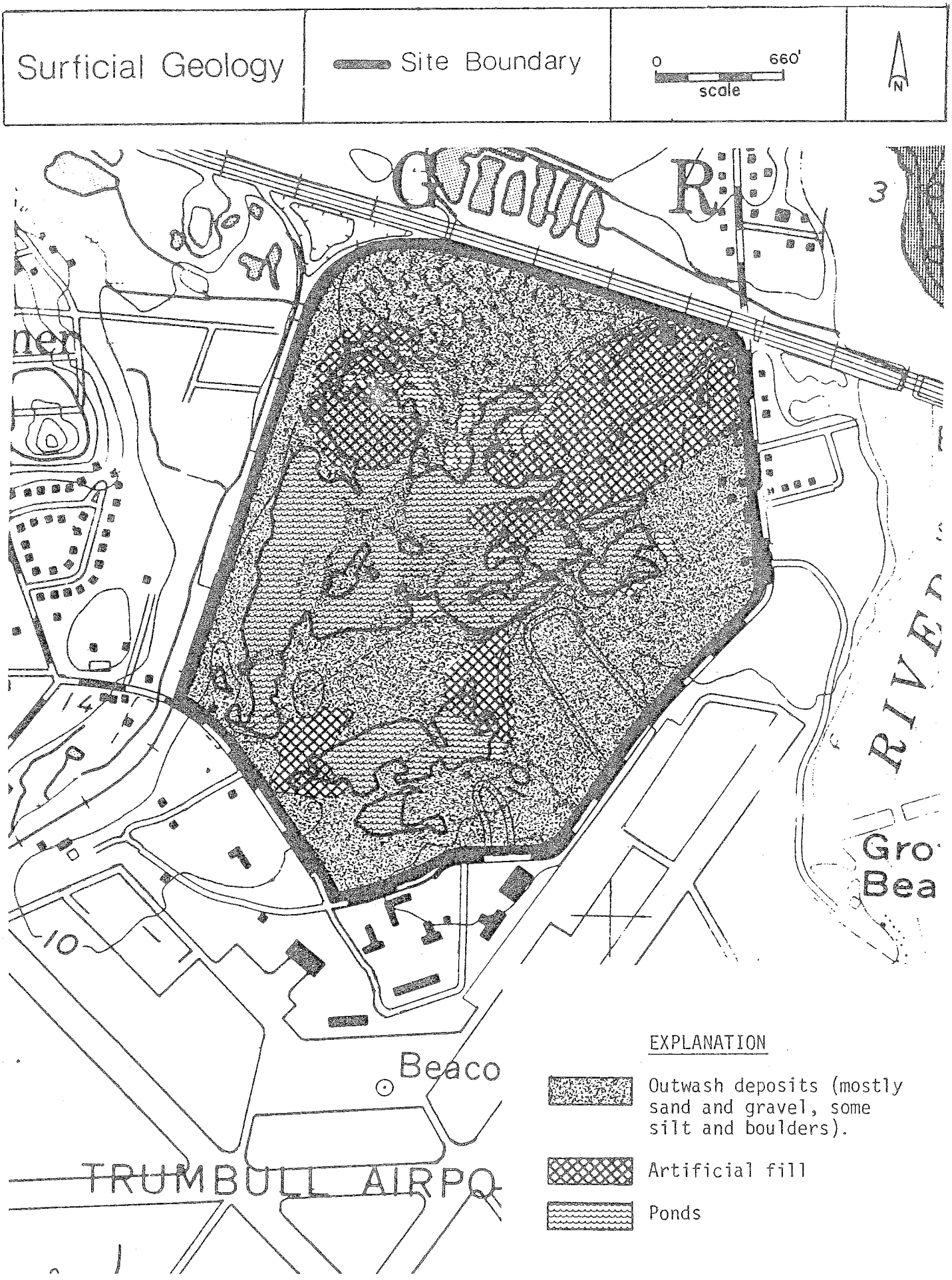


FIGURE 4: ESTIMATED NON-AGRICULTURAL EMPLOYMENT, 1978
NEW LONDON-NORWICH
LABOR MARKET AREA

SOURCES: Ct. State Labor Dept.
Ct. State Industrial Directory 1979
Survey by Eastern Ct. Development Council


Surficial Geology
Site Boundary
0
660'
scale
N
EXPLANATION
Outwash deposits (mostly sand and gravel, some silt and boulders).
Artificial fill
Ponds
Beaco
TRUMBULL AIRPO
RIVER

SURFACE/SUBSURFACE GEOLOGIC CHARACTERISTICS

The proposed industrial site is located in part of a very extensive series of glacial stream deposits, known as stratified drift. Sand and gravel are the predominant textural components of the stratified drift, but boulders or silty layers of material are also included. A substantial percentage of the site is presently under water, the result of excavation of the stratified drift below the level of the regional water table. In some areas, the native sand and gravel has been replaced by fill. Included in the fill are reworked sand, gravel, and boulders, as well as slag from the asphalt-making operation, crushed bituminous material, and some rubbish.

No bedrock outcrops were seen during the field review. A few local well records and the apparent depths of some of the ponds suggest that the thickness of the remaining stratified drift deposits (i.e., those portions of the deposits that are not presently submerged) exceed 20 feet. Bedrock is, therefore, unlikely to influence the usage of the site for industrial purposes.

SOILS

The exposed substratum in the area mapped ML2 is composed of sands and gravels. Approximately 17 acres of water is present on the site. The water is a result of the excavation of fill material. Filling and reclamation of these manmade ponds is planned for. After filling is completed, any steep slopes should be graded to three feet horizontal to one foot vertical or less. Top soil should be replaced. Four to six inches of top soil is sufficient on all areas not planned for construction. This area should be limed, fertilized and seeded to a permanent cover.

City sewerage and public water will be supplied. Soils will not be a limiting factor under these conditions.

Depth to the water table is an important factor when constructing buildings and roads on fill material. If the water table is high, wetness and frost heaving may occur. Before construction begins and during the filling operation, test holes should be dug to assure proper depth to water table.

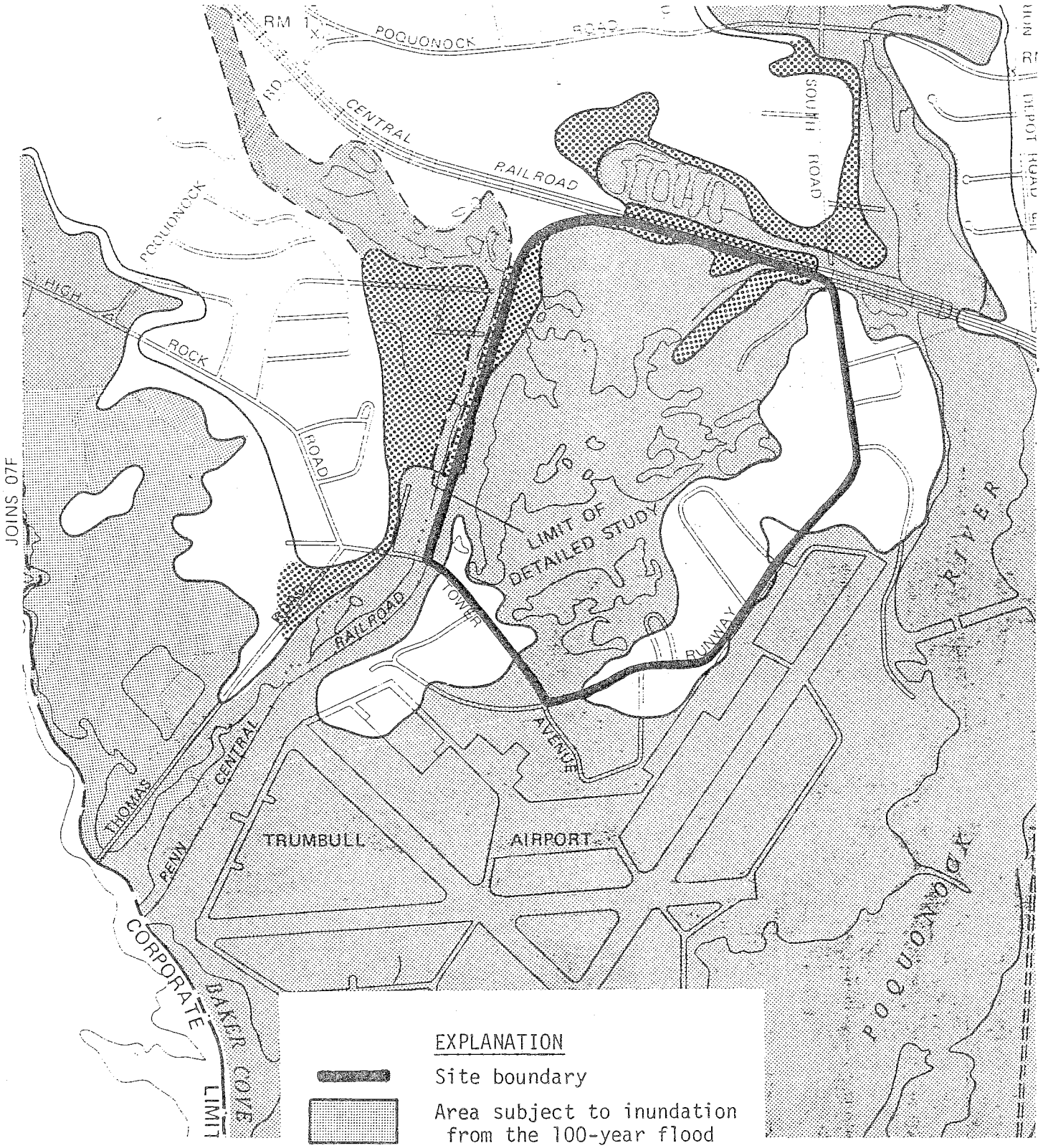
The areas mapped as 63A, Haven silt loam are rated as having few limitations for construction of buildings and roads.

Descriptions of the soils found on site are as follows:

Land covered by streets, parking lots, buildings and other structures of urban areas is mapped as Urban Land. Urban Land is designated by the soil mapping unit symbol DF.

The nearly level to gently sloping, moderately well drained areas on stream terraces and outwash plains are occupied by Sudbury sandy loam. Sudbury sandy loam is designated by soil mapping unit symbol 456A. The letter "A" denotes slopes as being 0 to 5 percent. Sudbury soils formed in water sorted outwash. Permeability is moderately rapid in the surface layer and subsoil and rapid in

Floodprone Area



taken from 1976
HUD FLood Insurance Study,
Town of Groton, Conn.

the substratum. A seasonal high water table exists at 18 to 24 inches. Surface runoff is slow to moderate. Sudbury sandy loam qualifies as Prime Farmland in the State of Connecticut.

The nearly level and gently sloping, moderately well drained stream terraces and outwash plains are occupied by Ninigret fine sandy loam. Ninigret fine sandy loam is designated by soil mapping unit symbol 25A. The letter "A" denotes slopes as 0 to 5 percent. Ninigret soils formed in water sorted outwash. They have moderately rapid permeability and a seasonal high water table at 18 to 24 inches. Surface runoff is slow to moderate. Ninigret fine sandy loam qualifies as Prime Farmland in the State of Connecticut.

The gently sloping stream terraces and outwash plains are occupied by Haven silt loam. The soils are designated by soil mapping unit symbol 63B. The symbol "B" denotes a 3-8 percent slope. Haven soils formed in water sorted loamy material over stratified outwash. The soils are well drained and have moderate permeability in the surface layer and subsoil, and very rapid permeability in the substratum. Surface runoff is medium. This soil qualifies as a Prime Farmland soil in Connecticut.

The nearly level stream terraces and outwash plains are occupied by Haven silt loam. The soils are designated by soil mapping unit symbol 63A. The symbol "A" denotes 0-3 percent slopes. Haven soils formed in water sorted loamy material over stratified outwash. The soils are well drained and have moderate permeability in the surface layer and subsoil and very rapid permeability in the substratum. Surface runoff is medium. This soil qualifies as a Prime Farmland soil in Connecticut.

Areas that have been disturbed to an extent that the natural layers are no longer distinguishable as occupied by Udorthents, smoothed. Udorthents, smoothed are designated by the soil mapping unit symbol ML2. Udorthents occur when soil material has been removed, or filling has occurred and the soil profile is buried and no longer is a major factor in interpreting an area for land use.

WATER RESOURCES

Surface-water bodies (ponds) constitute approximately 30 to 36 acres of the site. Their water quality is variable: some areas support at least a small fish population and have relatively clear water; other areas, particularly near the large fill deposit in the northwestern section of the parcel, appear to be substantially degraded, having foul-smelling, turbid water. Apparently, some unauthorized fishing and swimming occur on the site; however, major improvements would probably be needed in either water quality, topography, or both in order to make swimming a suitable activity in most sections of the ponds.

There are no inlet or outlet streams for the ponds. Water level is maintained primarily by equilibration with the local water table. Without the regular "flushing" action that an inlet-outlet system might provide, it may be anticipated that any contaminants in the pond water will be diluted only slowly, either by exchange with the groundwater system or by precipitation into the ponds (there is also minor surface runoff into the ponds).

The stratified drift on the parcel may have a moderate potential for groundwater-supply development. Relatively shallow wells (about ten feet deep) in the vicinity of the site have been reported to yield as much as 5,000 gallons per day. Little information was available to the Team with regard to the texture of the stratified drift at depth. Site-specific testing would be needed to determine the suitability of the surficial materials for high-yielding wells. In addition to transmissibility characteristics, certain quality factors must be taken into account. The site is located within an area in which high-yield wells may be intruded by salt water. Also, if the ponds remain, their quality may influence the quality of the well water. Even if the ponds are filled, their quality at the time of filling and the nature of the fill used may have a long-term impact on local wells. In view of the potential supply problems on the site and the existence of more favorable groundwater development areas in the town of Groton, it seems unlikely that the site would be considered for public-supply purposes. However, moderate quantities of water for industrial purposes might be obtainable from wells on the site if the existing public supplies prove to be insufficient or too costly.

Most of the parcel is presently lower in elevation than the 11-foot level estimated for the 100-year coastal flooding event. If the site is to be developed for industry, the elevation of the land surface in areas designated for building should be raised to 11 feet or more.

VEGETATION

No virgin vegetation exists in the study area. However, despite the historic modifications, most of the existing vegetation can be viewed as natural except for the residential area and the grasslands on the state property. The latter have probably been subject to recurrent mowing operations. Natural vegetation means that the existing vegetation become established through natural process such as wind dispersion of seeds or transported by birds, but its character and composition is unassisted by man (at least since the point of last disturbance).

Vegetation which grows on the Soneco Property and state land is described separately. Only the conspicuous and common species are listed below according to basic habitat conditions or structural type.

A. Vegetation on Soneco Property:

1. Vegetation growing in shallow water of ponds:

*Water Lily - (Nymphaea odorata)
Floating Hearts - (Nymphoides cordata)
*Water-Milfoil - (Myriophyllum spp.)
*Pondweed - (Potamogeton spirullus)

2. Edges of Ponds:

*Golden-pert - (Gratiola aurea)
Spike-rush - (Eleocharis obtusa and E. acicularis)
Soft Rush - (Juncus effusus)
Cranberry - (Vaccinium corymbosum)
Pickerel Weed - (Pontederia caudata)

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* Common to abundant species.

3. Wet Sands:

Spike Rush - (Eleocharis obtusa and E. smallii)
Pale Smartweed - (Polygonum lapathifolium)
Blue Curl - (Trichostema dichotomum)
Sedge - (Bulbostylis capillaris)
Bulrush - (Scirpus purshianus)
Common Arrowhead - (Sagittaria latifolia)
Water-Horehound - (Lycopus americanus)
Beak-rush - (Rhyncospora capitellata)
Mad-dog Skullcap - (Scutellaria lateriflora)
Meadow-Beauty - (Rhexia virginica)
Mermaid-weed - (Proserpinaca palustris)
Twisted Yellow-eyed Grass - (Xyris torta)
Water Plaintain - (Alisma spp.)
St. John's-wort - (Hypericum spp.)
Marsh St. John's-wort - (Triadenum virginicum)

B. Vegetation on State Property:

1. Grasslands (fields):

Butterfly weed - (Asclepias tuberosa)
Purple Lovegrass - (Eragrostis spectabilis)
*Switch Grass - (Panicum virgatum)
Wild Timothy - (Phleum pratense)
Hawkweed - (Hieracium spp.)
Early Goldenrod - (Solidago juncea)
Bentgrass - (Agrostis spp.)
Little Blue stem - (Andropogon scoparius)
Blue Toadflax - (Linaria canadensis)
Curled Dock - (Rumex acetosella)
Red Clover - (Trifolium pratense)
White Clover - (Trifolium repens)
English Plaintain - (Plantago lanceolata)

2. Wetland Complex:

An 8 to 10 acre inland wetland is located within the 40 acres of state land reserved for 'future aviation related and/or compatible non-aviation land uses' according to the Airport Master Plan.[1] This plan does not specifically identify or describe this ecologically significant habitat, both for plants and animals. It is perhaps acknowledged as a wetland insofar as the proposed realignment of Tower Avenue appears to skirt the perimeter of the wetland.

This wetland is almost entirely flooded in late winter-early spring when the ground water table is at its highest elevation. This is followed by gradual lowering of the water table during the growing season. In

1. Airport Master Plan, Groton-New London Airport, Groton, Connecticut, prepared by Hoyle, Tanner & Associates and SCRPA, July, 1980, during the growing season. In later summer, the only standing water is confined to one large pond which parallels a utility right-of-way and a number of small ponds scattered throughout the parcel.

late summer, the only standing water is confined to one large pond, east of a utility right-of-way, and a number of small ponds scattered throughout the parcel.

a. Pools and Ponds:

*White Water Lily
Floating Hearts
Sedge

b. Wet Sands:

*Cranberry
Marsh Fern - (Dry opteris thelpteris)
Marsh St. John's-wort
Spike Rush - (Eleocharis smallii)
Swamp Candles - (Lysimachia terrestris)
*Hardhack - (Spiraea tomentosa)
*Willow - (Salix spp.)
Bur-weed - (Sparganium americanum)
Wool-grass - (Scirpus cyperinus)
Meadow Beauty
Golden-purt
Twisted yellow-eyed grass

c. Forested Wetland:

*Red Maple - (Acer Rubrum)
*Poison Ivy - (Rhus radicans)
Marsh Fern
Cinnamon Fern - (Osmunda cinnamomea)
Wool-grass

Rare and Endangered Species

Two rare species occur on state owned property; these are the state endangered Osprey[2] and a wetland sedge which is both rare in the state[3] and New England.[3]

The rare sedge occurs at the edges of the ponds and pools in shallow water. It is found scattered throughout the wetland but where it grows, dense colonies are the rule. One large colony is being threatened by or its area has already been reduced by recent fill placed on the southwestern edge of the wetland. This course textured material was obviously deposited near the wetland and subsequently graded. Wetlands on state property, such as this are regulated by the Inland Wetland Section of the Water Resources Unit of the Department of Environmental Protection. Placement of fill in a wetland is an activity regulated by the Inland Wetlands Act and requires a permit. DEP is currently investigating the nature of filling of this wetland.

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2. Dowhan, J.J. & Craig, R.J. 1976. Rare and Endangered Species of Connecticut and Their Habitats. Connecticut Geological Natural History Survey, Rept. Invest #6.
3. Crow, G. et. al, 1981. Rare and Endangered Vascular Plant Species in New England. Rhodora 83:259-299.

This concentration of this rare sedge is truly unique and warrants protection. Historically, this plant was reported at only one other location. Recent surveys by the state's botanist has failed to relocate this old colony. The Groton site is, therefore, the only known station in the state where this sedge grows. A fact which only magnifies the importance of the colony.

FOREST RESOURCES

Description of the vegetation types on site are as follows:

Type A. (Open Field.) Approximately 35 acres of this tract are open field and either vegetated with predominantly grasses or a combination of grasses and herbaceous species including, but not limited to, goldenrod, Queen Anne's lace, deertongue, rabbit's foot clover, sundrops, milkweed, ragweed, St. John's-wort, Joe-pye-weed, black-eyed Susan, rough hawkweed, boneset, ground nut, cinquefoil, wild strawberry, cow vetch and partridge-pea. Staghorn sumac, oriental bittersweet, poison ivy, bayberry and tree of heaven are present where these open fields border other vegetation types. Sapling-size cottonwood and quaking aspen have become established where mineral soil has been exposed by the gravel operation or in some places by receding water.

Type B. (Wetland/Open Swamp.) At the time of the field investigation of this tract, 15± acres of open wetland vegetation was present. This acreage fluctuates with the amount of open water as dictated by seasonal rain fall. Dense growths of speckled alder, arrowwood, silky willow, pussy willow and phragmites are present along the gravel roads which pass through open water areas and also around the edges of open swamps. Vegetation within the open swamp includes cattail, many species of sedges, large cranberry, larger blue flag, spirea, sensitive fern and several species of St. John's-wort. Poison ivy, cat green brier, oriental bittersweet and foxgrape have become established and are physically supported by the shrub species which are present.

Type C. (Hardwood Swamp.) Poor and medium quality, sapling to pole-size red maple and black gum dominate this 6± acre area along with occasional pole-size sugar maple, black cherry, pin oak and black birch intermixed. The trees in this over-stocked stand are declining in health and vigor due to their crowded condition. The total volume which is present is between 8 and 10 cords per acre. Understory vegetation includes localized dense patches of sweetpepper bush, spice bush, and highbush blueberry with scattered swamp azalea and swamp rose also present. Climbing vine vegetation consists of poison ivy, cat green brier, oriental bittersweet, Virginia creeper, Japanese honeysuckle, foxgrape and summer grape. Sedges, grasses, cinquefoil, aster, touch-me-not, larger blue flag, Canada mayflower, cinnamon fern, bracken fern, marsh fern, royal fern, sensitive fern and lady fern form the ground cover throughout and are especially numerous where sunlight is able to penetrate the overstory canopy.

Type D. (Mixed Hardwoods.) This 6± acre over-stocked stand is made up of medium quality pole to sawtimber size red oak, pin oak, mockernut hickory, black birch, red maple, black gum and sassafras. Total volume in this stand ranges between 19 and 22 cords per acre. Spice bush, highbush blueberry, sweet pepperbush, arrowwood and shadbush are present in the understory. Recently, approximately

Vegetation

Site Boundary

0 660'
scale

N

LEGEND

- Paved Road
- Major Gravel Road
- Main R.R.
- R.R. Spur
- Vegetation Type Boundary
- Property Boundary
- Ponds
- Gravel Operation
- Residential Area
- Recent Burn Area

VEGETATION TYPE DESCRIPTION*

TYPE A: Open field, 35±acres.

TYPE B: Wetland/open swamp, 15±acres.

TYPE C: Hardwood swamp, 6±acres, over-stocked, sapling to pole-size.

TYPE D: Mixed hardwoods, 6±acres, over-stocked, pole to sawtimber-size.

TYPE E: Mixed hardwoods, 5±acres, under-stocked, sapling-size.

* Seedling-size = Trees less than 1 inch in diameter at 4 1/2 feet above the ground (d.b.h.)
Sapling-size = Trees 1 to 5 inches in d.b.h.
Pole-size = Trees 5 to 11 inches in d.b.h.
Sawtimber-size = Trees 11 inches and greater in d.b.h.

one acre of this stand was burnt over. This fire destroyed all the woody understory vegetation which was present. At present, raspberry and green brier dominate the understory in this small area. No trees were permanently damaged as a result of the fire. Ground cover throughout this entire stand consists of club moss, hayscented fern, cinnamon fern, Canada mayflower, striped pipsissewa, Virginia creeper, oriental bittersweet, false Solomon's seal, Solomon's seal and many species of asters.

Type E. (Mixed Hardwoods.) Sapling-size red maple, yellow birch, bigtooth aspen and pin oak are present in this 5± acre under-stocked stand. This area was partially cleared prior to the field investigation. No understory vegetation remains. A partial ground cover which consists of grasses, sedges, goldenrod, ragweed, ground nut, rabbit foot clover and partridge pea has become established.

WILDLIFE

Five general areas found within the review site boundary are described below:

Area 1.

This wet area is composed of a series of deep, water-filled pits from a previous sand and gravel operation. Some of the area is presently being filled. There is very little vegetation on the area although some pit borders developed alder thickets, grasses and an occasional clump of trees. The area is presently being used by a variety of transient shorebirds and as a nesting area for at least one pair of mute swans. Raccoon and other furbearer tracks were observed near the water. Wildlife utilization of the area is expected to increase as more vegetation becomes present.

Area 2.

This wet area is unique in that it appears to be used greatly by a variety of wildlife. There are areas of both deep and shallow water, grass, brush and medium sized trees. Habitat diversity within the area adequately covers the basic requirements of wildlife; food, cover, water and nesting areas. Wildlife attracted to this area include ducks, various shorebirds, songbirds, small mammals, furbearers and a variety of reptiles and amphibians. An osprey platform is located adjacent to this area on the east side.

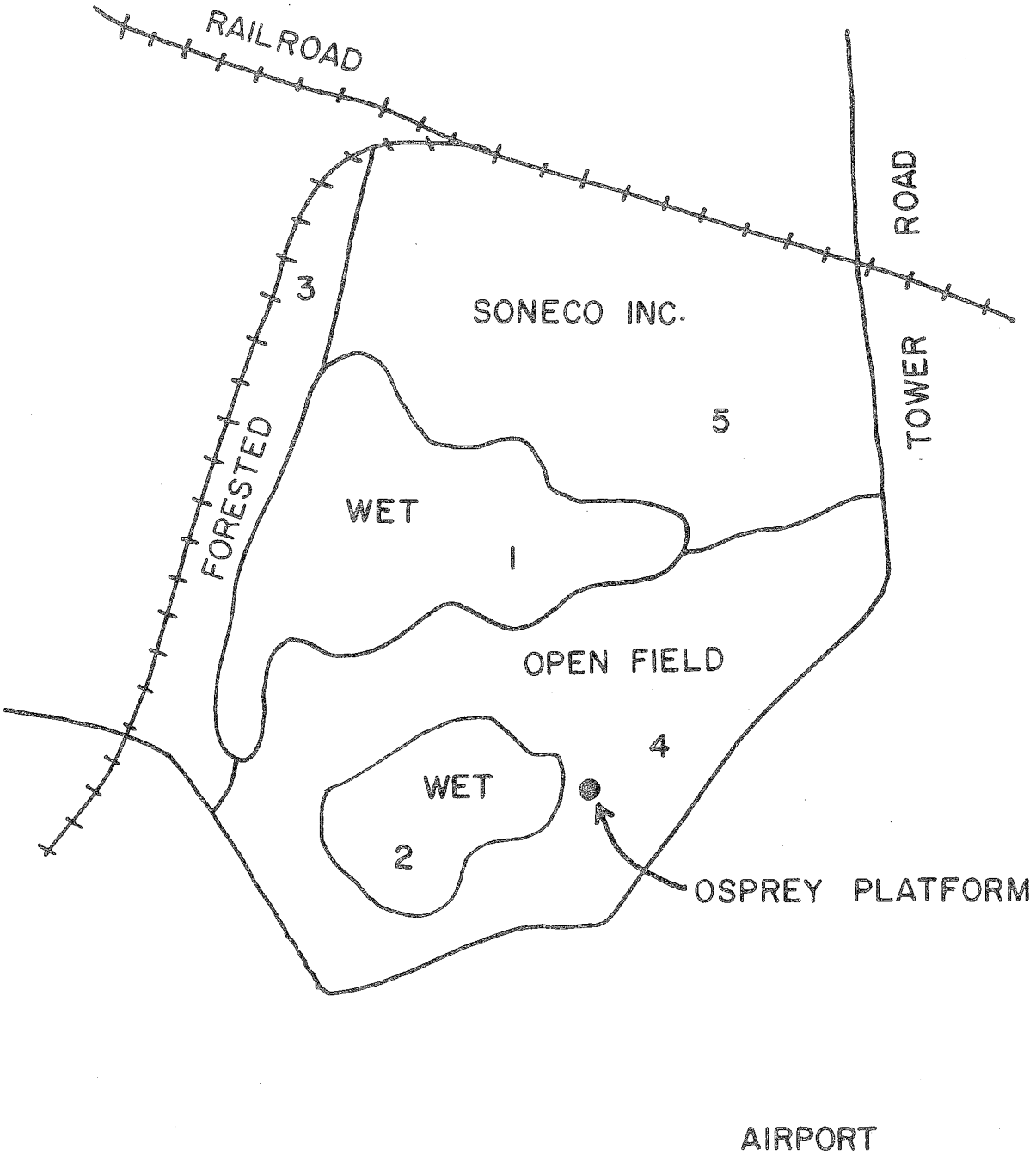
Area 3.

This forested area is made up of mature hardwoods - mostly red maple and oak. The understory vegetation consists of various shrubs with adequate value to wildlife as food and cover. Wildlife that would use this area include furbearers, small mammals and songbirds. Raccoon and opossum tracks were observed on the edge of the area near the water.

Area 4.

The area is made up of abandoned fields and mowed grass areas. The cover is made up of various grasses and some young woody vegetation. There seems to be a limited use of this area by wildlife due to the proximity of the airport runways and the lack of brushy cover. However, the sites that have the highest

Wildlife Management



potential for wildlife use are located around the border on Area 2. Small mammals and ground nesting birds would most likely be found here. Wildlife use would increase in this area as more brushy vegetation develops.

Area 5.

This area is presently being used by Soneco, Inc., as part of its sand and gravel operation. The plant and animal life in this area is negligible.

ENVIRONMENTAL IMPACT

COMPATIBILITY WITH EXISTING LAND USE AND ZONING

This section addressed the question of the compatibility of the uses permitted under the current zoning with the Groton-New London Airport. The property is industrially zoned (IB-40 zone). Table 1 summarizes the uses permitted in that zone, both those permitted by right, and those permitted conditionally. Uses permitted conditionally are those which may be allowed after a public hearing has been held and after the applicant has satisfied the Zoning Commission that he will comply with specific requirements applicable to that use.

The types of uses that might not be compatible with the airport are discussed in the recently completed Airport Master Plan.* The following paragraph is quoted from that document.

"First the airport must be considered....Since none of the proposed industrial area is under any runway approach, special attention should be given to the transitional and horizontal surfaces. This generally would eliminate those industries requiring their own water standpipe, large industrial smoke stacks or any large communications tower. Secondarily, any manufacturing or industrial enterprise that might create electrical interference with radio communications or NAVAIDS should be avoided. Also to be avoided would be those industries that make use of high intensity lighting, cause smoke, glare, or attract large numbers of birds."

Inspection of the uses listed in Table 2 turns up very few that would seem to be obviously prohibited by the considerations quoted above, with the exception of radio and TV broadcasting towers. However, there are some uses, for example, the manufacture of professional, scientific and controlling instruments, which might or might not interfere with airport operations. This latter use might cause radio and radar interference depending on the nature of the operations involved.

It would seem that a regulation limiting height of structures would go a long way towards making the majority of the uses listed compatible with the airport. For example, wholesaling, offices, and the majority of industrial uses should cause no problems. However, it does appear possible that many of the activities listed might have an adverse impact, depending on the nature of

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* Groton-New London Airport Master Plan Technical Report, January, 1980. Hoyle, Tanner & Associates.

TABLE 2

SUMMARY OF USES PERMITTED IN
IB-40 ZONE, TOWN OF GROTON

Category	Summary of Uses Permitted by Right	Summary of Conditional Uses
Agricultural & Resource Activities		Farm or Nursery Extraction of Earth Products
Cultural, Entertainment or Recreation	Outdoor and indoor recreational activities Nightclub or cabaret Exhibition Halls	
Financial, business & Government Services	Automotive services General offices & financial services, research & testing	
Personal, Repair & Construction Services	Car Wash Laundry & Drycleaning Automotive & machinery repairs	Cemetary, kennels
Retail trade, Household, building & motor vehicles	Building & industrial supplies Gasoline stations Marine craft & equipement Automobile supplies	
Wholesale Trade	Warehousing & wholesale uses	Junk & Salvage yards
Transportation, communications and utilities	Airport Bus, truck and rail terminals Radio and TV broadcasting and transmitting towers Utilities	
Industrial-food and kindred products	Bakeries, canneries, dairy products, etc.	
Industrial-textile mill products	Dying, finishing, weaving	
Industrial-apparel and other fabricated textile products	All Uses	
Industrial-Lumber and wood products	All Uses	

Table 2 (continued)

Category	Summary of Uses Permitted by Right	Summary of Conditional Uses
Industrial-Furniture and Fixtures	All Uses	
Industrial-Paper, Printing, Publishing	All Uses	
Industrial-Chemical, drugs, plastics & allied products	Gum and wood chemicals Plastic forming & materials Perfumes and cosmetics	
Industrial-Clay, stone and glass products	All Uses	
Industrial-Fabricated metal products	All Uses	
Industrial-Professional, scientific & controlling instruments	All Uses	
Industrial-Miscellaneous	All Uses	

the specific operation proposed. Examples are chemical, or clay stone and glass industries which might cause smoke, or require tall chimneys.

A zoning regulation which made all uses on the industrial park property subject to a special permit could be one approach to ensuring compatibility with the airport. One of the conditions for granting the permit could then be that the proposed use must be shown to be compatible with the airport, as evidenced by a letter from the Connecticut Department of Transportation. Another approach which might be used on the land which is currently state-owned would be a deed restriction, requiring a proposed activity to satisfy the Department of Transportation concerning compatibility.

In summary, it does not appear that the current zoning can assure that compatibility, but the necessary changes to the zoning seem to be rather small in scope.

EFFECT ON TRANSPORTATION ROUTES

In regard to effects on the road network, this proposed industrial development would draw traffic from the entire Southeastern Connecticut Region. Much of the traffic to and from the project would utilize Route I-95, both for commuting and for industry-related trips. This applies to both long distance trips and to those from comparatively nearby points. In addition, some traffic to and from the north would utilize Route 12. It thus seems that the impacts of interest here are on the road network between the site and the nearest two access points to Route I-95. These are the intersection of Route I-95 and Route 117, and the intersection of Route I-95 and Route 12.

There are two possible travel paths from Route I-95 and Route 12 to the site. The first of these is via Route 117 to Route 1 and to Tower Avenue via South Road. The second route would utilize the Defense Access Highway (Route 649), Poquonock Road, and High Rock Road to Tower Avenue. Of the two, the latter would seem preferable since it would not impact the already overloaded Route 1 - Route 12 corridor, and would not require use of South Road which traverses the densely developed Fort Hill Homes residential area. Another potential problem on the South Road route is the underpass under the main line Conrail tracks. This underpass is extremely narrow, and there South Road drops to such a low level that it is subject to flooding during severe storms. The route via the Defense Access Highway would seem preferable, but, depending on the extent of development at the proposed site, might require some improvements, especially along High Rock Road and Poquonock Road.

WATER AND SEWER SERVICE

In order to fully utilize the properties for moderate-high density industrial development, it is essential that water and sewer service be available. At the present time, the area has the availability of a large water main and Groton's public water supply. In terms of sewer service, the nearest available sewer line lies some distance west of the site. The area would apparently require the construction of a pumping station with a pressure sewer line to the existing

sewer main. According to the town's Public Works Department, such facilities could be provided in order to assure the availability of a public sewerage system for the future development.

EFFECT ON WATER RESOURCES

The implementation of the proposed development plans, regardless of which Schematic Concept is used, has the potential to alter local water resources drastically. Several aspects must be considered. First, the filling of any of the ponds will, in and of itself, destroy an existing surface-water resource and any of its concomitant recreational, wildlife, and aesthetic values. At least some areas of the ponds appear to have a significant ecological value, and some areas are being used, albeit without official recognition, for fishing and swimming. For these reasons, it may be worthwile to retain portions of the ponds as is. However, it is probably fair to say that filling the majority of the pond areas would not represent a serious loss of environmental values in terms of surface-water resources.

A second consideration with regard to the proposed project is the effect that filling and impermeable surfaces will have on runoff. The gravelly nature of the surficial geologic materials and the existence of the ponds assures that most rainfall onto the parcel is retained within the parcel for long periods of time. Industrialization will undoubtedly increase runoff. Several methods are available to control the increased flows. Examples are dry wells and retention basins. Since an increase in surface runoff would necessitate a loss of water movement to the groundwater system, dry wells would be preferable to impervious retention basins, unless the runoff directed to such wells would be likely to be seriously contaminated by salt, oils, or other materials.

A third consideration is related to the nature of the materials that would be used to fill the ponds. This factor has the potential for causing the most serious damage to on-site water resources, specifically groundwater. The water quality of the pond area proximal to the fill in the northwestern section of the property appears to have been degraded by contact with the fill. Presumably, the quality of groundwater within the fill has been similarly degraded. The town should be cognizant of the risk to groundwater quality if a large volume of unsuitable fill material is used in filling other areas of the ponds. It must also be noted, however, that the use of strictly "clean" fill may be very expensive. Not enough information was available to the Team to allow a determination of the total volume of fill that would be necessary to implement the project. Both the depths of the various ponds and the total area of the ponds that would ultimately be filled are unknown. The table below gives estimates of the volume of fill that would be used, and the approximate cost of the fill if bank-run gravel were used, for various possible conditions.

Table 3. Estimated volumes of fill needed for the project, in cubic yards (c.y.), and approximate cost of using bank-run gravel for fill, assuming a cost of $5/ton.

AREA OF PONDS TO BE FILLED

Assumed Average Depth of Ponds	10 Acres	20 Acres	30 Acres
5 Feet	80,667 CY ($605,000)	161,333 CY ($1,210,000)	242,000 CY ($1,815,000)
10 Feet	161,333 CY ($1,210,000)	322,667 CY ($2,420,000)	484,000 CY ($3,630,000)
15 Feet	242,000 CY ($1,815,000)	484,000 CY ($3,630,000)	726,000 CY ($5,445,000)

Despite the formidable projected cost of filling the ponds with bank-run gravel, the town and landowners should be slow to approve or suggest the use of less expensive and less suitable fill material, which may cause problems in terms of both long-term groundwater quality and structural stability. Perhaps an arrangement could be made whereby coarse-grained sediments dredged from local navigational routes (Thames River, etc.) could be deposited in the ponds. This would probably be economically beneficial to the town and the landowner, and it would also help to solve the problem of disposing of the dredged material. Nevertheless, this possibility should not be regarded as a panacea; fine-grained sediments, which would not necessarily have the structural stability essential for completion of the proposed project, probably constitute the largest proportion of dredge materials.

A fourth consideration with regard to water resources is the type of discharges that the occupant industries may need to make. Obviously, the nature of the discharges will depend upon the types of industries involved. Since the area has at least a moderate potential for groundwater development, it would be preferable to exclude from the site any industries that would need to make substantial discharges of wastewater to the ground. If industries needing to make such discharges are permitted, they should be located as far from the established residences near the site as possible.

EFFECT ON WILDLIFE

Area 1.

Development should not greatly affect the wildlife since most of the species using the area are transient and will find other areas to utilize. However, any aquatic life found within the water filled pits will be destroyed.

Area 2.

The loss of this area would have a severe negative impact on wildlife found here. If Area 1 is developed, this would be the only freshwater wetland in the immediate vicinity. The area appears to be greatly utilized by a wide variety of wildlife and, if destroyed, would eliminate many species within the immediate and adjacent vicinity.

Area 3.

This area is the only forested habitat in the immediate vicinity. If the trees were cut, species which are dependent on a wooded habitat would be eliminated, and cavity nesting birds and mammals would be forced out. This strip of woodland serves as an excellent buffer strip between a residential and an industrial area.

Area 4.

Development should not greatly affect wildlife use of the area. However, if development occurs too close to adjacent areas such as Area 2, it may have a negative affect.

EFFECT ON VEGETATION

It is recommended that the Groton-New London Airport Master Plan should be revised to (1) acknowledge the ± 10 acre wetland, (2) describe the biological characteristics, (3) recognize the significance of this wetland in light of the regional and state rare plant which grows here. Protection is the best use of this wetland and would provide a natural buffer for the osprey. Presumably, filling of the wetland and development of the entire 40 acre parcel will discourage nesting by the osprey and negate the purpose of relocating the osprey platform. Further development on the state property may be subject to CEPA. Activities in the freshwater wetland would require state permits from DEP.

As the majority of the tract which is proposed for industrial development is either open water or open fields (with top soil removed), the impact of such development on woody vegetation will not be of major importance.

Forested areas that will be cleared if development does occur, such as the hardwood swamp areas (Vegetation Type C) are not presently vegetated with, nor do they have the potential to produce high quality trees. Therefore, the impact of loss of this area for vegetation production will not be significant. Trees which will be removed from this area should development occur, should be utilized where possible as fuelwood.

Retention of the healthiest trees in the mixed hardwood area, (Vegetation Type D) should be considered. These trees have their greatest value in their ability to buffer or shield the residential area to the west of this tract, from the proposed industrial complex. Because these trees are at present declining in health and vigor due to crowding, a thinning which removes approximately one-third of the total volume would be beneficial. This thinning, if focused on the removal of poor quality, unhealthy trees, will result in decreased competition between the healthier trees which were left. Implementation of this thinning will allow residual trees to become healthier and more stable over time. This thinning will produce between seven and eight cords of fuelwood per acre including the removal of all dead and down trees. The chances of fire could be reduced if harvesting took place at a time of year when leaves were not present on the trees and cut tree utilization is as high as possible.

To improve the year round value of Vegetation Type D as a buffer or barrier, a combination of eastern white pine and eastern hemlock could be planted along the eastern edge of this stand. These trees should be planted in several

staggered rows approximately eight to ten feet apart. This planting will also provide area wildlife with improved cover.

The destruction of many acres of open swamp wetlands will be necessary if the development of this industrial complex is implemented as proposed. Several of the larger sections of these wetland areas, especially within the southern portion of this tract, have high vegetation diversity and provide quality habitat for several species of wildlife. Special consideration should be given to the retention of these areas without significant alteration.

MITIGATING MEASURES

Any areas developed should be landscaped with tree and shrub species, beneficial to wildlife, by producing berries or seeds. Landscaping should include clumps of vegetation and possibly a pond from Area 1.

Area 2 should be left untouched altogether with a buffer zone of at least 330 feet on all sides left undisturbed. This will help keep the area in a more natural state.

Area 3 should not be completely destroyed because it is not only valuable to wildlife, but is an effective buffer strip between the industrial site and other areas. Good forest management practices would only permit the removal of selected trees. Cavity trees should be left standing for nest sites of various birds and mammals.

The osprey nesting platform can be moved since it has not been active for a few years. Relocation should be across the Poquonock River in an open, undisturbed area. The Groton utility people and the airport people have cooperated with the Wildlife Unit concerning the nesting platform. These two organizations, along with the Wildlife Unit of Connecticut DEP, should be contacted before moving the platform.

As was previously noted, approximately one-third of the overall acreage consists of wetlands. In order to facilitate maximum usage of the property(ies), it is understood the various excavated ponds are to be filled creating or re-establishing land areas. While the surface and/or ground water of the area is not on the watershed of a public water supply reservoir or over an active or designated public water supply aquifer, it forms a part of the watershed of the nearby tidal, Poquonock River. It appears the natural outlet for storm water drainage for a major part of the site is in the area of the railroad underpass on South Road. A channel from the river which is parallel with the tracks extends to the road.

The river has water of good sanitary and chemical quality which normally allows the area to be open for the harvesting of shellfish (clams, oysters and mussels). However, for a number of months, it has been closed for this activity due to the introduction of water contaminated with pesticides from a major fire which destroyed a large hardware and home center. The river is one of the few major recreational areas in Southeastern Connecticut open for the taking of shellfish. The local shellfish commission has been active in planting seed

shellfish as well as planting and establishing scallops in the river.

Because of these natural resources, it would be prudent that any storm water discharge and/or industrial activities within the subject area be such to prevent or minimize surface and subsurface degradation of water. Potential sources of pollution, other than sanitary wastes, of concern would be concentrations of toxic heavy metals, organic chemicals such as petroleum products and radioactive materials. Leaky storage tanks or buried sewer and other pipe lines may introduce contamination which could migrate to and be carried by the storm sewer system to the subsequent wetlands-watercourse discharge point(s).

At the time of the field review, it was noted that on the Soneco property several of the pond areas were in the process of being filled in. Disposed materials, in addition to pieces of concrete and asphalt, consisted of boards, some metals and other items. A noticeable adverse impact on the water was evident by its putrid appearance and slimy algae growth. There would seem to be a definite lack of dissolved oxygen in the water. It is understood these and other pits may extend to a depth of 15-20 feet. Based on observations, the ongoing disposal and land restoration operation is of questionable environmental soundness. The type of material used in filling the pits or water bodies should be of acceptable quality (perferably inert) in order not to contribute to serious degradation or pollution of ground and/or surface water. This would be a major factor certainly as the overall area projected for filling and the quantity of fill necessary would be extensive and costly. Further investigation of the disposal and filling operations would be warranted by the appropriate agency(ies).

UNAVOIDABLE ADVERSE EFFECTS

Although the industrial park development scheme for this site is in its preliminary stages and not much detailed information is available, it seems likely that at least some deterioration of ground water quality will accompany the filling of the ponds. Even the use of "clean" sand and gravel may cause an increase in iron and manganese content, color, suspended particles, etc. Water quality problems can be minimized by careful controls over the types of fill allowed.

The existing ponds have at least some ecological, aesthetic, and recreational values. Loss of the ponds will unavoidably eliminate those values (although it is possible that the retention of portions of the ponds will salvage the major values).

IRREVERSIBLE COMMITMENTS OF RESOURCES

The filling of the ponds will irreversibly (for practical purposes) commit surface water resources to destruction. There is no way to implement the project at the density of industrial development desired without filling most of the pond areas.

Coastal Management

COASTAL RESOURCES

0 600 ft.
Approx. Scale

N

LEGEND

- COASTAL HAZARD AREA
- FRESHWATER WETLANDS
- TIDAL WETLANDS
- BEACH
- SHORELANDS
- NON-COASTAL RESOURCES
- EM EMBAYMENT
- PROPERTY BOUNDARY
- COASTAL AREA BOUNDARY
- STREAM
- ROADS
- RAILROAD TRACKS
- W WATER
- OSPREY NESTING PLATFORM

COASTAL MANAGEMENT

A thorough review for determining consistency of the conceptual industrial park for the site with the provisions of the Connecticut Coastal Management Act (CCMA) is obviously impossible at this juncture. However, it is possible to identify coastal resources on or adjacent to the site which may be affected by the industrial park proposal in addition to identifying some tentative applicable coastal policies and potential adverse impacts resulting from such a proposal. A more definitive analysis could be achieved once a formal proposal has been submitted.

Permits

Application of the CCMA to proposed uses or activities within the coastal boundary, vary as a function of property ownership. An activity on state property, if subject to the Connecticut Environmental Policy Act, must be consistent with the CCMA. A municipal improvement project on municipal property subject to section 8-24 of the Connecticut General Statutes (C.G.S.), must be consistent with the CCMA and a coastal site plan review is required. Last, activities or uses on private property requiring municipal plans as specified in Section 22a-105 of the C.G.S., will require preparation of a coastal site plan by the developer and review by the appropriate municipal agency or agencies for consistency with the CCMA.

Inland wetland permits would be required for activities in wetlands/watercourses on both Connecticut Department of Transportation and Soneco properties. The former would require a state permit from the Water Resources Unit of the DEP. Permits for activities in the 'pond' or ponds, despite their mode of origin, on the Soneco property must be secured from the Groton Inland Wetland Agency.

Coastal Resources

The accompanying illustration depicts the nature and extent of coastal resources on and adjacent to the study site. Note that only a small portion of land near the western perimeter is outside the boundary. A proposed use or activity in this area would not be subject to the provisions of the CCMA only if it was a discrete activity and located entirely outside the boundary.

Shorelands, coastal (flood) hazard area and freshwater wetlands/watercourses are coastal resources located within the boundaries of the review site. Impacts to resources adjacent to the site must also be evaluated in this process. Conceivably, offsite resources such as tidal wetlands, freshwater wetlands and watercourses, coastal waters and shellfish concentration areas could be affected by activities on the site, especially due to the handling of storm water discharges.

Coastal Policies

The following list of coastal policies will or may (as indicated by an asterisk) apply to the concept of an industrial park irrespective of project

specifications:

1. Coastal Resource Policies:

   General Resource - IA (A-C)
   *Tidal Wetlands - IF (A,D)
   Freshwater Wetlands & Watercourses - IG (A)
   Coastal Hazard Area - IH(A)
   Shorelands - IK(A)
   *Coastal Waters - IM(A)

2. Coastal Use Policies:

   General Development II (A)
   *Fuel, chemicals, etc. - IIK (B,C)
   Transportation - II L (A)
   Solid Waste - II M(A)

Adverse Impacts

The following** adverse impacts could potentially be generated by the proposed industrial park:

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

- Degrading natural or existing drainage patterns through the significant alteration of groundwater flow and recharge and volume of runoff.

- Increasing the hazard of coastal flooding through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones.

- Degrading visual quality through significant alteration of the natural features of vistas and view points.

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

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

Impact Evaluation and Mitigation

While it is impossible to predict all the possible impacts which could be generated in the development of an industrial park, it is possible to identify certain potential adverse impacts which could occur irrespective of specific

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** Source: CGS Section 22A-93 (15,A,D-H).

plans and proposals. The potential adverse impacts would result from (1) flooding incidental to coastal storms, (2) alteration of ponds, (3) storm water discharge, (4) alteration of the unique wetland on state property, and (5) erosion and sedimentation generated during construction. Each impact will be discussed separately below:

1. Coastal Flooding - Except for the state and residential properties, most of the site is subject to flooding incidental to a 100-year storm event. This will require that structures on the property be flood proofed in accordance with municipal flood hazard area requirements. If the industrial park project complies with the National Flood Insurance standards, it would also be consistent with the coastal hazard policy. The flood proofing mechanism which will probably be selected is filling of the gravel pit to a sufficient elevation that the lowest floor level will be at or above 11 feet.

2. Alteration of the "ponds" on the Soneco Property - Creation of an industrial park will necessitate the placement of a considerable volume of fill which will lead to the demise of the ponds on the site. These ponds, while man created, are operating as natural aquatic ecosystems containing aquatic vegetation, fish, amphibians and reptiles. Shorebirds, ducks and geese frequent the ponds. Wet sands between the ponds support a diverse array of herbaceous vegetation. One small pond near the southwestern border of the property did contain a small colony of the state rare plant which also occurred in greater abundance on the nearby wetland located on state property.

The inland wetlands agency should review any fill proposal for the ponds and determine its suitability in creating buildable land for the future industrial park development. Also, the municipal commission in reviewing the coastal site plan for the filling activity should evaluate the acceptability of any potential adverse impacts.

The town of Groton together with Soneco may wish to investigate the feasibility of using dredged material as the principal source of fill. There are problems with the use of dredged material or certain other types of materials as fill, especially when placed below the water table. If an improper type of fill is utilized and subsequently found to be unsuitable for a massive structure, then development of an industrial park may be infeasible or the structural integrity of the buildings may be adversely affected. Therefore, it is recommended that a certified engineer be consulted to (1) determine the types of fill that are suitable to support an industrial park, and (2) the manner of placement of different textures of fill. For example, it is probably the case that fill placed below the water table (i.e., into the ponds) should consist of coarse textured fill to provide the strongest foundation.

Dredged material, especially finer textured types, placed above the water table must be dewatered in order to provide the most compact volume possible. Fine textured dredged material which has not been dewatered and is subjected to the loading weight of an industrial park can undergo expansion and contraction as a function of the water content. The material could flow laterally under such loadings and thereby adversely affect the structural integrity of the buildings and parking facilities.

Finally, if dredged material is used, ground water contamination may occur depending upon the toxicity of the material and its salt content. This would increase the salinity of the water table and could affect the water quality of the neighboring surface wells and even the integrity of the wetland on state property. Excessive quantities of salt introduced into the ground water table could cause the demise of the state rare plant which is strictly a freshwater species. If practical, dredged material should be dewated at an off-site location or the salt content of the water closely monitored. Off-site dewatering would facilitate overland transport in trucks.

3. Storm Water Discharge - An industrial park of this proposed magnitude will generate substantial quantities of stormwater. Traditionally, stormwater is disposed via the nearest water course or coastal water body. This route of disposal would impact tidal wetlands, coastal water quality and shellfish concentration areas. Storm water calculations should be projected for a 25-year storm event. No increase in the natural storm water discharge should be permitted, thereby requiring some form of on-site detention with controlled flow release. Given the nature of the site, most storm water could be processed via one or more strategically located sumps. In no case should any storm water discharge be permitted into the wetland on state property.

4. Impacts to the Wetland on State Property - As noted earlier, this is an outstanding and unique wetland in that (1) it contains the only known population of a state rare species which is also classified as regionally rare in New England, (2) the vegetation is natural and diverse, and (3) it is utilized by numerous shorebirds, herons, and other wetland birds. Protection of this wetland may be the only means by which to encourage nesting by osprey assuming the remaining parcel is converted to an industrial park.

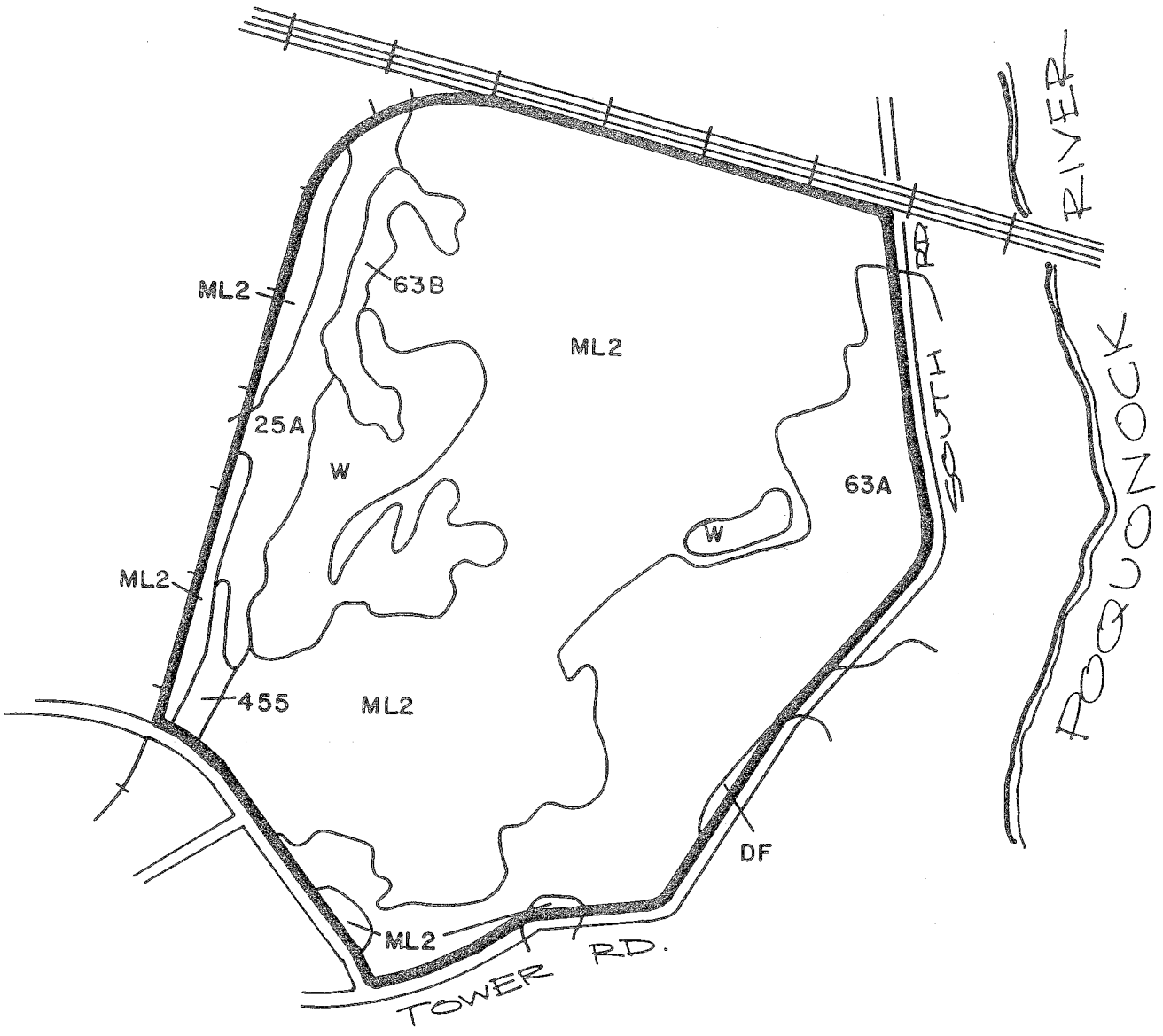
Alteration or destruction of this unique wetland would be inconsistent with the coastal policies and generate a significant adverse impact further. No storm water discharges into the wetland should be permitted. Protection is the priority use for the wetland.

If the airport reserve property were transferred to the town of Groton then the 10 acre wetland plus an appropriate buffer should be retained in state ownership or deed restrictions be imposed precluding any activity in the wetland except for preservation and protection.

5. Erosion and Sedimentation - Obviously, with a development of this magnitude, erosion and sedimentation is always a potential problem. During the development, filling and grading appropriate erosion and sedimentation controls should be practiced in order to minimize adverse impacts. Any construction near the state property which would induce sedimentation or erosion of the 10 acre wetland, would require strategic placement of siltation screens and preserve an adequate buffer of natural vegetation. Siltation screens are most desirable in this instance given the general ineffectiveness of hay bales.

Appendix

Soils



TRUMBULL AIRPORT

INDUSTRIAL COMPLEX
GROTON, CONNECTICUT

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

Soil Series	Natural Soil Group	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
						On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
Haven		63A	63	33%	Frost Action	1	1	2	1
Haven		63B	4	2%	Frost Action	1	1	2	1
Ninigret		25A	15	7%	Wetness, Frost Action	3	3	2	1
Sudbury		455	3	2%	Wetness, Frost Action	3	3	2	1
Udorthents		ML2	94	48%					
Water		W	17	8%					
			193	100%					

LIMITATIONS DETERMINED ON-SITE

LIMITATIONS: 1=Slight; 2=Moderate; 3=Severe

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.