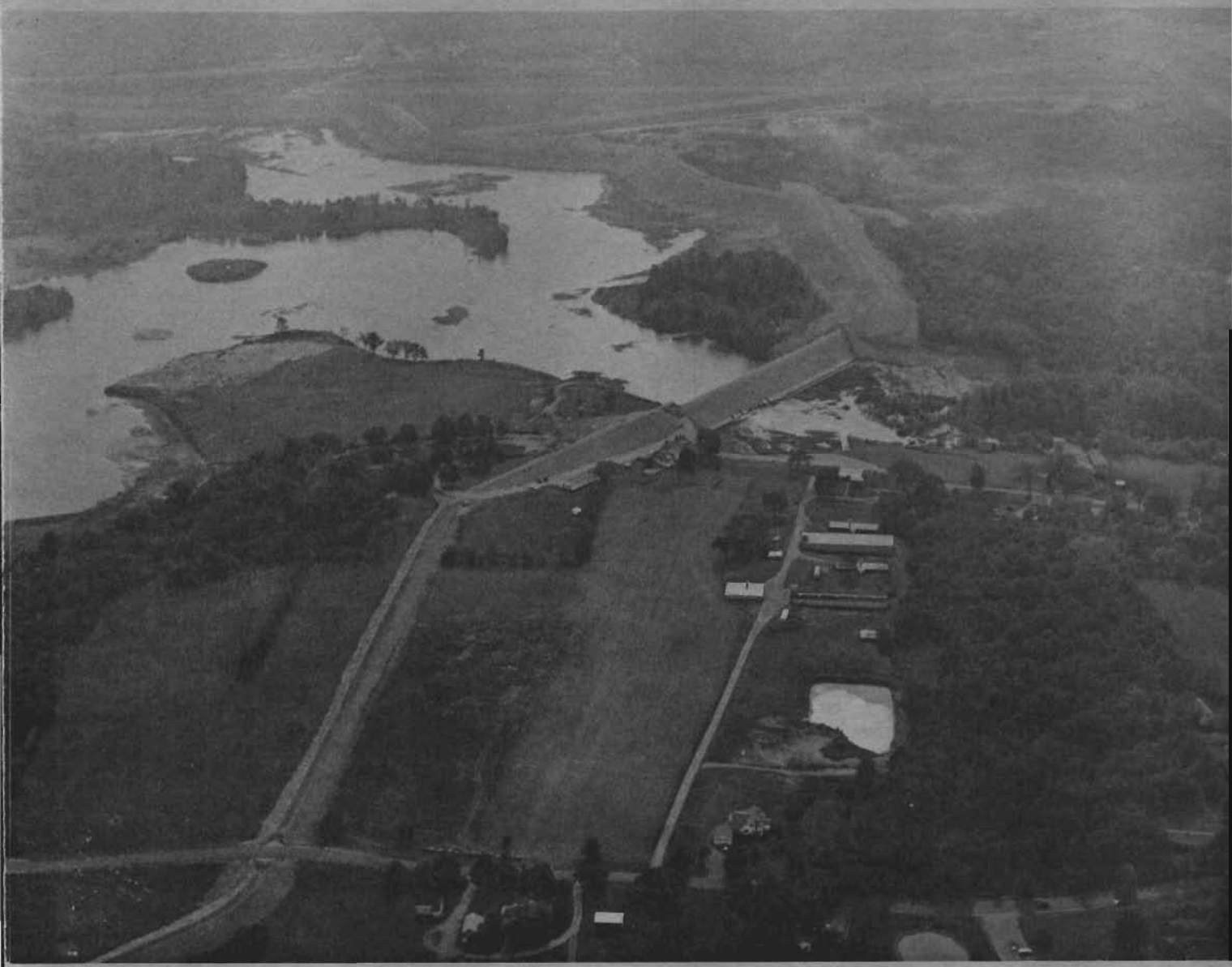
MANSFIELD HOLLOW LAKE
CONNECTICUT
MASTER PLAN
FOR RECREATION RESOURCES DEVELOPMENT



DESIGN MEMORANDUM

JULY 1979

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

MANSFIELD HOLLOW LAKE

MANSFIELD, WINDHAM AND CHAPLIN

TOLLAND AND WINDHAM COUNTIES, CONNECTICUT

MASTER PLAN

FOR

RECREATION RESOURCES DEVELOPMENT

Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts 02154

May, 1979

PREFACE

The recreation opportunities available at Mansfield Hollow Lake, known locally as Lake Naubesatuck, are an important supplement to public recreation facilities in eastern Connecticut. A wide variety of activities can be enjoyed at Mansfield Hollow State Park as well as throughout the reservoir area. The city of Willimantic and the University of Connecticut are located only a few miles from Mansfield Hollow Dam and the 450 acre Lake Naubesatuck, around which the project's recreation facilities are based.

This Master Plan has been developed from a study of the recreation requirements of the region and in cooperation with the State of Connecticut, Department of Environmental Protection. Consideration has been given to the environment of the reservoir area, fish and wildlife enhancement, and conservation of natural resources. Optimum development of recreation facilities, with emphasis on quality and compatibility, has been the primary objective in planning the recreational use potential of Mansfield Hollow Lake.

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

SUMMARY

Mansfield Hollow Lake is located in a relatively rural section of eastern Connecticut, yet is close to major population centers which exert a significant demand on the recreation resources of the project area. Increasingly popular informal recreation activities, which include hiking, nature study, fishing, hunting and cross-country skiing, complement the day use facilities at Mansfield Hollow State Park. While picnicking and boating have long been major recreational pursuits at this project, several unique activities are also accommodated. These include special areas for model airplane and boat hobbyists as well as field dog trials.

With a project area in excess of 2,000 acres, there is ample room for a variety of recreational interests while still preserving the unspoiled character of most of the area. The proposed recreation development is primarily intended to improve existing facilities with the only new development being an expanded trail system and another boat launching ramp. Since the Willimantic water supply reservoir is located immediately downstream from Mansfield Hollow Dam, water contact recreation is not allowed on Lake Naubesatuck behind the dam. However, if present public health regulations are changed, the potential for increased water based recreation at Mansfield Hollow Lake would be significant.

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I. INTRODUCTION

1. PROJECT AUTHORIZATION

The Mansfield Hollow Dam and Reservoir was authorized by the Flood Control Act approved 18 August 1941 (Public Law 288, 77th Congress) as a component part of the comprehensive system of reservoirs and channel improvements for flood control in the Thames River Basin. Construction of the dam was completed in 1952. Authorized flood control projects in the Thames River Basin are shown in Figure 1.

The establishment and maintenance of a 450 acre seasonal lake at elevation 211.5 feet mean sea level (msl) behind Mansfield Hollow Dam for recreational and fish and wildlife purposes was approved in 1962.

2. PROJECT PURPOSES

Mansfield Hollow Lake was constructed as part of the Corps of Engineers comprehensive flood control plan for the Thames River Basin consisting of six reservoirs and one local protection project. As part of this plan, the operation of Mansfield Hollow Lake provides flood protection primarily to Willimantic, Connecticut, but also to Norwich and other communities along the Shetucket River. The project also offers recreational opportunities compatible with the primary function of flood control. Since completion, Mansfield Hollow Lake has prevented estimated losses of $4,388,000. The flood of record in the Thames River Basin occurred in August 1955, caused by the torrential rains of Hurricane Diane, and resulted in damages estimated at $62 million with eight lives lost. In conjunction with the Norwich channel, downstream losses of $4,300,000 were prevented during this storm.

3. PURPOSE OF THE MASTER PLAN

The purpose of this Master Plan is to present a comprehensive and coordinated program for the development, management and use of the Mansfield Hollow Lake area for other purposes which are compatible with the authorized flood control purpose of the project. This Plan will serve as a guide in the operation and control of land and water use for the derivation of maximum public benefits from the resources of the project area. It is intended that this Master Plan be flexible so that adjustments may be made as changing conditions necessitate.

4. APPLICATION OF PUBLIC LAWS

Public Law 78-534, as amended, authorizes the Secretary of War (now Secretary of Army) to construct, maintain and operate public park and recreational facilities in reservoir areas and to grant such leases on land or facilities to non-Federal bodies as is reasonable and consistent with the major purpose of the dam and reservoir.

Public Law 85-624 directs Federal agencies to coordinate the use of impounded bodies of water with the U.S. Fish and Wildlife Service and directs State wildlife resource agencies to determine the extent of damage caused to wildlife. It also charges governmental bodies to promote the development and improvement of such resources by the preparation of wildlife resource plans and reports, to provide assistance in the development, protection, rearing and stocking of all species of wildlife, to assist in controlling losses from disease, and to minimize damages from overabundance by providing public hunting and fishing areas, including easements over public lands thereto. It further authorizes the modification of, or addition to, projects not completed by March 10, 1934, the date of the Fish and Wildlife Coordination Act, in order to acquire lands to accommodate the means and measures for the conservation of wildlife resources as integral parts of the project.

Public Law 89-72 states that a project which has been completed as of July 9, 1965, with non-Federal bodies agreeing to administer project land and water areas for recreation, fish and wildlife enhancement purposes and to bear the cost of operation, maintenance and replacement of existing facilities serving those purposes, such facilities and appropriate project lands may be leased to non-Federal public bodies. The law specifically states that it is not to be construed as preventing or discouraging post-authorization development by non-Federal public bodies so long as agreement is made with the head of the Federal agency having jurisdiction over the project.

Public Law 89-90 authorizes the establishment of the National Water Resources Commission which has the authority to set forth planning standards and water quality criteria and to maintain a continuing study of regional or river basin plans and programs in relation to national requirements.

5. SCOPE

The scope of this Master Plan includes a description of project features, an evaluation of natural resources, an analysis of past use, a determination of recreational potential, a plan of public use development and a reservoir management program. Included in the Plan is the experience obtained from past use and operation of the project by Federal, State and local interests. The development and subsequent operation required to carry out the program has been considered a cooperative endeavor among these agencies rather than solely a Federal responsibility.

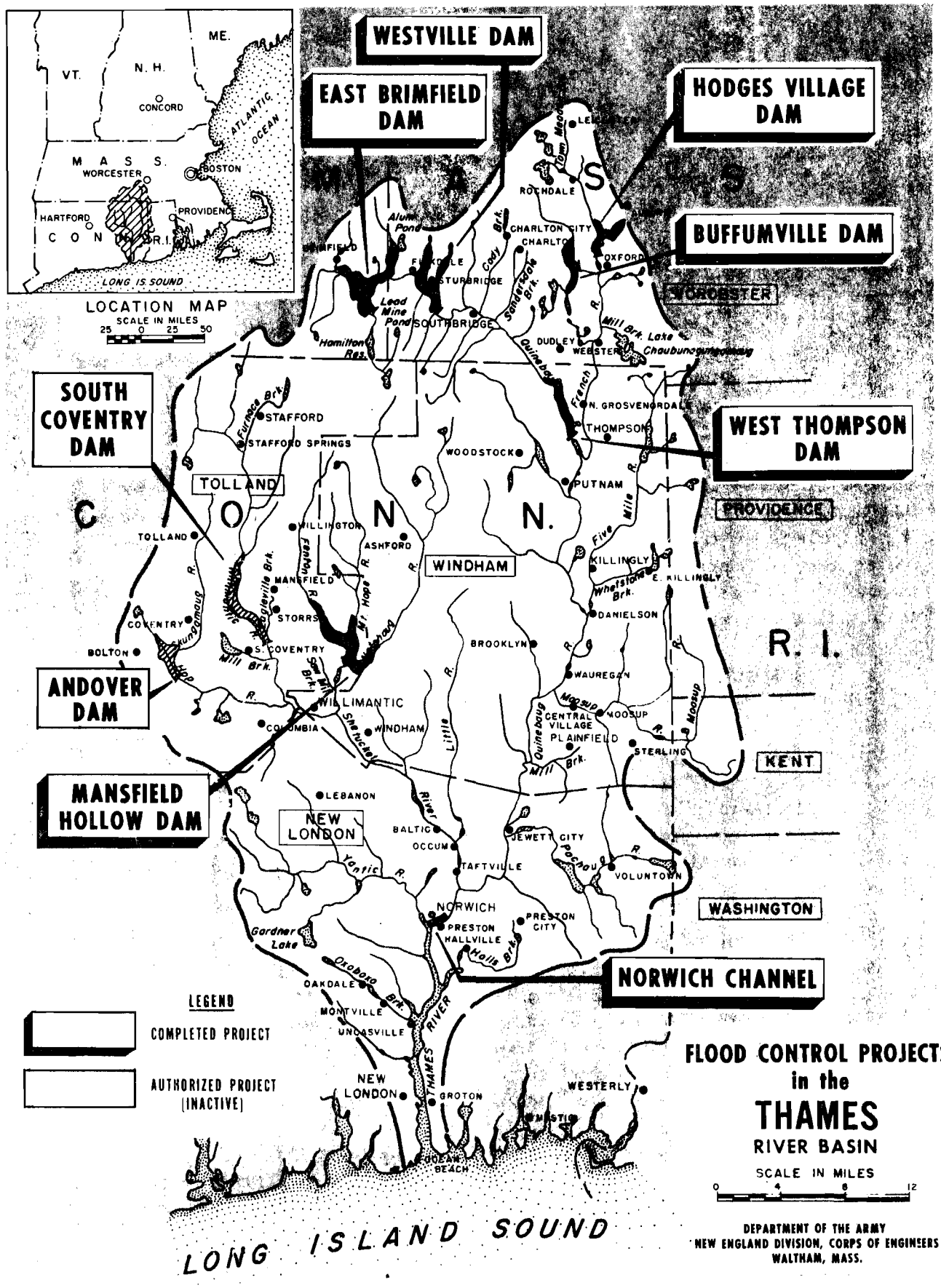

WESTVILLE DAM
EAST BRIMFIELD DAM
HODGES VILLAGE DAM
BUFFUMVILLE DAM
SOUTH COVENTRY DAM
WEST THOMPSON DAM
ANDOVER DAM
MANSFIELD HOLLOW DAM
NORWICH CHANNEL
LOCATION MAP
SCALE IN MILES
25 0 25 50
ME.
VT.
N. H.
CONCORD
ATLANTIC OCEAN
M A S S.
WORCESTER
BOSTON
HARTFORD
PROVIDENCE
C O N N.
R.I.
LONG IS SOUND
C O N N.
R. I.
TOLLAND
WINDHAM
PROVIDENCE
WORCESTER
KENT
WASHINGTON
NEW LONDON
STAFFORD
STAFFORD SPRINGS
WOODSTOCK
PUTNAM
THOMPSON
N. GROSVENORDALE
WEBSTER
DUDLEY
SOUTHBRIDGE
CHARLTON CITY
CHARLTON
OXFORD
STURBRIDGE
ROCHDALE
WILLINGTON
ASHFORD
MANSFIELD
STORRS
COVENTRY
S. COVENTRY
BOLTON
WILLIMANTIC
COLUMBIA
WINDHAM
KILLINGLY
E. KILLINGLY
DANIELSON
BROOKLYN
WAUREGAN
CENTRAL VILLAGE
PLAINFIELD
MOOSUP
STERLING
LEBANON
BALTIC
OCCUM
JEWETT CITY
TAFTVILLE
VOLUNTOWN
NORWICH
PRESTON CITY
PRESTON
HALLVILLE
OAKDALE
MONTVILLE
UNCASVILLE
NEW LONDON
GROTON
MYSTIC
WESTERLY
OCEAN BEACH
Hamilton Res.
Lead Mine Pond
Alum Pond
Quinebaug R.
French R.
Mill Brk. Lake
Choubunagungamaug
Furnace Brk.
Fenton R.
Mt. Hope R.
Willimantic R.
Natchaug R.
Hop R.
Mill Brk.
Shetucket R.
Little R.
Five Mile R.
Whetstone Brk.
Moosup R.
Pachaug R.
Yantic R.
Gardner Lake
Oxoboxo Brk.
Halls Brk.
THAMES RIVER
LONG ISLAND SOUND
LEGEND
COMPLETED PROJECT
AUTHORIZED PROJECT (INACTIVE)
FLOOD CONTROL PROJECTS in the THAMES RIVER BASIN
SCALE IN MILES
0 4 8 12
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

Figure 1

II. PROJECT DESCRIPTION

1. LOCATION

Mansfield Hollow Lake is located in northeastern Connecticut on the Natchaug River in the Thames River Basin, 5.3 miles above the Natchaug's confluence with the Willimantic River, where the two rivers form the Shetucket River. The Natchaug River drains the west central part of the basin and is one of the three principal tributaries of the Shetucket. The Natchaug flows out of western Windham County and into Mansfield Hollow Lake in the towns of Mansfield in Tolland County, and Windham and Chaplin in Windham County. The dam is about 4 miles north of the center of Willimantic, 25 miles east of Hartford and 40 miles west of Providence, Rhode Island. U. S. Route 6 and Connecticut Routes 195, 89 and 198 pass by or through the reservoir area, providing excellent access to this project.

2. PROJECT DATA

a. Basin Hydrologic and Climatic Summary

The Thames River Basin, including the Natchaug River watershed and Mansfield Hollow Lake, has a variable climate characterized by frequent but short periods of heavy precipitation. The basin lies in the path of the "prevailing westerlies" and cyclonic disturbances that cross the country from the west or southwest to the east or northeast. The basin is also occasionally exposed to coastal storms, some of which originate in the tropics and may be of hurricane intensity, heavily laden with moisture from the ocean.

The southern part of the Thames River Basin has a generally milder climate than the northern part, due to the influence of Long Island Sound. The average annual temperature in Mansfield near the dam is about 48°F. Average monthly temperatures range from about 70°F in July and August to 26°F in January and February. Air temperatures sometimes reach 100°F in summer and fall to -10°F or lower infrequently in winter.

The average annual precipitation over the Thames River Basin is about 44 inches. Snowfall at Mansfield Hollow Dam averages about 43 inches, which is about 1-foot less than in northern parts of the basin. For the Thames River Basin as a whole, the average annual runoff is 22.5 inches (1.64 cfs per square mile) or just over 50 percent of the average annual precipitation.

b. Reservoir Shoreline, Length and General Character

The Mansfield Hollow Reservoir, if filled to the spillway crest elevation (257 feet msl), has a storage capacity of 52,000 acre-feet, which is equivalent to 6.1 inches of runoff from the drainage area of 159 square miles. The full reservoir would have a water surface area of 1880 acres and a maximum depth of 62 feet. At this elevation, the reservoir would extend up the Natchaug River about 3.2 miles, Mount Hope River about 1.1 miles and the Fenton River about 3.1 miles. The seasonal recreation lake has a surface area of about 450 acres in the summer with a shoreline about five miles in length and irregular in shape. The average depth of the lake is about eight feet with a maximum depth of about twelve feet at the dam.

c. Project Structures

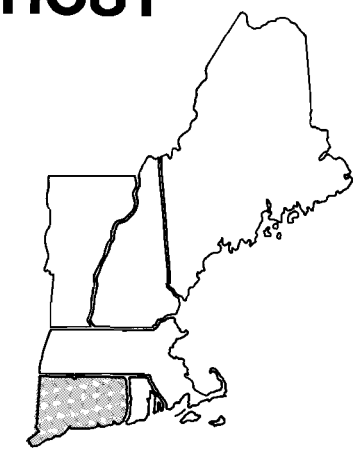
Mansfield Hollow Dam is a rolled-earth fill structure with a dumped rock blanket. Together with a concrete ogee spillway section, the dam and six dikes total 15,030 feet in length with a maximum height of 68 feet. The top of the dam at elevation 273 feet msl has a paved access road

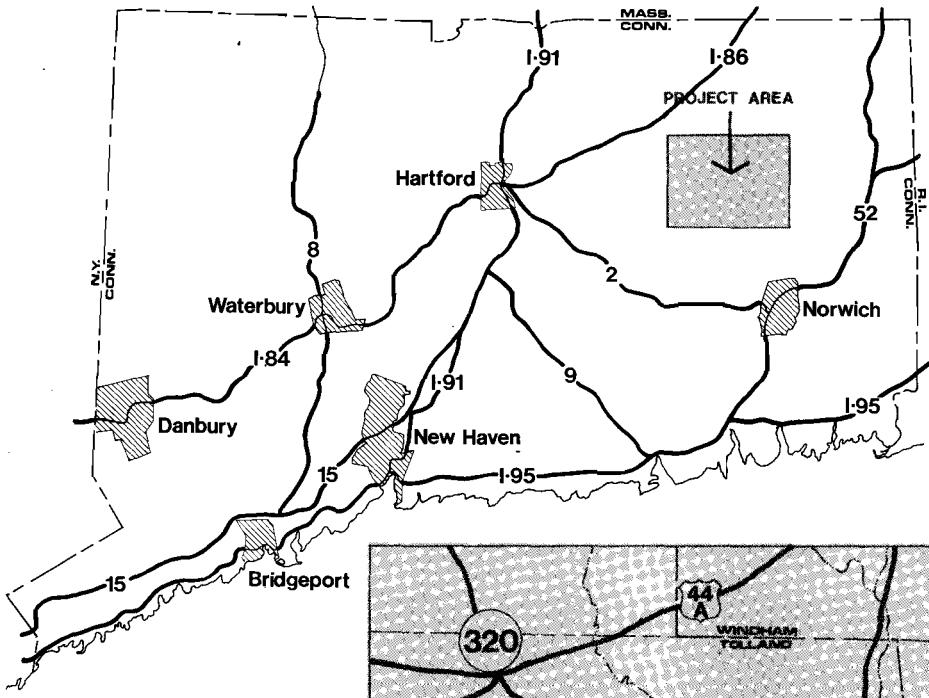
The overflow concrete spillway is 690 feet long across the main stream with a crest elevation of 257 feet msl. Five gated rectangular conduits, three with inverts at elevation 199 feet msl and two with inverts at elevation 195 feet msl, comprise the outlet works of the dam and are located in the center of the spillway. Five 5½' x 7' hydraulically operated slide gates control the flow through the outlet works. Concrete weirs upstream from the first two gates maintain the lake at elevation 211.5 feet msl in the summer and 208 feet msl in the winter.

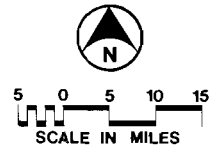
Part of the dam, designated as dike "B", was built across Chapin Brook to prevent the reservoir from flooding Mansfield Center during high flood stages. A conduit through the dike allows the brook to flow into the Fenton River. If a storm occurs when the Mansfield Hollow Reservoir is 18 feet or more deep, the runoff would be stored behind the dike until the reservoir level dropped enough to allow discharge from Chapin Brook. This storage would form a reservoir of 520 acre-feet at elevation 245 feet msl and 760 acre-feet at elevation 250 feet msl. The dike outlet is a conduit 230 feet long with a sluice gate at the entrance at elevation 218 feet msl and a backwater gate at the exit at elevation 216 feet msl.

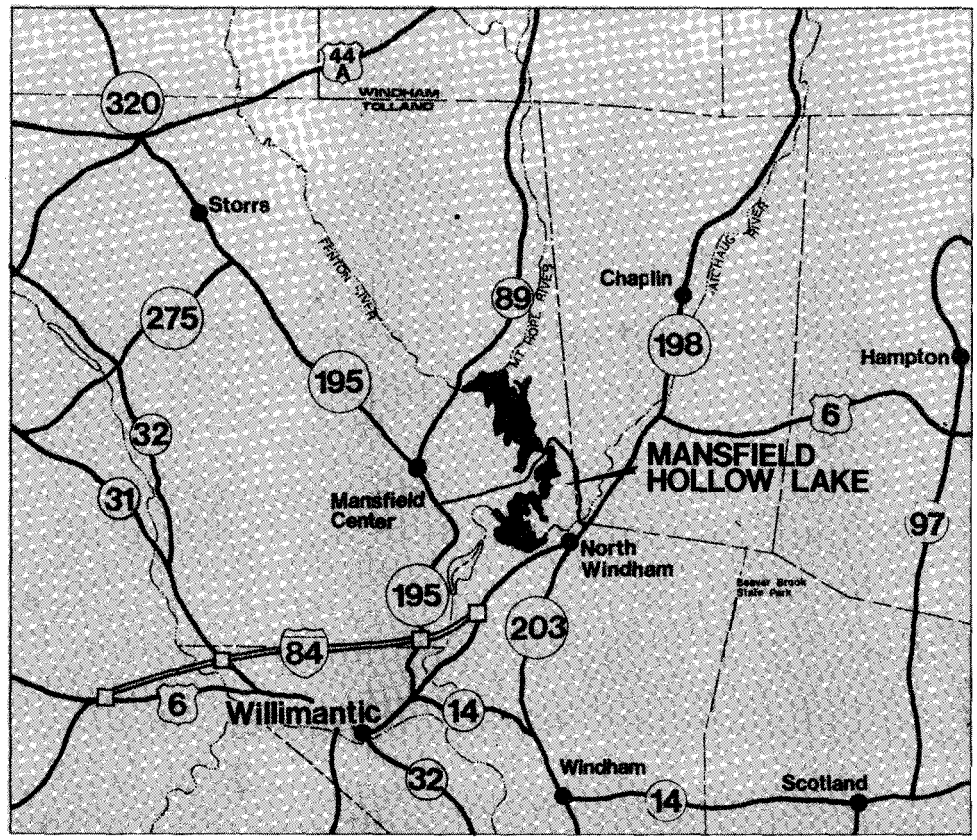
MANSFIELD HOLLOW LAKE
MANSFIELD, CONNECTICUT

VICINITY MAP









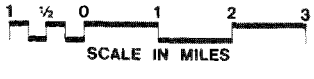


Figure 2

PERTINENT DATA

RIVER BASIN:	Thames
PROJECT NAME:	Mansfield Hollow Lake
RIVER:	Natchaug River
LOCATION:	Mansfield Center, Conn.
DRAINAGE AREA-SQ MILES:	159
PROJECT AREA- ACRES	2,472 (fee-owned)
RESERVOIR	
Seasonal Lake	
Elev-feet msl	211.5
Capacity-Acre Feet	2,800
-Inches of Runoff	0.33
Area-Acres	450
FLOOD CONTROL STORAGE	
Capacity-Acre Feet	49,200
-Inches of Runoff	5.8
Area at Crest-Acres	1,880
Length-Miles	3.7
DAM	
Type	Rolled Earth
Length-Feet	12,420
Top Elev-Feet msl	273
Height above Riverbed-Feet	68
DIKES	
Number	6
Total Length	2,610
SPILLWAY	Concrete Gravity
Type	Ogee Weir
Length-Feet	690
Elev-Feet msl	257
CONTROL WORKS	
Type	5 Outlets thru Spillway
Size-Feet	5'-6" x 7'-0"
Length-Feet	(2@55'; 3@52')
Invert Elev-Feet msl	(2@195; 3@199)
Capacity at full pool-cfs	10,200
Gates-Type	Hydraulic Slide
Number	5
Size	5'-6" x 7'-0"

3. RESERVOIR OPERATION

Reservoir regulation at Mansfield Hollow Lake is coordinated with water level stages on the Willimantic and Shetucket Rivers. As part of the flood control program in the Thames River Basin, the Project Manager reports significant runoff potential in the form of rainfall and snowmelt to the Reservoir Control Center (RCC) in Waltham, Massachusetts. Reporting networks have been established in cooperation with the National Weather Service, the U.S. Geological Survey and local authorities. Reports from network stations are received weekly during nonflood periods and as requested by the RCC during storms. Because of rapid runoff in the basin, data collection emphasis has been on river gages, especially at damage centers downstream of reservoirs in order to provide prompt information on flood conditions.

Regulation of flow from the dam is initiated whenever the downstream channel capacity of the Natchaug and Shetucket Rivers might be exceeded. Regulation may be considered in the following three phases during the course of a flood: Phase I, the appraisal of storm and river conditions during the development of a potential flood, leading to initial flow regulation; Phase II, regulation of reservoir discharge to reduce downstream flooding along the Natchaug and Shetucket Rivers; and Phase III, emptying the reservoir as rapidly and safely as possible following flood conditions.

4. VISITATION

Public visitation to Mansfield Hollow Lake has averaged more than 230,000 people per year since 1968. It is expected that the upward trend in public use will continue with the total visitation reaching 300,000 by 1990. Mansfield Hollow Lake has an excellent capability of meeting the ever-increasing public demand for outdoor recreation activities. The water and land resources of the project, most of which are licensed to the State of Connecticut and operated as Mansfield Hollow State Park, provide an attractive recreation area with a wide variety of popular year-round activities.

III. OPERATING PROJECTS - STATUS

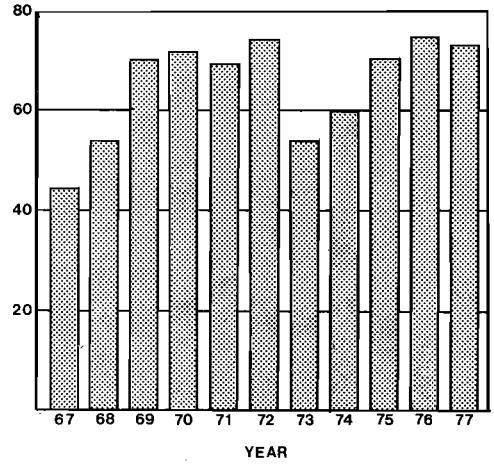
1. PROJECT DEVELOPMENT

Construction of Mansfield Hollow Dam began in July 1949 and was completed in March 1952 at a total cost of $6,447,000. Since project completion there have been eight significant flood control operations when more than 20% of the available storage capacity was used. The two largest storages occurred in August 1955 when 65% of the reservoir capacity was utilized and in January 1979 when 46% was used.

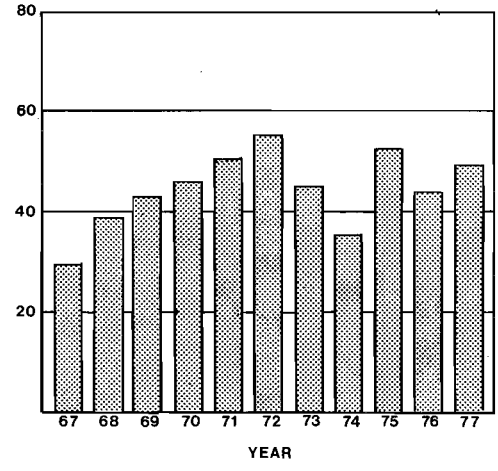
VISITATION DATA

ANNUAL ATTENDANCE IN THOUSANDS

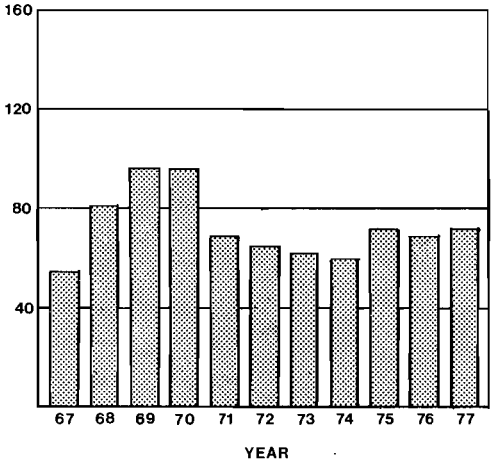
MAIN GATE / ACCESS ROAD



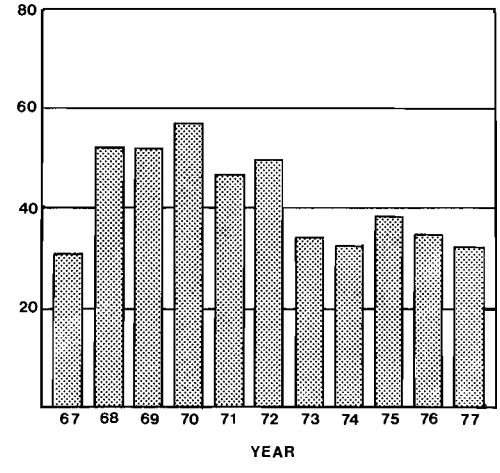
MANSFIELD STATE PARK



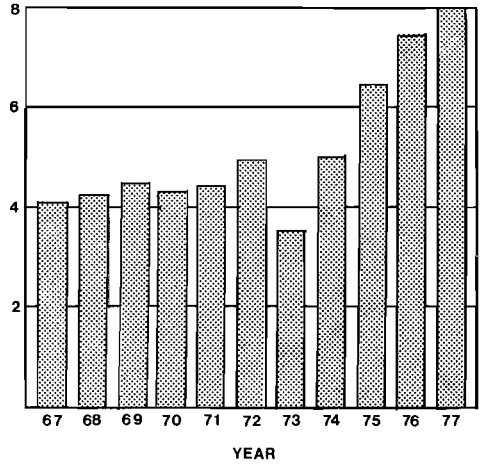
STATE PARK BOAT LAUNCH



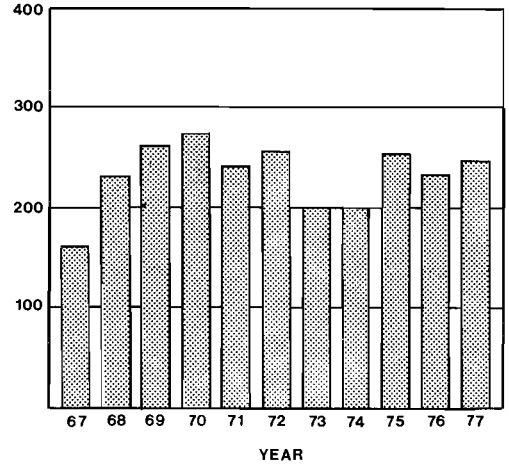
NORTH WINDHAM AREA



CAREFREE LAKE AREA



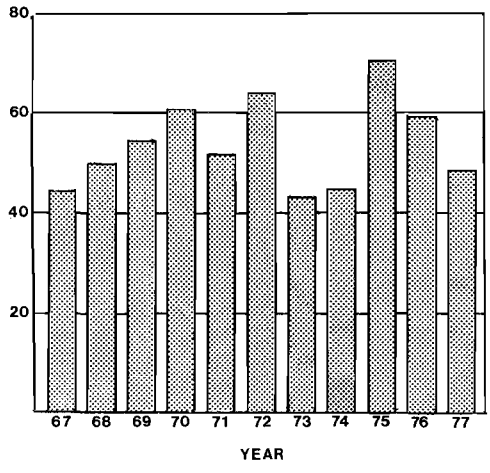
TOTAL



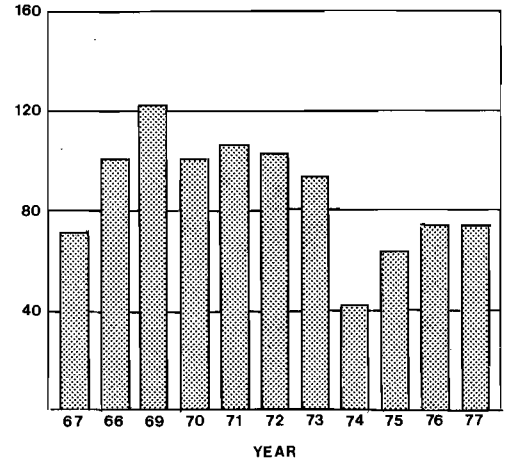
VISITATION DATA

ANNUAL ATTENDANCE IN THOUSANDS

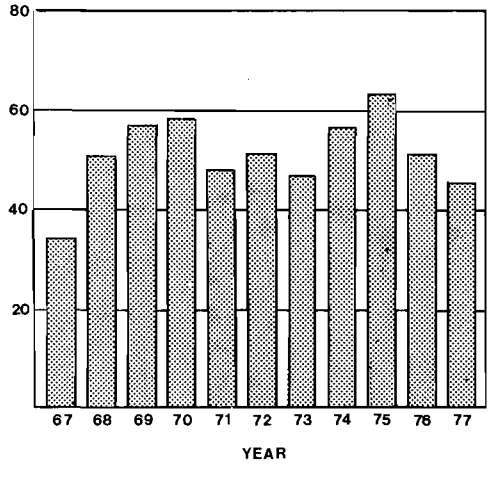
PICNICKING



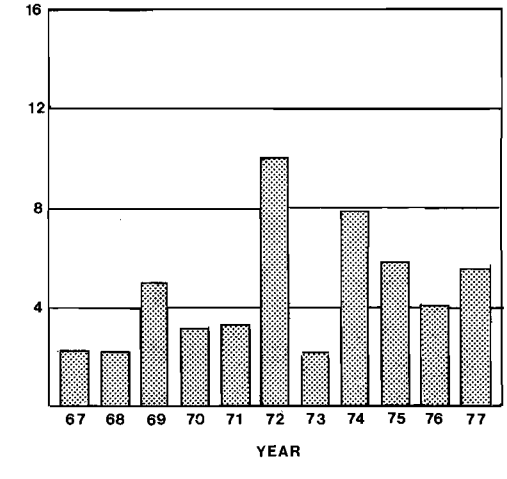
SIGHTSEEING



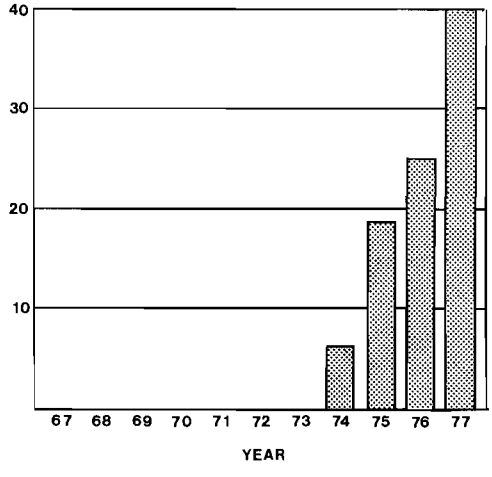
FISHING



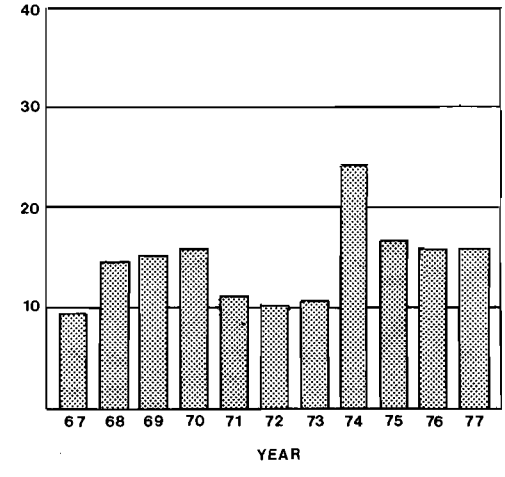
HUNTING



HIKING



BOATING



2. EXPENDITURES FOR PUBLIC USE DEVELOPMENT

Total Federal expenditures through FY 1978 for public use and environmental resource development at Mansfield Hollow Lake have amounted to $68,700, all of which have been Code 710 funds.

Expenditures by the State of Connecticut at Mansfield Hollow State Park have essentially been for routine operation and maintenance of recreational facilities originally provided by the Federal Government. There have been no private recreational developments or expenditures at this project.

IV. RECREATIONAL AND ENVIRONMENTAL RESOURCES

1. GEOLOGICAL FEATURES

The bedrock underlying the dam and reservoir area is metamorphic gneisses and schists with pegmatite intrusions. The Natchaug, Fenton and Mount Hope Rivers flow mostly over alluvium composed of silt, sand and gravel, although for short distances the Natchaug and Mount Hope Rivers flow through narrow valleys in bedrock and in terraces of glacial drift that line all three steep-sided river valleys. These terraces are the only flat areas above the floodplain and therefore are used in preference to other parts of this predominantly hilly area for most recreation activities.

Almost the entire reservoir area, except around the lake below Bassett Bridge, is underlain by extremely productive aquifers. The U.S. Geological Survey estimates that wells in these aquifers could yield up to several million gallons per day.

2. ARCHEOLOGICAL AND HISTORICAL RESOURCES

The Nipmuck Trail starts at the picnic area at Mansfield Hollow State Park and proceeds north up the Fenton River for about five miles within the reservoir area. The persistent hiker may still find evidence of early Indian activity near ancient travelways and along brook courses. Implements discovered, including stone knives, arrowheads and skinning tools, verifies habitation by members of the Nipmuck tribe.

Located immediately downstream of Mansfield Hollow Dam is Kirby's Mill, presently owned by the University of Connecticut. This typical nineteenth century granite mill, built in 1882, housed a variety of industries including the Kirby Optical Company in the early 1900's. The mill is constructed of large granite blocks with an attractive square clock tower. Presently, it is being used for storage by the University although there have been plans to convert it into an art museum and workshop.

3. ECOLOGICAL RESOURCES

The ecosystems which are native to the area are significantly affected during flood stages by the management of the dam and reservoir. In effect, inundation annually eliminates some herbaceous vegetative cover and any wildlife habitats which thrive therein. Depending upon the duration of the flood stage and the movement of water through the reservoir, woody vegetative cover may be reduced or damaged to some extent. The wildlife thriving in these areas are forced to migrate to other cover areas, and may or may not resettle in the original areas in the same year after inundation. The ecosystems require periods of weeks or months to return to normal after flood stage due to settlement of water-borne material such as silt and debris in vegetative areas. Inundation also deters perennial growth and decreases food sources for higher forms of wildlife.

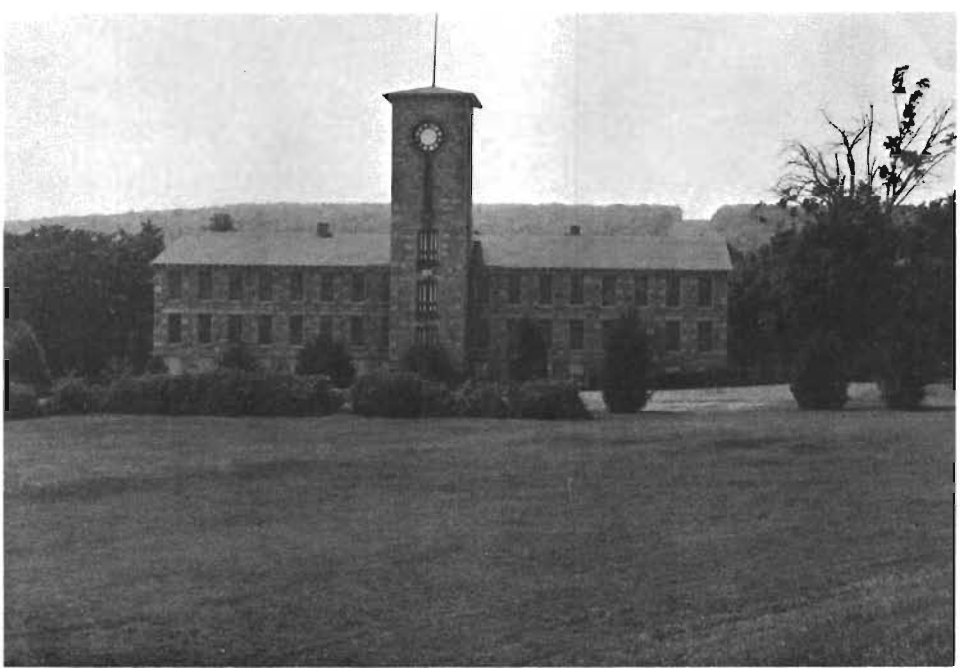
The annual vegetative cover, not considered to be woody plant material, is frequently flattened against existing ground and begins to go through a complete cycle of deterioration and regrowth. The reestablishment of wildlife hatitats within such areas is thereby discouraged within the same growing season. However, grasses which are able to withstand the "mowing" action of floodwaters destroying their tops are quickly reestablished in areas where trees, woody plants and succulent perennials are killed by frequent flooding. These areas provide quickly replenished food supplies and cover for the wildlife and fowl which frequent them. These areas extend throughout the "bottom lands" of the reservoir area and provide a marginal habitat for waterfowl and mammals which prefer a stream and field environment. Upland species are occasionally observed in this habitat.

4. ENVIRONMENTAL AND SCENIC QUALITIES

a. Topography

The Natchaug River is formed by the confluence of the Still River and Bigelow Brook south of Phoenixville, Connecticut and flows southwestward to Mansfield Hollow Lake. During spring freshets, the river rises moderately, and summer flow is well sustained by rainfall and groundwater. Because of the generally hilly topography, runoff is fairly rapid throughout the Thames River basin.

Mansfield Hollow Dam Gatehouse and Overlook



Kirby's Mill

The Natchaug River has a total fall of 267 feet along a total length of 16 miles. In the vicinity of the reservoir, the average slope is about 15 feet per mile. Hilly terrain with moderate relief surrounds the reservoir area. The river valleys, narrow and steep-sided, are flanked by terraces and high hills. Parts of the narrow floodplains are swampy. The upper part of the reservoir inundates a former marsh and swamp. Elevations in the vicinity range from about 190 feet msl in the streambed at the dam to about 590 feet msl on a hill east of Chaffeeville overlooking the Fenton River.

b. Vegetation

About three-fourths of the land in the towns of Mansfield, Chaplin, and Windham is wooded, including about 50 percent of the reservoir area. Most of the woodlands vary in density and tree sizes, indicating recent regeneration following some previous use, such as agriculture or cutting. The predominant tree species in the floodplain and swamp woodlands is red maple, frequently accompanied by ironwood and white ash and occasionally gray birch, red oak, American elm, and sugar maple. The shrubby swamps of the reservoir consist largely of redosier dogwood, meadowsweet, steeplebush, speckled alder and black alder. The herbaceous plants of marshes and wet meadows are tussock sedge and other sedges, grasses, rushes and ferns. The upland woods in the reservoir area occur mostly on dry sandy soil and consist predominantly of red and white oak and white pine.

c. Land Uses

The project area contains 2472 acres acquired in fee and open to the public, and 61 acres in flowage easement. The immediate area outside the project contains woodland, residential property, commercial enterprises and a small airport. The reservoir area has been cleared to an elevation 18 feet above the base of the dam or 1½ feet above the level of the summer recreation pool, for a total of about 600 acres. The easement properties are southeast of the dam in the village of North Windham, the southwest corner of Chaplin, and the southeast corner of Mansfield, all consisting of small residential properties.

About 159 acres of land in the immediate vicinity of the dam and dikes are reserved for operational and maintenance purposes by the Corps of Engineers, with accommodations for the visiting public. The balance of the reservoir area (2313 acres) is presently licensed to the State of Connecticut. The principal developed recreation area is located in the flat high area in the midportion of the reservoir. The major

public use facilities which are completed and available for use are located along the northwest side of the lake, while a small roadside picnic area is located in the southern portion of the reservoir just off U.S. 6.

The remaining land and water areas licensed to the State are available for fish and wildlife and forestry management where compatible with flood control and other recreational uses of the reservoir area. Included in the area licensed to the Connecticut Department of Environmental Protection, Parks and Recreation Unit are 525 acres which are presently outleased for agricultural purposes to former owners.

d. Visual Amenities

Protection and preservation of natural site amenities is a fundamental project purpose in this Master Plan. The land encompassed by the dam and reservoir area is typical of the southern New England countryside, characterized by rolling wooded hills, quiet streams, expanses of sky framed by forest growth, and the absence of noise, confusion and congestion. In such an area where man senses the presence of nature with its living entities of forest and stream, development must be coordinated with the intangible as well as the tangible site assets in order not to become an intrusion. In this way, the area becomes a place where man can, for a time, come close to the unspoiled world about him, and can derive the satisfaction of having his activities of sport and play blend with nature.

e. Water Quality

The waters of the Natchaug, Mt. Hope and Fenton Rivers which flow into the reservoir are classified by the State of Connecticut as AA. This classification is the highest in water purity in Connecticut. Because the water supply reservoir for the city of Willimantic is located one mile downstream from Mansfield Hollow Dam, regulations of the State Department of Public Health prohibit swimming, bathing or any other water contact activities in the project area.

5. RECREATION

The Connecticut Department of Environmental Protection manages the present recreational facilities around the lake as Mansfield Hollow State Park. The day use area on the west side of the lake has 60 picnic tables, 40 fireplaces, rest rooms and two ball fields. The State also manages a small roadside picnic area off Route 6 consisting of four picnic tables and fireplaces. There is a boat launching ramp on the same side of the lake just above Bassett Bridge. The State also provides opportunities for fishing, hunting, hiking and dog trials and maintains the public access roads to their facilities. Swimming is not presently allowed because of the proximity of this project to the Willimantic water supply reservoir located about a half mile downstream of Mansfield Hollow Dam.

Downstream from Mansfield Hollow Dam

V. FACTORS INFLUENCING AND CONSTRAINING RESOURCE DEVELOPMENT AND MANAGEMENT

1. GENERAL

Located in the scenic Thames River Valley of eastern Connecticut, Mansfield Hollow Lake has the potential to provide numerous natural and developed recreational opportunities. A significant portion of the visitation to the project comes from nearby Willimantic and Storrs, the home of the University of Connecticut, both of which are less than five miles from the State Park.

2. DEMOGRAPHIC

Mansfield Hollow Lake is located in the least developed and least densely populated region of Connecticut, yet several heavily populated and highly industrialized cities in Connecticut, Massachusetts and Rhode Island are within an hour's drive of the project. More than one million people live within 40 miles of the reservoir area. With rolling uplands and varied landscape of forests and farmland, the river valley offers the quality of resources which help satisfy the ever-growing recreational demands of the populous urban centers.

At present, 367.6 acres of reservoir land are outleased by the Corps of Engineers on a competitive basis to eight local farmers and dairymen. Open areas with thinly wooded sections are utilized for pastureland and grazing. In addition, several open areas amounting to approximately 75 acres are treated by the State as hedgerows and for game food to avoid reversion back to brush and woodland. This type of use prevents the fields from becoming fallow, controls nuisance growth, enhances wildlife habitat, stimulates the local economy and preserves the rural farm-type atmosphere of the valley, where the only center of industry is the city of Willimantic.

Most of the people from surrounding towns, as well as city residents, find employment in this city of about 15,000 residents. The two largest industries are the American Thread Company, which manufactures thread and yarn, and Brand Rex, which makes wire and cable. Each industry employs about one thousand people. Located just outside the city of Willimantic is the Kendall Corporation, a subsidiary of Colgate-Palmolive.

The town of Mansfield has a population of about 20,000 with the economic mainstay being the University of Connecticut at Storrs, which has an enrollment of over 17,000 students.

3. TOPOGRAPHY AND GEOLOGY

In several places within the reservoir area terraces of glacial drift line the steep-sided river valleys providing relatively flat areas above the floodplain. These terraces provide excellent opportunities for recreation development because of the good soil conditions, mostly sand and gravel. Other areas within the reservoir consist of marsh and swampland which provide good wildlife habitat and are best left in a natural, undeveloped state.

4. ACCESSIBILITY

Mansfield Hollow Lake is readily accessible over an excellent paved highway system from all directions. U.S. Route 6 and part of I-84 are the principal east-west arteries passing by the project from Providence, Rhode Island and Hartford, Connecticut. Connecticut Route 32 is the major highway between I-95, New London and Norwich, Connecticut to the south and I-86 to the north. Other Connecticut State highways passing through or near the reservoir area include Routes 195, 89 and 198, with the latter two roads connecting directly to U.S. 44 north of the project. It is expected that these existing roads and highways will be capable of easily accommodating all potential visitation to Mansfield Hollow Lake.

5. AREA OF INFLUENCE

Northeastern Connecticut is the least populated area in the State, and yet more than one million people reside within an hour's drive of Mansfield Hollow Lake. Past informal surveys have shown that about 65% of the visitors to this project came from within 25 miles and about 85% from within 50 miles. Although the most popular recreational activities are picnicking and fishing, sightseers account for the highest percentage of visitation,

6. RELATED RECREATIONAL, HISTORICAL AND SCIENTIFIC AREAS

Several other public recreational areas are located near Mansfield Hollow Lake and State Park. The most noteworthy are Beaver Brook State Forest, James L. Goodwin State Forest and the Pomeroy State Forest. There are also two rest areas overlooking part of the reservoir along Route 6.

There are numerous places of historic significance in Mansfield and the surrounding area including the Nipmuck Trail, Nathan Hale State Monument, Kirby's Mill and the Eleanor Williams House (1710), which is listed in the National Register. The University of Connecticut was founded in 1881 as one of the original land grant colleges.

7. RESERVOIR PLAN OF OPERATION

Mansfield Hollow Lake is held at an elevation of 211.5 feet msl from early April until November, when it is lowered to about elevation 208 feet msl in order to gain additional flood control storage capacity. These regulation procedures have no effect on public use within the reservoir area.

Two or three weekends each spring, in cooperation with the Windham Regional Planning Agency and the Appalachian Mountain Club, the water level of the lake is raised approximately 1 to 1½ feet and then drawn down to the normal summer elevation in order to provide additional flow downstream for the annual canoe events. A canoe cruise open to the public, in addition to an officially sanctioned race, is held on the Shetucket River below the confluence of the Willimantic and Natchaug Rivers every June.

8. BORROW AREAS

There are five borrow areas located within the project boundaries of Mansfield Hollow Lake varying in size from only one to more than 20 acres. Most of these areas have revegetated and are no longer used on a regular basis.

9. WATER QUALITY

The Natchaug, Mt. Hope and Fenton Rivers, upstream of Mansfield Hollow Dam, are Class AA waters. The confluence of these three rivers is in the Mansfield Hollow Reservoir area. Immediately downstream of the project is Willimantic Reservoir, an impoundment along the Natchaug River which is used as the water supply for the city of Willimantic, Connecticut. Class AA water is of uniformly excellent character and is suitable for water supply and all other water uses. Dissolved oxygen concentrations must always be at least 5 mg/l and 75 percent saturated 16 hours per day. Total coliform bacteria levels must not exceed a median of 100 colonies per 100 ml nor more than 500 colonies per 100 ml in more than 10 percent of the samples collected.

The Corps of Engineers, New England Division, has been periodically collecting water quality samples in the reservoir area since 1971. To date, the mean dissolved oxygen concentration of samples taken from the Mount Hope River, immediately downstream of its confluence with the Fenton River, is 9.9 mg/l while the mean concentration in the Natchaug River, in the reservoir area, is 9.3 mg/l. The mean dissolved oxygen concentration of water discharged from the project is 9.6 mg/l. Violations of the 5 mg/l minimum dissolved oxygen concentration were observed once in the Mount Hope River in 1972 and once in the Natchaug River above Mansfield Hollow

Lake in 1974. On each of these occasions the dissolved oxygen concentration was reported as 4.8 mg/l. No violations of the minimum dissolved oxygen requirement for Class AA waters have been observed in the water discharged from Mansfield Hollow Lake. The policy of drawing water from the bottom of the reservoir, as well as the top of the weirs, helps to maintain highly oxygenated discharge waters.

It is typical of impoundments that they increase the color and decrease the turbidity of the waters passing through them. The color increase comes from leached organic materials from submerged vegetation and decreases over the years. The turbidity decrease comes from the settling of suspended particles in the still waters of the impoundment.

The waters entering Mansfield Hollow Lake are highly colored and have low turbidity. The water discharged from the lake is more colored and is slightly more turbid. The Mount Hope and Natchaug Rivers above Mansfield Hollow Lake have mean color and turbidity levels of 52 color units and 1.6 FTU's (Formazin Turbidity Units), and 55 color units and 2.6 FTU's, respectively. The water discharged from the lake has average levels of 63 color units and 2.6 FTU's. The reason for the increased turbidity is not known.

The levels of nutrients in Mansfield Hollow Lake are high. The mean phosphate concentrations in the discharge waters from the lake is 0.85 mg/l and the mean nitrate-nitrogen concentration in these waters is 0.59 mg/l. These nutrient levels are well above the 0.03 mg/l phosphate and 0.30 mg/l inorganic nitrogen which are generally considered critical for algae blooms to occur, although algae blooms have not been a problem. However, the nutrient levels reported by the Corps in the discharge from Mansfield Hollow Lake have been decreasing over the years and it is unlikely that algae blooms will be a problem in the future.

Total coliform levels in the Natchaug River below Mansfield Hollow Dam show that Class AA standards are not being met. Two thirds of the samples taken had total coliform levels in excess of 100 organisms/100 ml and 21 percent of the samples exceeded the 500 organisms/100 ml level. Insufficient data was collected on the total coliforms in the rivers entering Mansfield Hollow Lake to determine whether coliform levels increase or decrease as waters pass through the lake. It should be noted that certain types of coliform bacteria live in the soil and even though Class AA standards are not being met, this does not necessarily mean that the waters are being polluted.

10. ANTICIPATED ATTENDANCE

It is anticipated that visitation to Mansfield Hollow Lake will gradually increase, reaching about 300,000 visitor days by 1990. This project can easily accommodate the additional visitation due to its size and the many recreational opportunities available. The planned improvements to the existing recreational facilities and the addition of new trails and a boat launching ramp will add to public enjoyment of the project resources. The most dramatic increase in recreational use based on current trends is projected to be hiking activity. Other activities showing increasing trends are picnicking, fishing and boating. The illustrations on the following pages indicate the visitation to Mansfield Hollow Lake for the past ten years.

11. PUBLIC LAW 89-72 AND COST-SHARING REQUIREMENTS

Under Section 4 of PL 89-72 where a project has been completed as of 9 July 1965 and non-Federal public agencies agree to administer project land and water areas for recreation and fish and wildlife management purposes and bear the cost of operation, maintenance and replacement of facilities serving these purposes, such facilities and appropriate project lands may be leased to non-Federal public agencies with up to 50% of the cost of development and construction provided by the Federal Government and the remainder by the non-Federal interest.

The Connecticut Division of Conservation and Preservation of the Department of Environmental Protection has a 25 year lease for fish and wildlife and forestry management purposes and another 25 year lease for public park and recreational purposes at Mansfield Hollow Lake. At such time as the state desires and is able to enter into a cost-sharing contract, the proposed improvements recommended in this Master Plan may be constructed.

VI. COORDINATION WITH OTHER AGENCIES

1. FEDERAL

Planning, development and management of the recreation and fish and wildlife resources at Mansfield Hollow Lake has been coordinated with several Federal agencies including the U.S. Fish and Wildlife Service and the Heritage, Conservation and Recreation Service.

2. STATE

The Connecticut Department of Environmental Protection, Division of Preservation and Conservation, Parks and Recreation Unit manages Mansfield Hollow State Park and has been directly involved in the planning and development of the resources and recreation facilities discussed in this Master Plan.

3. LOCAL AND INSTITUTIONAL

Several local and regional agencies,organizations and interested groups have been contacted regarding recreational planning and use of the project area, as well as providing useful information for inclusion in this Master Plan. Those with whom coordination has taken place include the town of Mansfield, Mansfield Historical Society and the Natchaug Ornithological Society.

VII. PHYSICAL PLAN OF DEVELOPMENT

1. ZONING

All project lands within the Mansfield Hollow Reservoir area are available to the public for authorized recreational use, except for the immediate area around the dam and dikes which is zoned for project operations. These areas are reserved for project operation and maintenance and are generally not suitable for public recreation due to potential safety hazards and conflict with authorized management of the project for flood control purposes. However, an overlook area and parking are provided at the dam for the visiting public.

a. Project Operations - The total area in the vicinity of the dam and adjacent dikes, which is reserved for project operation and maintenance, comprises about 27 acres. All fee owned land downstream of the dikes and a narrow strip averaging about 150 feet wide upstream of the dikes is included in this zone.

b. Operations: Recreation - Intensive Use - Mansfield Hollow State Park is the only developed, intensively used area within this project. The Connecticut Department of Environmental Protection, Parks and Recreation Unit, has provided a large picnic area with 60 tables and fireplaces, rest rooms, drinking water, two ball fields, a soccer field, and a boat launching ramp with parking for about 40 cars and trailers. About 6 acres are zoned for these intensively developed facilities which also include a nature trail between the boat ramp and picnic area and a segment of the Nipmuck Trail which starts at the State Park.

c. Operations: Recreation - Low Density Use - Two areas within the reservoir are zoned for low density use and together comprise about 30 acres. One area located between the dam and the State Park is used by local model airplane and boat enthusiasts. The model airplane clubs maintain a mowed runway for their remote controlled planes, and a sandy shoreline not far away at the lake provides an excellent area for the use of powered model boats.

The other low density use area is located east of the lake and north of the Natchaug River and is used during the spring and fall for organized dog trials in which hunting dogs are judged on performance in pointing game birds. This area also provides excellent upland hunting and is stocked by the State of Connecticut.

d. Operations: Wildlife Management - The remainder of the reservoir area consisting of about 2409 acres is zoned for wildlife management and provides good habitat for many species of birds and animals. The entire 450 acre lake is also included in this zone and offers excellent fishing and boating. Other low density recreational use that takes place throughout the project area includes hiking, hunting, horseback riding, cross country skiing and sightseeing.

Interim use of several tracts of land for agricultural purposes takes place within the reservoir area on land presently licensed to the State of Connecticut. The State managed land includes all of the project area except that which is zoned for project operations. Eight agricultural leases totaling 367.6 acres are presently in effect, primarily for raising hay and corn. No livestock grazing or use of pesticides or chemical fertilizers is allowed due to possible contamination of the water which flows directly into the Willimantic Reservoir.

The Connecticut Light and Power Company has an easement for a power transmission line across the reservoir area in two locations. This power line was designed and constructed to minimize the esthetic intrusion on the area by utilizing single high level poles placed strategically so that they are hardly noticeable in many areas. The amount of clearing necessary for the power line was also kept to a minimum with considerable undergrowth left under the conductor.

2. PROJECT STRUCTURES

The project administration and maintenance area at Mansfield Hollow Lake consists of the Project Manager's office, utility building and garage located immediately downstream of the dam near the spillway and outlet works. The Project Manager's home is also located here. There is a public overlook area on top of the dam next to the spillway which is accessible by a stairway. Visitor parking is provided at an overlook area near the entrance gate to the dam.

A storage shed used by the Project Manager is located on high ground upstream of the dam near the utility building. An abandoned house, also owned by the Corps, is located off the former Route 6 near the east end of the dam and had been inhabited in the past by Mansfield Hollow State Park personnel. However, this house is in need of repair. The State intends to make the necessary renovations with the Park Manager planning to move in once they are complete.

3. RECREATION SITE AND AREA PLANS

Mansfield Hollow State Park is the major recreational development within the reservoir area. Present facilities include a large picnic area, two softball fields, a soccer field, rest rooms, drinking water, a boat launching ramp, parking areas and a nature trail. Future development plans, as discussed with the Connecticut Department of Environmental Protection, include the addition of another boat launching ramp off the east side of Bassett Bridge Road to serve the southern half of Lake Naubesatuck (Mansfield Hollow Lake). There is presently a twelve foot diameter culvert under Bassett's Bridge Road which connects the north and south portions of the lake, however larger boats and sailboats are unable to pass through this culvert since the clearance is only six feet. The present parking area on the west side of Bassett's Bridge Road can easily accommodate the existing boat ramp as well as the proposed ramp.

Other recommended improvements include expansion of the Nipmuck Trail and the nature trail between the State Park picnic area and boat launching ramp. An interpretive brochure for these trails would also be very helpful and may be a joint effort between the Corps and the State.

South of the State Park and Bassett's Bridge Road is an area used by model airplane and model boat enthusiasts. Parking and access road improvements are planned in the vicinity of the grassed runway and near the shore for boating participants as well as spectators.

A small roadside picnic area located off U.S. Route 6 near the east end of Mansfield Hollow Dam is also managed by the State of Connecticut.

A large area consisting of mixed fields and woods on the east side of the lake opposite the spillway is used in the spring and fall for field dog trials where hunting dogs are judged on performance in pointing game birds. One day permits are granted by the State to concessionaires to sell refreshments at these popular events. No development is planned at this area since it is desired to preserve it as is for hunting, hiking and other passive types of recreational use, as well as the dog trials.

The Mansfield Southeast Elementary School has two ball fields and a soccer field on project land behind the school off Route 89. No further development of facilities is planned in this area.

There are many trails within the reservoir area in addition to the Nipmuck Trail and the State Park nature trail. Some of these trails are abandoned roads while others are woodland paths, but all are suitable for hiking and most offer opportunities for horseback riding and cross-country skiing as well. Off-road recreational vehicles, including trail

bikes and snowmobiles, are not permitted by the State of Connecticut on leased lands, which includes most of the project area. Horses are not permitted on the Nipmuck Trail. There are presently about five miles of existing trails within the project area and it has been proposed to extend this trail system by expanding, brushing out and improving an additional 3-1/4 miles of new multi-use trails. The Natchaug Ornithological Society utilizes several scenic trails at the upper end of the lake near the Mt. Hope River for bird watching, and has indicated a willingness to cooperate with the Corps and the State in improving some of these trails. It is also expected that other volunteer groups and organizations may be willing to assist in widening, expanding and marking some of the new trails as well as many of those presently available to the public.

There has been strong interest expressed by the State of Connecticut Division of Conservation and Preservation, Department of Parks and Recreation for a public swimming beach at Mansfield Hollow State Park along with expansion of the other day use facilities if water contact recreation could be permitted. However, the Connecticut Department of Public Health is opposed to swimming in the lake since this would violate regulations regarding recreational use of waters flowing directly into public water supply reservoirs. Therefore, there are no plans to add swimming facilities at Mansfield Hollow despite the recognized need for such facilities in the northeastern part of the State as evidenced by the Connecticut Statewide Comprehensive Outdoor Recreation Plan.

4. SCHEDULE OF DEVELOPMENT

All of the proposed recreational development improvements previously discussed are planned to be completed by 1980 in cooperation with the State of Connecticut and various concerned local interests. The following items of work are scheduled:

a. A boat launching ramp at Mansfield Hollow State Park,

b. An expanded nature trail at Mansfield Hollow State Park,

c. The improvement of the Nipmuck Trail through the project area,

d. An access road and parking improvements near the model boat and airplane area, and

e. A trail extension and improvement north of Lake Naubesatuck for bird watching, hiking and other suitable nonmotorized uses.

5. COST ESTIMATES

The estimated cost of all the planned recreation facilities needed to complete the total plan of development is $30,000. Section XV of the Master Plan contains a detailed breakdown of all costs.

VIII. FACILITY LOAD AND DESIGN CRITERIA

1. SITING

All recreational facilities have been planned, designed and located with consideration given to environmental and esthetic qualities, type of use, amount of visitation and the area's ability to assimilate various activities. Optimum facility development has been planned to avoid overuse, incompatibility and congestion, and to maintain the primitive and natural aspects of the area. Structures are located on high ground where possible to avoid inundation during flood control operations.

2. WATER SYSTEM

The water supply at the project administration area and at the Mansfield Hollow State Park is provided by driven wells. These are the only areas within the project with potable water supply systems.

3. WASTE COLLECTION AND TREATMENT SYSTEM

Sanitary waste collection and treatment systems consisting of septic tanks and leaching fields are provided at the rest room facilities at both Mansfield Hollow State Park and the project administration area at the dam. All subsurface sewage disposal systems are designed and constructed in accordance with State and Federal regulations.

4. ROADS

There are numerous unmaintained, gravel and paved roads throughout the reservoir area which provide convenient access to the various activity areas. Several of these are abandoned town roads which are paved, but not suitable for high speed travel. The access road to Mansfield Hollow State Park is gravel, but is well maintained by the State to adequately handle traffic.

5. PARKING AREAS

Parking for about 15 cars is provided at the paved overlook area at Mansfield Hollow Dam, while the State Park provides adequate parking at both the picnic/day use area and the boat launching ramp. The paved parking area at the boat ramp has about 40 car and trailer spaces in addition to the several small gravel surfaced parking areas at the picnic area which can accommodate approximately 80 cars. A gravel parking area with a capacity for about 50 cars is located near the dog trial area.

6. LAUNCHING RAMPS

The boat launching ramp at Mansfield Hollow State Park is a dual lane paved ramp, about 20 feet wide and at a 10% grade. It is capable of accommodating all normally expected pool fluctuations during the summer boating season, usually no more than one or two feet. A small dock is also provided at the boat ramp.

7. PICNIC UNITS

Public picnicking facilities are provided at the North Windham access area off U.S. Route 6 near the east end of the dam as well as at Mansfield Hollow State Park. Four picnic sites (4 tables and 4 fireplaces) are available at the North Windham area and 60 sites (60 tables and 40 fireplaces) are provided at the State Park.

8. REST ROOMS

Rest rooms at Mansfield Hollow Lake include a concrete A-frame type waterborne facility at the State Park, two portable, rented, chemical toilets at the boat ramp, and pit type toilets at the entrance to the field dog trial area. Waterborne rest rooms are also provided at the project administration area.

9. OVERLOOK STRUCTURES

A small overlook area with parking for about 15 cars is located at the entrance gate to the dam. A fine view of the dam and spillway as well as Kirby's Mill is afforded visitors. A stairway next to the gate house allows visitors to also obtain a panoramic view from the top of the dam.

10. PLAY AREAS

There are two ball fields and a soccer field at Mansfield Hollow State Park and two ball fields and a soccer field also on project land near the Mansfield Southeast Elementary School, all of which are available for organized athletic activities as well as informal recreational use. These are the only designated play areas although there are many open fields and other places available to the public at several locations in the project area.

11. TRAILS

As previously discussed there are numerous hiking trails in the project area, many of which are also suitable for other uses such as cross country skiing, nature study and horseback riding. Some of the trails are abandoned dirt roads, woods or logging roads, while others consist of only a path through the woods. The former roads average about 10 feet in width and are covered with low vegetation, usually grass, in many places. Most of the other trails are marked or are planned to be marked and often traverse more rugged terrain.

12. NAVIGATION AIDS

As an aid to navigation on the 450 acre Naubesatuck Lake a twelve foot diameter culvert under Bassett's Bridge Road allows small boats to pass between the upper and lower sections of the lake. Larger boats are restricted to the northern part of the lake where access is provided at the boat launching area. However, in the future when a new boat launching ramp is located on the southern part of the lake, larger boats, including sailboats, will have access to the entire lake.

A series of buoys is located about 500 feet in front of the log boom to warn boaters not to approach any closer. The log boom stretches across the lake for more than 500 feet in front of the spillway and flood control gates to catch any debris which might float down and get caught in the gates.

13. WASTE DISPOSAL

Trash receptacles are provided at all public recreation areas at Mansfield Hollow Lake. Rest room facilities either have septic tanks and leaching fields or are self contained chemical or pit type toilets.

14. VISITOR SAFETY CONTROLS

All roads leading into the reservoir area have gates or barricades which can be closed during flood control operations. Guardrails are located along roads where necessary and railings are provided next to stairways and on top of the dam around the overlook area for the convenience and safety of the visiting public. The buoys in front of the log boom are also a safety measure which helps prevent boaters from hitting the log boom or getting dangerously close to the dam's intake works.

IX. SPECIAL PROBLEMS

1. NATURAL RESOURCE PRESERVATION

The development of the land and water resources at Mansfield Hollow Lake has been planned to provide ample recreation facilities for the public and, at the same time, preserve the natural beauty of the area. This Master Plan proposes that the undeveloped areas be maintained to preserve the scenic and environmental quality of the existing ecosystem.

2. FISH AND WILDLIFE RESOURCES

Mansfield Hollow has been for many years a mecca for local professional and amateur naturalists and biologists, which indicates the value of this area as wildlife habitat. Major wildlife species present are cottontail rabbits, grey squirrels, skunks, opossoms, vole, mice and other rodents. Game birds such as black duck, mallards, Canadian geese, grouse and pheasant can also be found.

The non-game birds inhabiting this area include osprey, red-tail hawk, common loon, herring gull, cattle egret, migrating shorebirds, mocking bird, cardinal and wintering sparrows and finches. The golden plover is one of the rare shorebirds which visit the lake.

Among the cold-blooded species to be seen are snapping, painted and spotted turtles, water snake, milk snake, garter snake, hognose and green snakes. Amphibians include bullfrog, green frog, leopard frog, red-backed salamander and newt. Fishing is a great attraction at Mansfield Hollow Lake. The Fenton, Mt. Hope and Natchaug Rivers are stocked with trout while species found in the lake include trout, bluegills, shiners, bass, yellow perch and chain pickerel.

Several factors which influence species found in the reservoir area include water quality, numerous wetlands that provide resting, feeding and brood rearing areas, open fields and a diversity of forest cover. The Connecticut Department of Environmental Protection has made the field trial area at the project available on Sundays during the upland game season (October 15 - February 28), and also sets the seasons and bag limits for the various species of fish and game. The open season for fishing is from 6:00 a.m. on the third Saturday in April through March 31 for lakes and ponds and through the last day in February for rivers and streams in the project area. Open seasons for the various species of fish and game are included in tables on the following pages.

3. ARCHEOLOGICAL AND HISTORICAL RESOURCES

The principal archeological and historical resources in the immediate project area are Kirby's Mill, just downstream of Mansfield Hollow Dam, and the Nipmuck Trail, which passes through part of the reservoir. Both of these are under the direct jurisdiction of the State of Connecticut and are therefore maintained and protected by the State.

4. USER FEES

No fees for use of the recreational facilities are charged by either the State of Connecticut or Corps of Engineers at Mansfield Hollow Lake.

5. SPECIAL LAND AND WATER USES

Water recreation at Mansfield Hollow Lake is restricted since the Willimantic Reservoir, which supplies the City of Willimantic, is located immediately downstream. Due to State public health regulations, water contact recreation is therefore prohibited.

LAKES AND PONDS

Species	Legal Methods	Open Season	Minimum Length	Daily Limit
Bass, largemouth and smallmouth	Angling, ice fishing	Apr 15-Mar 31	12"	6
Carp, suckers, eels lampreys	Angling, bobbing, ice fishing, bow & arrow	Apr 15-Mar 31	None	No limit
Panfish	Angling, bobbing, ice fishing	Apr 15-Mar 31	None	No limit
Pickerel, chain	Angling, ice fishing	Apr 15-Mar 31	15"	6
Pike, northern	Angling	May 1-Nov 30	26"	2
Smelt	Angling, ice fishing	Apr 15-Mar 31	None	50
Trout, charr	Angling, ice fishing	Apr 15-Feb 28	*None	5**
Lake trout	Angling, ice fishing	Apr 15-Feb 28	20"	5**
Kokanee	Angling, ice fishing	Apr 15-Feb 28	None	8**
Atlantic salmon	Angling, ice fishing	Apr 15-Feb 28	15"	1
Sturgeon	May not be possessed at any time			

*Minimum legal length for lake trout is 20"

**The daily creel limit of trout, kokanee, lake trout and charr, when taken in a combination of lakes, ponds and streams may not exceed eight in the aggregate, of which not more than 5 may be trout or charr.

STREAMS

Species	Legal Methods	Open Seasons	Minimum Length	Daily Limit
Alewives, Blueback Herring	Angling	Apr. 15-June 15	None	50
	Scoop net	Apr. 1-June 15	None	50
Bass, largemouth & smallmouth	Angling, ice fishing	Apr. 15-Feb. 28	None	No Limit
Bass, striped	Angling	Apr. 15-Feb. 28	16" snout to fork of tail	No Limit
(1) Carp, suckers, eels, lampreys	Angling, bobbing, ice fishing, bow and arrow, spearing	Apr. 15-Feb. 28	None	No Limit
Pan fish	Angling, bobbing, ice fishing	Apr. 15-Feb. 28	None	No Limit
Pickerel, chain	Angling, ice fishing	Apr. 15-Feb. 28	None	No Limit
(2) Pike, northern	Angling	May 1-Nov. 30	26"	2
Shad	Angling (also scoop net in the Conn. River)	Apr. 15-closing date to be announced	None	6
(3) Smelt	Angling, ice fishing, scoop net	Apr. 15-Feb. 28	None	2 gallons
Sturgeon	STURGEON MAY NOT BE POSSESSED AT ANY TIME			
(4) Trout, charr	Angling, ice fishing	Apr. 15-Feb. 28	None	5
(4) Kokanee	Angling, ice fishing	Apr. 15-Feb. 28	None	8
Atlantic salmon	Angling, ice fishing	Apr. 15-Feb. 28	15"	1

(1) In streams and stream sections stocked with trout may be taken only by angling and ice fishing.

(2) Northern pike may be taken by ice fishing in the Connecticut River and its coves. The closed season for pike in the Connecticut River or in streams or sections of streams open throughout the year.

(3) Smelt may not be taken in tributaries to Candlewood Lake, Crystal Lake, Ellington-Stafford, Shenipsit Lake, Ellington-Tolland-Vernon and West Hill Pond, Barkhamsted-New Hartford, Beach Pond, Voluntown and Highland Lake, Winchester.

(4) Kokanee, trout and charr, when taken in a combination of lakes, ponds and streams, may not exceed 8 in the aggregate, of which not more than 5 may be trout or charr.

HUNTING SEASONS AND BAG LIMITS

NOTE: (Nov. 24-Dec. 3) and (Dec. 5-Dec. 21) all hunters must wear at least 200 square inches of fluorescent orange clothing visible from all sides.

SPECIES	SEASONS	DAILY LIMIT	SEASON OR POSSESSION LIMIT
Quail	Oct. 15-Oct. 29	2	10
Pheasants	Oct. 15-Dec. 3	2	10
Ruffed Grouse	Oct. 15-Dec. 3	2	10
	Dec. 22-Jan. 14		
Chukar Partridge	Oct. 15-Dec. 3	2	10
Gray Squirrel	Oct. 15-Dec. 3	8	40
	Dec. 22-Jan. 14		
Cottontail Rabbit	Oct. 15-Dec. 3	3	25
	Dec. 22-Feb. 28		
European Hare	Oct. 15-Dec. 3	1	10
	Dec. 22-Feb. 28		
Raccoon	*Oct. 15-Jan. 21	5	50
Snowshoe Hare	Nov. 10-Dec. 3	2	10
(varying hare)	Dec. 22-Jan. 31		
Red Fox, Gray Fox	Oct. 15-Dec. 3	No Limit	
	Dec. 22-Feb. 28		
Crows	Sept 17-Sept 30	No Limit	
	Oct. 15-Dec. 3		
	Jan. 1-Mar. 15		
Woodchuck	Mar. 15-Nov. 15	No Limit	
Woodcock	**Oct. 15-Dec. 3	5	10***
Wilson's Snipe	**Oct. 15-Dec. 3	8	16***
Rails			
Virginia & Sora	**Sept. 1-Nov. 8	25	25***
Clapper and King	**Sept. 1-Nov. 8	10	20***
Gallinules	**Sept. 1-Nov. 8	15	30***

Wild Turkey, Hungarian Partridge, Mink, Moose, Muskrat, Beaver, Otter, Harbor Seal, Canada Lynx, Pine Marten, Bog Turtle, Indiana Bat, Black Bear, Fisher, Bobcat, Mountain Lion (Felis Concolor) — NO OPEN SEASON

*From December 5--December 21, Racoon hunting will not be permitted during the daylight hours between 1/2 hour before sunrise to 1/2 hour after sunset.

**Shooting hours exceptions: On October 15, 7:00 a.m. to sunset.

***Possession Limit--others in this column are season limits.

Other special uses of project lands include the field dog trials sponsored by the State of Connecticut and the model airplane and boat clubs' events near the State Park, which are also coordinated with the State.

X. PROJECT RESOURCE MANAGEMENT

Mansfield Hollow Lake is operated primarily for flood control purposes, with provisions for recreational facilities a secondary benefit. Corps of Engineers staffing at the dam includes a Project Manager and assistant, and one part-time temporary aide, with the Project Manager residing on site. All routine operation and maintenance activities at the project except for the area under lease to the State of Connecticut are performed by the Corps personnel. The Connecticut Department of Environmental Protection has three permanent and three part-time (summer) employees at Mansfield Hollow State Park and is responsible for overseeing the management of that part of the project area leased to the State.

The reservoir area is periodically patrolled by local and State law enforcement agencies as well as a Corps of Engineers Ranger assigned to the Thames River Basin. The Willimantic Water Works also has law enforcement jurisdiction in the project area.

Concession and visitor interpretation facilities at Mansfield Hollow Lake consists of a temporary food stand permitted during the dog trials and a nature trail at the State Park. A Project Resource Management Appendix to this Master Plan is scheduled to be prepared and will contain a more detailed discussion of both Corps of Engineers and State of Connecticut management activities.

XI. FOREST MANAGEMENT

No formal forest management activities are presently being undertaken at Mansfield Hollow Lake. However, the forest resources of the area are of major importance to wildlife and contribute to the esthetic and recreational value of the project. *A Forest Management Plan is scheduled to be prepared for this project as an Appendix to this Master Plan.

* Most of the woodland is second growth mixed hardwood with very little merchantable timber. Some selective cutting or thinning has taken place around recreation areas and access roads.

XII. FIRE PROTECTION

About 76 percent of the project area (1870 acres) consists of woods or grasslands which are subject to forest fire danger during dry periods. Public recreational use of the project area tends to increase this hazard, although fires are permitted in designated fireplaces provided at the picnic areas.

Fire protection and suppression services of the local fire departments and the Connecticut Park and Forest Commission are available. The Project Manager is also on the alert for fires and has emergency plans posted. Numerous roads throughout the reservoir are maintained to permit access to fire fighting equipment. A Fire Protection Appendix to this Master Plan has been completed.

XIII. FISH AND WILDLIFE MANAGEMENT

The Connecticut Department of Environmental Protection conducts the fish and wildlife management programs at Mansfield Hollow Lake. Rainbow, brook and brown trout are stocked in the Fenton, Mt. Hope and Natchaug Rivers upstream of Lake Naubesatuck, while largemouth bass, smallmouth bass, chain pickerel, brown bullheads, bluegills, yellow perch and pumpkinseeds are the principal game fish found in the lake. Other than trout stocking there is no specific fishery management presently being undertaken at Mansfield Hollow Lake.

Wildlife management within the reservoir area consists of food planting for ring-necked pheasant, ruffed grouse and bobwhite quail, in addition to stocking pheasant. Quail are frequently used for the field dog trials sponsored by the New England Field Dog and Kennel Club, and often survive in substantial numbers throughout the project area. Grouse are not actively managed, but do benefit from pheasant management programs. The stocked pheasants usually do not survive through the hunting season so the hunting/management practice is basically a put and take program with no attempt to build wild populations.

Other wildlife species found in the reservoir area, which also benefit from the State of Connecticut's management programs, include white-tail deer, cottontail rabbit, grey squirrel, grey and red fox, mink, woodchuck, Canadian geese, mallard ducks, black ducks and wood ducks.

A more detailed discussion of fish and wildlife management is presented in the Fish and Wildlife Management Appendix to this Master Plan.

XIV. PROJECT SAFETY

The safety of project visitors is considered a continuing responsibility of those engaged in reservoir management, and rules and regulations relating to safety have been established for both project personnel and the visiting public. All Corps employees in a reservoir management capacity are trained in first aid and fire fighting. In addition, all potential safety hazards at Mansfield Hollow Lake have been identified and protective measures have been taken as necessary. The necessary guardrails and fences have been installed along roads and around the dam, and signs and barricades are located in appropriate places throughout the project. A Project Safety Appendix to this Master Plan has also been completed.

XV. COST ESTIMATES

The following table lists the total expenditures to date for recreation development at Mansfield Hollow Lake, as well as estimated future costs for improvements as discussed in this Master Plan. The existing boat launching ramp and parking area were constructed by the State of Connecticut while the day use facilities at the State Park were provided by the Corps of Engineers.

XVI. CONCLUSIONS

Mansfield Hollow Lake, in addition to its primary purpose of providing flood protection, also offers significant recreational opportunities ranging from passive activities to organized sports. Most of the reservoir area has been left in its natural state with the major recreation development concentrated at the State Park. Nearly a quarter of a million people visit the project annually, and the proposed improvements to the recreational facilities are expected to further enhance public enjoyment. It is the intent of this Master Plan to protect the relatively undeveloped character of Mansfield Hollow Lake while still accommodating increasing public use.

MANSFIELD HOLLOW LAKE

Item	Unit	Unit Cost	Existing Qty.	Existing Cost	Future Qty.	Future Cost	Total Qty.	Total Cost
Rest Rooms (Pit)	EA	$ 1,100	2	$ 2,200			2	$ 2,200
(Waterborne)	EA	26,000	1	26,000			1	26,000
Picnic Tables	EA	200	64	12,800			64	12,800
Fireplaces	EA	100	42	4,200			42	4,200
Trash Barrels	EA	9	22	200			22	200
Water System	LS	2,800	1	2,800			1	2,800
Ball Field Facilities	LS	2,000	1	2,000			1	2,000
Misc. Improvements	LS	10,000	1	10,000			1	2,000
Boat Ramp	LS	10,000	1	NA	1	10,000	2	10,000
Trail Expansion	LS				1	5,000	1	5,000
Parking and Access Road Improvements	LS				1	10,000	1	10,000
SUBTOTALS				$60,200		$25,000		$85,000
E&D and S&A				$ 8,500		$ 5,000		$13,500
TOTAL COST				$68,700		$30,000		$98,700

XVII. RECOMMENDATIONS

The following improvements, as discussed in this Master Plan, are recommended to enhance the recreational potential at Mansfield Hollow Lake:

1. Construction of a new boat launching ramp and parking area on the east side of Bassett Bridge Road opposite the present boat ramp.

2. Improvement of the Nipmuck Trail through the project area.

3. Improvement of the access road and parking near the model airplane and boat area.

4. Expansion of the nature trail at Mansfield Hollow State Park.

5. Improvement and expansion of the bird watching and future multi-use trails north of Lake Naubesatuck.

These improvements could be provided with Federal assistance by cost sharing with the State of Connecticut at such time the State desires to enter into a cost-sharing contract with the Corps of Engineers.

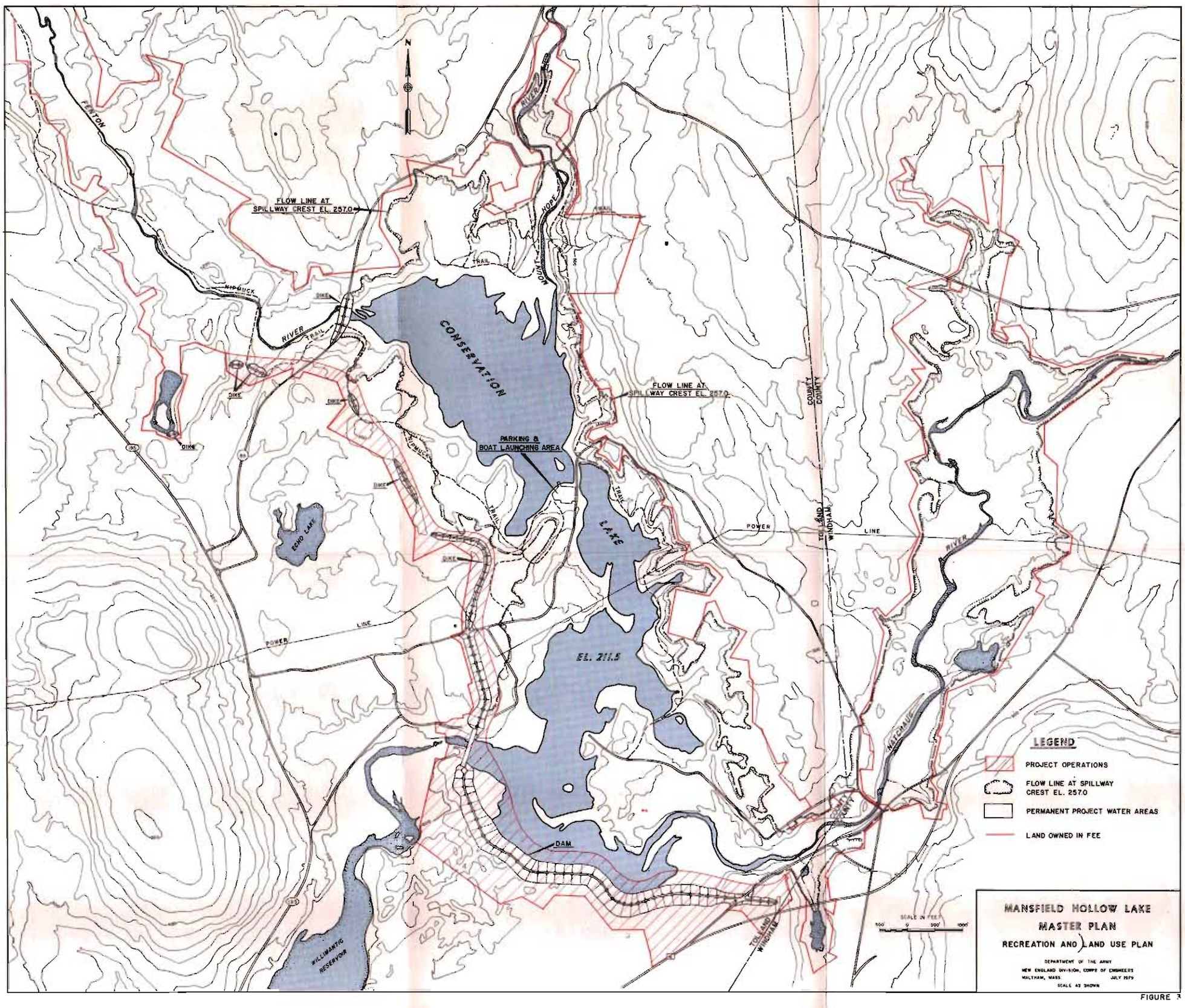

N
FENTON
RIVER
FLOW LINE AT
SPILLWAY CREST EL. 257.0
HOPE
TRAIL
NIPMUCK
TRAIL
DIKE
CONSERVATION
PARKING &
BOAT LAUNCHING AREA
FLOW LINE AT
SPILLWAY CREST EL. 257.0
COUNTY
COUNTY
TO LAND
WINDHAM
POWER
LINE
RIVER
ECHO LAKE
LAKE
EL. 211.5
POWER
LINE
DAM
WILLIMANTIC
RESERVOIR
WATCHAUG
TO LAND
WINDHAM
LEGEND
PROJECT OPERATIONS
FLOW LINE AT SPILLWAY
CREST EL. 257.0
PERMANENT PROJECT WATER AREAS
LAND OWNED IN FEE
SCALE IN FEET
500' 0 500' 1000'
MANSFIELD HOLLOW LAKE
MASTER PLAN
RECREATION AND LAND USE PLAN
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. JULY 1979
SCALE AS SHOWN

FIGURE 3

COMPARTMENT BREAKDOWN

Site	Acres	Type
9-A	22.4	HS
9-B	21.2	MH
9-C	4.7	OF
9-D	20.3	SH
9-E	10.5	MH
9-F	9.1	HS
9-G	11.9	OF
9-H	47.9	MH
9-I	2.0	HS
9-J	6.8	F
9-K	8.7	F
9-L	2.0	P
9-M	33.3	MH
9-N	4.1	OF
9-O	7.5	F
9-P	10.7	F
9-Q	6.1	F
9-R	15.8	HS
9-S	5.3	SH
Total	250.3	

10-A	5.1	HB
10-B	13.5	SH
10-C	9.7	HS
10-D	3.7	OF
10-E	49.3	MH
10-F	17.5	HS
10-G	10.3	SH
10-H	34.4	MH
10-I	4.3	SH
10-J	6.4	HS
10-K	22.4	MH
10-L	9.4	H
10-M	6.4	SH
10-N	3.7	OF
10-O	7.1	MH
Total	203.2	

OF	OLD FIELD
F	MAINTAINED FIELD
MH	MIXED HARDWOOD
SH	SOFTWOOD – HARDWOOD
P	PINE
BP	BORROW PIT
HS	HARDWOOD SWAMP
HB	HABITATION
H	HEMLOCK

TYPE MAP

NATCHAUG RIVER SECT.

MANSFIELD HOLLOW LAKE

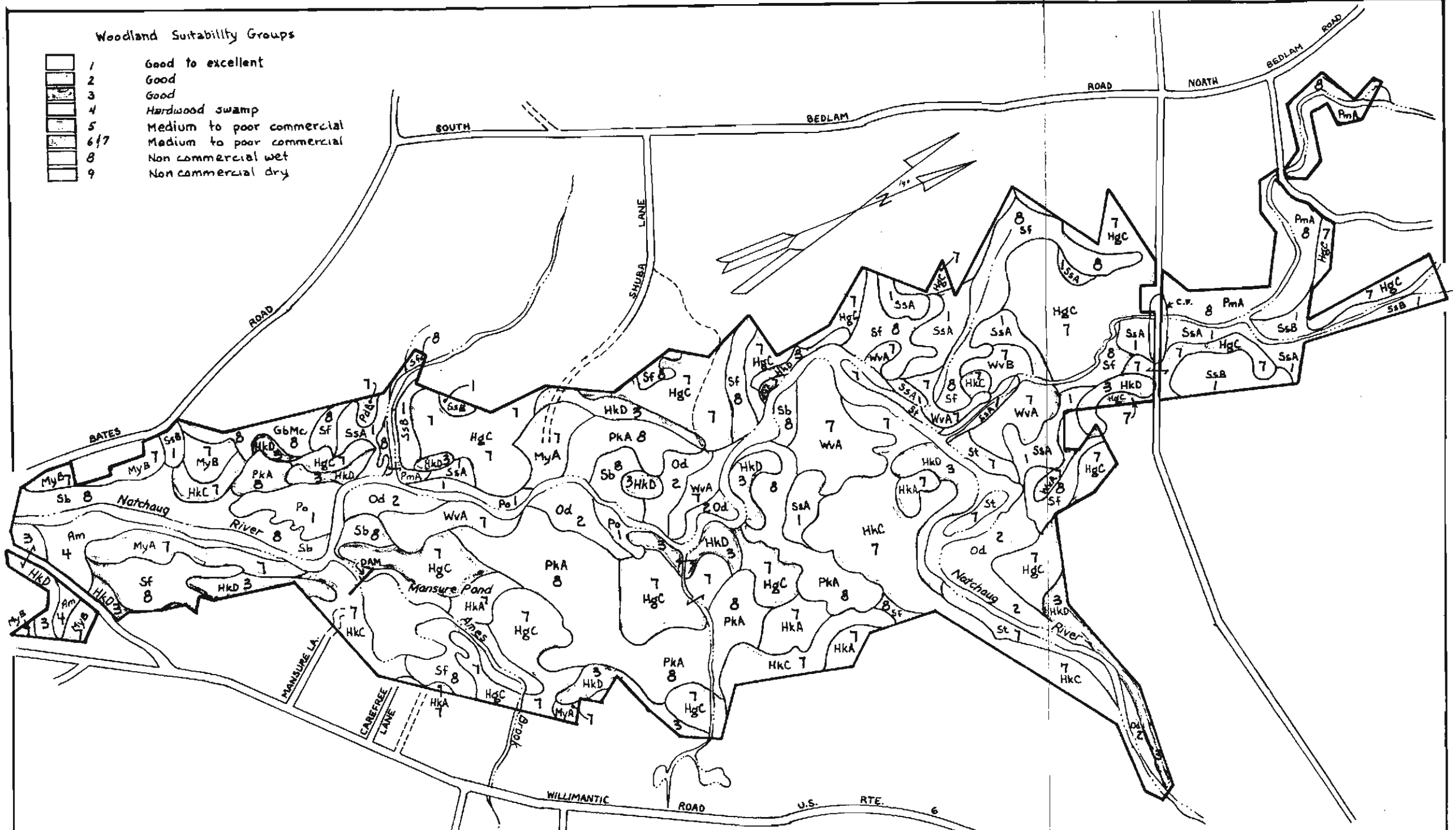
CONNECTICUT

R. HANACEK FEB 1977

1:6000

SCALE 1" ≅ 500'

A



Symbol	Soils Type	Woodland Suitability
Am	Alluvial land	4
GbMc	Gloucester very stony, sandy loam, 8 to 15% slopes	8
HgC	Hinckley - Windsor Complex, 3 to 15 % slopes	7
HgD	Hinckley - Windsor Complex, 15 to 35 % slopes	3
HkA	Hinckley gravelly sandy loam, 0 to 3% slopes	7
HkC	Hinckley gravelly sandy loam, 3 to 15 % slopes	7
HkD	Hinckley gravelly sandy loam, 15 to 35% slopes	3
MyA	Merrimac sandy loam, 0 to 3 % slopes	7
MyB	Merrimac sandy loam, 3 to 8% slopes	7
Od	Ondawa fine sandy loam	2
PdB	Paxton very stony fine sandy loam, 8 to 15 % slopes	7
PkA	Carlise muck	8
PmA	Adrian and Palms mucks	8
Po	Podunk fine sandy loam	1
Sb	Saco silt loam	8
Sf	Scarboro fine sandy loam	8
SsA	Sudbury sandy loam, 0 to 3% slopes	1
SsB	Sudbury sandy loam, 3 to 8% slopes	1
St	Suncook loamy fine sand	7
WvA	Windsor loamy sand, 0 to 3% slopes	7
WvB	Windsor loamy sand, 3 to 8% slopes	7

SOILS OVERLAY

NATCHAUG RIVER SECT.

MANSFIELD HOLLOW LAKE

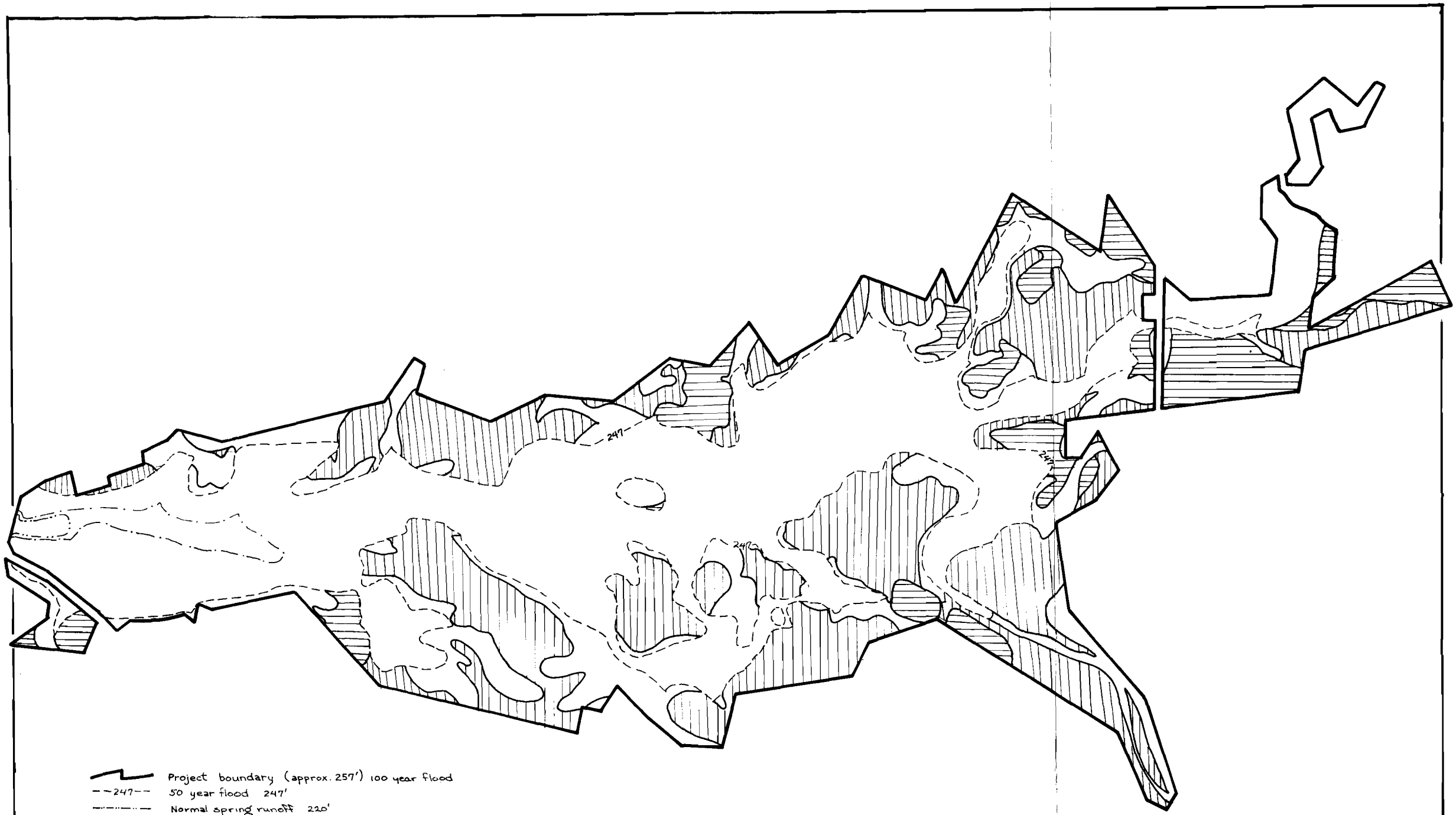
CONNECTICUT

R. HANACEK Feb. 1979

1:4000

SCALE 1" = 500'

B



Project boundary (approx. 257') 100 year flood

--247-- 50 year flood 247'

Normal spring runoff 220'

High spring runoff 225' once every 3 years

FORESTED AREAS ABOVE 247' WITH COMMERCIAL POTENTIAL
(SLOPES LESS THAN 15%, WSG 1,2,3,4,5,7)

OPEN AREAS ABOVE 247' CAPABLE OF GROWING A COMMERCIALLY HARVESTABLE STAND
(SLOPES LESS THAN 15%, WSG 1,2,3,4,5,7)

HIGH WATER LEVELS

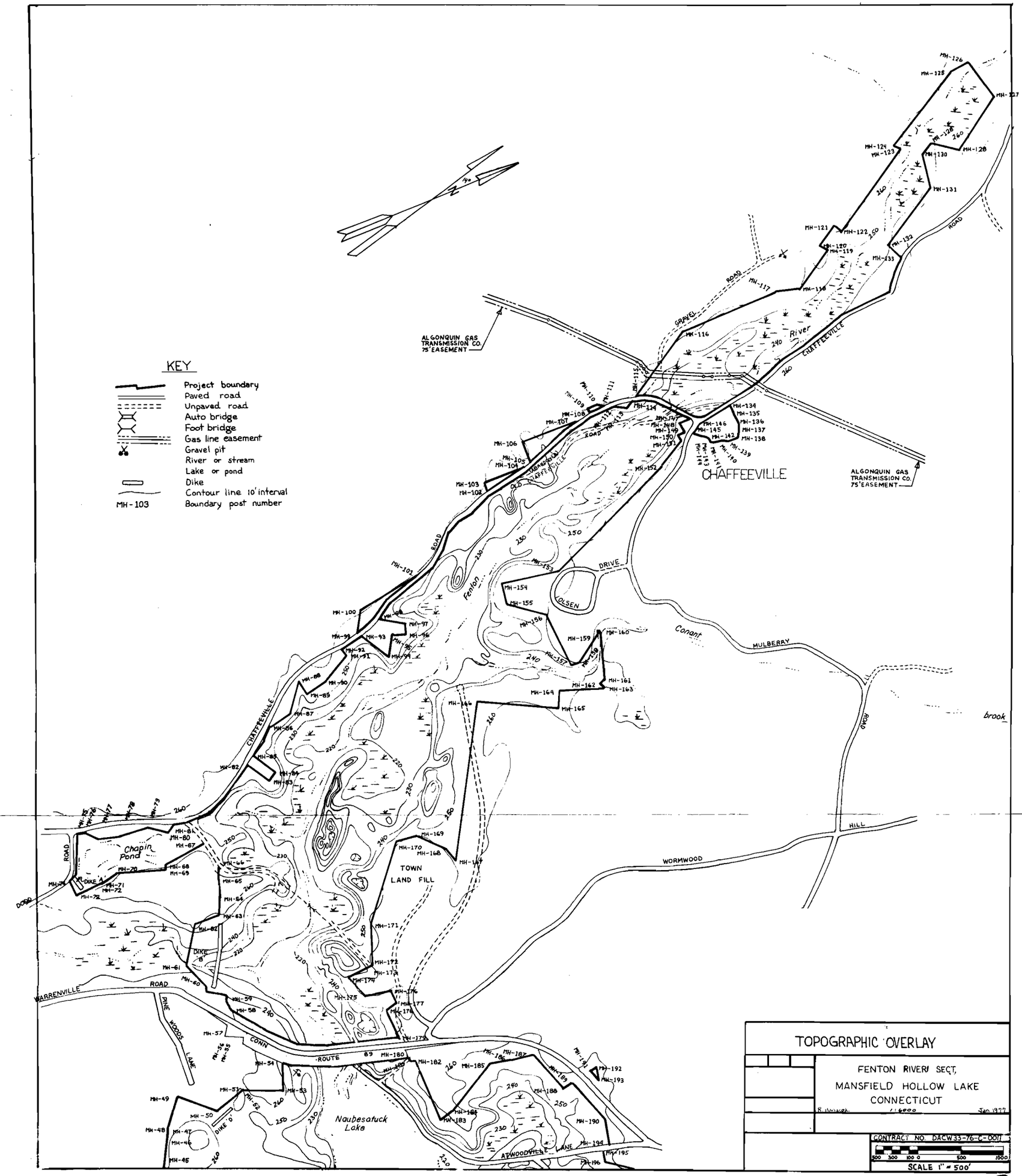
NATCHAUG RIVER SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

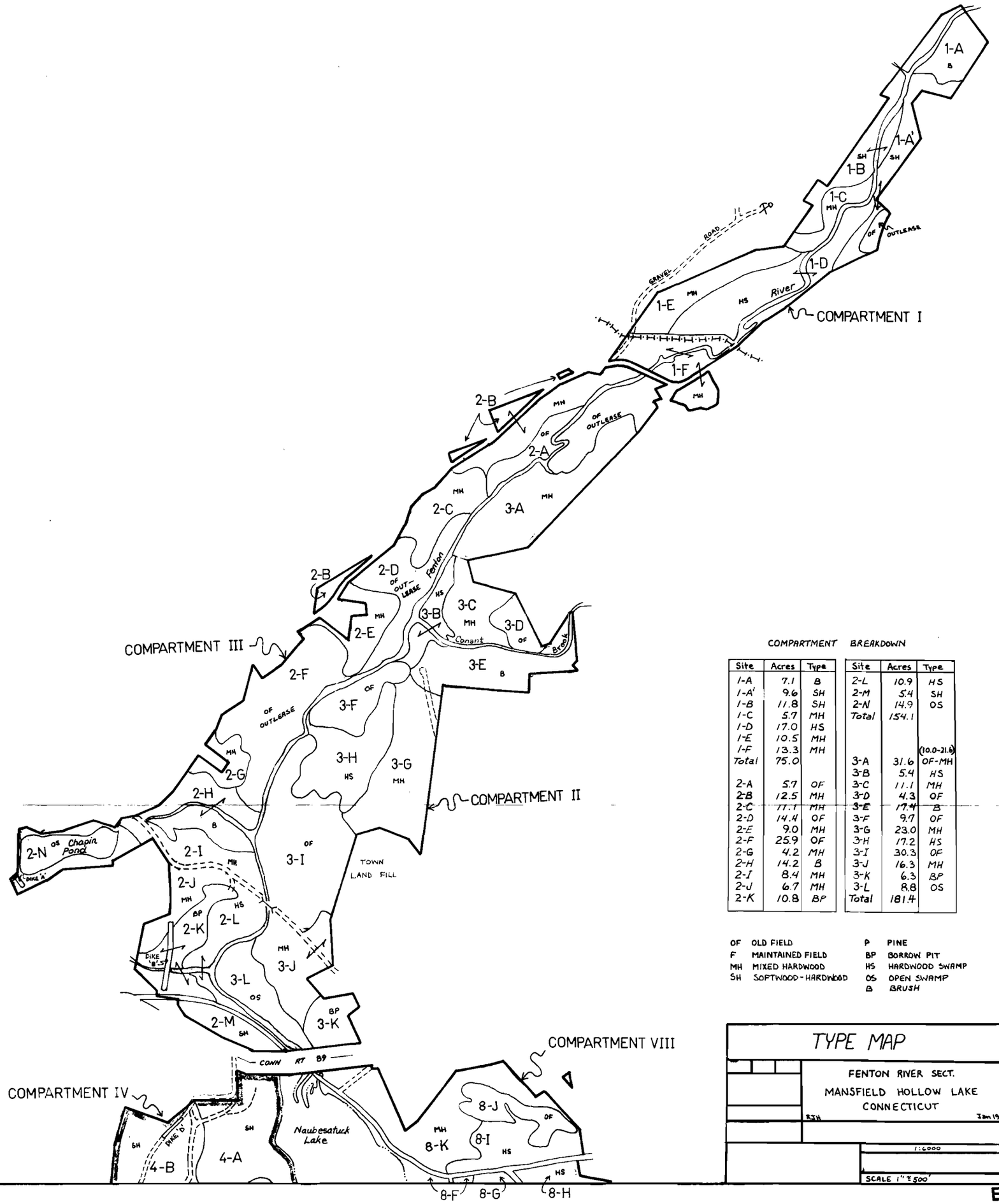
R. HANACEK MAR '77

1 : 6000

SCALE 1" = 500'

C


KEY
Project boundary
Paved road
Unpaved road
Auto bridge
Foot bridge
Gas line easement
Gravel pit
River or stream
Lake or pond
Dike
Contour line 10' interval
MH-103 Boundary post number
ALGONQUIN GAS TRANSMISSION CO. 75' EASEMENT
CHAFFEEVILLE
ROAD
GRAVEL ROAD
River
Fenton
Conant brook
DRIVE
OLSEN
MULBERRY HILL
WORMWOOD
Chapin Pond
DIKE A
DIKE B
DIKE C
DIKE D
TOWN LAND FILL
Naubesatuck Lake
WARRENVILLE ROAD
PINE WOODS LANE
CONN ROUTE 89
ATWOODVILLE LANE
TOPOGRAPHIC OVERLAY
FENTON RIVER SECT,
MANSFIELD HOLLOW LAKE
CONNECTICUT
Jan 1977
CONTRACT NO. DACW33-76-C-0011
SCALE 1" = 500'
D



COMPARTMENT BREAKDOWN

Site	Acres	Type
1-A	7.1	B
1-A'	9.6	SH
1-B	11.8	SH
1-C	5.7	MH
1-D	17.0	HS
1-E	10.5	MH
1-F	13.3	MH
Total	75.0	
2-A	5.7	OF
2-B	12.5	MH
2-C	11.1	MH
2-D	14.4	OF
2-E	9.0	MH
2-F	25.9	OF
2-G	4.2	MH
2-H	14.2	B
2-I	8.4	MH
2-J	6.7	MH
2-K	10.8	BP

Site	Acres	Type
2-L	10.9	HS
2-M	5.4	SH
2-N	14.9	OS
Total	154.1	
		(10.0-21.6)
3-A	31.6	OF-MH
3-B	5.4	HS
3-C	11.1	MH
3-D	4.3	OF
3-E	17.4	B
3-F	9.7	OF
3-G	23.0	MH
3-H	17.2	HS
3-I	30.3	OF
3-J	16.3	MH
3-K	6.3	BP
3-L	8.8	OS
Total	181.4	

OF	OLD FIELD	P	PINE
F	MAINTAINED FIELD	BP	BORROW PIT
MH	MIXED HARDWOOD	HS	HARDWOOD SWAMP
SH	SOFTWOOD - HARDWOOD	OS	OPEN SWAMP
		B	BRUSH

TYPE MAP

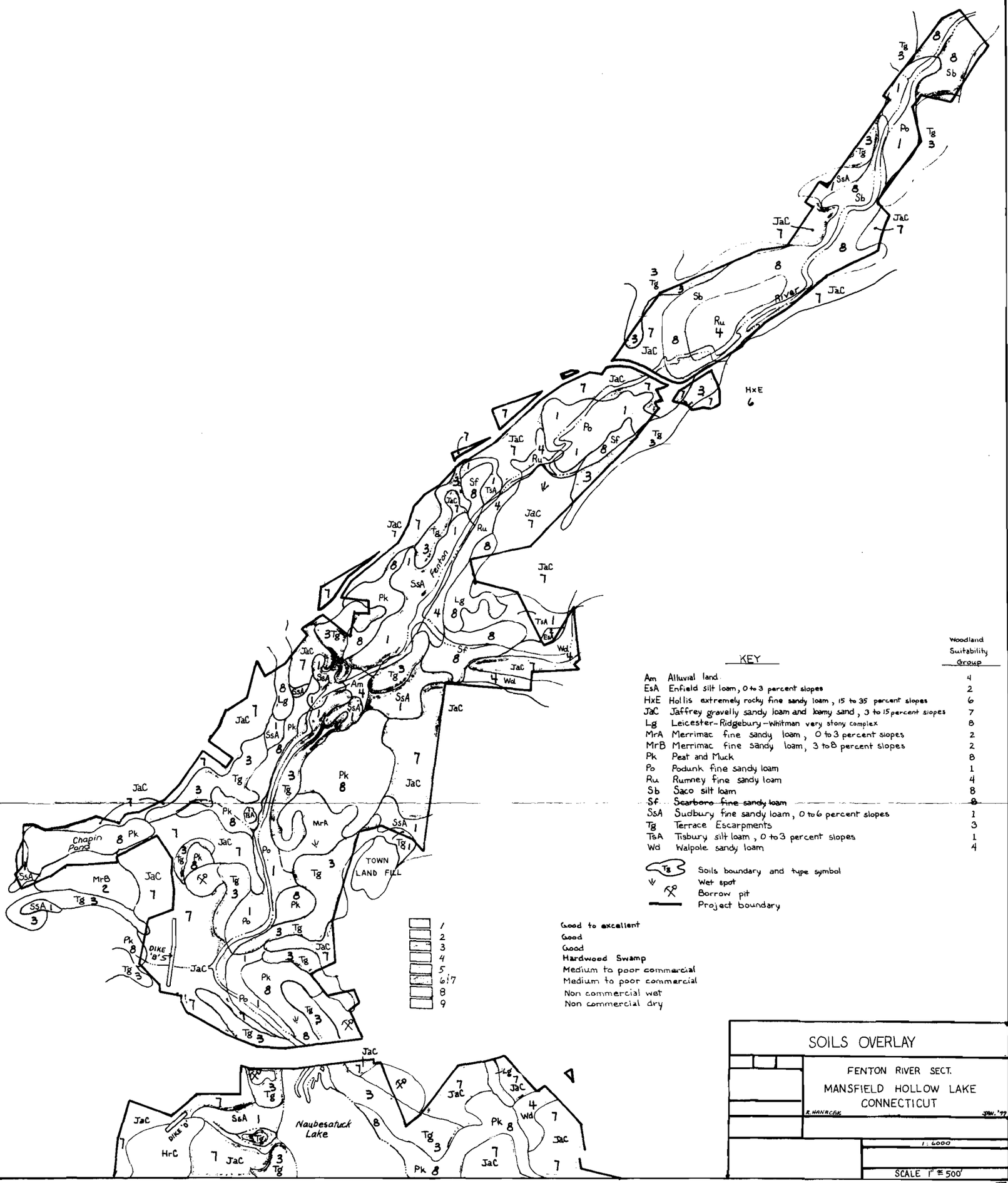
FENTON RIVER SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

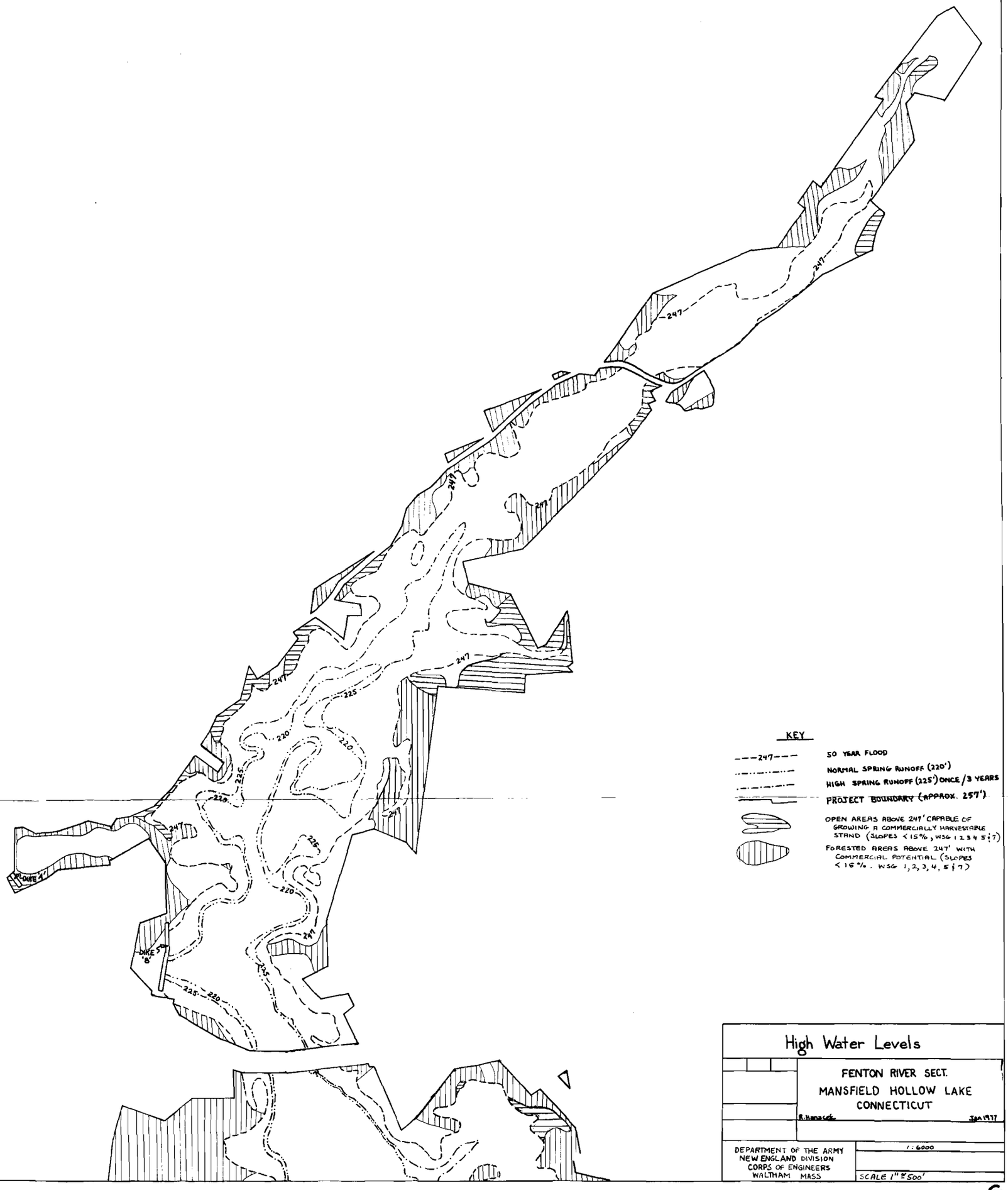
RJH Jan 1977

1:6000

SCALE 1" = 500'

E


Fenton River
Chapin Pond
Naubesatuck Lake
TOWN LAND FILL
DIKE 'B'
DIKE 'D'
KEY
Woodland Suitability Group
Am Alluvial land 4
EsA Enfield silt loam, 0 to 3 percent slopes 2
HxE Hollis extremely rocky fine sandy loam, 15 to 35 percent slopes 6
JaC Jaffrey gravelly sandy loam and loamy sand, 3 to 15 percent slopes 7
Lg Leicester-Ridgebury-Whitman very stony complex 8
MrA Merrimac fine sandy loam, 0 to 3 percent slopes 2
MrB Merrimac fine sandy loam, 3 to 8 percent slopes 2
Pk Peat and Muck 8
Po Podunk fine sandy loam 1
Ru Rumney fine sandy loam 4
Sb Saco silt loam 8
Sf Scarboro fine sandy loam 8
SsA Sudbury fine sandy loam, 0 to 6 percent slopes 1
Tg Terrace Escarpments 3
TsA Tisbury silt loam, 0 to 3 percent slopes 1
Wd Walpole sandy loam 4
Soils boundary and type symbol
Wet spot
Borrow pit
Project boundary
1 Good to excellent
2 Good
3 Good
4 Hardwood Swamp
5 Medium to poor commercial
6 7 Medium to poor commercial
8 Non commercial wet
9 Non commercial dry
SOILS OVERLAY
FENTON RIVER SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT
R. HANNOCK JAN. '77
1:6000
SCALE 1" = 500'
F



High Water Levels

FENTON RIVER SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

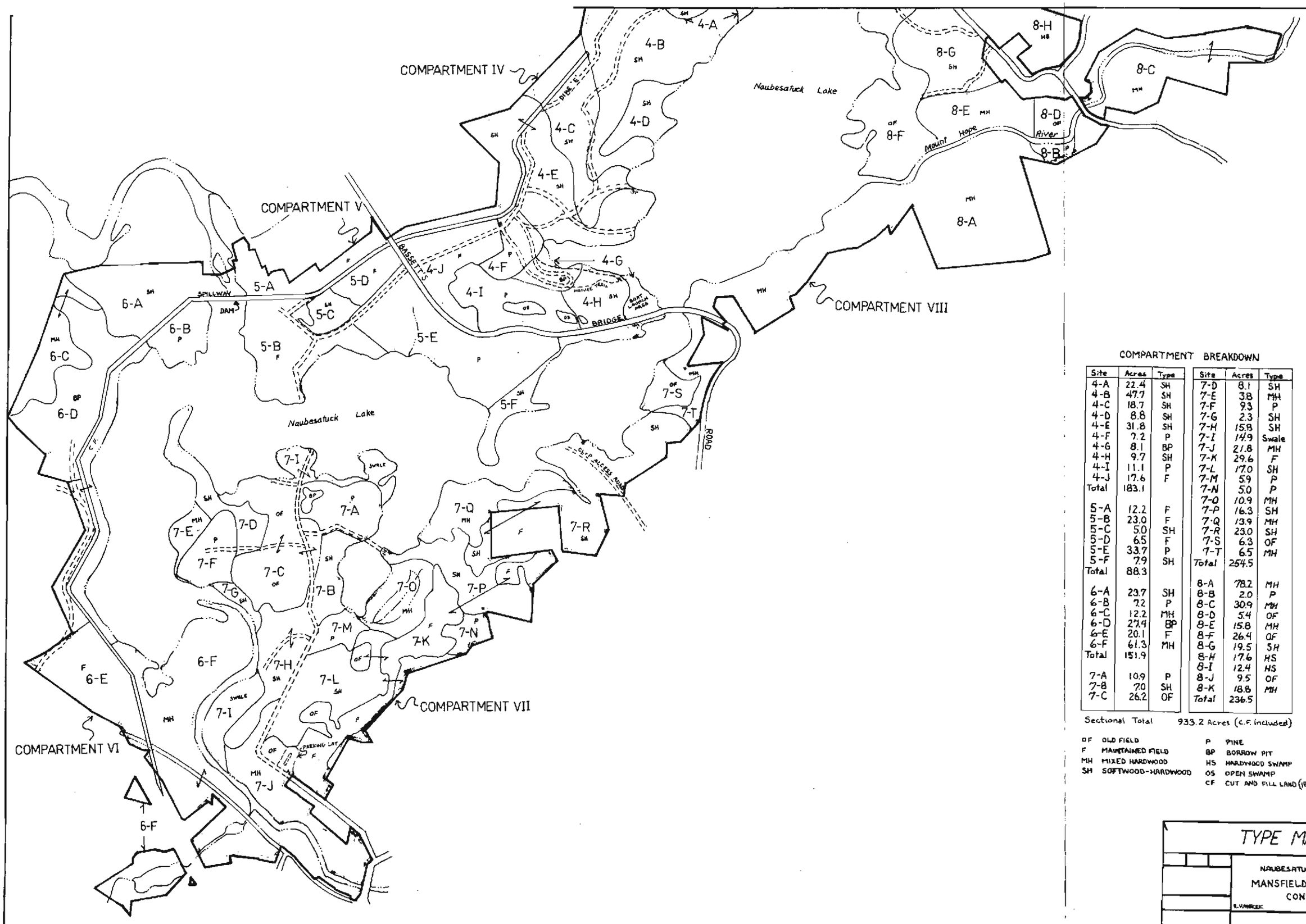
R. Hancock Jan 1977

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM MASS

1:6000

SCALE 1" = 500'

G



COMPARTMENT BREAKDOWN

Site	Acres	Type
4-A	22.4	SH
4-B	47.7	SH
4-C	18.7	SH
4-D	8.8	SH
4-E	31.8	SH
4-F	7.2	P
4-G	8.1	BP
4-H	9.7	SH
4-I	11.1	P
4-J	17.6	F
Total	183.1	
5-A	12.2	F
5-B	23.0	F
5-C	5.0	SH
5-D	6.5	F
5-E	33.7	P
5-F	7.9	SH
Total	88.3	
6-A	23.7	SH
6-B	7.2	P
6-C	12.2	MH
6-D	27.9	BP
6-E	20.1	F
6-F	61.3	MH
Total	151.9	
7-A	10.9	P
7-B	7.0	SH
7-C	26.2	OF

Site	Acres	Type
7-D	8.1	SH
7-E	3.8	MH
7-F	9.3	P
7-G	2.3	SH
7-H	15.8	SH
7-I	14.9	Swale
7-J	21.8	MH
7-K	29.6	F
7-L	17.0	SH
7-M	5.9	P
7-N	5.0	P
7-O	10.9	MH
7-P	16.3	SH
7-Q	13.9	MH
7-R	23.0	SH
7-S	6.3	OF
7-T	6.5	MH
Total	254.5	
8-A	78.2	MH
8-B	2.0	P
8-C	30.9	MH
8-D	5.4	OF
8-E	15.8	MH
8-F	26.4	OF
8-G	19.5	SH
8-H	17.6	HS
8-I	12.4	HS
8-J	9.5	OF
8-K	18.8	MH
Total	236.5	

Sectional Total 933.2 Acres (C.F. included)

OF OLD FIELD
F MAINTAINED FIELD
MH MIXED HARDWOOD
SH SOFTWOOD-HARDWOOD
P PINE
BP BORROW PIT
HS HARDWOOD SWAMP
OS OPEN SWAMP
CF CUT AND FILL LAND (18.9 acres)

TYPE MAP

NAUBESATUCK LAKE SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

R. VANREEK JAN. 1977

1:6000

SCALE 1" = 500'

H

KEY

- Project boundary (APPROX. 257')
- 247 — 50 Year Flood.
- Normal spring runoff (220')
- High spring runoff (225') ONCE/3 Years

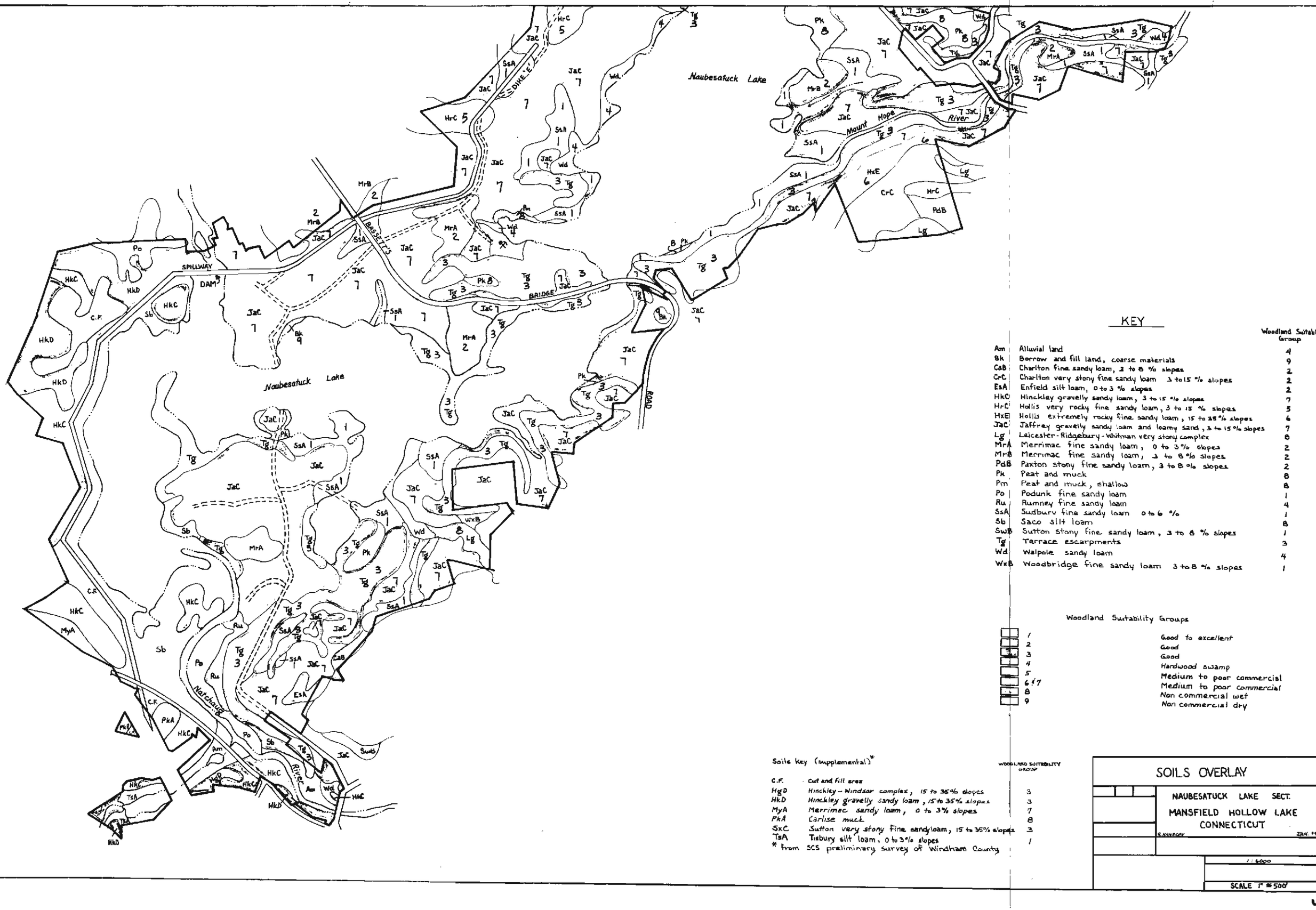
High Water Levels

NAUBESATUCK LAKE SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

R.J.H. JAN 1977

1 : 6000

SCALE 1" To 500'



KEY

		Woodland Suitability Group
Am	Alluvial land	4
Bk	Borrow and fill land, coarse materials	9
CaB	Charlton fine sandy loam, 3 to 8 % slopes	2
CrC	Charlton very stony fine sandy loam 3 to 15 % slopes	2
EsA	Enfield silt loam, 0 to 3 % slopes	2
HkC	Hinckley gravelly sandy loam, 3 to 15 % slopes	7
HrC	Hollis very rocky fine sandy loam, 3 to 15 % slopes	5
HxE	Hollis extremely rocky fine sandy loam, 15 to 25 % slopes	6
JaC	Jaffrey gravelly sandy loam and loamy sand, 3 to 15 % slopes	7
Lg	Leicester-Ridgebury-Whitman very stony complex	8
MrA	Merrimac fine sandy loam, 0 to 3 % slopes	2
MrB	Merrimac fine sandy loam, 3 to 8 % slopes	2
PdB	Paxton stony fine sandy loam, 3 to 8 % slopes	2
Pk	Peat and muck	8
Pm	Peat and muck, shallow	8
Po	Podunk fine sandy loam	1
Ru	Rumney fine sandy loam	4
SsA	Sudbury fine sandy loam 0 to 6 %	1
Sb	Saco silt loam	8
SwB	Sutton stony fine sandy loam, 3 to 8 % slopes	1
Tg	Terrace escarpments	3
Wd	Walpole sandy loam	4
WxB	Woodbridge fine sandy loam 3 to 8 % slopes	1

Woodland Suitability Groups

1	Good to excellent
2	Good
3	Good
4	Hardwood swamp
5	Medium to poor commercial
6 & 7	Medium to poor commercial
8	Non commercial wet
9	Non commercial dry

Soils key (supplemental)*

		WOODLAND SUITABILITY GROUP
C.F.	Cut and fill area	
HgD	Hinckley – Windsor complex, 15 to 35% slopes	3
HkD	Hinckley gravelly sandy loam, 15 to 35% slopes	3
MyA	Merrimac sandy loam, 0 to 3% slopes	1
PkA	Carlisle muck	8
SkC	Sutton very stony fine sandyloam, 15 to 35% slopes	3
TsA	Tisbury silt loam, 0 to 3% slopes	1

* from SCS preliminary survey of Windham County

SOILS OVERLAY

NAUBESATUCK LAKE SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT

B. HANCOCK JAN. '69

1 : 6000

SCALE 1" = 500'

J

MANSFIELD HOLLOW

ATWOODVILLE

BEDLAM CORNER

NORTH WINDHAM

SHERMAN CORNER

WINDHAM AIRPORT

Naubesatuck Lake

Mount Hope River

Natchaug River

Stonehouse Brook

Mansure Pond

Pond

DAM

SPILLWAY

STORRS ROAD

CONN. RTE. 195

MANSFIELD HOLLOW ROAD

BASSETTS ROAD

ATWOODVILLE ROAD

BEDLAM ROAD

PALMER ROAD

WINDHAM CENTER ROAD

BATES ROAD

DEPOT ROAD

BURNHAM LANE

WILLIMANTIC ROAD U.S. RTE. 6

CONN. RTE. 203

U.S. ROUTE 6

THE CONN. LIGHT & POWER CO. R.O.W.

KEY

- Project boundary
- Paved road
- Unpaved road
- Bridge or causeway
- Dike
- Power line
- River or Stream
- Reservoir or pond
- Swamp
- MH-375 Boundary post number
- Contour lines 10' interval
- Borrow pit
- Picnic area

TOPOGRAPHIC OVERLAY

NAUBESATUCK LAKE SECT.
MANSFIELD HOLLOW LAKE
CONNECTICUT
NATCHAUG R. INCLUDED
JAN. 1977

CONTRACT NO. DACW33-76-C-0011

Scale 1" = 500' 1:6000

K