



US Army Corps  
of Engineers  
New England Division

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# **CHARLES RIVER NATURAL VALLEY STORAGE PROJECT**

**MASSACHUSETTS**

## **MASTER PLAN FOR RECREATION RESOURCES DEVELOPMENT**

**DESIGN MEMORANDUM NO. 4**

CHARLES RIVER  
NATURAL VALLEY STORAGE  
PROJECT

MASTER PLAN  
FOR  
RECREATION RESOURCES  
DEVELOPMENT

DESIGN MEMORANDUM NO. 4

NEW ENGLAND DIVISION  
U.S. ARMY CORPS OF ENGINEERS  
WALTHAM, MASSACHUSETTS

JUNE 1984

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## PREFACE

The lands and waters of the Charles River Natural Valley Storage Project offer an important addition to public recreation in eastern Massachusetts. The project provides needed open space for passive recreation activities such as hiking, canoeing, fishing, and cross-country skiing in a region of rapid suburban growth.

Recreation planning has been coordinated with State and local governmental agencies as well as interested private groups and individuals. Recreation development outlined in this Master Plan has been based on careful analysis of regional recreation needs balanced against recreation impact and land use suitability. Preservation and improvement of wildlife and fisheries habitat are equally important goals in the development plans outlined in this Master Plan.



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CARL B. SCIPLE  
Colonel, Corps of Engineers  
Division Engineer



## SUMMARY OF THE MASTER PLAN

The Charles River Natural Valley Storage Project is located in eastern Massachusetts within the Charles River Watershed. The watershed extends from Boston harbor southwesterly to near the Rhode Island border. The project consists of seventeen separate areas totalling 8,103 acres in two cities and fourteen towns in the middle and upper watershed.

The authorized purpose of the project is flood control. The wetlands of the middle and upper watershed act as natural flood storage areas, detaining runoff and moderating flood levels in the lower watershed. Through Federal protection of critical wetlands, the preservation of this natural system of flood control is assured. Recreation opportunities and fish and wildlife conservation are additional benefits.

This master plan describes in detail how the project resources will be conserved, enhanced, developed, managed and used in the public interest.

The principal conclusion of the master plan is that the primary project purpose of flood control through wetland protection necessitates public use which will have a minimal impact on the land. Local communities have also expressed a general desire to minimize active recreation. The project area instead will provide valuable open space for passive recreation activities such as hiking, nature observation, cross-country skiing and canoeing. The project area also provides important natural habitat for fish and wildlife and will be managed to enhance these resources.

Recreation development is to be limited to layout and marking of trails, designation of canoe launching sites, provisions for limited parking in bordering upland areas, and installation of project signs for identification and public use regulation.

An active fish and wildlife management program is recommended to preserve and enhance these resources. Management by a non-Federal agency is to be encouraged. Part of the project area has been leased to the Massachusetts Division of Fisheries and Wildlife for management. Lease of most of the project fee owned lands to the state is anticipated. Other tracts may be leased to other State agencies or to local town Conservation Commissions.

The results of master plan implementation will be carefully monitored to determine both beneficial and adverse impacts. Future revisions and updates of the master plan will be made as necessary. The overall goal of resource management is to provide optimum public use of lands, waters, and recreation resources, while limiting adverse impacts.

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## I. INTRODUCTION

### A. Project Authorization

The initial study of the Charles River Watershed (Figure 1) was authorized by a resolution of the House Committee on Public Works adopted June 24, 1965. This resolution requested that the Board of Engineers for Rivers and Harbors determine the advisability of providing "improvements in the interest of flood control, water supply, recreation, water quality control, navigation, tidal flood control, allied purposes and related land resources."

As a result of this study, the New England Division, in 1972, completed the Water Resources Development Plan for the Charles River Watershed. This report recommended the implementation of a plan to acquire certain critical wetland areas in the Charles River Watershed for natural storage of flood waters, a plan termed the Charles River Natural Valley Storage Project.

This plan or project was subsequently authorized by the passage of Public Law 93-251, the Water Resources Development Act of 1974.

The approved project authorized the Federal acquisition of approximately 8100 acres of wetland and floodplain as areas of natural valley storage to provide flood protection to communities in the lower watershed. In combination with Federal acquisition, the Commonwealth of Massachusetts has provided assurances that local interests will:

- Prevent modification or alteration of existing bridges, culverts, roadways, utilities, and any other improvements which may affect the drainage characteristics of the natural valley storage areas.
- Adopt and enforce regulations to restrict development of flood plains.
- Operate and maintain the existing dams along the Charles River.

### B. Prior Pertinent Reports

The following New England Division reports provide prior data and information on the Charles River Watershed:

- Interim Report on Charles River for Flood Control and Navigation, Lower Charles River, Massachusetts. May 1968 (House Document No. 370, 90th Congress)
- Charles River Study Report, The water resources development plan for the Charles River Watershed, April 1972.

- Design Memorandum No. 1. Hydraulic Analysis, Charles River Watershed Natural Valley Storage Project, October 1976.
- Design Memorandum No. 2. General Design Memorandum - Phase I and Phase II Combined, Charles River Watershed Natural Valley Storage Project, July 1976.
- Design Memorandum No. 3. Real Estate, Charles River Watershed Natural Valley Storage Areas Project, (Priority 1), October 1976, Massachusetts.
- Design Memorandum No. 3A, Real Estate, (Priority 2), May 1978
- Design Memorandum No. 3B, Real Estate, (Priority 3), July 1978
- Design Memorandum No. 3C, Real Estate, (Priority 4), June 1979

In addition, the following reports by other agencies or organizations provide a framework for recreation and fish and wildlife resource planning in the project area:

- Open Space and Recreation Program for Metropolitan Boston, Volume 3, The Mystic, Charles and Neponset Rivers, prepared cooperatively by the Metropolitan Area Planning Council, the Metropolitan District Commission, and the Massachusetts Department of Natural Resources, April 1969.
- Outdoor Recreation and Environmental Conservation in the Charles River Watershed, Massachusetts Department of Natural Resources, May 1971.
- Massachusetts Outdoor Recreation Plan, Massachusetts Department of Natural Resources, January 1973.
- Massachusetts Outdoors, Statewide Comprehensive Outdoor Recreation Plan, Massachusetts Department of Environmental Management, September 1978.
- Charles River Corridor Plan, Thomas M. Paine, ASLA, Charles River Watershed Association, June 1981.

#### C. Project Purpose

Flood problems in the Charles River Watershed are presently minimized by the existence of numerous wetlands which provide significant natural stormwater storage. The natural storage capability of these wetlands is aided by incidental manmade structures such as culverts and bridge openings which restrict runoff. The topographic and land use characteristics



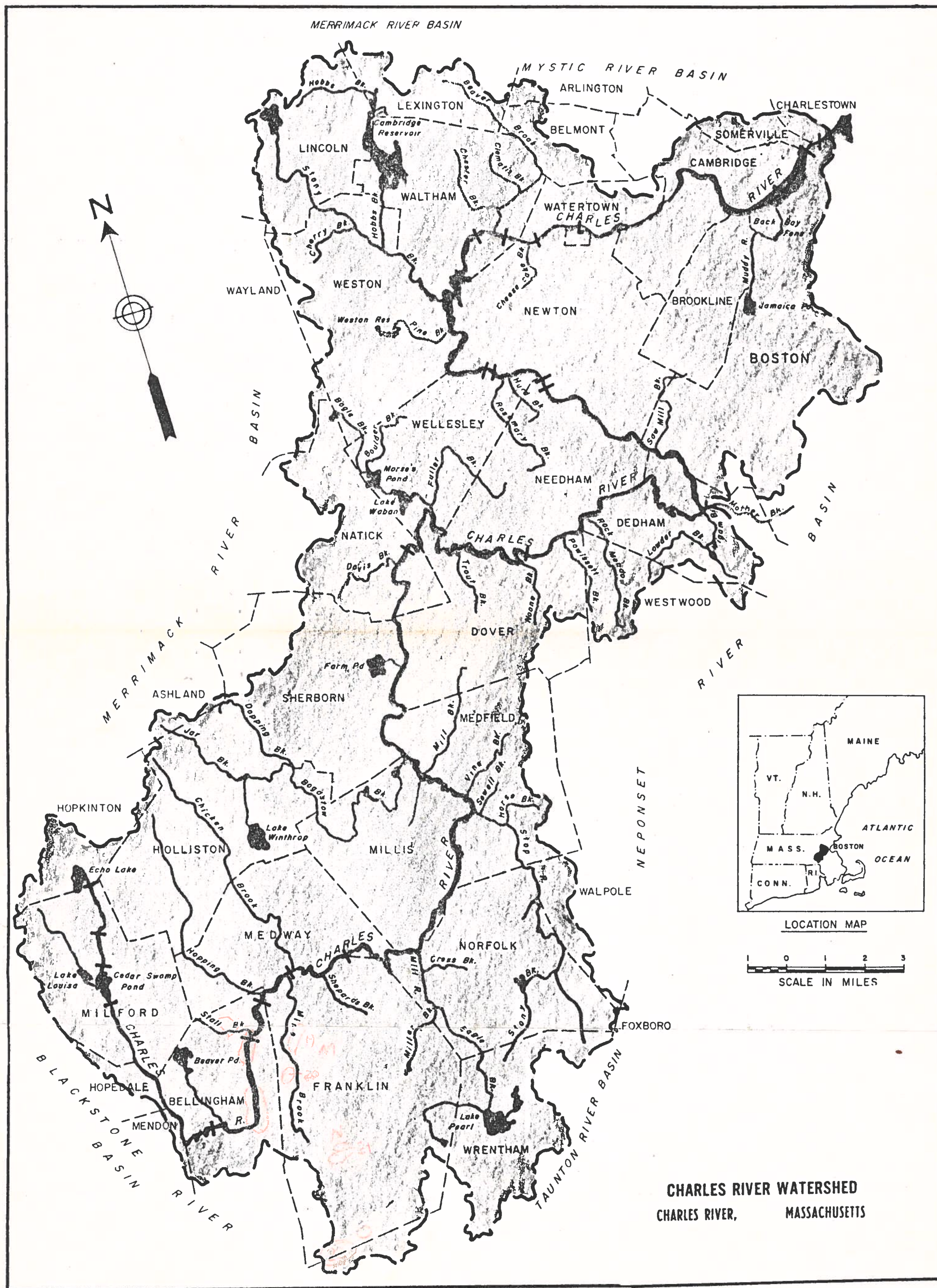


Figure 1



of the upper watershed offer an excellent opportunity to achieve significant flood damage prevention by the non-structural alternative of preserving key wetlands in their present natural condition.

The Charles River Natural Valley Storage (NVS) Project is one part of a comprehensive watershed plan for flood management. This plan also includes a new multi-purpose dam at the mouth of the Charles River in Boston. The new Charles River Dam was authorized for construction in 1968, completed in 1978, and is now maintained and operated by the Metropolitan District Commission. This new dam and three navigation locks replace an older dam and one navigation lock constructed in 1910, 2,250 feet upstream of the new facility. The old dam was constructed by the Commonwealth of Massachusetts to control the water level in the lower Charles River, impounding 8.6 miles of the river and creating a pool between the cities of Boston and Cambridge known as the Charles River Basin. (The term "Charles River Basin" is locally used in reference to this lower portion of the river, while the "Charles River Watershed" refers to the entire drainage area of the river and its tributaries).

The new Charles River Dam improves flood control and navigation in the Charles River Basin through use of three navigation locks and a pumping station. At times of high tide in Boston harbor and flood discharges into the lower basin, the pumping station is capable of maintaining the pool level of the Charles River Basin below flood stages.

The Metropolitan District Commission (MDC) also maintains the Mother Brook Diversion in Dedham. This diversion was originally constructed in 1640 to augment flow of the nearby Neponset River for mills on that river. One third of the flow of the Charles River is diverted at this point. The MDC has also provided improvements to Silk Mill Dam in Newton Upper Falls and channel improvements along two miles of the river from the Silk Mill Dam upstream to the Kendrick Street Bridge.

#### D. Purpose and Scope of Master Plan

This master plan for recreation resources development has been prepared in accordance with the objectives and policies governing planning, development and management of outdoor recreation resources at Corps of Engineers water resources projects as outlined in ER 1165-2-400, "Recreational Planning, Development, and Management Policies" and ER 1165-2-500 "Environmental Guidelines for the Civil Works Program of the Corps of Engineers". ER 1165-2-500 establishes the following four environmental objectives.

- To preserve unique and important ecological, aesthetic, and cultural values of our national heritage.
- To conserve and use wisely the natural resources of our Nation for the benefit of present and future generations.

- To enhance, maintain, and restore the natural and man-made environment in terms of its productivity, variety, spaciousness, beauty, and other measures of quality.
- To create new opportunities for the American people to use and enjoy their environment.

ER 1165-2-400 outlines broad recreation development planning objectives which became the framework for preparation of this master plan. These objectives are to:

- Optimize public use of project resources and reconcile accommodation of the large public demand with reasonable user density for preservation of the recreation resources, potential, and experience over the life of the project.
- Support the quest for diverse recreation opportunities and preferences outlined in the Statewide Comprehensive Outdoor Recreation Plan.
- Ensure that project resources are treated as an integrated whole with continuing concern for environmental quality.
- Coordinate fully with and assist in the fulfillment of comprehensive State, regional and urban recreation plans.

This master plan has as its specific purpose the inventory and analysis of project recreation resources and the comparison with other recreation opportunities available in the region in order to establish a general plan for natural resource management and recreation facilities development. This plan takes into consideration the diverse factors of suitable recreation activities, preservation of project wetland flood storage capability, fish and wildlife management objectives and the level of recreation development desired by the local citizenry. The information presented in this plan is to be a guide for future project development and management decisions to insure maintenance of project purposes while optimizing public benefits from project resources.

#### E. Applicable Public Laws

The following public laws outline the authority to operate and maintain the Charles River Natural Valley Storage Project for the multiple-use functions of flood control, recreation and natural resource management.

- The Flood Control Act of 1944, Public Law 78-534, as amended, authorizes the Secretary of the Army to construct, operate and maintain public park and recreation 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 purposes of the project.

- The Fish and Wildlife Coordination Act of 1958, Public Law 85-624, directs Federal agencies to coordinate the use of impounded water bodies with the U.S. Fish and Wildlife Service. The Act directs State wildlife resource agencies to determine the extent of any impacts upon wildlife resources. Governmental bodies are also charged with promoting the development and improvement of such resources by the preparation of wildlife resource plans and reports, by assisting in the development, protection, rearing and stocking of all species of wildlife, by assisting in controlling losses from disease and minimizing damages from overabundance, and by providing public hunting and fishing areas, including easements over public lands thereto.
- Under Public Law 89-72, Section 4, where a project has been completed as of 9 July 1965 and non-Federal bodies agree to administer project land and water areas for recreation and 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. Under this provision, it is proposed that the Commonwealth of Massachusetts Department of Fisheries, Wildlife and Recreational Vehicles be licensed to manage most of the project lands for fish and wildlife habitat improvement purposes.

## II REGIONAL ANALYSIS

### A. Regional Setting

The Charles River Watershed is located entirely within the boundaries of the Commonwealth of Massachusetts. The Commonwealth is the northern end of the Atlantic megalopolis, a concentration of population and urban development stretching from Washington, DC north to Boston. Massachusetts is the fourth most densely populated state in the nation, with an average of over 700 persons per square mile. The population in 1980 totaled 5,737,037, only 0.8% over that in 1970 (Table 1).

Table 1

#### Massachusetts Population

<u>Year</u>	<u>Population</u>	<u>% Change</u>
1950	4,690,514	
1960	5,149,000	+ 9.7
1970	5,689,170	+10.5
1980	5,737,037	+ 0.8

A distinct slowdown in growth in the last decade is due in part to the general migration to the south and west being experienced by many States in the industrial northeast beset by high unemployment, less favorable climate and higher living costs.

The majority of the population of Massachusetts is concentrated in the eastern one-third of the State, in the metropolitan area of the capitol city of Boston. The Boston Standard Metropolitan Statistical Area (SMSA) is the largest employment and population center in New England, with a 1980 population of 2,763,357. The population is most densely concentrated in the urban core cities of Boston, Cambridge and Somerville (Figure 2).

This urban center encompasses the major New England institutions for medicine, finance, industry, education, culture and government, giving Boston the self proclaimed title of "The Hub of the Universe". Over forty degree granting institutions are located here, including MIT, Harvard University, Boston University, and Northeastern University.

The Charles River Watershed lies almost entirely within the Boston SMSA, including portions or all of five cities and thirty towns in four counties. (Table 2). While the lower watershed is part of heavily urbanized metropolitan Boston, the upper watershed is primarily rural and suburban. Population density here is less than 1500 persons per square mile in contrast to a density of over 10,000 persons per square mile in the lower watershed. (Figure 3). Housing is typically single-family detached wood framed dwellings. Commercial development has traditionally been concentrated in a few intensely developed population centers.



**U.S. Department of Commerce**  
**BUREAU OF THE CENSUS**





Table 2  
WATERSHED AREA BY COMMUNITY

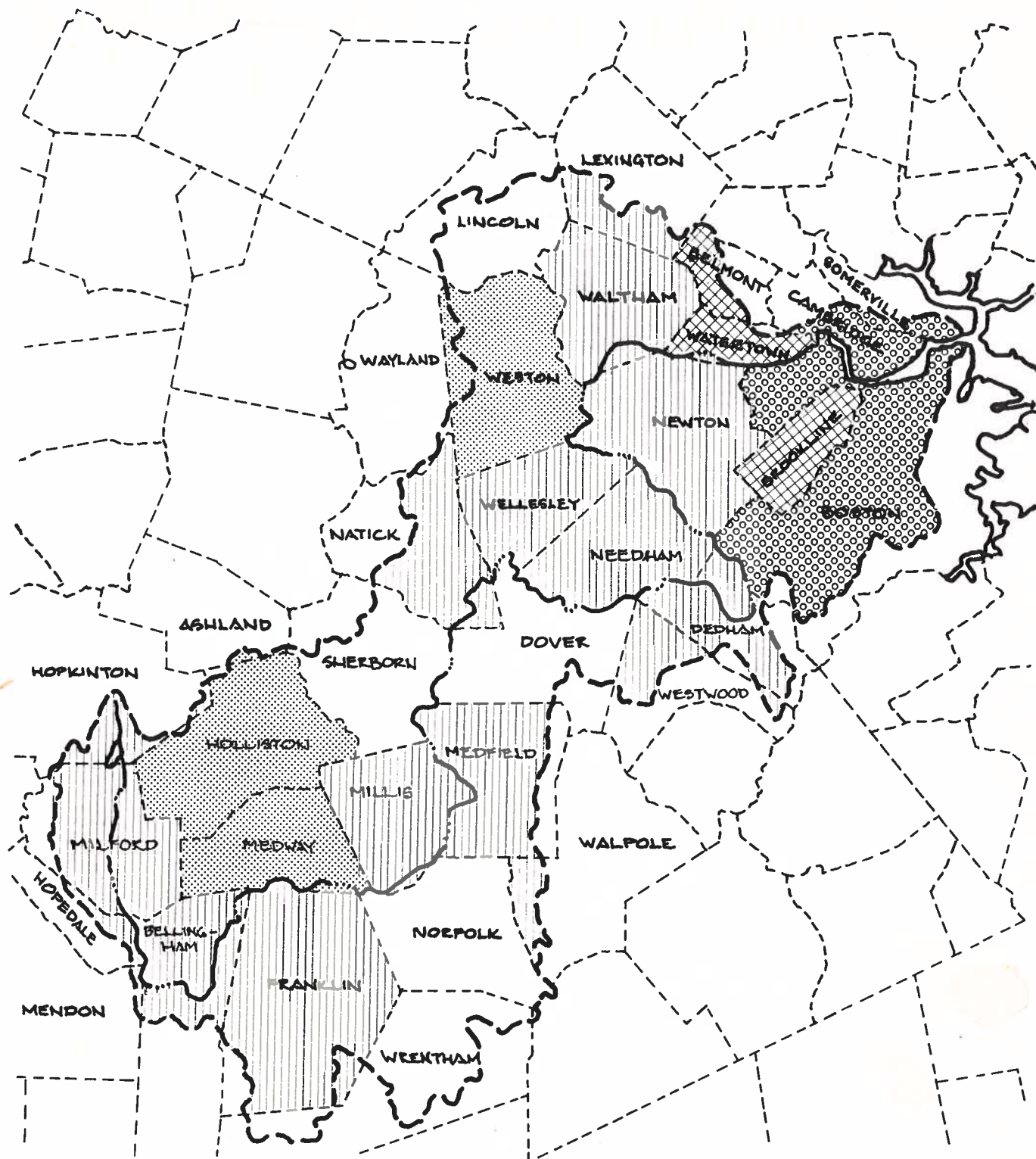
	Total Area (sq. mi.)	Watershed Portion (sq. mi.)	Percent in Watershed (% of total)
1. Ashland	12.96	0.56	0.04
2. Arlington	5.58	0.35	0.06
3. Bellingham	18.86	7.93	42.1
4. Belmont	4.66	1.87	40.2
5. <u>Boston</u>	45.40	25.97	57.2
6. Brookline	6.82	6.82	100.
7. <u>Cambridge</u>	7.14	4.61	62.2
8. Dedham	10.79	7.21	66.9
9. Dover	15.31	13.11	85.6
10. Foxboro	20.80	0.02	0.001
11. Franklin	27.00	24.50	90.7
12. Holliston	19.10	19.02	99.7
13. Hopedale	5.27	0.99	18.8
14. Hopkinton	27.92	2.86	10.2
15. Lexington	16.63	4.91	29.5
16. Lincoln	14.92	9.14	61.3
17. Medfield	14.52	11.36	78.2
18. Medway	11.66	11.66	100.
19. Mendon	17.94	0.29	0.02
20. Milford	14.99	12.93	86.4
21. Millis	12.26	12.26	100.
22. Natick	15.99	8.83	52.2
23. Needham	12.75	12.75	100.
24. <u>Newton</u>	18.33	18.33	100.
25. Norfolk	15.35	15.31	99.8
26. Sherborn	15.39	12.84	83.5
27. <u>Somerville</u>	4.12	1.40	34.0
28. Walpole	21.09	2.06	9.8
29. <u>Waltham</u>	13.52	13.52	100.
30. Watertown	4.17	3.60	86.3
31. Wayland	15.88	0.42	0.03
32. Wellesley	10.51	10.51	100.
33. Weston	17.36	15.00	91.0
34. Westwood	11.24	3.82	34.3
35. Wrentham	22.68	9.83	43.3
Total - Sq. Mi.	528.91	307.39	
Total - Acres	(338,8502.4)	(196,729.6)	

Source: Mass. Department of Commerce

City names are underscored.

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## Charles River Watershed



0 5  
SCALE IN MILES

### 1980 AVERAGED RESIDENTIAL DENSITIES

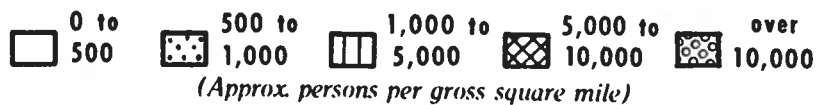


Figure 3



Following World War II, suburban sprawl resulted in a rapid increase in population in the middle and upper watershed, at the expense of cities and towns in the lower watershed, which experienced population declines. (Figure 4). This population shift is readily illustrated in Table 3, which shows that while the Boston SMSA population continues to increase, the major increase is occurring in suburban communities at the expense of the inner cities.

Table 3  
Population Change 1960-1980

<u>Place</u>	<u>1960</u>	<u>Population 1970</u>	<u>1980</u>	<u>% Change 1960 to 1980</u>
Boston SMSA	2,595,481	2,753,700	2,763,357	+ 6.5
Boston City	697,197	641,071	562,994	- 19.2
Cambridge	107,716	100,361	95,322	- 11.5
Newton	92,384	91,263	83,622	- 9.5
Franklin	10,530	17,830	18,217	+ 73.0
Milford	15,749	19,352	23,390	+ 48.5
Millis	4,347	5,686	6,908	+ 57.9

Construction of major access highways, including the circumferential routes 128 and I-495, and radial routes such as I-90 (the Massachusetts Turnpike) and I-95, has greatly facilitated access into the middle and upper watershed. (Figure 4). Route 128 in particular has become the east coast center for the electronics/computer industry. Housing for employees has rapidly expanded into the surrounding suburban towns.

Within the watershed, Routes 135, 16 and 109 radiate out from Route 128, providing ready access for commuters into the upper watershed. This expansion trend was further accelerated in the late 1960's with the construction of I-495, another circumferential highway approximately 20 miles beyond Route 128. Development along I-495 is only beginning to repeat the development story of Route 128. As development pressures grow, the need for land inevitably results in the filling of wetlands and floodplains. Land development in eastern Massachusetts has been no exception to this rule.

The Commonwealth first recognized the threat to wetlands in coastal areas by passing the Jones Act (Chapter 426 of the Acts of 1963), the first wetlands protection statute in the nation. In 1965, the Commonwealth adopted the Hatch Act (Chapter 220 of the Acts of 1965) which extended wetlands protection to inland wetlands. These measures attempted to regulate the alteration of wetlands by requiring a person who desired to make any alteration to first obtain a permit from the Massachusetts Department of Natural Resources. The Act did not prohibit dredging and filling, and the burden of complying with the Act was placed on the developer.

In 1972 the Jones Act and the Hatch Act were combined into a single Wetlands Protection Act (Chapter 131, Section 40 of the Massachusetts General Laws). This Act places authority for wetland protection under the jurisdiction of town level Conservation Commissions with appeal authority to the state level Department of Environmental Quality Engineering.

The Federal Flood Insurance Act (PL 93-234) established the requirement that municipalities adopt regulations governing land use in flood prone areas or lose eligibility for federally insured private construction and mortgage money. This act regulates proper use rather than prohibiting development in flood plains.

In spite of these measures available for protection of the NVS areas of the Charles River Watershed, permanent protection could not be assured. The only effective means for protection was through land acquisition. It was for this reason that the decision was made to federally acquire the major wetlands in the middle and upper watershed.

#### B. Recreation and Natural Resource Problems & Needs

Hand in hand with urban sprawl has gone the loss of valuable open space in the middle and upper watershed. Accentuating this loss is an increasing demand for outdoor recreation opportunities. According to the 1978 Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP), the most popular recreation activities in the state are bicycling, nature walking, and swimming (both pool and non-pool). Ice skating is the most popular winter sport, followed by downhill skiing, snowmobiling and cross-country skiing. Activities projected to experience the most growth in terms of activity days during this decade are golf, picnicking, nature walking, trailer camping, cross-country skiing, and hiking.

The 1978 SCORP indicates that the Boston Metropolitan area (SCORP planning Region VIII) is deficient in facilities for bicycling, hunting, picnicking, nature walking, snowmobiling and target shooting.

#### C. Public and Agency Involvement

Following authorization of the study of the Charles River Watershed in 1965, a Coordinating Committee was formed to assist and provide guidance and advice in the conduct of the study. This committee consisted of representatives from the following Federal and State agencies:

##### Federal Agencies

Department of the Army (Chair)  
Department of Agriculture  
Department of the Interior  
Department of Commerce  
Department of Health, Education and Welfare  
Department of Housing & Urban Development





0 5

SCALE IN MILES

### Figure 4



Massachusetts Agencies (designated by Governor)

Department of Natural Resources  
Metropolitan District Commission  
Metropolitan Area Planning Council

Also convened was a Citizen Advisory Committee (CAC) consisting of approximately 30 members representing cities and towns located wholly or partly in the watershed, and industrial, conservation, education, recreation and real estate interests. This committee provided a means of communication between watershed interest groups and the study agencies. The CAC made known the desires of watershed interests and was a sounding board for study proposals throughout the five-year study.

In January of 1967, formal public hearings were held in the watershed communities of Waltham, Wellesley and Franklin. These hearings were held for the purpose of determining the desires of local interests. Major concerns expressed at these early hearings were the need to:

- improve water quality of the Charles River
- maintain and improve the aesthetic quality of the river corridor
- acquire additional land for river oriented recreation and open space
- provide flood control, particularly to the lower basin
- control land use along the river to restrict development in flood plains
- support efforts to restore anadromous fish
- provide additional river access points for launching canoes.

In the spring of 1971 the CAC sponsored a series of twelve informational meetings in watershed communities. The purpose of these meetings was to acquaint local officials and citizenry with the study and its preliminary findings. The meetings also offered the opportunity for citizen participation on an informal basis, with time allotted for questions and answers.

On May 13th, 1971 a formal public meeting was held in Medfield, Massachusetts to solicit comments on the final plan proposal for land acquisition. The Feasibility Report was subsequently submitted to the Board of Engineers for Rivers and Harbors for approval in 1972.

Following project authorization in 1974, a series of meetings were held on a monthly basis during 1977 and 1978 to develop recommendations

for management guidelines for the NVS properties. Attendees at these meetings included representatives of appropriate state, regional and private organizations. It was the consensus of these meetings that the Massachusetts Division of Fisheries and Wildlife be designated as the management agency for NVS project lands, based on their expressed interest.

Since that time, the Corps together with the Division of Fisheries and Wildlife has held meetings with public officials of various towns in the watershed to discuss land management policies. These meetings are on going.

During plan formulation and implementation, invaluable assistance has also been provided by the Charles River Watershed Association (CRWA), a non-profit citizen's group organized "...to protect, improve and expand the natural resources and recreational opportunities of the Charles River watershed, and to enhance their enjoyment by the inhabitants." The CRWA activities include publishing a monthly newsletter, the "Streamer", preparing educational and informational materials including a river canoe guide, serving as a repository and clearing house for information on the Charles River, maintaining liaison with public agencies at all levels, and acting as a watchdog for misuse and abuse of natural resources in the watershed. The CRWA also prepared informational publications for the Corps, in a tabloid format, for public information and involvement during plan formulation and implementation.

### III. PROJECT DESCRIPTION

#### A. Location

The Charles River Natural Valley Storage Project is comprised of seventeen separate areas of natural wetland in the middle and upper portions of the Charles River Watershed.

The position of the NVS wetlands in the watershed is crucial to their flood control function. In conjunction with other favorable characteristics of the watershed - moderate topography, large areas of highly permeable soil, and low river gradient - the floodwater storage capability of the numerous wetlands on the Charles River and its tributaries significantly retards runoff. Peak flows in the lower watershed occur approximately four days after the end of a heavy rainfall. After a major flood, it may take three to four weeks for the river to return to normal flows. In the August 1955 flood, about 50,000 acre-feet of flow occurred after the peak discharge, most of this coming from the water stored in wetlands and ponds. This is equivalent to about 5 inches of runoff from the drainage area of 184 square miles at the Charles River Village gage.

The swamps, marshes and wet meadows along the Charles River and its tributaries total 20,000 acres, approximately ten percent of the 307 square mile watershed. Individual wetland parcels range in size from less than one acre up to 2,300 acres. During the formulation of the project plan, it became apparent that it was not economically feasible to acquire all the wetlands in the watershed.

Critical wetlands were identified and analyzed. A minimum area of 100 acres was determined to be the minimum size for practical Federal purchase, operation and administration. On this basis, nineteen areas totaling approximately 10,000 acres, or half of the total wetlands in the watershed, were selected as having major flood water retention capabilities.

The critical areas are either located adjacent to the Charles River or on one of the larger tributaries. Not all areas containing more than 100 acres were included, where adjacent primary storage areas provided adequate control.

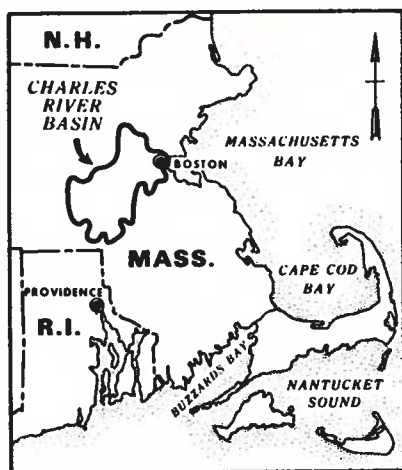
To optimize the unit cost of acquisition each area was field checked further by a real estate appraiser and an engineer to determine the practicality and economic feasibility of buying these areas. Town master plans were reviewed to determine if the selective areas were complementary to the thinking of community planners. Subsequently, the initial 19 locations were reduced to 17 areas containing about 8,500 acres. This reduction of two areas was due to recent development in those areas with their size being reduced to less than 100 acres and flood water retention capacity being limited.

In the latest plan of acquisition, approximately 8,100 acres in seventeen areas have been identified for federal protection through fee simple purchase or restrictive easement for flowage. The general location of these seventeen tracts is shown in Figure 5.

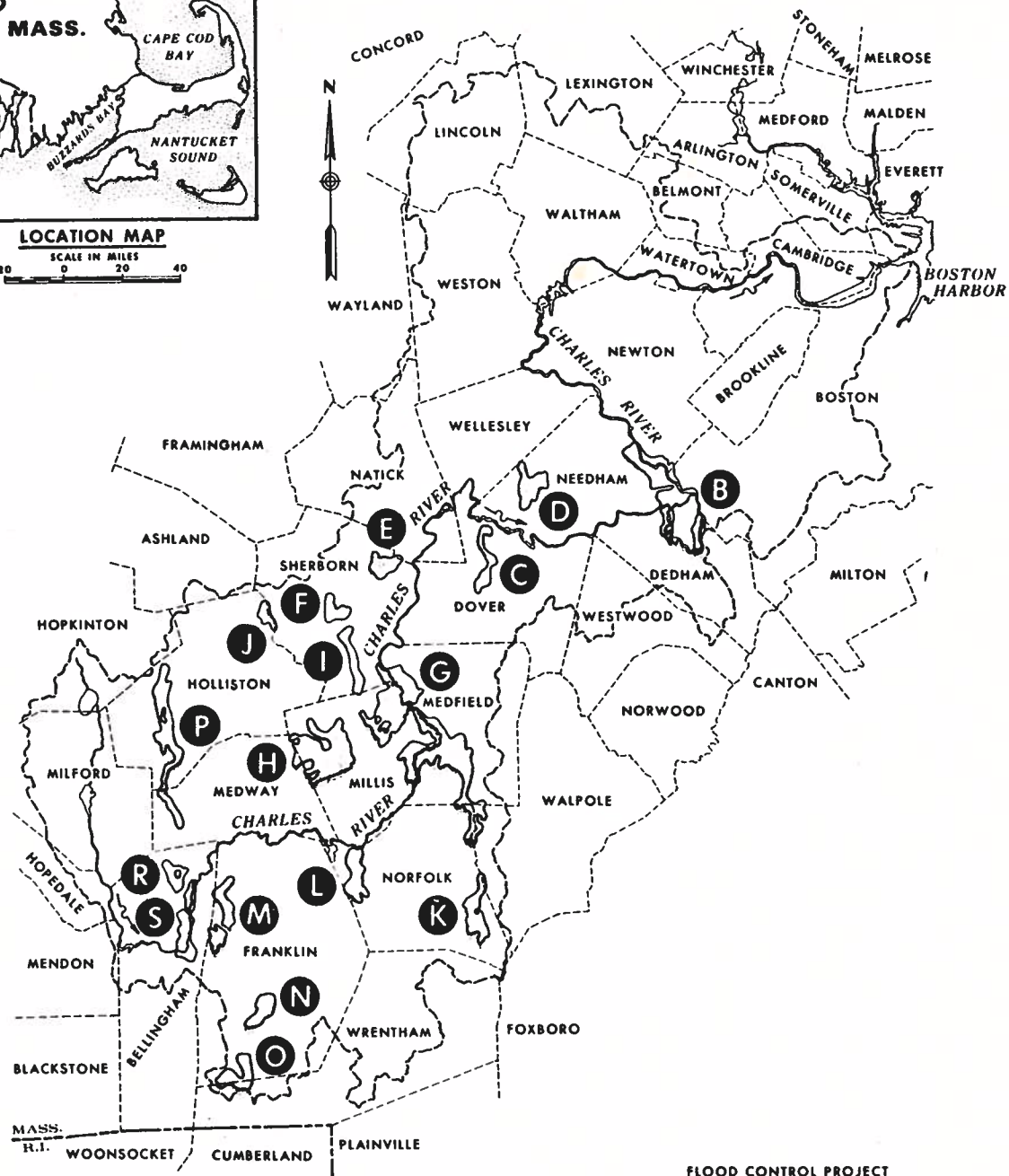
Fee simple title insures the greatest protection of the wetland areas from alteration, and provides the legal basis for Federal management of recreation and natural resources. Acquired restrictive easements only prohibit the construction of habitable structures or any modifications which may impact upon the project purpose of flood control. The property otherwise remains private, with public access prohibited except by permission of the landowner.

#### B. Project Data

Under the authority of the Federal Water Resources Development Act of 1974, federal funds totalling \$8,300,000 have been used to acquire project lands in fee simple title or restrictive easement. The acquisition program began in 1977 and is expected to be completed in 1984. Table 4 summarizes the acreage acquired or restricted in each NVS project area.



**LOCATION MAP**  
SCALE IN MILES  
20 0 20 40



FLOOD CONTROL PROJECT  
**CHARLES RIVER, MASS.**  
NATURAL VALLEY STORAGE AREAS

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

Figure 5





Table 4  
NVS Project Acreage by Area\*

<u>Area</u>	<u>Fee Acreage</u>	<u>Easement</u>	<u>Total</u>
B	120.70	1052.92	1173.62
C	92.81	170.37	263.18
D	44.91	212.72	257.63
E	2.70	200.98	203.68
F	68.48	55.19	123.67
G	1152.65	1507.17	2659.82
H	341.88	531.18	873.06
I	12.27	86.45	98.72
J	95.41	15.02	110.43
K	8.44	355.77	364.21
L	185.52	114.10	299.62
M	338.58	49.89	388.47
N	78.96	57.07	136.03
O	70.29	158.25	228.54
P	266.58	242.75	509.33
R	30.34	49.41	79.75
S	<u>310.59</u>	<u>22.78</u>	<u>333.37</u>
	3221.11	4882.02	8103.13

\*Data as of June 1984



#### IV. RESOURCES OF THE PROJECT AREA

##### A. Natural and Scenic Qualities

The Charles River Watershed is part of the major physiographic province known as the Appalachian Highlands, an ancient range of igneous and metamorphic rock forming the mountains and hills of much of the northeastern United States. In recent geological time, this rugged landscape was blanketed by glaciers which covered all of New England. The southward movement of the ice sheet and subsequent melting left the area with a layer of glacial debris, called till. Till is a mix of gravel, sand, silt and clay.

The result of this glacial activity is a landscape of gently rolling hills and wide valleys. Hills in the upper watershed range from 200 to 500 feet above sea level. In the middle and lower basin the glacial till is generally deeper, particularly in the preglacial valleys where the quiet waters of glacial lakes produced wide flat plains and terraces of well-sorted sand and gravel. These plains give the Charles River an importantly flat profile through much of its length and cause extensive meandering of the river channel.

The total fall of the river in its 80 mile length from source to mouth is 354 feet, yet nearly 200 feet of this fall occur in the first 19 miles between Echo Lake and Medway Dam. In the next 40 miles the river drops only 75 feet. Throughout its length, the major drops in river profile elevation occur abruptly at falls or dams. This variable profile gives the river the contrasting characteristics of sometimes being a meandering channel in the midst of vast wet meadow, such as in Cutler Park in Dedham or the Medfield-Millis marshes, and then flowing through narrow channels of exposed bedrock, creating scenic gorges and waterfalls such as at Hemlock Gorge in Newton and the Rocky Narrows in Sherborn.

The eastern portion of the watershed is situated in the Boston Basin, a distinct coastal lowland area. This flat basin is punctuated by small but distinct glacially formed hills called drumlins. These smooth, elongated hills are generally 100 to 150 feet high. Beacon Hill and Bunker Hill are two famous Boston area drumlins. Here the Charles River once opened out into extensive coastal marshlands and mudflats. These shallows have now virtually disappeared under three and one half centuries of urban development.

##### B. Land Use

The Charles River was named by Captain John Smith in 1614 for Charles I of England, and it was the English settlers of the seventeenth century who found the river a favorable location for settlement. Numerous villages sprang up on its banks. The river also offered a source of power for mills. Many villages prospered and gradually evolved into permanent communities, including the present cities of Boston, Cambridge, Waltham, Newton and Needham.

With the advent of more reliable steam power for industry, the use of the river shifted to other interests. Increasing urbanization of the lower Charles, including filling in of the heavily polluted Back Bay mud flats for development, drew attention to the need to provide public access to the river. In 1877 the City of Boston began acquisition of the Fenway, a small tributary to the Charles. This acquisition became the nucleus of a network of parks designed by landscape architect Frederick Law Olmsted. This park network, called the "Emerald Necklace", was the first urban park system in the nation. The Fenway was linked to Jamaica Pond, the Arnold Arboretum and Franklin Park by a system of landscaped parkways, forming a "necklace" around the city of Boston.

In 1910 the original Charles River Dam was constructed, creating the famous Charles River Basin. The dam greatly improved the lower Charles by restricting harbor tides, converting the basin to fresh water and eliminating the remaining mud flats. Following completion of the dam, a walkway called the Esplanade was constructed along the river bank behind the Beacon Street houses. In the 1930's the banks of the basin were redesigned to create a wider park with numerous recreation facilities including boat houses, paths and a band shell. The construction of Storrow Drive in the 1950's necessitated the loss of part of this park land.

The new Charles River Dam, 2,250 feet downstream of the old dam, was constructed by the Corps of Engineers in 1978. This dam provides improved flood prevention and navigation to the Charles River Basin.

From the Charles River Basin upstream to Watertown, the river is framed by parkways or highways which protect the shoreline from urban encroachment.

West of Watertown Square upstream to Moody Street Dam in Waltham center, the river has been severely abused by adjacent landowners and shopping area parking lots.

Above Waltham the river is more natural. The pool of the Moody Street Dam creates a popular river section known as the "Lakes Region" of the Charles due to its numerous bays and islands. It is in this portion of the river that another concentration of recreation developed in the late nineteenth century. In 1897 Norumbega Park in Newton was developed by a street railway company to encourage weekend use of its trolley lines. The park provided canoes for rent and also contained an amusement park, a dance hall, and walking paths through landscaped grounds. The park was converted to use as a hotel site in the 1960's.

Upstream at Riverside in Newton, a number of canoeing associations were established, with boat houses and landings built at several locations. A recreation club constructed facilities for swimming, tennis, baseball, football, picnicking and running. In 1920 the 40 acre area was turned over to the Metropolitan District Commission for continued

operation. Encroachments by the construction of Route 128 and the Massachusetts Turnpike, and subsequent fire damage to several structures resulted in the demise of the original recreation center.

Upstream of Newton Lower Falls, the right of way of Route 128 again disrupts the quiet nature of the river. In contrast, not far upstream is Hemlock George, one of the most scenic spots along the entire river. The hemlock lined gorge is marked by the large granite arched Echo Bridge which carries drinking water to the City of Boston.

Above Newton Upper Falls, the flood plain widens into an extensive open area of marsh and scattered islands of upland. This area, known as Cutler Park, was originally set aside by the towns of Brookline and Newton for water supply. The area is now under the Metropolitan District Commission as a public reservation. Cutler Park stands in strong contrast to adjoining marsh areas in Dedham and Boston which have fallen victim to residential and commercial development, and for use as city dumps.

It is also in this area that up to a third of the flow of the Charles is redirected through the Mother Brook Diversion to the Neponset River. This canal was first dug in 1640 to augment the flow of the much smaller Neponset River, providing additional water to mills on that river - a diversion which has been maintained to this day.

Upstream of the Dedham loop, land use becomes more suburban to rural, with only small pockets of intense development along the river. It is here that the Charles is in its most natural state, providing excellent opportunities for various passive recreation and fish and wildlife oriented activities. The river varies in character from a narrow forest lined channel to a meandering ribbon through acres of wet meadow. Numerous tributaries with wetlands of their own increase the variety and abundance of wildlife habitat.

It is only in the upper reaches of the river, in the Town of Milford that the natural character of the river is significantly altered by adjoining development. The thin rocky soil found in most of the watershed makes the region poorly suited for agriculture. While the land was extensively cleared and cultivated in the 18th and 19th centuries, the opening of the rich prairie lands in the midwest in the middle of the 19th century led to most local farms being converted to other uses or allowed to return to forest.

### C. Vegetation

The Charles River watershed is located in the northern extent of the Appalachian Oak Forest (Bailey, 1976), a section of the Eastern Deciduous Forest which runs from Tennessee north and east into southern New England. Vegetation in this region can be differentiated into the following habitat categories.

- Upland Forest - Oak-Hickory forest dominated by northern red oak (*Quercus rubra*) and shagbark hickory (*Carya ovata*) with small stands of hemlock and northern hardwoods in shady ravines and on moist, north facing slopes. Much of this land was once cleared for agriculture or lumber and most of these woodlands date only from the late nineteenth century or even more recent. These forests typically have smaller trees and appear drier and more open than forests to the north.
- Forested Wetland - forest dominated by red maple (*Acer rubrum*) which usually borders a river or stream and is subject to periodic flooding and saturated soil conditions throughout the year. Trees are generally small and have a dense understory of speckled alder (*Alnus rugosa*), highbush blueberry (*Vaccinium corymbosum*), sweet pepper-bush (*Clethra alnifolia*) and viburnum species. Other tree species include elm (*Ulmus* spp.), poplar (*Populus* spp.) and willow (*Salix* spp.).
- Scrub-Shrub Wetland - woody growth up to seven feet tall, growing in saturated soil or standing water. Typical growth is willow (*Salix* spp.), buttonbush (*Cephalanthus occidentalis*), meadow sweet (*Spiraea latifolia*), hardhack (*Spiraea tomentosa*) and red-osier dogwood (*Cornus stolonifera*).
- Emergent Wetland - herbaceous and semi-woody plants growing in water up to eighteen inches deep. Seasonal growth may be up to six feet high but more commonly is three to four feet. Common plants of this type include cattail (*Typha* spp.), purple loosestrife (*Lythrum salicaria*), reed (*Phragmites communis*), blue-joint (*Calamagrostis canadensis*), and sedge (*Carix* spp.).
- Aquatic - plants, either bottom rooted or floating, that have their vegetative parts supported on the water surface. Plants of this type include white water lily (*Nymphaea odorata*), bladderwort (*Utricularia vulgaris*) and duckweed (*Lemna* spp.).

The vast majority of the land acquired for the project is either seasonally flooded emergent wetland or forested wetland dominated by red maple.

#### D. Water Quality

The Charles River, like many rivers in the industrialized Northeast, has suffered from decades of abuse. The river has been a convenient place to quickly dispose of trash and waste. Major sources of pollution include sewage treatment plant discharges, sewer overflows, urban runoff, industrial discharges and landfills or dumps. Sewage treatment plants discharging into the Charles or its tributaries include plants in Milford, Franklin, Wrentham State School, the Norfolk-Walpole prison complex, and Millis.

An active program of pollution abatement is now underway by many communities in the watershed, under the review of the U.S. Environmental Protection Agency, the Massachusetts Division of Environmental Quality Engineering, and the Metropolitan District Commission. Advanced treatment facilities have been constructed in Milford and Medfield. A regional treatment facility now serves the towns of Franklin and Medway, with Millis and Bellingham considering tying in.

The floodplains and wetlands of the Charles are the location of several past and present landfills which predate present state laws regulating proper methods of waste disposal. The largest dump is operated by the City of Boston on the edge of the Charles in West Roxbury. Other active or former dumps in the watershed are located in Newton, Waltham, Watertown, Milford, Medway, Millis, Natick, Sherborn, Needham, Wellesley and Franklin.

Industrial discharges have been easier to deal with and most major pollution sources are being dealt with. In the lower basin, sewerage systems are now utilized for transferring wastes to treatment plants operated by the Metropolitan Sewerage District.

Water classification standards have been established for the Charles by the Commonwealth of Massachusetts. These standards, shown in Figure 6 and Table 5, are defined as follows:

Class A -- Waters designated for use as public water supplies in accordance with the General Laws. Character uniformly excellent.

Class B -- Suitable for bathing and recreational purposes including water contact sports. Acceptable for public water supply with appropriate treatment. Suitable for agricultural, and certain industrial cooling and process uses, excellent fish and wildlife habitat; excellent aesthetic value.

Class C -- Suitable for recreational boating; habitat for wildlife and common food and game fishes indigenous to the region; certain industrial cooling and process uses; under some conditions acceptable for public water supply with appropriate treatment. Suitable for irrigation of crops used for consumption after cooking. Good aesthetic value.



Class D -- Suitable for aesthetic enjoyment, power, navigation, and certain industrial cooling and process uses. Class D waters will be assigned only where a higher water use class cannot be attained after all appropriate waste treatment methods are utilized.

Class SC -- Suitable for aesthetic enjoyment; for recreational boating; habitat for wildlife and common food and game fishes indigenous to the region; industrial cooling and process uses.

#### E. Climate

The climate of the watershed is typically humid continental - long snowy winters and hot humid summers, locally moderated by the influence of the relatively stable temperature of the Atlantic Ocean. The climate is typically variable and unpredictable with varying periods of drought and stormy wet weather. The heaviest precipitation can come from coastal storms called "nor'easters", low pressure centers which travel up the coast and pump in moisture off the ocean. Hurricanes may also occur, but very infrequently, the last major event being in August 1955.

Annual rainfall averages 44 inches and is evenly distributed throughout the year. Annual total snowfall averages 45 to 55 inches throughout the watershed. Snow typically occurs from November to March. Temperatures range from occasional highs of 100°F to occasional lows of minus 20°F. The mean monthly temperature ranges from a summer high between 67° and 72°F to a winter low between 25° and 29°F. A summary of climatic data for the watershed is shown in Figure 7.

#### F. Fish and Wildlife Resources

The wetlands and adjacent areas acquired for the project offer a diverse range of natural habitats that are increasingly important for wildlife in the rapidly urbanizing towns of the region. The management goal of preserving the NVS areas in their natural state for flood storage purposes also benefits fish and wildlife resources by preserving and protecting natural habitat.

The marshes, wet meadows, ponds and streams in the NVS project area are particularly valuable for waterfowl habitat. Black ducks and wood ducks are the dominant species, but mallards, blue-winged teal and Canada goose are also found. The region is situated on the Atlantic Flyway, a major migratory route along the east coast. The Charles River, its tributaries, and ponds all provide nesting and feeding sites for waterfowl and other migratory birds.

Wildlife game species in the project area include gray squirrel, cottontail, woodcock, grouse, ring-necked pheasant and a few whitetailed deer. Other wildlife species include muskrat, mink, skunk, fox, beaver, otter and raccoon. In many towns in the watershed, hunting is either



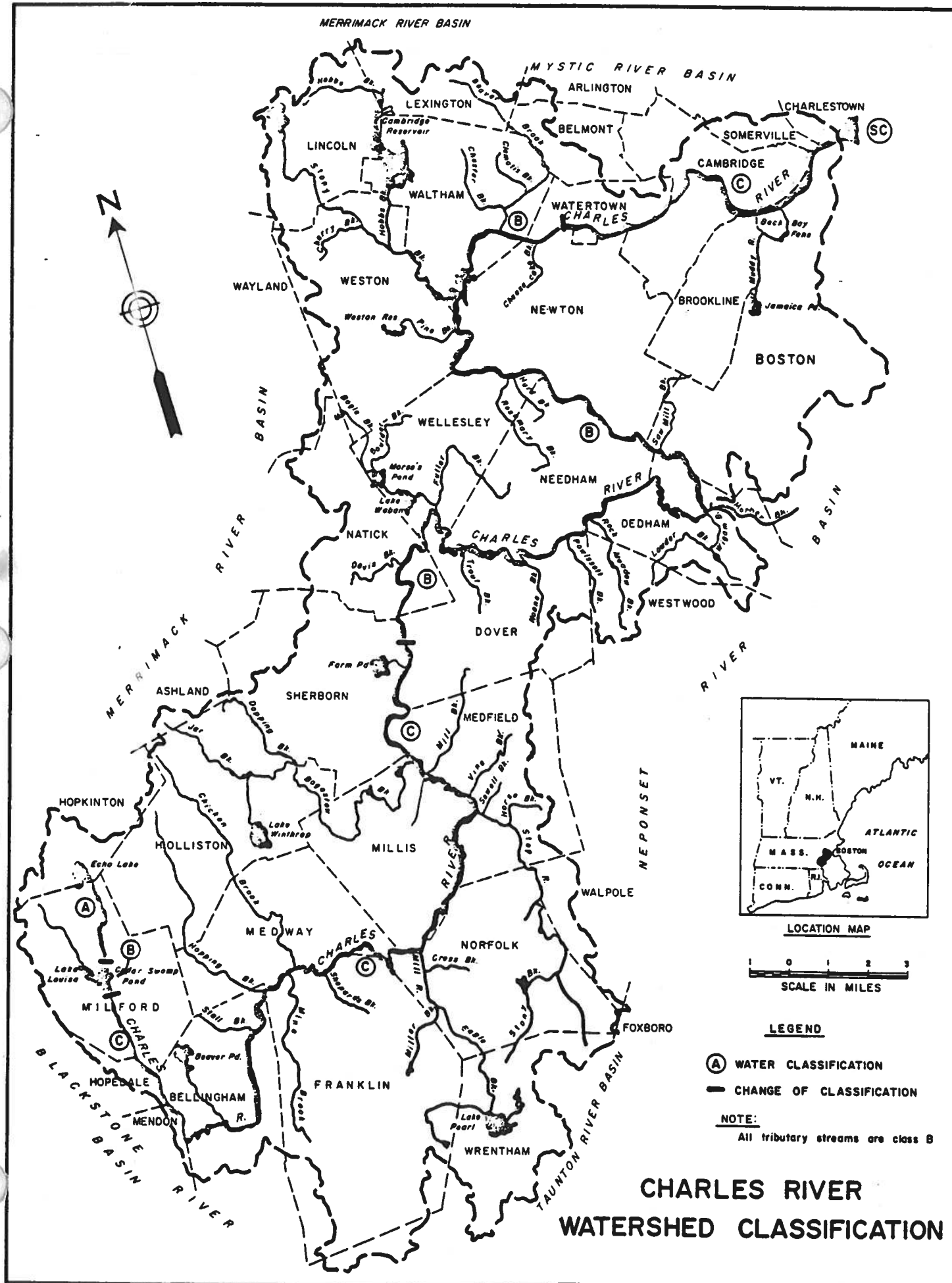
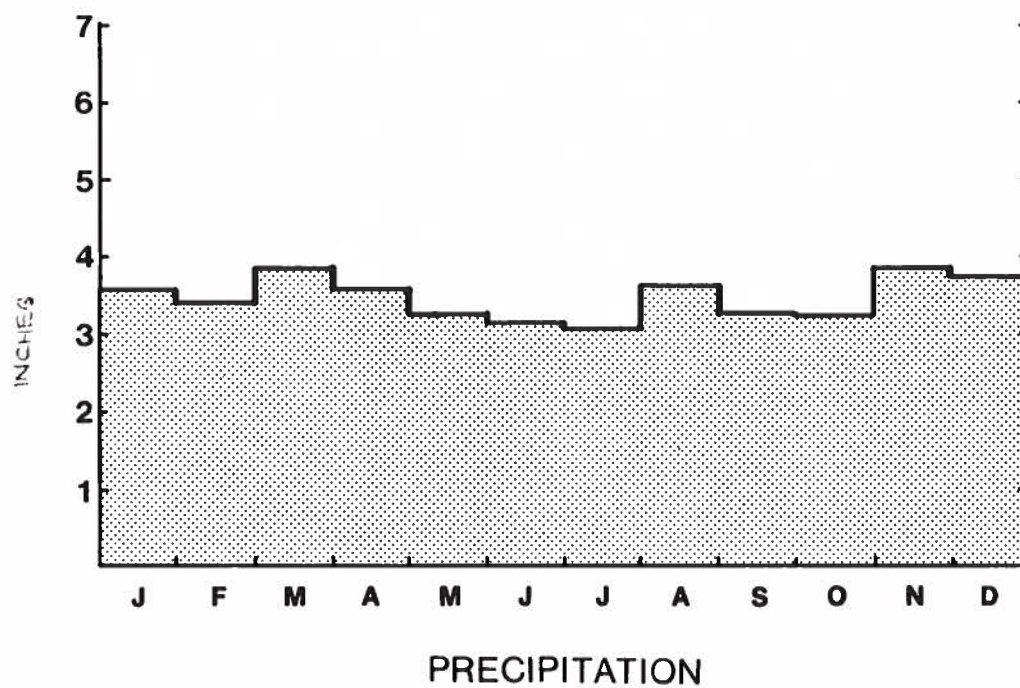
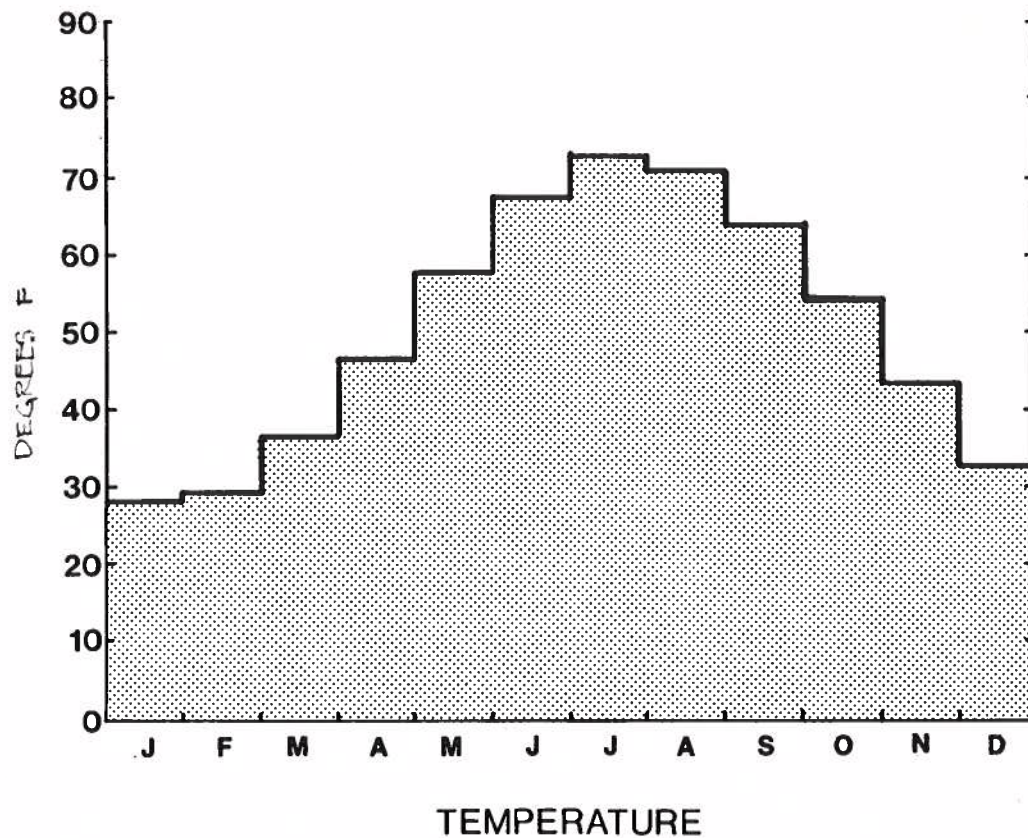


Figure 6





## CLIMATE DATA

Source: National Weather Bureau  
Boston, MA

Figure 7



Table 5

## CHARLES RIVER WATERSHED CLASSIFICATION

Boundary	River Miles	Present Use	Anticipated Future Use	Present Condition	Classification
The Charles River from its source to Dilla Street, Milford	80. 1-76. 5	Water supply	Water supply	A	A
The Charles River from Dilla Street, Milford to Main Street, Milford	76. 5-75. 2	Fishing Fish & wildlife propagation	Same	D	B
The Charles River from Main Street, Milford to Bridge Street, Dover	75. 2-44. 7	Recreational boating Fish & wildlife propagation Fishing Assimilation	Same	D & C	C
The Charles River from Bridge Street, Dover to Watertown Dam, Watertown	44. 7- 9. 8	Recreational boating Fish & wildlife propagation Fishing Assimilation	Same and bath bathing	D & C	B
The Charles River from Watertown Dam, Watertown to the Charles River Basin Dam in Boston	9. 8- 1. 2	Recreational boating Fish & wildlife propagation Fishing Assimilation	Same	D & C	C
Farm Pond, Sherborn	--	Recreation	Recreation	B	B
All other streams in the Charles River Watershed unless denoted above	--	--	--	-	B

Source: Commonwealth of Massachusetts, Water Resources Commission, Division of Water Pollution Control.

locally prohibited or restricted by local ordinances to those properties where the owner or town authorities specifically grant permission. A small amount of trapping also occurs in the area, primarily for muskrat and mink.

Fishing is an important recreational activity on the Charles River and its tributaries. Largemouth bass, yellow perch, bullheads, pickerel, sunfish and white suckers are the primary warm-water fish species caught. Areas B, G and S are the major areas for warm-water fishing. In the lower Charles fishing activity is reduced by past years of pollution which continue to give the resource a bad reputation, in spite of recent improvements in water quality. Lack of public access to the river is also a problem.

Few of the streams in the watershed are presently capable of supporting natural populations of cold-water fish. The region relies instead on stocking of several streams to support a "put-and-take" fishery for brook trout and brown trout. Stocking takes place only in the upper watershed upstream of the town of Natick. This stocking is performed by the Massachusetts Division of Fisheries and Wildlife each spring in the rivers and brooks listed in Table 6. Use of this fishery generally ends by mid-summer due to the increase in water temperature.

The Charles River once supported large runs of anadromous fish. These runs included American shad, alewife, blueback herring and lesser numbers of other fish. These fish were an important food item to early settlers. The construction of numerous dams along the river, combined with increasing pollution, all but eliminated the runs.

In the early 1970's, a program to restore anadromous fish runs in the Charles was begun by the Massachusetts Division of Marine Fisheries in cooperation with the Massachusetts Division of Fisheries and Wildlife, the Metropolitan District Commission, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers. The primary goal of this program is to restore American shad to the river, but runs of other anadromous species such as alewife and blueback herring are expected to increase as well.

The initial program objectives for restoration involved the installation of fish passage facilities at eleven dams, abatement of pollution, and stocking with shad eggs. The goal is shad restoration to sixty miles of the eighty mile long river.

In 1971 the Massachusetts Division of Marine Fisheries began stocking of shad eggs from Connecticut River fish, but without much success. The fishway at the Watertown Dam was reconstructed in 1972. A fishway was incorporated in the design of the new Charles River Dam. Smelt are now able to move upstream to the Watertown Dam. Alewives now reach the foot of Bleachery Dam, approximately twelve miles upstream of the mouth of the river.

Table 6

## Annual Trout Stocking by

## Massachusetts Division of Fisheries and Wildlife

<u>Water Body</u>	<u>Location</u>	<u>Fish Stocked</u>
Charles River	Millis to S. Natick	2,000-2,500 Brown Trout
Stall Brook	Bellingham	500 Eastern Brook Trout
Trout Brook	Dover	300 Eastern Brook Trout
Dix Brook	Franklin	500 Eastern Brook Trout
Miscoe Brook	Franklin	500 Eastern Brook Trout
Bogastow Brook	Holliston	1,000-1,500 Eastern Brook Trout and Brown Trout
Story Brook	Weston	1,000 Eastern Brook Trout
Cherry Brook	Weston	700 Eastern Brook Trout
Vine Brook	Medfield	300 Eastern Brook Trout
Hopping Brook	Medway	1,500 Eastern Brook Trout and Brown Trout
Mill River	Norfolk	300 Eastern Brook Trout and Brown Trout
Eagle Brook	Wrentham	500 Eastern Brook Trout

Source: Walter Hoyt, Middlesex District Supervisor - Mass Div. of Fisheries and Wildlife.

In 1978 the Division of Marine Fisheries began transplanting prespawning adult shad into the river in hopes of providing a better imprint of the river for the offspring. It is still too early to tell whether this program will be successful.

Additional fishways are planned at Finlay Dam (Newton Lower Falls), Cordingly Dam, Cochrane Dam and South Natick Dam. When these are complete, sixty miles of the Charles will be open to anadromous fish.



## V. RESOURCE USE OBJECTIVES

The overriding objective in the management of project natural resources is to attempt to serve the needs of the general public for recreation open space by making project lands available for public use. At the same time project facilities must be well planned and project resources properly managed to insure the highest level of use consistent with the project purpose of natural valley storage area protection. In this context, the following resource use objectives have been developed:

- Manage wildlife populations to achieve optimum population levels consistent with available habitat. Existing native vegetation may be supplemented by the planting of specific vegetation for wildlife food and cover.
- Manage fishery resources to achieve optimum populations of a desirable game fish. Management should include continuation of trout stocking program in designated cold water streams.
- Forest resources should be inventoried to determine long range management needs and the desirability of instituting a program of selective timber harvesting. Any timber cutting should be done with the primary objective of improvement in the vigor and health of forest resources.
- Existing agricultural land should be maintained in productive agricultural use through management agreements with local farmers. Land with potential use for agriculture should be inventoried to determine suitability and desirability for conversion to active agricultural use. Criteria in this determination should include potential impact on water quality, erosion potential, wildlife habitat impact and impact to groundwater.
- Recreation facilities should be planned with the objective of minimal impact on existing vegetation. Project lands were acquired for the purpose of protection from alteration of their natural state. To be consistent with this purpose, recreation should be limited to passive uses such as hiking, nature walking, fishing, canoeing and cross-country skiing. Parking facilities should be designated in adjacent upland areas, such as roadside pull-offs, existing parking areas, or new gravel surfaced off-street lots for no more than ten vehicles.



## VI DEVELOPMENT AND MANAGEMENT PLANS

### A. Management Recommendations

The lands acquired for the Charles River Natural Valley Storage Project are primarily wetlands which, in accordance with the authorized project purpose, are to remain in their natural state. Development of active recreation facilities is not planned within the project area. The project instead provides open space for passive recreation and fish and wildlife habitat in a rapidly developing urban and suburban setting. Anticipated uses of project lands and waters include canoeing, hiking, nature walking, cross-country skiing, skating, fishing and hunting.

It is the policy of the Federal Government under P.L. 89-72, The Federal Water Project Recreation Act, that every opportunity be explored to make project lands available for management by state or local agencies. Appropriate agencies in the project area include the Massachusetts Division of Fisheries and Wildlife, the Metropolitan District Commission, and town Conservation Commissions.

In 1977 the Metropolitan Area Planning Council, under a contract from the Corps, organized and operated a series of meetings with appropriate local, regional, state and federal agencies interested private organizations and individuals. These meetings were held on a monthly basis through 1978 to develop recommendations for management guidelines for the NVS properties.

The Corps had established early in the project planning that management responsibility for fee owned lands should, wherever possible, be turned over to another agency or organization with expertise in wildlife management.

At the first of these series of meetings no major public agency had yet expressed interest in managing the NVS areas. The decision was made to designate the individual cities and towns as the management authorities.

In December of 1977 the Massachusetts Division of Fisheries and Wildlife announced its desire to become the principle management agency for the NVS project lands. The management committee approved the state proposal with the following resolution:

"If a contiguous land ownership pattern (lands acquired in fee) can be acquired by the United States Army Corps of Engineers for the Natural Valley Storage Project it is recommended that the Massachusetts Division of Fisheries and Wildlife be designated as the management agency through the exercise of a license arrangement with the United States Army Corps of Engineers."

The Trustees of Reservations and the Massachusetts Audubon Society expressed concern about the issue of fee or easement acquisition of their properties included in designated NVS areas. The Corps established a policy during project planning that the real estate acquisition procedure to be followed is to first offer to purchase lands at fair market value, and as a second option, to purchase a restrictive easement. Acquisition of either interests would be through voluntary purchase or condemnation proceedings. The Corps agreed that Trustees and Mass. Audubon land would be acquired in easement only if so desired. Several towns and many private land owners have also decided to opt for easement acquisition.

The Medfield-Millis marshes, Area G, the first significant tracts acquired in fee, came under the management of the Division of Fisheries and Wildlife in a license agreement in 1979. As additional tracts are acquired, it is anticipated that the Division will become the principle management agency. Unfortunately, the fee acquisition pattern in several NVS areas does not provide a contiguous block of land large enough for reasonable land management for fish and wildlife purposes. The goal in some cases will be for the Division to negotiate management easements with adjoining private and public land owners to permit the desired unified management program for the NVS area. Other areas may be leased to other agencies or organizations if interest is so expressed.

Specific land management and recreation development recommendations for each NVS area are as follows:

Area B

Cutler Park is a 700 acre tract of marshland located in Newton, Dedham, and Boston, and is under the jurisdiction of the Metropolitan District Commission. The MDC lands below the 95 foot contour elevation have been included in the Charles River NVS project through flowage easements only and will remain under the principle jurisdiction of the MDC. The Corps has acquired additional property in the local area adjacent to Cutler Park and in another major marsh upstream at the Mother Brook Diversion, another MDC property. This upstream marsh, in the town of Dedham, has been acquired primarily in fee. This marsh is a highly visible and scenic natural open space adjacent to Massachusetts Route 1, the VFW Parkway. Recreation activity in the Cutler Park section of the Charles River includes canoeing, nature walking, and skating, at a shallow pond near Kendrick Street. Limited parking and canoe launching sites are provided by the MDC. Additional access points are recommended as shown in figure 8.

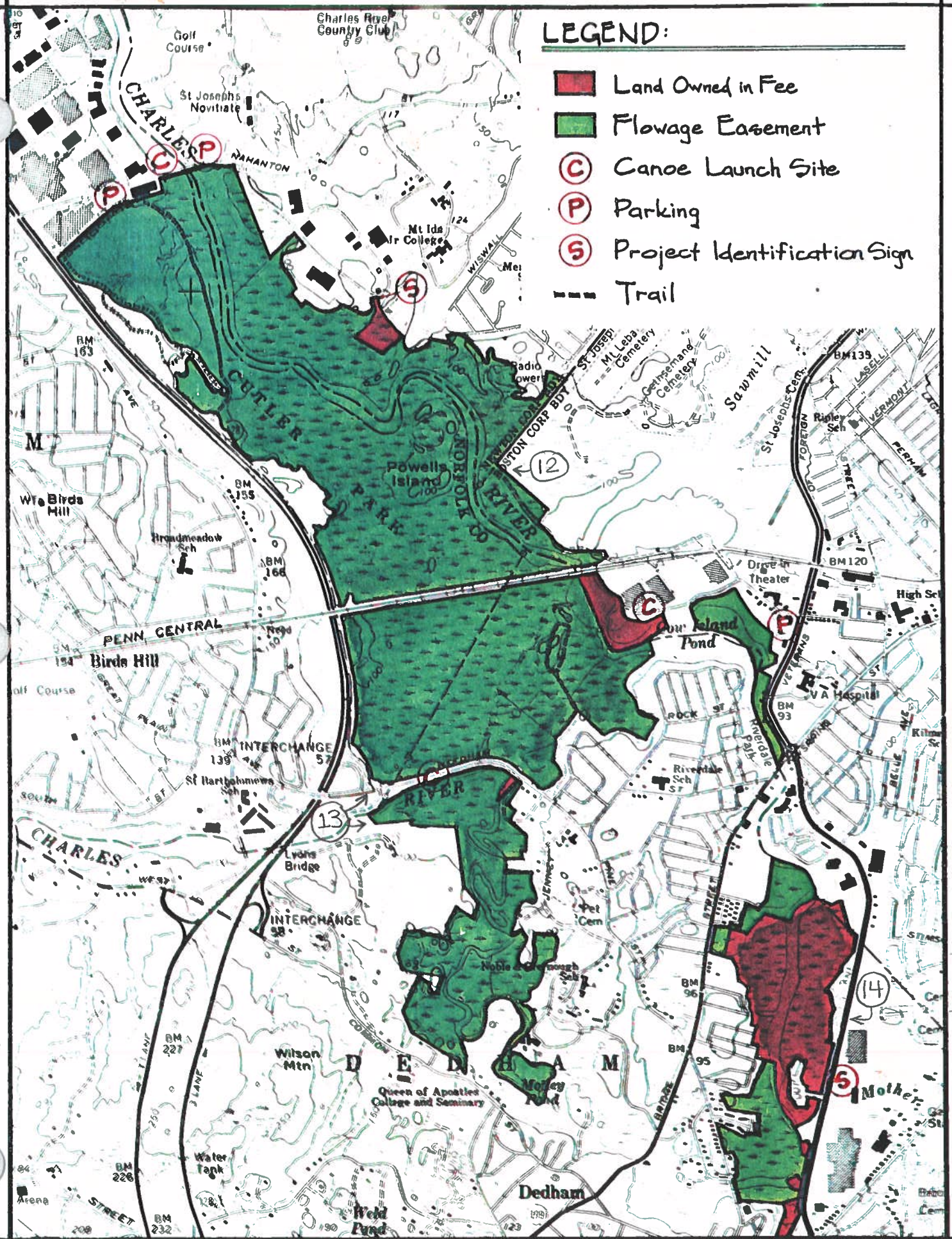
Management of fee owned lands in Area B by the Massachusetts Division of Fisheries and Wildlife is recommended as part of the comprehensive plan to manage lands of the Charles River NVS project for fish and wildlife habitat enhancement and passive recreation purposes. Should the Division of Fisheries and Wildlife decide not to lease this area, then Area B should be made available for lease to the MDC for management in conjunction with the Cutler Park Reservation. While the MDC prohibits hunting on the property along the Charles River within its jurisdiction, the area does provide important habitat. Use of the area for birdwatching and other non-consumptive uses of wildlife could be encouraged through the maintenance of trails and observation points in the project area.





# LEGEND:

- Land Owned in Fee
- Flowage Easement
- C Canoe Launch Site
- P Parking
- S Project Identification Sign
- Trail



**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENTS  
12 13 14

**AREA B**





### Area C

The 263 acres in fee and easement in NVS Area C preserve wetlands bordering Trout Brook in the town of Dover. Trout Brook, a tributary of the Charles River, flows northward through a narrow tree and shrub swamp. Near its mouth at Claybrook Road, the brook enters an open wet meadow partially owned in fee and partly in easement on land owned by the Dover Land Conservation Trust. A smaller tributary wetland to the east is a tree swamp with fee owned land fronting on Chickering Drive and easement over land owned by the town of Dover. Of the 170 acres in easement, 31 acres are owned by the Dover Conservation Trust and 31 by the town of Dover.

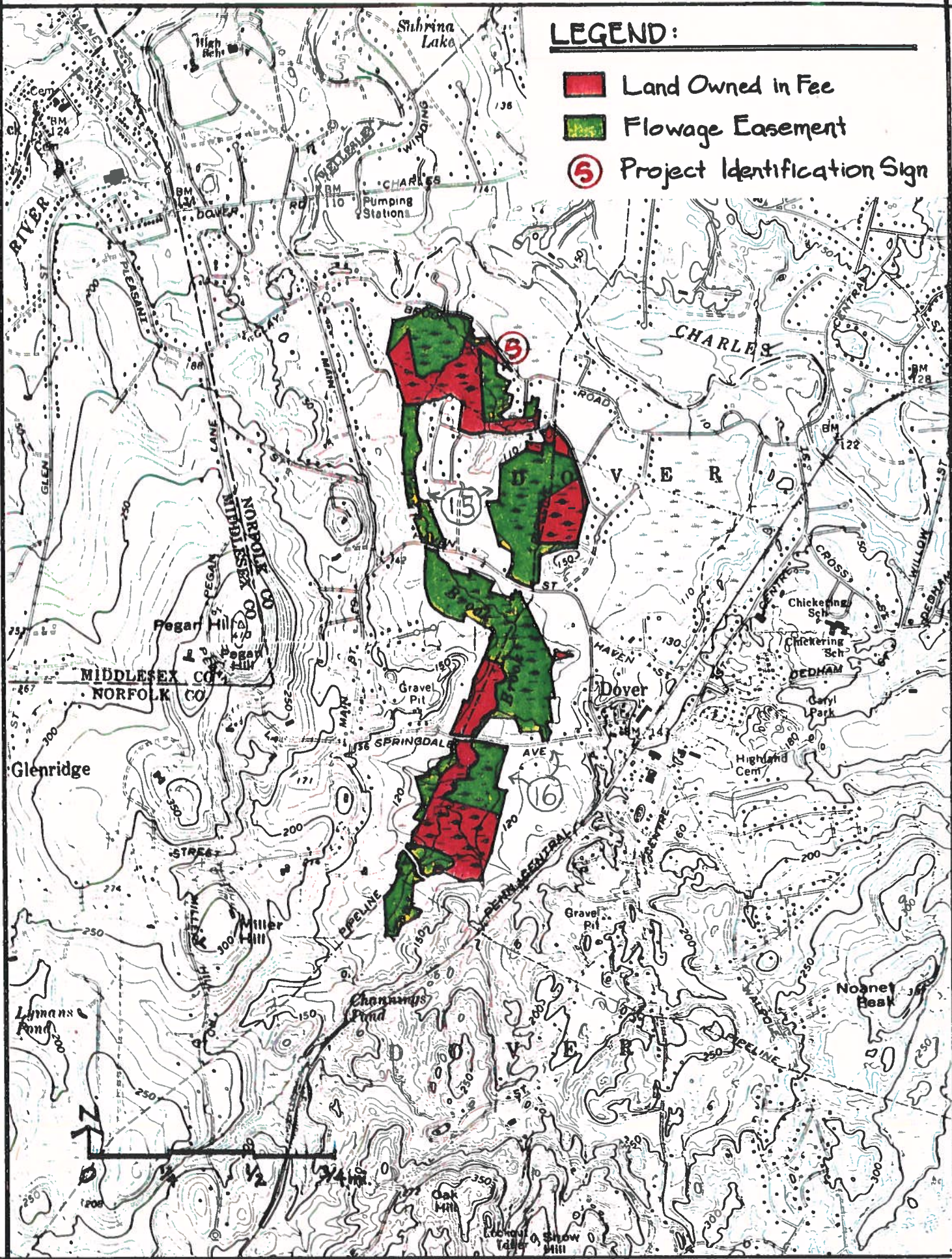
Trout Brook is stocked each spring by the Mass. Division of Fisheries and Wildlife with eastern brook trout. A small pull-off for parking is available on Haven Street. Limited roadside parking is also available on Claybrook Road and Springdale Avenue. A town owned skating pond north of Springdale Avenue provides seasonal off-street parking for approximately 20 vehicles. Trout Brook is an important cold water fishery which would best be managed by the Mass. Division of Fisheries and Wildlife. With the opportunity for the state to lease easement land along the brook, a limited trail system could be established to provide additional access to the brook for fishermen.





# LEGEND:

- Land Owned in Fee
- Flowage Easement
- S Project Identification Sign



**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENTS  
15 16

**AREA C**





#### Area D

A large wetland area north of the Charles River in the Town of Needham is designated as NVS Area D. The majority of this 257 acre area is an easement on land owned by WHDH radio and is the location of their transmission station and towers. The center of this wetland, the location of the transmission towers, is a broad shrub swamp surrounded by tree swamp as a transition to upland woods. The northern portion of the site abuts new single family residential development near the Wellesley town line.

Areas owned in fee total only 45 acres and have no direct public access. The 212 acres in easement include 76 acres in five tracts owned by the town of Needham. These town owned tracts extend beyond the project area and front on Central Avenue, Pine Street and Charles River Street, providing limited public access to the project area.

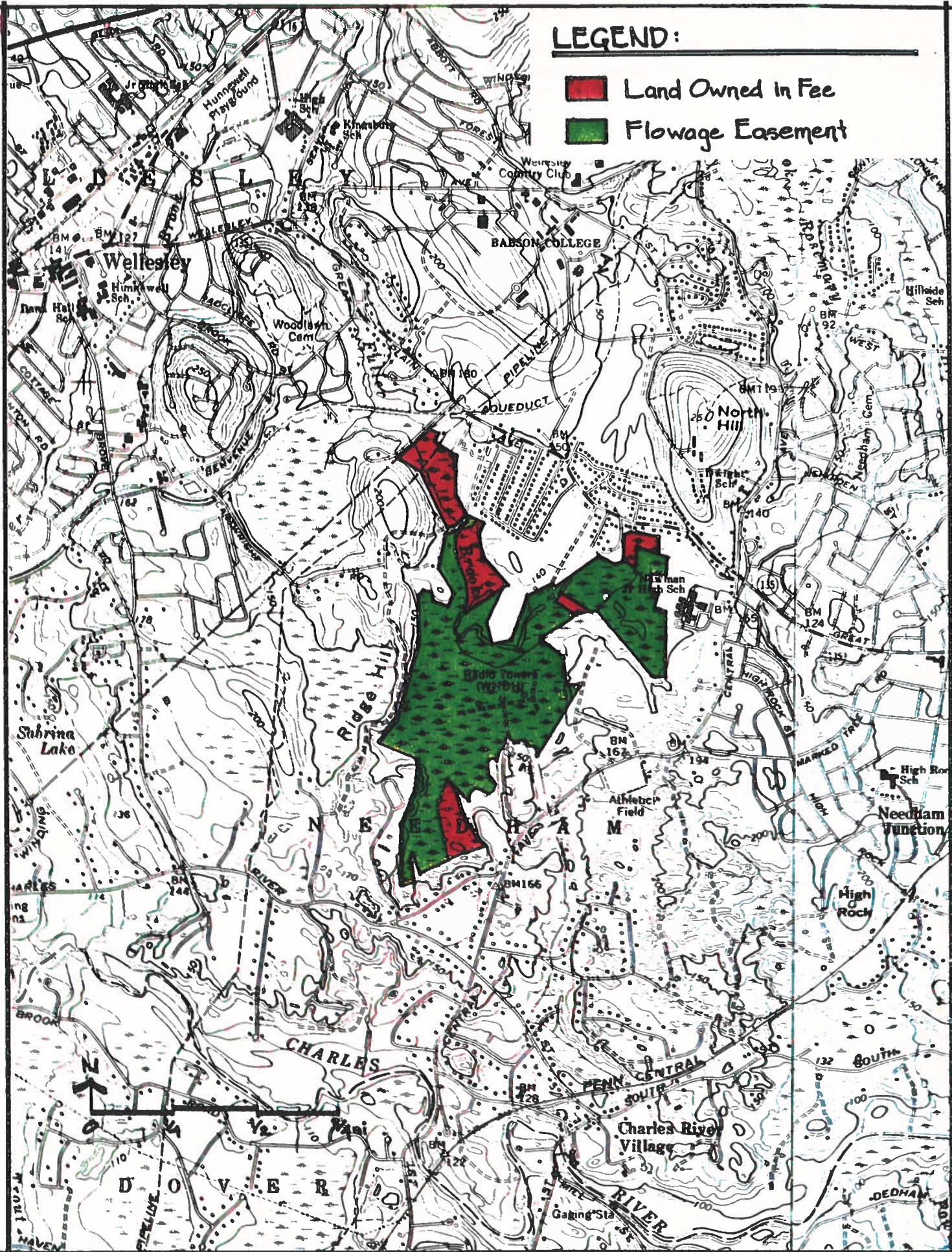
The fee owned lands are too scattered and small to offer any reasonable opportunity for recreation. Management of these tracts should be for wildlife purposes only, under a lease with the State or with the town of Needham.





# LEGEND:

- Land Owned in Fee
- Flowage Easement



CHARLES RIVER  
NATURAL VALLEY STORAGE

SEGMENT  
⑪

AREA D







### Area E

Area E, located in the towns of Natick and Sherborn, is not the smallest NVS area, but has the least amount of fee acreage, totaling only 2.7 acres. The 201 acres in easement includes 186 acres of the ~~Broadmore~~<sup>Indian Brook</sup> Wildlife Sanctuary owned and maintained by the Massachusetts Audubon Society.

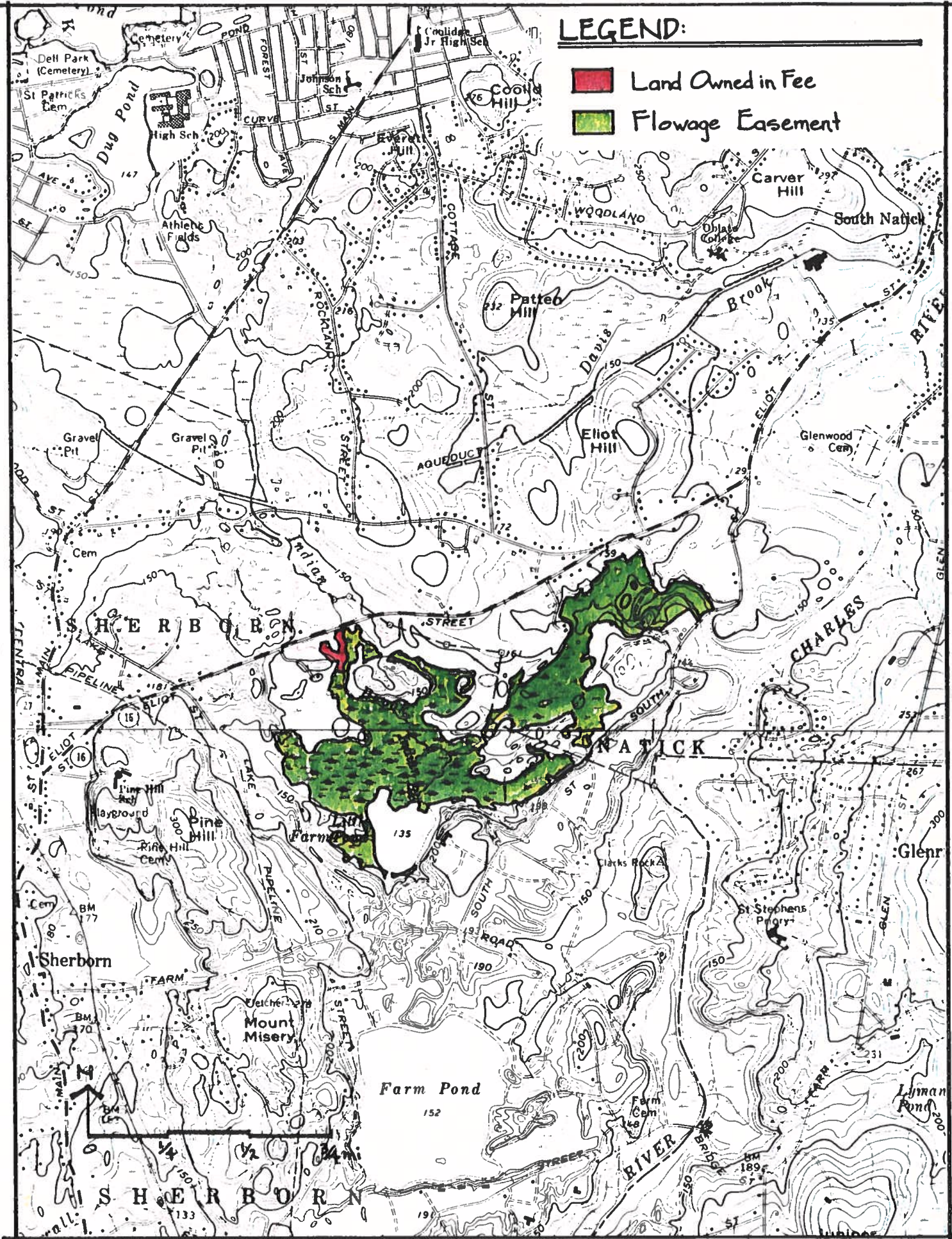
The project area is primarily a wooded swamp bordering Indian Brook, a small tributary of the Charles River. Flow out of the wetland is retarded by a small dam across Indian Brook near South Street in Natick. This dam is Maintained by the Massachusetts Audubon Society.

The limited fee owned land in this area suggests the desirability of management of this tract by the Massachusetts Audubon Society in conjunction with the Broadmore<sup>891</sup> Sanctuary. Broadmore<sup>891</sup> provides a nature center and interpretive trails through wetlands and upland natural areas typical of the Charles River Watershed. Features of the sanctuary include red maple swamps, oak-hickory forest, a white pine plantation, two small ponds, blueberry swamp, upland meadows and a boardwalk across Indian Brook. The boardwalk provides an excellent means of observing an open marsh and the change in plant species that occurs in the transition from wetland to upland forest.



# LEGEND:

- Land Owned in Fee
- Flowage Easement



**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENT  
**(18)**

**AREA E**

Figure 11





#### Area F

The second of five NVS areas in the town of Sherborn is a red maple swamp located southwest of the junction of Massachusetts Routes 16 and 27. This wetland drains into Sewall Brook, another tributary of the Charles River. The project area totals 123 acres.

The only public access to fee owned land here is a small frontage on Route 27 (Main Street) at the Sewall Brook bridge. Of the 54 acres in easement, 28 acres are on land owned by the Town of Sherborn. Town property provides access to the site from Main Street, Goulding Street, and Russett Hill Road.

Wet soil throughout the site limits use of the area to possible winter trail activities only. Development of a loop trail around the edge of the area would require a cooperative agreement with the Town of Sherborn. Suitability of the site for effective wildlife habitat management requires further study with the Mass. Division of Fisheries and Wildlife.

#### AREA I

Area I is located in the upper reach of Bogastow Brook in Sherborn. Bogastow Brook flows southward, parallel to Route 115, through Bogastow Pond and then east into NVS Area G. The 98 acre area contains only 12 acres in fee none of which has public access. These small scattered parcels discourage any reasonable management for recreation or fish and wildlife enhancement unless the state or the town of Sherborn acquires additional abutting land in fee or easement.

Should the Massachusetts Division of Fisheries and Wildlife decide not to assume management of this small area, the town of Sherborn has expressed interest in assuming management of lands within their town.





## AREA G

The Medfield - Millis marshland is the largest contiguous tract of land acquired for the project. This open wet meadow is almost six miles in length and totals 1,149 acres in fee title and 1,507 acres in flowage easements. Easement tracts include over 900 acres owned by the following agencies and non-profit organizations:

Commonwealth of Mass.	-	91.06 acres
Town of Medfield	-	243.38 "
Town of Millis	-	38.40 "
Town of Walpole	-	92.75 "
Trustees of Reservations	-	<u>472.54</u> "
		928.13

Easement land also includes the following organization which promote fishing and hunting:

Fin, Fur & Feather Club, Inc.	-	71.57 acres
Walpole Sportsman's Assoc., Inc.	-	48.88 "
Medfield Sportsmens Club, Inc.	-	<u>34.53</u> "
		154.98

The project area includes land on both sides of the Charles River. Here the Charles marks the boundary between the towns of Medfield and Millis. The southern portion of the area along the Stop River also includes tracts in the towns of Walpole and Norfolk.

Approximately half of Area G is an open wet meadow dominated by bluejoint grass. The remainder is shrub and tree swamp. During late winter and into the spring months, most of the area may be inundated by floodwater from heavy rain or snowmelt for several weeks. Floodwaters usually recede by April; however, saturated soil conditions may persist into the summer, limiting access for recreation.

Area G was the first NVS area to be licensed to the Massachusetts Division of Fisheries and Wildlife for fish and wildlife habitat management. The area provides numerous opportunities for public access. Access to the Charles and Stop Rivers is available or proposed at the Route 27 bridge on the Charles, the Bridge Street - Dover Road bridge area, the Route 109 (Main St.) bridge on the Charles, Dwight Street on both sides of the Charles, Causeway Street on the Stop River in Medfield, and Forest Road in Millis. Public access to South End Pond is also available from Orchard Street on land owned by the Town of Millis.

The access on Route 27 at the Sherborn-Medfield line is on easement land owned by the Commonwealth of Massachusetts as part of the Medfield State Hospital property. Roadside parking is available on the east side of the bridge on Route 27. The abandoned right of way of old Hospital Road leads to an old bridge abutment upstream of Route 27. This area

offers the potential for off street parking and a more formal canoe launch area, but the site is secluded from view and would be difficult to police.

At the Bridge Street bridge site on the Millis-Medfield line, the old Bridge Street right of way between the new bridge and the railroad tracks provides a paved surface for parking approximately ten vehicles. An unpaved road leads northwest from this point across the railroad tracks to project lands downstream. This area in Medfield is used by local hunters and fishermen.

The river access point on the east side of the Main Street (Route 109) bridge is a convenient drop-off point for canoeists and provides access for fishing, but parking is limited. The Causeway Street bridge on the Stop River near its junction with the Charles provides a seasonal canoe launching area, but flow on the Stop River in the late summer and fall is frequently too low to permit canoe usage. Causeway Street is also narrow and unpaved, restricting safe parking in the area.

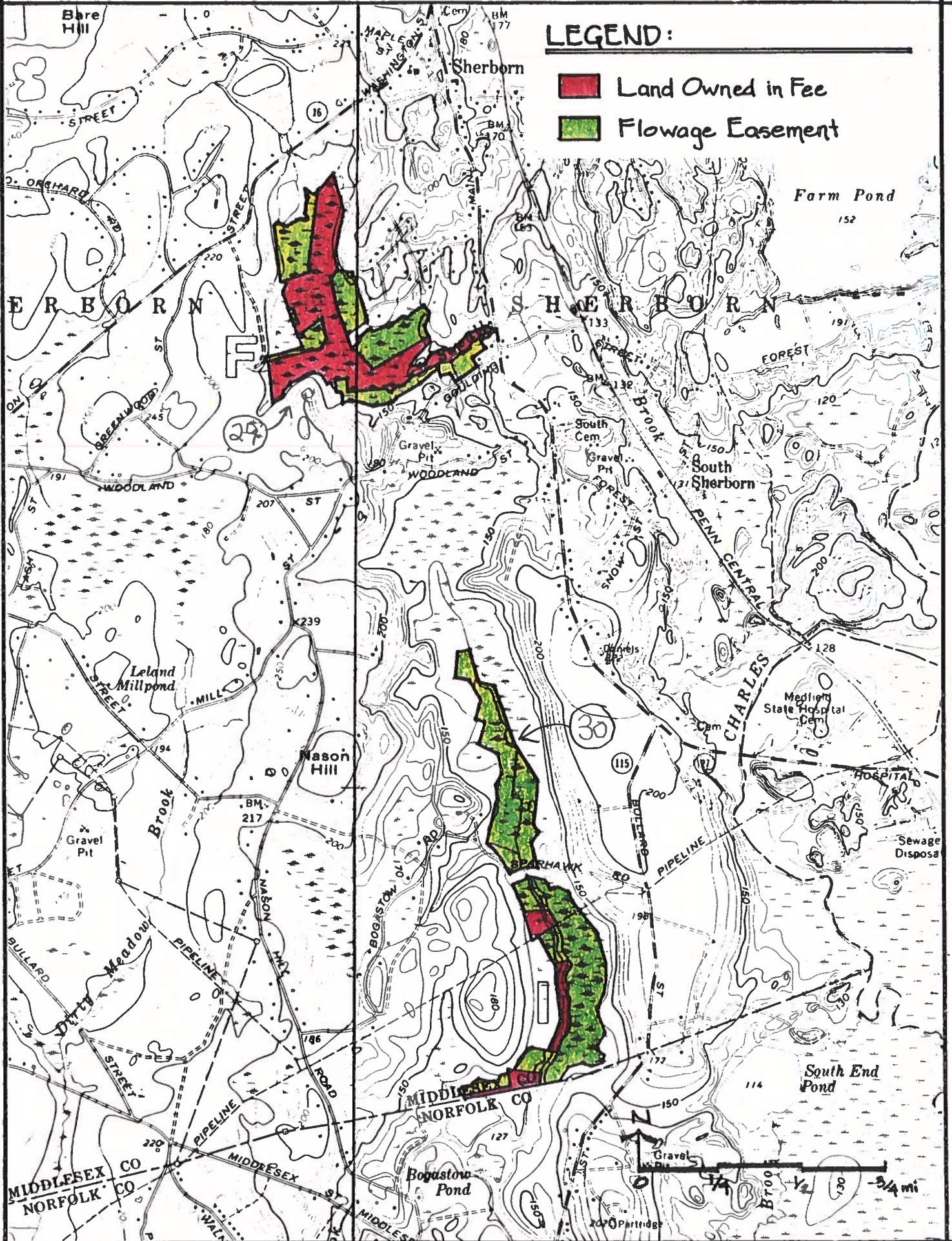
The Forest Road site is an existing small roadside area on the Millis side of the bridge. Parking for approximately five vehicles is available. Access to the water for launching canoes is easy here, and the area receives frequent use.

Present management activities of the State include stocking the area with pheasant and snowshoe rabbit. The large project land area provides a valuable local opportunity for hunting in a region of rapid suburbanization. In addition to hunting of stocked animals, hunting of native waterfowl also occurs. The State also annually stocks the Charles River from Millis to South Natick with approximately 2,500 brown trout.

Area G undoubtedly provides the greatest opportunity for public use and enjoyment of the Charles River NVS project. Continued and expanded management of the area by the State is recommended.

# LEGEND:

- Land Owned in Fee
- Flowage Easement



CHARLES RIVER  
NATURAL VALLEY STORAGE

SEGMENTS  
29 30

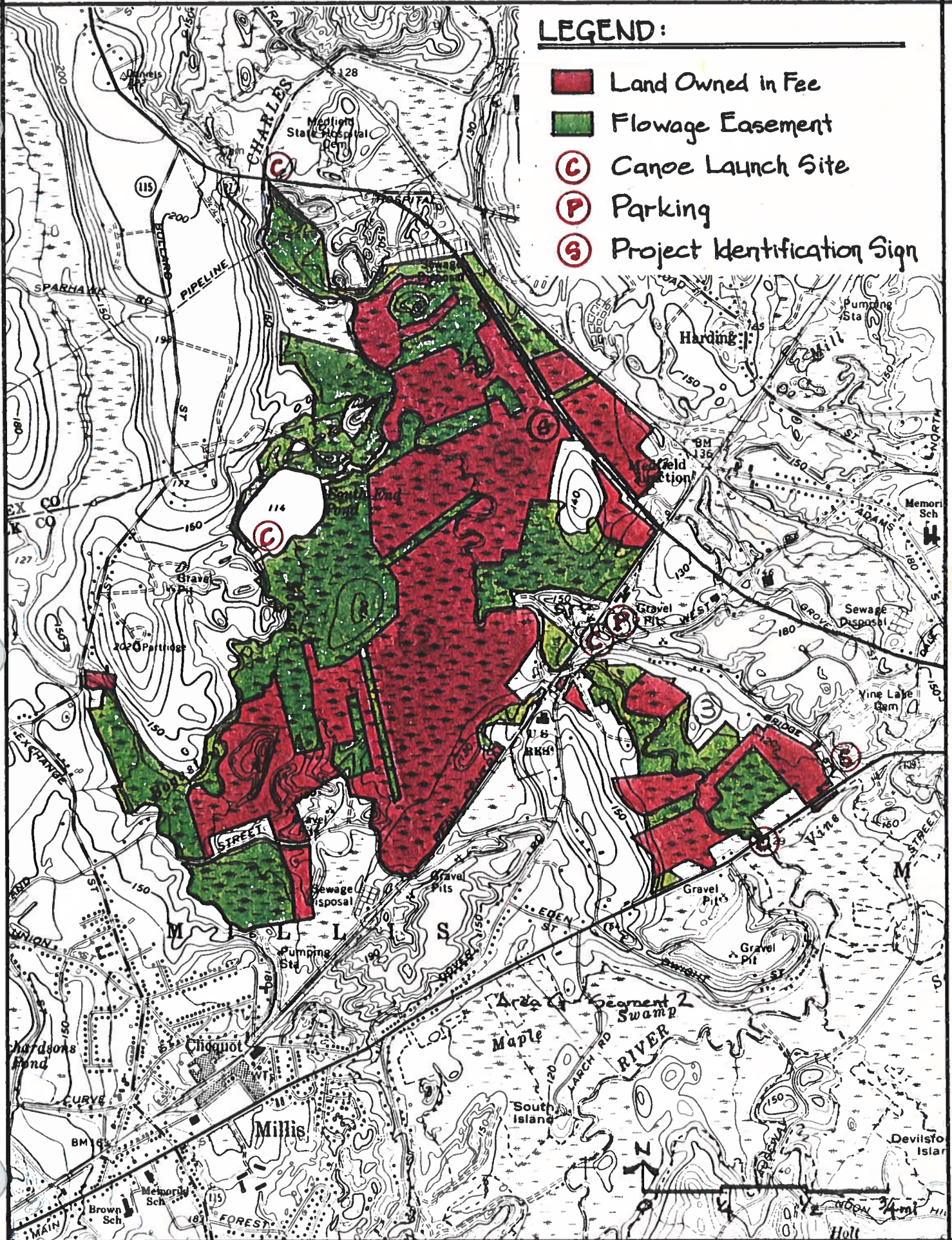
AREAS F&I





# LEGEND:

- Land Owned in Fee
- Flowage Easement
- C Canoe Launch Site
- P Parking
- S Project Identification Sign



CHARLES RIVER  
NATURAL VALLEY STORAGE

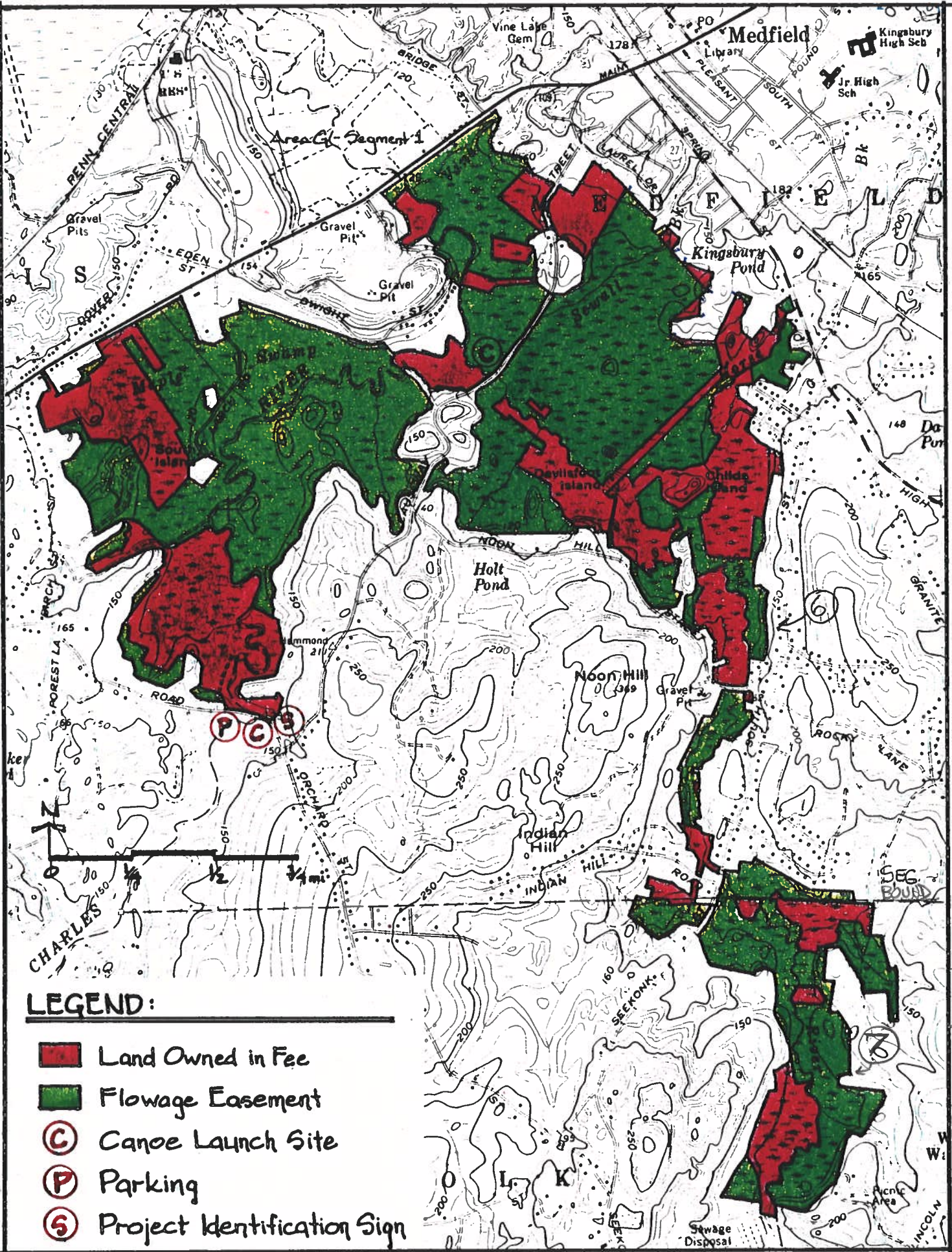
SEGMENTS  
①②③

AREA G SEG 1









CHARLES RIVER  
NATURAL VALLEY STORAGE

AREA G SEG 2

Figure 14



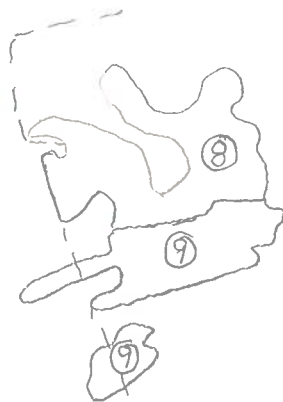


#### AREA H

Area H is an 873 acre tract on the west side of Millis, between Millis Center and the Medway line in the floodplain of Bogastow Brook. The area is locally known as "The Great Black Swamp". Massachusetts Route 109, running east-west, bisects the project area.

Only one small isolated fee owned tract lies directly on the brook. Most of the 347 acres owned in fee is in irregularly shaped blocks of land between Main Street (Route 109) and Causeway Street in Millis. The numerous isolated and scattered tracts will make public access difficult.

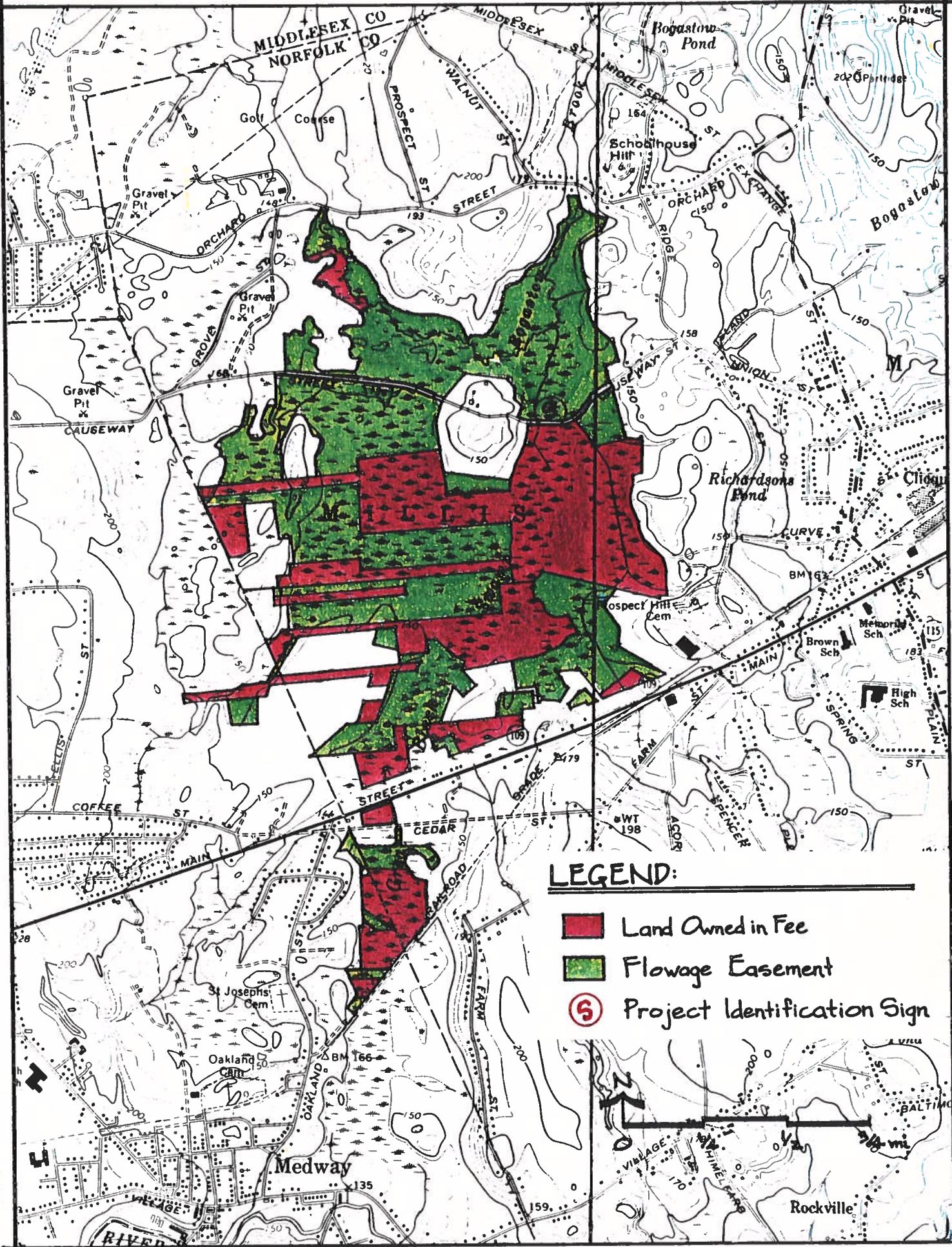
Management of the area by the Massachusetts Division of Fisheries and Wildlife is recommended. The state should attempt to obtain management easements with the major land owners of the 526 acres in easement to provide more comprehensive management over the area.



MILLS  
KAYAK

AREA

(H)



**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENTS  
(89)

**AREA H**





#### AREA J

Area J is a wooded wetland on Dopping Brook, on the border of the towns of Holliston and Sherborn north of Route 16. The wetland is bisected north to south by a railroad right of way. The sole public access to the 111 acre area is from Brook Street on the Sherborn side of Dopping Brook. Limited roadside parking is available at this location. Access to the interior of the site is facilitated by a transmission line right of way which parallels the brook. The isolated character of this area offers the potential for limited hunting.

Management of this area by the Massachusetts Division of Fisheries and Wildlife is recommended.



# LEGEND:



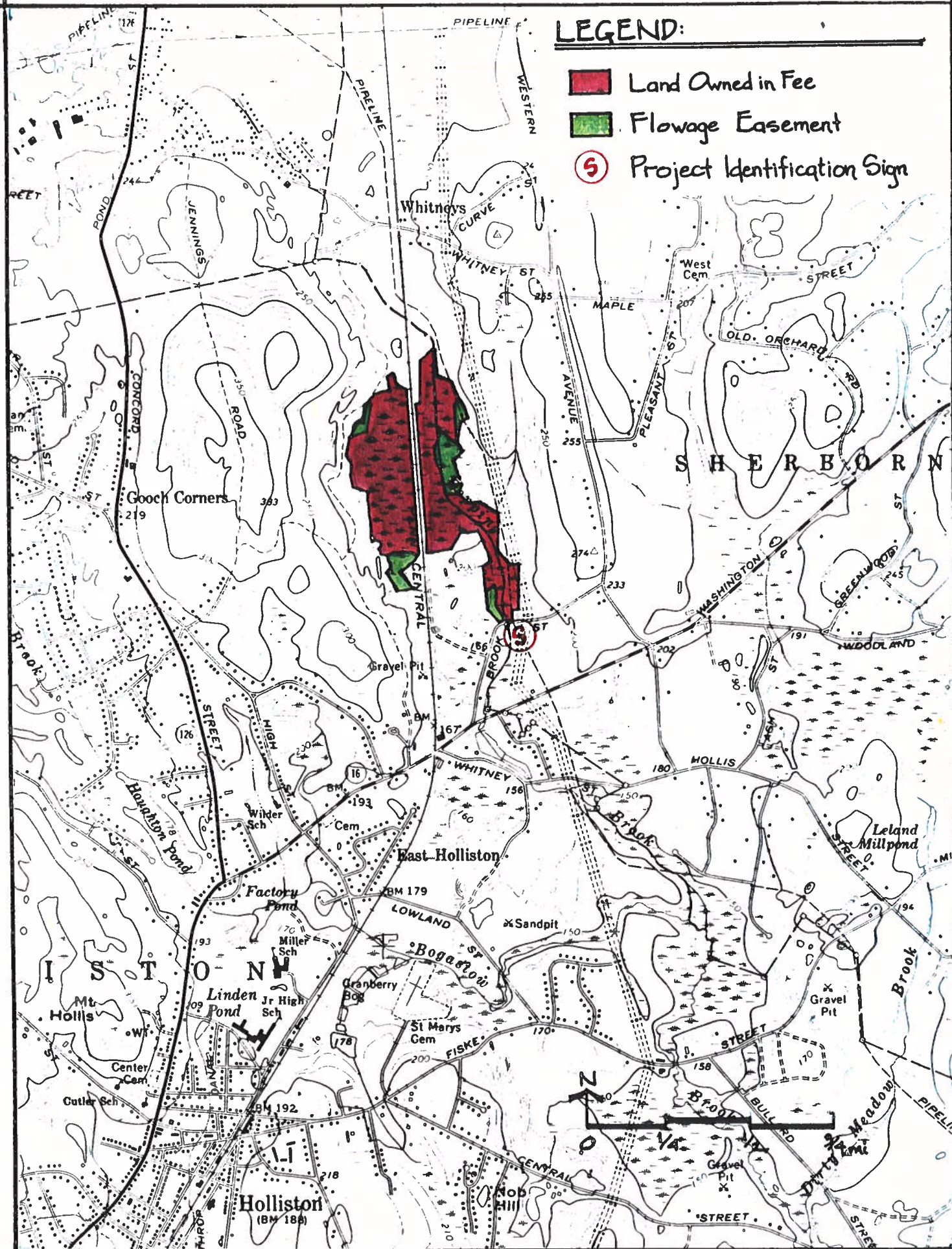
Land Owned in Fee



Flowage Easement



Project Identification Sign



CHARLES RIVER  
NATURAL VALLEY STORAGE

SEGMENT

(31)

AREA J

Figure 16



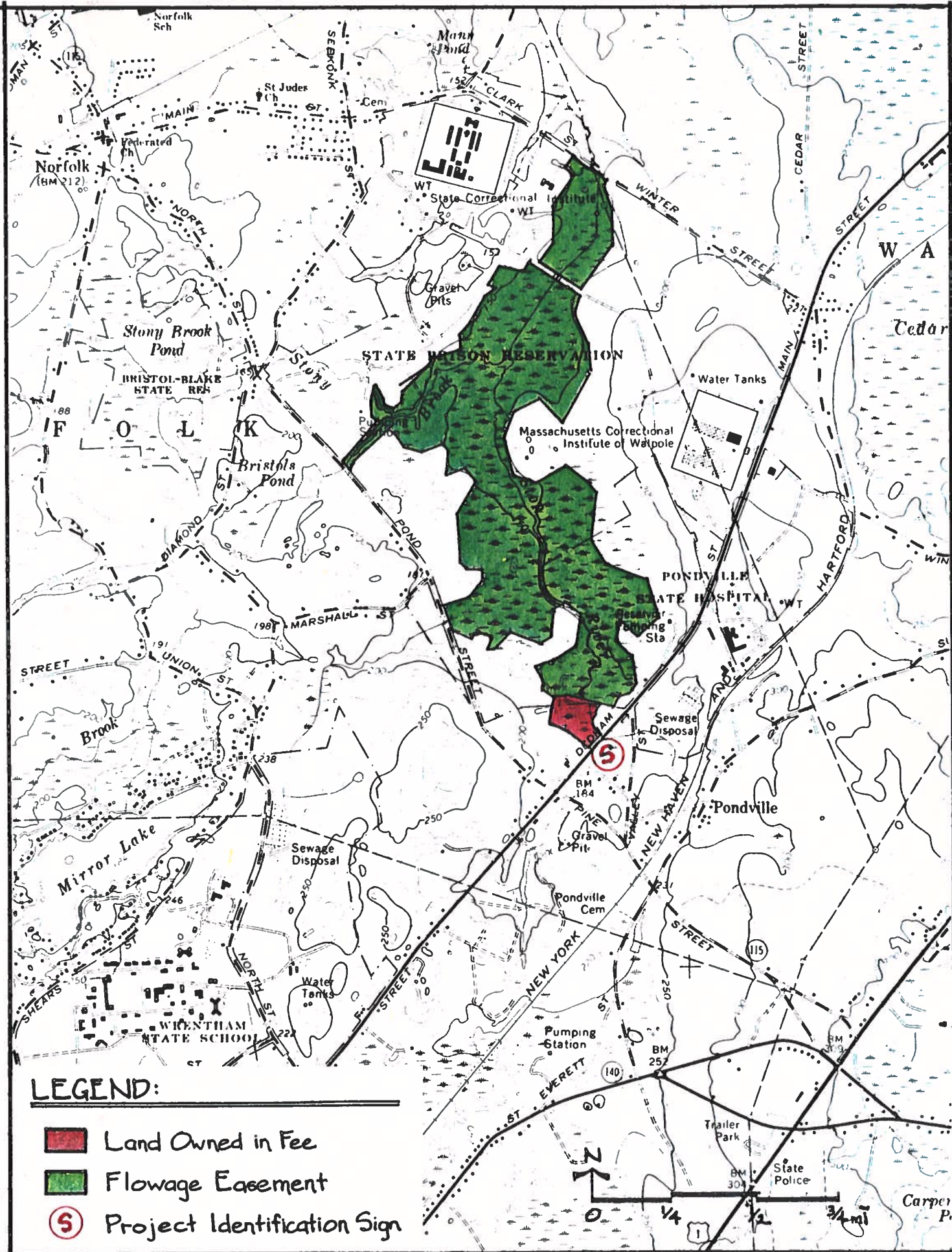
AREA K

The Stop River is a major tributary of the Charles River, originating in the Town of Norfolk and flowing north along the Walpole border into Medfield and NVS Area G. In the upper reaches of the Stop River is a 365 acre wetland between Clark St. Winter St. and Pond Street. The only area acquired in fee in this large tract is an eight acre parcel at the intersection of Sherwood Drive and Dedham Street in Norfolk. The remaining 356 acres are in easement over land owned by the Commonwealth of Massachusetts Department of Corrections. The wetland separates two state correctional institutions - the Walpole and Norfolk State Prisons.

Public use of this area is not encouraged.







# CHARLES RIVER NATURAL VALLEY STORAGE

SEGMENT  
10

# AREA K

Figure 17



## AREA L

The Mill River is a major tributary of the Charles River, originating at Lake Pearl in Wrentham. Mill River flows northward through the western portion of the town of Norfolk, parallel to the Norfolk Airport, entering the Charles at River Road and Myrtle Street.

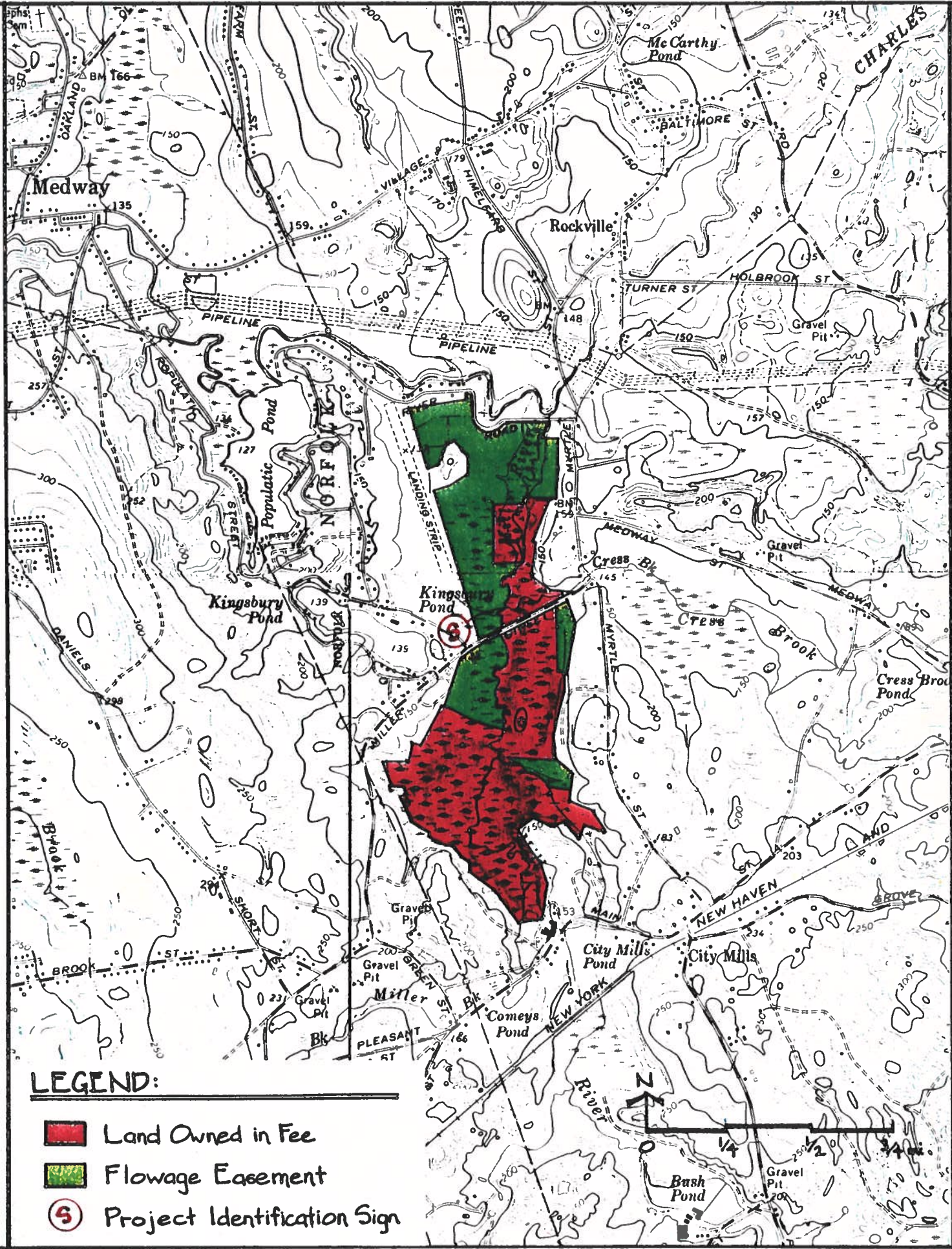
Area L is a broad wetland along the lower reach of the Mill River. The wetland varies in character from wet meadow to red maple woodland. The total area acquired includes 186 acres in fee and 114 acres in easement. The fee owned land is in one continuous block on both sides of the river, with public access from Miller Street.

The Mill River is stocked with Eastern Brook Trout and Brown Trout each spring by the Mass. Division of Fisheries and Wildlife. With few private dwellings in the area, limited hunting under a program regulated by the state may be possible. Coordination with local officials is recommended prior to implementing such a program.

Management of Area L by the Massachusetts Division of Fisheries and Wildlife is recommended. A limited parking area should be developed on Miller Street. Seasonal trails should be laid out to provide additional access to the river and to provide possible winter access to the area when wet soils are frozen or snow covered.







**LEGEND:**

- Land Owned in Fee
- Flowage Easement
- S Project Identification Sign

**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENT  
11

**AREA L**

Figure 18



#### AREA M

The third largest fee owned land area in the NVS Project is on Mine Brook in the Town of Franklin. Fee owned land extends over two miles along the brook and is interrupted only by Interstate 495. Fee acreage totals 339 acres of the 388 acre project area.

The wetland contains extensive wet meadow in the southern or upstream portion around Interstate 495. Downstream the river meanders through a narrow wet meadow bordered by shrub swamp and red maple woods. Access to the area is provided by the former right of way of Oak Street Extension.

Use of the brook for canoeing may be possible during seasonal high flow conditions, but other nearby water bodies offer more favorable and reliable conditions. This area would best be managed for fish and wildlife by the Mass. Division of Fisheries and Wildlife.

#### AREA R

The smallest NVS area is in northern Bellingham near the Medway town line. Area R is located on Stall Brook, which enters the Charles River downstream of North Bellingham Dam. This area does not meet the original project criteria of a minimum of 100 acres because approximately 50 acres of the proposed acquisition area was zoned for industrial use since original area delineation, making the land too expensive for fee purchase.

More than half of the total 80 acres of Area R is in easement, the majority being on land owned by the town of Bellingham. Land owned in fee does not provide legal access to Stall Brook. Access is provided over town land fronting on Hartford Avenue.

Stall Brook is stocked with Eastern Brook Trout each spring. Fee lands should be included in a lease agreement with the Mass. Division of Fisheries and Wildlife for management of this cold water fishery.

#### AREA S

Area S is located on the Charles River in Bellingham. This is the first significant wetland encountered along the Charles downstream of Cedar Swamp Pond in Milford. The river channel reflects a sudden change in gradient by assuming a meandering character after leaving a relatively straight channel at Charles River Grove. The river edge is a wet meadow which gradually changes to shrub swamp and woodland. At the downstream or northern end of this wetland, the river channel widens into the pool of North Bellingham Dam.

Fee acreage in Area S totals 330 acres in an almost continuous block along two linear miles of the Charles. Interstate 495 bisects the project area. Public access is only available from High Street to Bellingham, with parking limited to road shoulders. No adjacent upland project area is available for additional parking.

Management of the area for fisheries and wildlife habitat improvement by the Massachusetts Division of Fisheries and Wildlife is recommended.

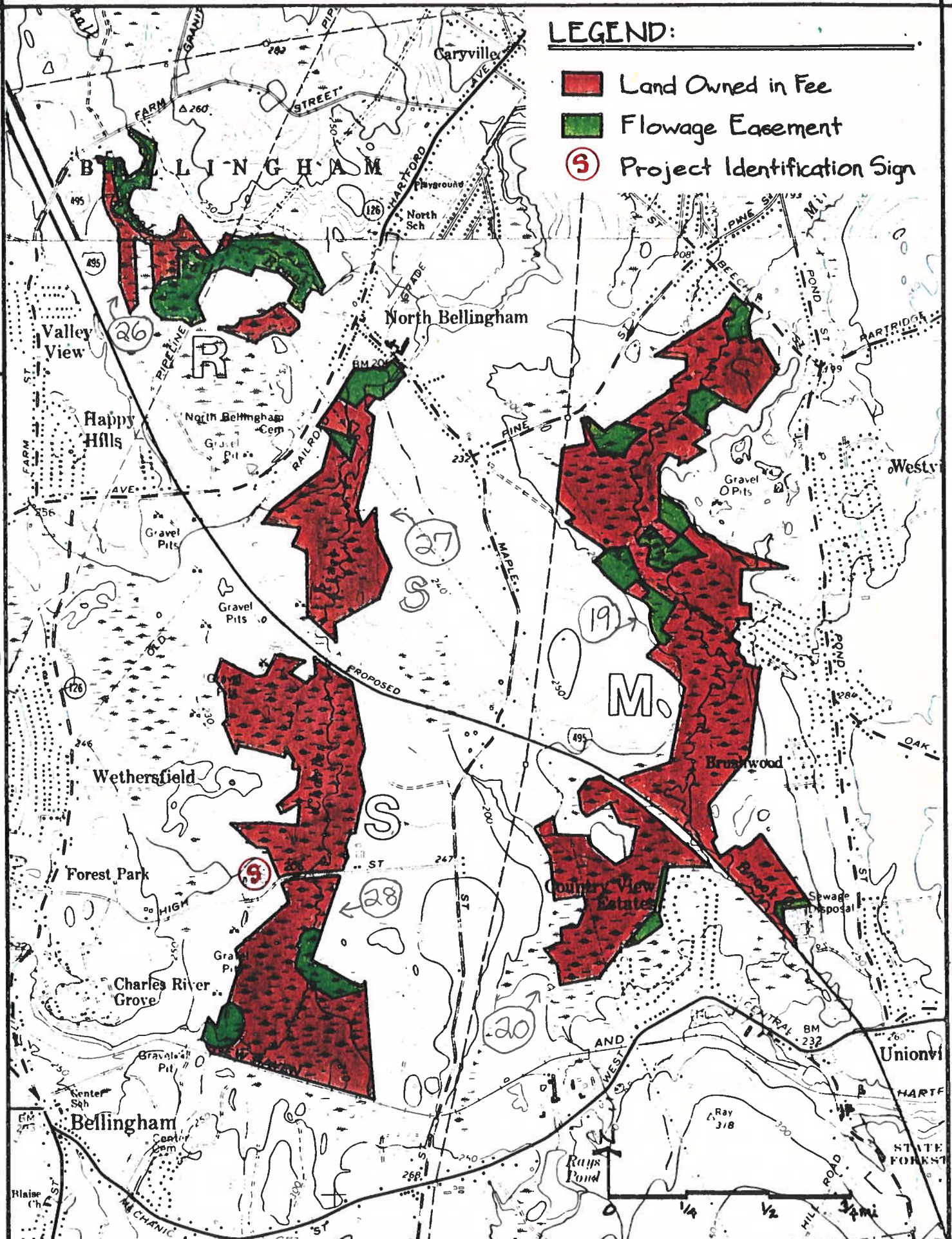
SEGMENTS

19 20 26 27 28



# LEGEND:

- Land Owned in Fee
- Flowage Easement
- S Project Identification Sign



CHARLES RIVER  
NATURAL VALLEY STORAGE

AREAS M, R & S





#### AREA N

Mine Brook south of Interstate 495 in the Town of Franklin is the location of Area N. As Mine Brook flows northward from Grove Street, the channel meanders through a narrow zone of wet woodland before opening into a shallow backwater area formed by an access road along an electric transmission line. Downstream is another backwater area at a lower elevation, formed by a culvert under a railroad right of way and the interstate highway.

The project area includes 79 acres in fee and 57 acres in easement. The land in restrictive easement includes 17 acres owned by the Town of Franklin.

The large shallow backwater areas and the access now provided along the power line right of way offer an excellent opportunity for wildlife management and possible limited hunting. Lease of this area by the Mass. Division of Fisheries and Wildlife is recommended.

#### AREA O

Tracts along Miscoe Brook in the towns of Franklin and Wrentham total 65.4 acres in fee and 170.45 acres in easement. The easement tracts include 20.9 acres on land owned by the Town of Wrentham and 89.58 acres on land owned by the Commonwealth of Massachusetts in the Franklin Forest. These easements cover only part of larger tracts which provide public access to Miscoe Brook. No direct public access is available to fee lands.

The Massachusetts Division of Fisheries and Wildlife stocks Miscoe Brook in Franklin each spring with approximately 500 Eastern Brook Trout. The tracts acquired in fee and easement provide important additional protection for this valuable cold water fishery. Recreation use of Area O will be limited to seasonal fishing. Management of this area under a lease agreement with the Massachusetts Division of Fisheries and Wildlife is recommended.



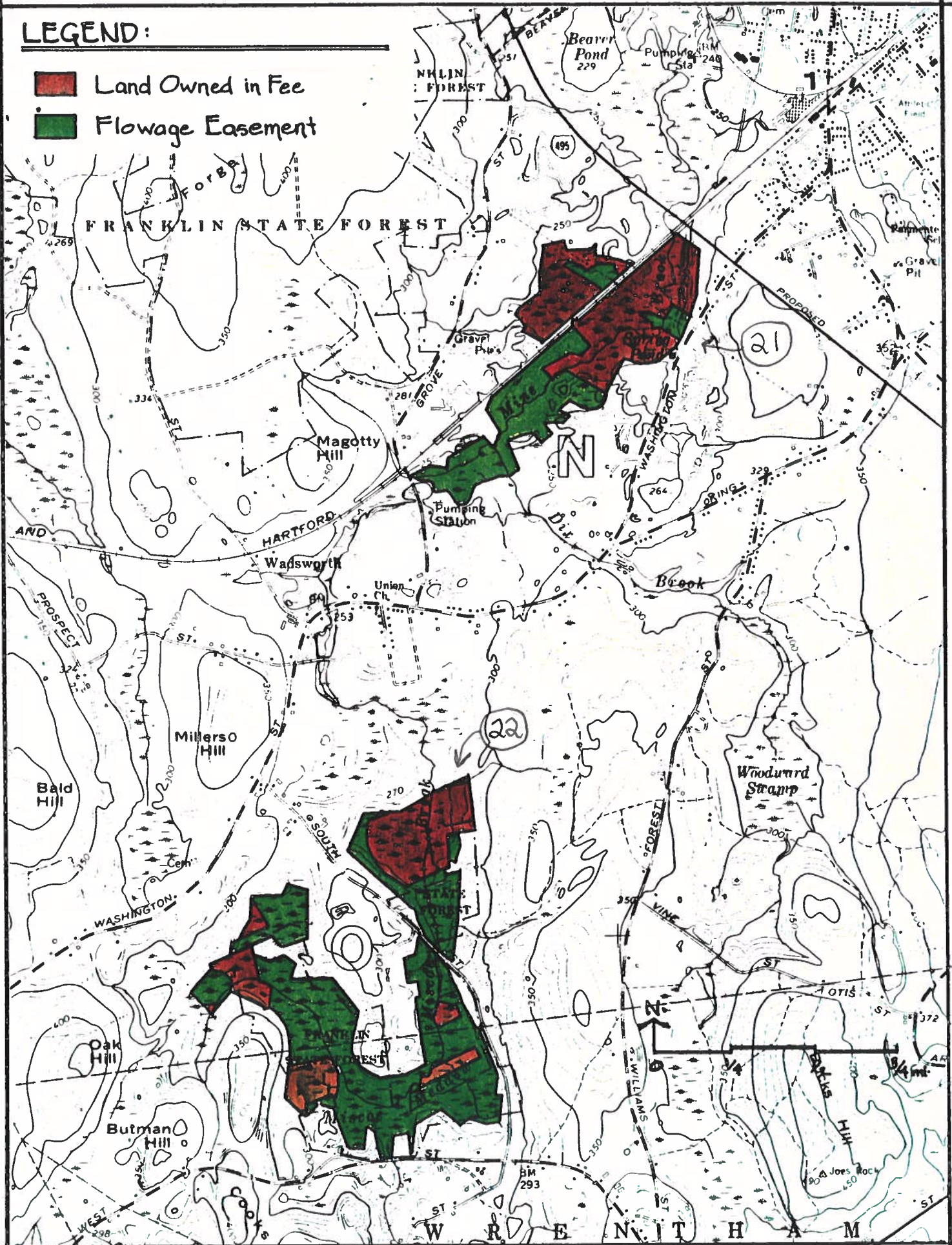
# LEGEND:



Land Owned in Fee



Flowage Easement



CHARLES RIVER  
NATURAL VALLEY STORAGE

SEGMENTS  
21 22

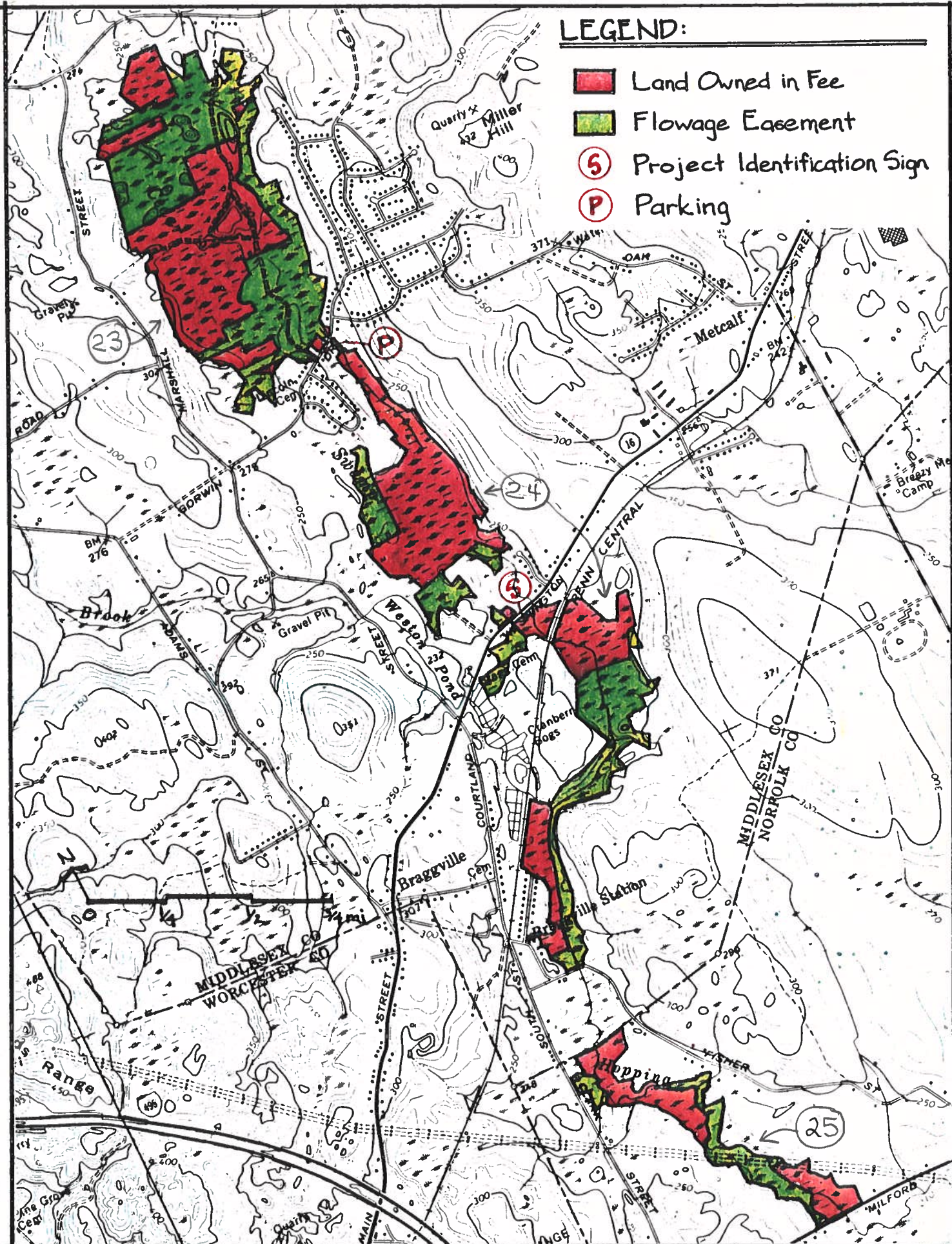
AREAS N & O





# LEGEND:

- Land Owned in Fee
- Flowage Easement
- S Project Identification Sign
- P Parking



**CHARLES RIVER  
NATURAL VALLEY STORAGE**

SEGMENTS  
23 24 25

**AREA P**

Figure 21



### Area P

Area P is a 4 mile long wetland in the towns of Holliston and Medway. The wetland is bisected by a Charles River tributary variably known as Beaver Dam Brook, Cedar Swamp Brook, and Hopping Brook. This tributary enters the Charles River downstream of Caryville Dam in Bellingham. Area P totals 510 acres, approximately half in fee and half in easement. Half of the easement tract acreage is land owned by the town of Holliston, primarily north of Gorwin Drive in the Brentwood Conservation Area.

The brook, particularly in Medway, is stocked with 1,500 Eastern Brook Trout and Brown Trout each spring. Fishing is a major recreation use of project lands.

Project lands north of Routh 16 include areas of Cedar Swamp, a locally unique vegetation community type dominated by Atlantic white cedar (Chamaecyparis thyoides). The saturated peat soil is very acid, supporting an interesting variety of small plant such as pitcher plant (Sarracenia purpurea), sundew (Drosera spp.), and cranberry (Vaccinium oxycoccus).

The wetland area north of Gorwin Drive, which is accessible through the Brentwood Conservation Area, offers an opportunity for cooperative development with the Town of Holliston, owner of more than 115 acres now under easement for the NVS project. Management of this portion of Area P by the Town of Holliston is recommended. Lease of project lands below Gorwin Drive by the Mass. Division of Fisheries and Wildlife should provide proper management of this trout stocking area.





## B. Site Development Standards

While recreation development on project lands is to be very limited, the establishment of standards for any development are important to insure consideration of the sensitivity of each site, the level of development to be achieved, and uniformity in methods and materials to be used to establish a project identity.

Because project lands are primarily wetlands acquired to insure their preservation, every effort should be made to concentrate recreation usage on adjacent upland. In several areas, upland has been acquired as a part of a larger tract of wetland. In other instances, adjacent upland is owned by state or local agencies, or by non-profit organizations. Such areas may provide suitable locations for small gravel surfaced parking areas to be used by fishermen, canoeists or hikers.

### a. Parking

Facilities for visitor parking should be limited to designated sites only. The sites shown in the site development plans utilize existing parking whenever possible. Roadside parallel parking has the least impact on project lands, is generally the easiest to maintain, involves little or no construction cost and is easiest to police. Roadside perpendicular parking concentrates more vehicles closer to the point of access but may create a safety hazard if vehicles must be backed out onto a public road. Off road parking improves public safety by taking the parking activity off the right of way. This type of parking area must be readily visible from the road to provide security and discourage undesirable activities.

All parking areas are to be gravel surfaced unless already paved. Wood posts or barriers are to be installed to visually define the parking area and access roads, and to control vehicles.

### b. Launching Sites

Designated sites for launching canoes or car top boats are to be simple earth or gravel ramps for pedestrian use only. Adjacent parking is preferred, but at some locations parking may be minimal or at a nearby location. The launch site itself may have short term parking as a drop off point only. The recommended launch site plan is a small off street parking lot for approximately 6 vehicles with a short, gently sloped path to the water for easy hand carrying of boats or canoes.

### c. Trails

Trail development will provide improved and controlled access onto and through project lands. Specific trail uses include hiking, nature observation, cross-country skiing, snowshoeing and shoreline access. In determining specific trail layout, design considerations should include



soil conditions to avoid excessively wet or erodable soils. Trails for winter use only may be sited on wet soils which freeze during the winter months.

Access to trails should be restricted by posts or gates to prevent vehicular use. Whenever practical, barrier-free design principles should be followed in order to permit maximum participation by persons with special physical needs. Grades generally should not exceed 8.5 percent. Siting of trails should respect existing vegetation and topography.

Trail layout should form a loop so that visitors do not have to repeat the trail to return to their starting point.

#### d. Signs

The installation of signs on project lands should be limited to four general types:

- Project identification signs - identifying the site as a part of the Charles River Natural Valley Storage Project and the local agency responsible for management of the area. Signs should only be provided at highly visible locations such as along highways or at road ends.
- Directive signs - signs providing instruction to the public on the location of river access points for fishing or canoe launching, trail locations or special activity areas.
- Regulatory signs - signs which inform the public about prohibited uses or activities, potential hazards, or unlawful activities. Such signs should be kept to an absolute minimum to avoid a negative atmosphere for visitors.
- Boundary signs/markers - the boundaries of project lands should be marked in a manner sufficient to enable the public and adjacent land owners to readily identify their location. Marking should be by the methods employed at other Corps of Engineers properties - installation of corner monuments, marking of trees and clearing of a four foot path along the boundary where practical.

## VII OPERATION & ADMINISTRATION

Under Public Law 89-72, the Federal Water Project Recreation Act Federal agencies responsible for the planning and development of multiple purpose water resource projects "shall encourage non-Federal public bodies to administer project land and water areas for recreation and fish and wildlife enhancement purposes and operate, maintain, and replace facilities provided for those purposes..."

In 1979 the Massachusetts Department of Fisheries and Wildlife entered into a license agreement with the Corps for management of fee owned land in Area G, the Medfield-Millis marshland. This area was leased separately because it was the first major area to be acquired in the four year phased acquisition program. When the full acquisition program is completed in 1984, negotiations will be held with the Department to determine those areas in the remainder of the project which are mutually desirable to lease for fish and wildlife management.

Under a license for fish and wildlife management purposes, the Massachusetts Department of Fisheries and Wildlife has the responsibility for habitat management, regulation of public use, promotion of limited recreation, and routine maintenance. Habitat management activities include stocking of fish and game, aiding in the restoration of runs of migratory shad, planting food and cover for wildlife, and maintaining a diversity of vegetation cover types in order to provide suitable habitat for a wide range of wildlife species. A part of habitat management would also include the perpetuation of agricultural land use, as this provides important habitat diversity.

Regulation of public use is conducted under the Director of the Massachusetts Division of Law Enforcement. His staff as well as natural resource officers and members of the State Police have the legal authority to enforce fish and game laws and regulations as well as other unlawful uses of project lands.

Promotion of limited recreation includes providing improved stream-bank access for shore fishermen, developing launching sites for cartop boats and canoes, with limited provisions for parking, and establishing trails for hiking and cross-country skiing. Other recreation uses which the Division may explore include skeet shooting or target shooting in designated areas, and limited primitive camping by organized groups such as Scouts.

Routine maintenance activities include removal of trash, clearing and marking of established trails, posting of area identification signs and other signs directing public use, and controlling erosion.

For those NVS areas not leased by the Massachusetts Division of Fisheries and Wildlife, every effort will be made by the Corps to encourage other agencies or public bodies to assume similar management responsibilities. The goal would be to provide land for management in conjunction with adjacent or nearby natural resource management programs.

## VIII RECOMMENDATIONS

The lands and waters of the Charles River NVS project were acquired for the purpose of preserving them in their natural condition as they are a cost effective and environmentally sound means of flood control. Public use of the project area must be in keeping with this objective. Therefore, extensive public recreation is not recommended, nor is it desired by local towns. The extensive land areas of the project instead offer opportunities for fish and wildlife habitat improvement and the public enjoyment of these areas through passive recreation activities such as fishing, canoeing, hiking, nature observation, and cross-country skiing.

In order to improve public use of project recreation opportunities, the following recommendations have been developed:

- Continue the present fisheries and wildlife management license with the Massachusetts Division of Fisheries and Wildlife and expand the management agreement to other suitable project areas.
- Promote cooperative management agreements for lands acquired in restrictive easements from non-federal public agencies and organizations. Such agreements could provide more comprehensive management of fish and wildlife resources and additional opportunities for public access and enjoyment.
- Support reestablishment of anadromous fish species through cooperative management practices in conjunction with other Federal and State agencies.
- Establish well defined and readily accessible locations for launching car top boats and canoes as specified in the development plan.
- Improve access to the river for fishing by clearing and marking trails and identifying suitable parking locations.
- Develop trail systems in cooperation with adjacent land owners and owners of land under restrictive easement. Trails should be developed to permit hiking, cross country skiing, snowshoeing and similar low intensity uses only.
- Install project signs at each area as recommended in the development plan. Keep regulatory signs to a minimum, utilizing directive rather than negative messages whenever possible.
- Establish and maintain project area boundary corner markers and boundary lines to help prevent encroachment by abutting property owners.

State License →

G, H, L, M, N, O, R, S

Part of P south of  
Gorwin Dr.



Table 7

Summary of Management Recommendations

AREA	Leasee				Canoe Launch	Trails	Parking	Project Sign
	Ma. Fish. & Wildlife	MDC	Ma. Audubon	Town				
B	<del>Corps</del> ●	①			yes ●	●	●	●
C	<del>Corps</del> ●				yes			●
D	<del>Corps</del> ●							
E	Corps		●					
F	<del>Corps</del> ●							
G	<del>MDFW</del> ●				yes ●		●	●
H	<del>MDFW</del> ●							●
I	<del>Corps</del> ●							
J	<del>Corps</del> ●							●
K	<del>Corps</del> ●							●
L	<del>MDFW</del> ●							●
M	<del>MDFW</del> ●							
N	<del>MDFW</del> ●							
O	●							
P	<del>MDFW</del> ●			②	yes		●	●
R	<del>MDFW</del> ●							
S	<del>MDFW</del> ●				yes ●			●

1 - Alternate recommendation

2 - Town of Holliston for area north of Gorwin Drive

