

environmental review team report

**PROPOSED
INDUSTRIAL
SITE**

MANSFIELD, CONNECTICUT



RC & D

**EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT**

**ASSISTED BY: U.S. DEPARTMENT OF AGRICULTURE,
SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES**

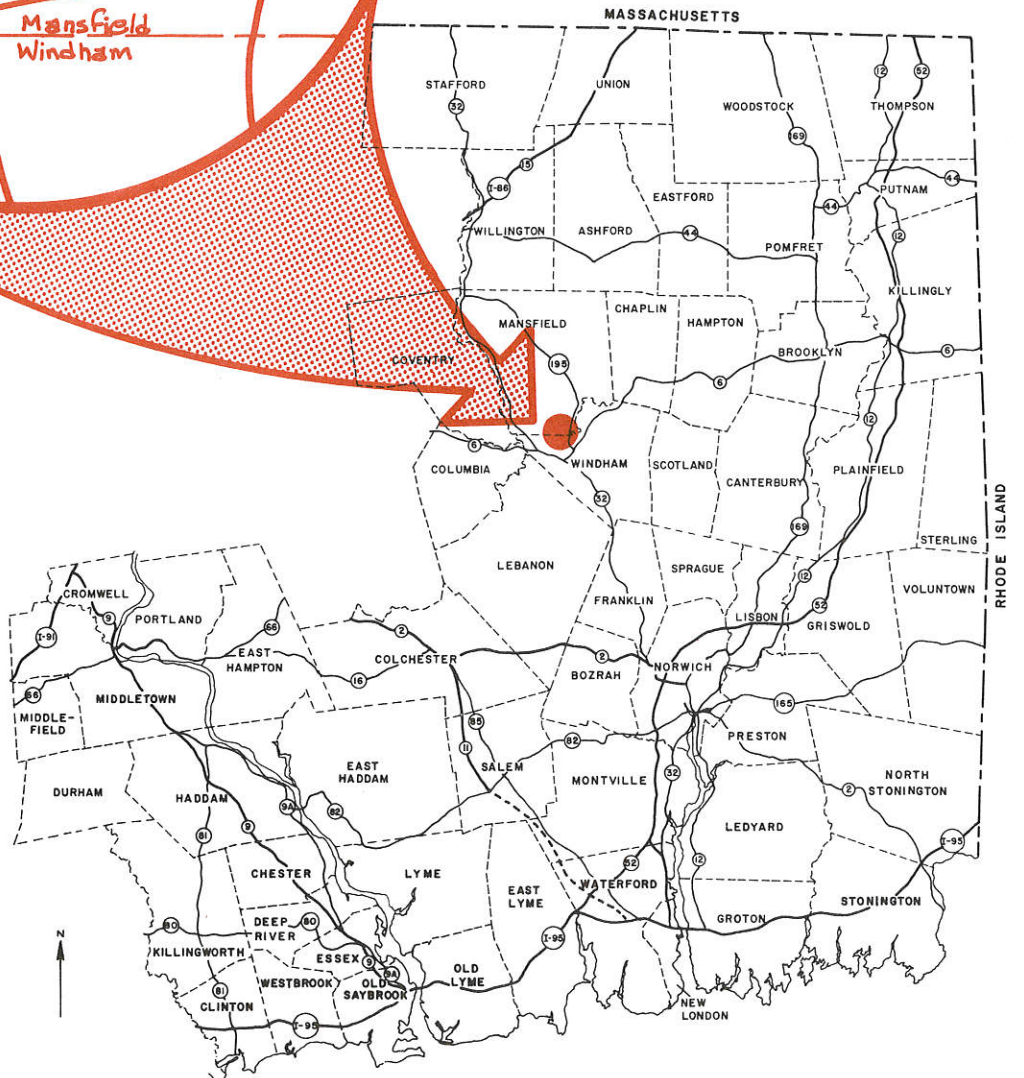
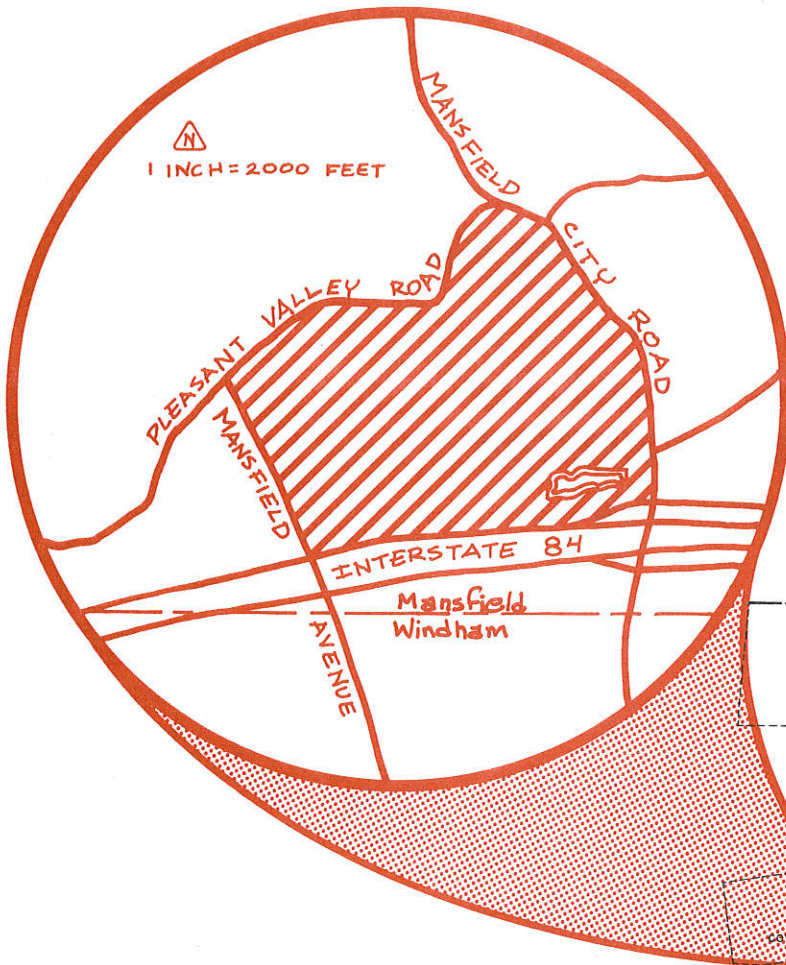
ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
PROPOSED INDUSTRIAL PARK
MANSFIELD, CONNECTICUT
JUNE, 1974

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in part, assisted by a grant from the
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Regional Planning Agency*

EASTERN CONNECTICUT RESOURCE CONSERVATION
AND DEVELOPMENT PROJECT
Environmental Review Team
139 Boswell Avenue
Norwich, Connecticut 06360

LOCATION OF STUDY SITE

PROPOSED INDUSTRIAL SITE
MANSFIELD, CONNECTICUT



EASTERN CONNECTICUT
RESOURCE CONSERVATION AND DEVELOPMENT PROJECT



ENVIRONMENTAL REVIEW TEAM REPORT
ON THE
PROPOSED INDUSTRIAL PARK
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This report is an outgrowth of a request from the Mansfield Economic Development Commission, with the approval of the land owners, 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) Executive Council for their consideration and approval as a project measure. The request has been approved and the measure reviewed by the Environmental Review Team.

The soils of the site were mapped by a soil scientist of the USDA Soil Conservation Service. Reproductions of the soil survey and a table of limitations for urban development were forwarded to all members of the Team prior to their review of the site.

The Team that reviewed the proposed development consisted of the following personnel: Donald Summers, District Conservationist, Soil Conservation Service (SCS); William Leeming, Engineer, SCS; Timothy Dodge, Biologist, SCS; Peter Dodds, Student Biologist, SCS; Daniel Meade, Geologist, Natural Resource Center, State of Connecticut Department of Environmental Protection (DEP); Huber R. Hurlock, Forester, DEP; Diana J. Marsh, Sanitarian, State of Connecticut Department of Health; David R. Miller, Climatologist, Connecticut Cooperative Extension Service (EXT); Rudy Favretti, Landscape Architect, EXT; Lester Barber, Planner, Windham Regional Planning Agency; Barbara A. Hermann, Team Coordinator, Eastern Connecticut RC&D Project.

The Team met and reviewed the site on May 2, 1974. Reports from each Team member were sent to the Team Coordinator for review and summarization.

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 Town of Mansfield. 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 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: Miss Barbara A. Hermann (889-2324), Environmental Review Team

Coordinator, Eastern Connecticut RC&D Project, 139 Boswell Avenue
Norwich, Connecticut 06360.

INTRODUCTION

The Town of Mansfield, through its Economic Development Commission, is in the initial planning stages for the eventual development of an industrial park of over 200 acres. The site is located immediately north of I-84 and is bounded by Mansfield City Road, Pleasant Valley Road, and Mansfield Avenue. Services available to the site include transportation (I-84), water, and sewers.

Situated in the valley flat area of the Conantville Brook drainage basin, the parcel exhibits very little topographic variation. The area presently consists of open fields, wooded areas, and wetlands. The fields are being used for production of corn silage and hay and for pasture.

In considering this site for industrial use, this report will first describe the existing resources and then evaluate the various aspects of development. Information and suggestions are provided for the use of the town in the preparation and review of the development plans. Any comments or recommendations made should not be construed as mandatory or regulatory in nature.

EVALUATION

EXISTING RESOURCES

The proposed industrial park site is located in the eastern upland section of the State of Connecticut, an area typically underlain by metamorphic rocks of Paleozoic Age, and veneered with a thin layer of glacial till and/or stratified sands and gravels. Specifically, the site is situated in the valley flat area of the Conantville Brook drainage in the southern part of Mansfield (see Figure 1 Topography). Drainage from this area is by the Conantville and Sawmill Brooks into the Natchaug River.

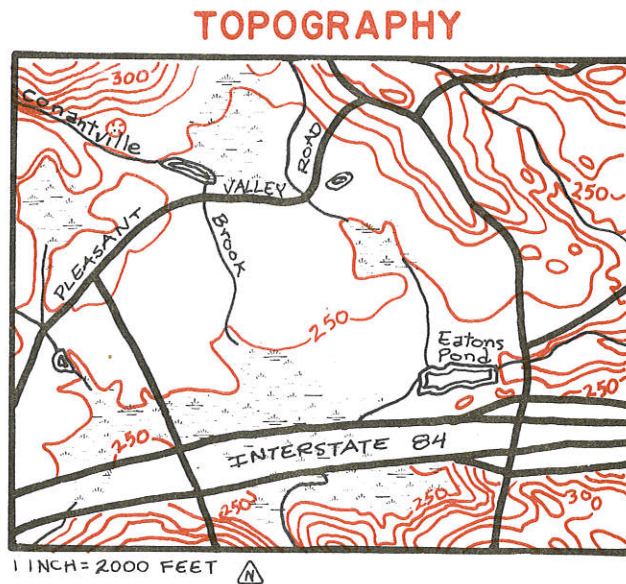


FIGURE 1

Geology. The bedrock type on the site, interpreted and mapped by G. Snyder of the U.S. Geological Survey, has been identified as Willimantic Gneiss, a light colored rock consisting generally of quartz and feldspars. As shown on Figure 2, the unconsolidated materials overlying the bedrock in the site area are gravelly sands with the exception of a small amount of organic swamp deposit and fine sands in the vicinity of Eaton's Pond and Conantville Brook and a small patch of till in the northeastern corner of the site.

UNCONSOLIDATED MATERIALS

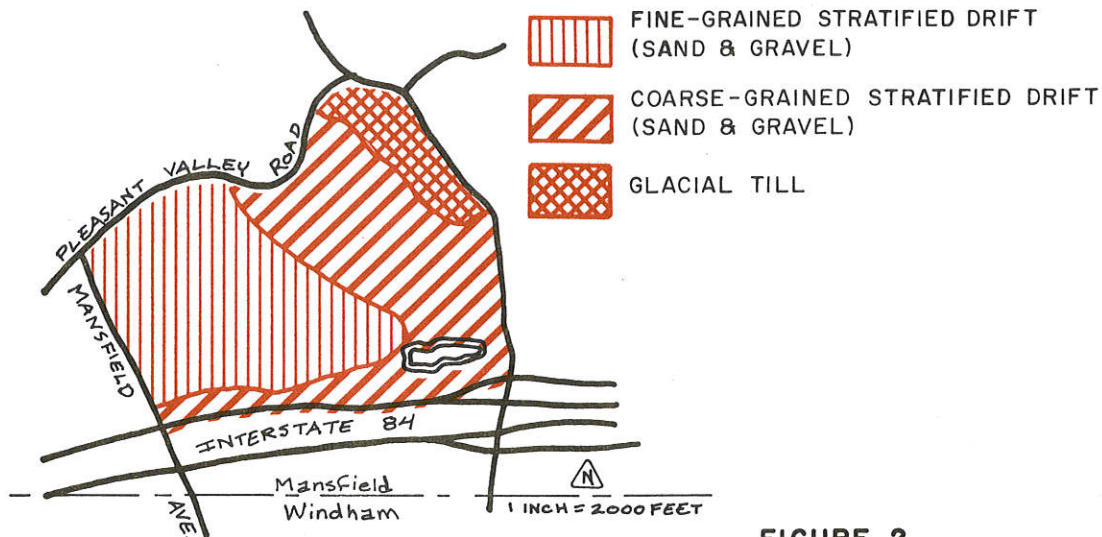


FIGURE 2

Hydrogeology. That portion of the drainage of Conantville Brook above the breached dam of Eaton's Pond totals approximately 2.63 square miles, of which approximately 0.8 square miles or 30% is underlain by sands and gravels. This is a relatively high percentage for such a small drainage in this part of the state, but it can be quite easily explained if one constructs the local geologic history.

At the present time, the Willimantic River flows through the southern part of the City of Willimantic and in the southeastern part of the city joins with the Natchaug to form the Shetucket River. If one looks at local well and test hole logs and reports, as well as outcrop locations and trends, it becomes obvious that a second valley owes its existence to the Willimantic River. The ancient valley can be projected from a point where the Willimantic and Hop Rivers presently join, through Pleasant Valley (location of the site) to a point on the Natchaug immediately south of the Better Valu Supermarket.

The valley is preglacial in origin and has been subsequently filled by glacially derived sediments. These sands and gravels exceed 100 feet in thickness over much of the southern half of the site and become thinner as one goes in a northerly direction (see Figure 3). The upper 10 to 20 feet of material as logged in 6 test holes ranges from fine to coarse sand to gravel.

A high ground water table prevails throughout the site on a year round basis. Over much of the area standing water occurs and in areas where water is not at the surface it is just below. Geometry of the water table in this area is almost flat with a very low slope to the east. The only significant deviation from

this will occur in the northeastern corner of the site where the unconsolidated materials are glacial tills.

DEPTH TO BEDROCK

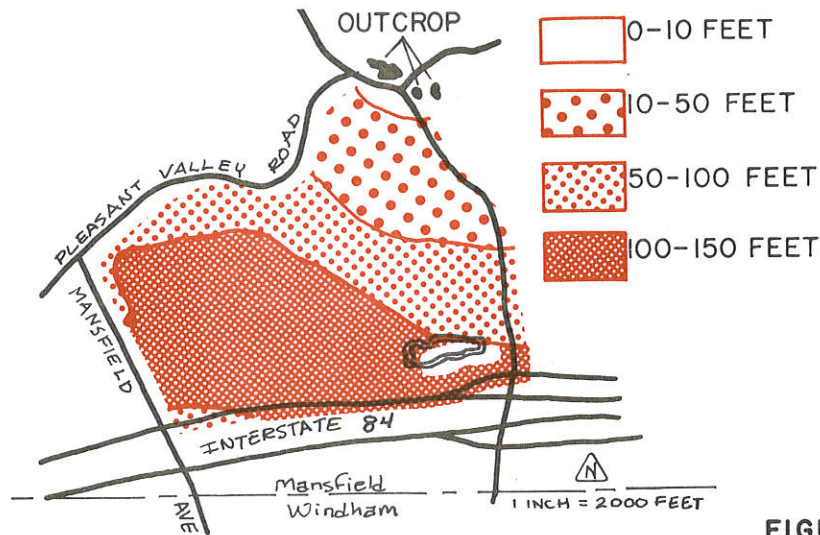


FIGURE 3

Soils. A detailed soils map of the proposed industrial site is given in the Appendix to this report along with two charts, soils limitations and physical properties of soils. Due to the original scale at which the soils are mapped (1"=1,320') the lines shown on the soils map should not be viewed as precise boundaries, but rather as guidelines to the distribution of soil types on the property.

The soils limitations chart indicates the probable limitations for each of the soils for on-site sewage disposal, buildings with basements, landscaping, and streets and parking. However, limitations, even though very severe, do not preclude the use of the land for development. If economics permit greater 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 table giving physical properties of the soils relate primarily to natural and artificial drainage. With 36.3 percent of the site being moderately well drained with a seasonally high water table and another 21.5 percent being poorly to very poorly drained, drainage will be a critical factor in determining the suitability of and methods for industrial development.

It should be noted that 68 percent of the total soils on the site fall within capability class II for the use and manage-

ment of soils for crops and pasture, which is of high agricultural value.* Any proposed change in land use should consider the potential loss of food production. The Town of Mansfield presently has a low acreage of agricultural land in production and a change to industry or other urban uses will be permanent.

Forestry and Wildlife. As described earlier, a large portion of the site is currently used for crops and pasture. Forests are present in the wetland belts and in a small stand located in the center of the site. Scarlet oaks, white oaks, and non-commercial species are presently dominant and are not merchantable for sawlogs.

Existing wildlife habitat quality is very good. Abundant shrub growth, field borders, and a combination of varied land uses provide good cover and food. The area provides habitat primarily for farmland game and waterfowl. Included are grey squirrel, raccoon, ruffed grouse, rabbit, red fox, pheasant, songbirds, and other small non-game animals. Waterfowl include mallard and black ducks and possibly occasional Canadian geese.

Streams which drain the wetlands areas appear to be largely intermittent, probably running dry during the summer. It is doubtful that any significant fishery exists. Eatons Pond is very shallow and provides little fishery value. Some damage has occurred to the wetland area upstream from Eatons Pond from sedimentation arising from the construction of I-84 and/or the sewer line. A small pond at the north end of the property contains panfish.

Land Use. Current uses in the immediate vicinity of the site are principally agriculture, with a small subdivision located at the southeast edge of the site. Scattered residences occur throughout the area. South of I-84, in the City of Willimantic, land use is varied and generally at urban densities.

The presence of the highway and expanding water and sewer service in the area suggest that much of the surrounding land uses will be transformed into high density urban uses at some point in the future. With regard to this specific site, Local, Regional, and State plans all suggest this location for industrial development.

* See Soil Survey of Tolland County, Connecticut, United States Department of Agriculture, 1966.

WATER SUPPLY AND WASTE DISPOSAL

Both public water and sewer systems are available at the periphery of the site. No problems are foreseen with regard to the sewers, provided normal precautions are taken to insure compatibility of any industrial wastes with the municipal system. In an area such as this where public sewers are available, and connection is feasible, subsurface sewage disposal systems cannot be approved (Public Health Code Section 19-13-B20c).

Public water is available to the site from the Willimantic Water Department and appears to be in sufficient quantity to meet normal demands. However, the supply, if needed in large quantities, may be questionable, particularly in times of low flow on the Natchaug River. Consideration should be given to reviewing the adequacy of this supply prior to the final determination and approval of proposed uses of this site. The possibility of an on-site water supply does exist for relatively small quantities.

Construction of water and sewer lines should not encounter any difficulties due to the widespread presence of sands and gravels and a more than adequate depth to bedrock.

Large quantities or specific types of industrial wastes may require special handling, such as special facilities at the town landfill or approved lagoon areas. Any recyclable materials should be separated at the industrial site. An investigation should be made of using any of the waste products as an energy source at the industrial site or for the town.

FOUNDATION DEVELOPMENT AND GRADED CONDITIONS

The existing substrata, consisting primarily of fine-grained and coarse-grained stratified drift, constitute very good foundation material. Excavation problems can be anticipated due to high ground water levels unless "dewatering" is implemented before excavation. Lowering the generally high ground water level over the entire site, or over areas selected for construction, should enhance all future construction of facilities.

It is likely that a combination of fill, channelization, and curtain drains will be necessary for creating suitable construction sites. The use of drains alone will be severely hampered by a lack of hydraulic gradient over the site. The unconsolidated materials are, however, ideally suited for drainage because of the relatively high values of hydraulic conductivity typical of sand and gravel deposits. Excavations created by removing materials for fill could be converted into natural-looking ponds and temporary runoff retention pools.

Temporary sediment basins should be utilized to trap eroded materials during construction. Eatons Pond could be used as a temporary sediment basin, to be cleaned of sediment at intervals.

Eatons Pond serves as the outlet for surface water from the entire site and also a total watershed of about 1700 acres. About one fourth of the total watershed is open land which is estimated to be one third cropland and two thirds grassland. The remaining portion of the watershed is wooded except for the southern end of the watershed containing the only relatively dense residential area. Considering the existing land use, vegetative cover, and topography, the runoff potential is estimated to be moderate. Future development within the total watershed can increase runoff which must then be safely conveyed through the site in question to the watershed outlet at Eatons Pond.

ROADS AND UTILITIES

Good and adequate access is provided to the site at the southeast corner from I-84 and its attendant service roads. It should be noted that I-84 has not been completed to either Hartford or Providence and that its future is uncertain at this time.

The roads surrounding the site, particularly Pleasant Valley Road, will need to be improved for heavy industrial traffic. Internal circulation on the site could be designed, however, to discourage access except at the location most convenient to I-84.

Construction of roads on the site should not encounter any serious difficulties except where it may be necessary to cross a wetland area.

AIR QUALITY

This area is not well suited for the dispersion of air pollutants. The surrounding topography increases the frequent inversions over the valley which in turn hold atmospheric pollutants near the ground. Therefore, industries which have air emissions can expect to have a more serious effect than normal in this valley location.

Another factor which should be considered when evaluating the air quality of the area is I-84. If and when completed, it can be expected to receive considerably more traffic, thus increasing the air pollutants along its corridor.

At present, there are two types of permits governing air pollution which will be required in the development of an industrial park. First are the point source permits which apply to any "mobile source, process source or stationary source which is subject to emissions rate standards or other emissions standards imposed by these regulations."* Permits are required for both construction and operation of the affected facility.

* "State of Connecticut, Rules and Regulations of Department of Environmental Protection Concerning Construction Permits for Sources of Air Pollution", January, 1974.

As of June 1, 1974, permits are also required for the construction and operation of indirect sources of air pollution. The regulations define an indirect source as "any building, structure, facility, installation or combination thereof, that has or leads to associated activity as a result of which any air pollutant is or may be emitted. [These] include, but are not limited to: shopping centers; sports complexes; drive-in theaters or restaurants; parking lots or garages; residential; commercial; industrial or institutional buildings or developments; amusement parks and other recreational areas; highways; airports and combinations thereof."*

In both cases, permits will be issued only when it can be insured that construction or operation of the proposed facility "will neither prevent nor interfere directly with the attainment or maintenance of any applicable ambient air quality standard."* Thus, if proper procedures are followed, there should not be a serious degradation of air quality resulting from the proposed industrial park. However, in making the necessary evaluations prior to issuance of any permits, both the tendency for inversions in this valley and the additional impact of I-84 when completed should be considered.

AESTHETICS AND PRESERVATION

This site includes many aesthetic features. Swords of trees, stonewalls, and wetlands make this site interesting and provide a break in the topographic monotony of the site. In planning this site, if the wetland portions and the existing tree areas are used as natural buffers, the scenic quality of the site would remain and the site would be very interesting and inviting. Reserving these areas will also provide a visual buffer from I-84 and would help screen any future development in the surrounding area. The wetlands could be consciously managed to provide enhancement of the developed portions of the site; possibly including the creation of ponds and walkways.

Trees will grow well throughout the area. Hemlock and white pine could be planted around the edges of the area to serve as a buffer between residential and industrial areas. Three to five rows of the trees evenly mixed and spaced about eight feet apart (670 per acre) would be adequate. Any landscape plantings should be successful on this site.

Development of the site will reduce cropland areas, thus reducing the quality and quantity of farmland game habitat. Development plans should provide for wildlife through plantings in an effort to retain as much diversity of vegetation as possible. Small grains, seed crops, and grasses should receive emphasis in future plans. As much edge and hedgerow should be retained as possible.

* "State of Connecticut, Rules and Regulations of Department of Environmental Protection Concerning Construction Permits for Sources of Air Pollution," January, 1974.

A shift will occur toward backyard wildlife with a probable increase in songbird habitat. Proper planning could help recreate the desirable patterns of vegetation that now exists on the site.

The pond in the north end of the property should be protected during development. Plantings with wildlife values around the pond should be considered. Eatons Pond should be protected from further draining or filling in order to maintain its value for waterfowl.

Wetland areas should be maintained and protected from filling or other disturbances, such as industrial waste pollution. It is important that natural drainage continue and that biological processes, natural sediment storage, ground water regulation, and other wetland values be preserved. Good practices will also benefit wildlife.

SERVICES TO SUPPORT DEVELOPMENT

As indicated earlier, major public utilities are available at the site. Fire protection from Mansfield facilities is probably inadequate although Willimantic facilities are convenient. The growth of commercial facilities along Route 195 in Mansfield and the close proximity of the City of Willimantic provide adequate supportive commercial and service activities.

COMPATIBILITY OF SURROUNDING LAND USES

As described earlier, existing land uses are mainly agricultural and residential. Any type of development should be such as not to cause undue noise, dust, or smoke in the area. Efforts should be made to include buffer screens around all development. With adequate control over building design, location, and landscape treatment, the proposed industrial park could be compatible with the existing rural uses, as well as with future urban uses.

ALTERNATIVE LAND USES FOR AREA

This area contains considerable acreage which is well suited to and presently used for agricultural crop production and pasture. However, maintenance of the agricultural uses would require very great effort to overcome strong market pressures to convert this portion of Mansfield to intense urban use. Efforts should be made to consolidate industrial installations so that the better agricultural land can be preserved for a longer period of time. With certain types of industry, it may be possible to continue farm operations on a large portion of the area and still be compatible.

If not used for industrial purposes, high density residential or commercial uses are also feasible and likely at the site.

Local, Regional, and State plans all suggest this location for industrial development. Its location here would strengthen Willimantic as the central commercial, industrial, and service center of the Windham Region.

GENERAL COMMENTS

With the exception of the high water table, this site is physically well-suited for industrial use. There will be no problems with bedrock excavation; the unconsolidated materials offer good support generally and are workable; and the site is almost dead level. Supporting services are good and the possibility of an on-site water supply for normal or supplemental use exists. Both water supply and air quality should be considered when determining what types of industry to permit on this site.

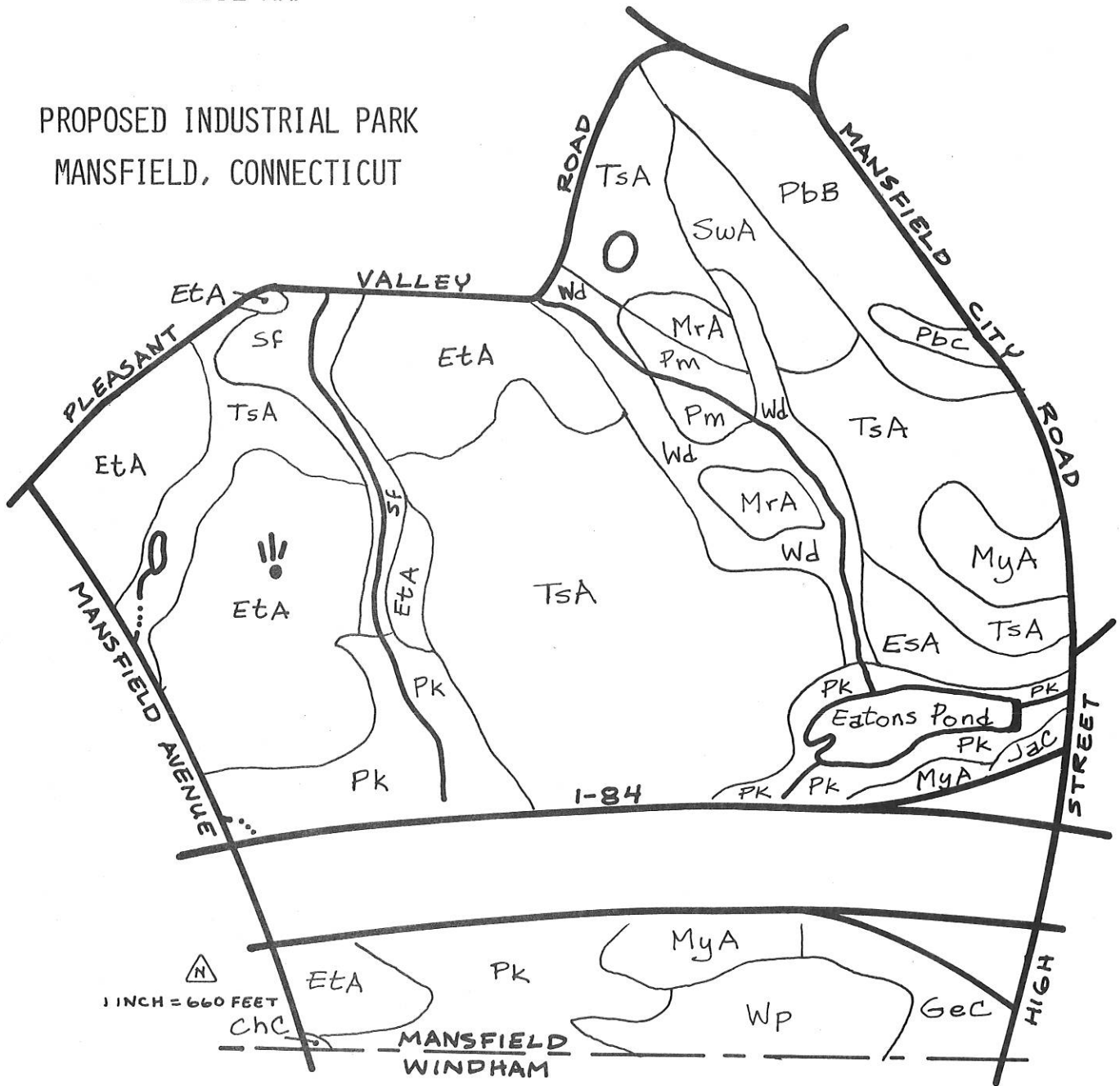
The major trade-off being made here is the loss of agricultural land for a gain of industrial land. Due to the site's location, availability of services, and existing plans, it is highly unlikely that it will remain in agriculture. However, it is possible and desirable to proceed with development in an orderly fashion so that as much land can be used for agriculture for as long as possible.

Any installation of industrial use should be based on sound engineering and land use planning. Preservation and management of the wetlands and some wooded areas will enhance the aesthetic quality of the site and future development, benefit the wildlife habitat, and serve as a buffer from surrounding areas.

APPENDIX

SOIL MAP

PROPOSED INDUSTRIAL PARK
MANSFIELD, CONNECTICUT



Prepared by:
UNITED STATES DEPARTMENT
OF AGRICULTURE
Soil Conservation Service

ADVANCE COPY, SUBJECT TO CHANGE

1965

SOILS LIMITATIONS CHART

Natural Soil Group*	Mapping Symbols	Acres	Percent of Total Acres	Limitations For:**				Principal Limiting Factor(s)
				On-Site Sewage	Base-ments	Streets and Parking	Land-scaping	
A-1a	EtA	53	21.9	1	1	2	1	-
A-1b	JaC	1	0.5	1	2	3	3	Droughtiness, slope 3-15%.
A-1d	EsA, MrA, MyA	26	10.7	1	1	2	1	Droughtiness.
A-2	TsA	82	33.8	2	2	2	2	Seasonal high water table.
A-3a	Wd	11	4.6	4	4	4	4	High water table.
A-3b	Pm, Sf	11	4.6	4	4	4	4	High water table.
B-2a	SwA	6	2.5	2	2	2	2	Seasonal high water table.
C-1a	PbB	16	6.6	3	1	1	2	Hardpan, slope 3-8%.
C-1b	PbC	2	0.8	3	2	2	3	Hardpan, slope 8-15%.
F-1	Pk	30	12.3	4	4	4	4	High water table, organic material.
		242	100.0					

* Refer to Know Your Land, Natural Soil Groups for Connecticut, Soil Conservation Service, USDA Connecticut Cooperative Extension Service, for further explanation of the natural soil groups.

** Limitations: 1-slight; 2-moderate; 3-severe; 4-very severe.

ACREAGE SUMMARY OF SOILS LIMITATIONS

	<u>Slight</u> <u>Acres</u>	<u>%</u>	<u>Moderate</u> <u>Acres</u>	<u>%</u>	<u>Severe</u> <u>Acres</u>	<u>%</u>	<u>Very Severe</u> <u>Acres</u>	<u>%</u>
On-Site Sewage	80	33.0	88	36.4	18	7.4	52	21.4
Basements	95	39.2	91	37.6	-	-	52	21.4
Landscaping	29	11.9	156	64.4	1	0.4	52	21.4
Streets and Parking	79	32.9	104	42.9	3	1.5	52	21.4

PHYSICAL PROPERTIES OF SOILS

<u>Natural Soil Group</u>	<u>Mapping Symbol</u>	<u>Slope</u>	<u>Erosion Hazard</u>	<u>Depth to Seasonal Water Table</u>	<u>Drainage Class</u>	<u>Substratum</u>	<u>Features Affecting Artificial Drainage</u>
A-1a	EtA	0-3%	High	Deep	Well drained.	Coarse sand and gravel.	Natural drainage adequate.
A-1b	JaC	3-15%	Low-Medium	Deep	Excessively drained.	Sand and gravel.	Natural drainage adequate.
A-1d	EsA	0-3%	High	Deep	Well drained.	Coarse sand and gravel.	Natural drainage adequate.
A-1d	MrA MyA	0-3%	Low-Medium	Deep	Well drained to somewhat excessively drained.	Sand and gravel.	Natural drainage adequate.
A-2	TsA	0-3%	Medium	12"-20"	Moderately well drained.	Sand and gravel.	Suitable for tile.
A-3a	Wd	-	Low	0"-8"	Poorly to somewhat poorly drained.	Sand and gravel.	Suitable for open ditches and tile.
A-3b	Pm	-	Low	0"	Very poorly drained.	-	Suitable for open ditches.
A-3b	Sf	-	Low	0"	Very poorly drained	Loamy sand and sand with some gravel.	Suitable for open ditches and tile.
B-2a	SwA	0-3%	Low-Medium	10"-20"	Moderately well drained.	Firm to very friable gravelly fine sandy loam to sandy loam.	Suitable for tile.

PHYSICAL PROPERTIES OF SOILS, continued

<u>Natural Soil Group</u>	<u>Mapping Symbol</u>	<u>Slope</u>	<u>Erosion Hazard</u>	<u>Depth to Seasonal Water Table</u>	<u>Drainage Class</u>	<u>Substratum</u>	<u>Features Affecting Artificial Drainage</u>
C-1a	PbB PbC	3-8% 8-15%	High	May have perched water table in winter and early spring.	Well drained.	Very firm and compact fine sandy loam and sandy loam.	Natural drainage adequate.
F-1	Pk	-	Low	0"	Very poorly drained.	-	Suitable for open ditches.